

**ANALYZING THE PROSPECTS OF  
MONETARY INTEGRATION IN SOUTH ASIA**

A

Thesis

Submitted to



For the award of

**DOCTOR OF PHILOSOPHY (Ph.D)**

in

**Economics**

By

**Biswash Gauchan**

**Reg. No. 11413317**

**Supervised By**

**Dr. Vishal Sarin**

**LOVELY FACULTY OF BUSINESS AND APPLIED  
ARTS  
LOVELY PROFESSIONAL UNIVERSITY  
PUNJAB  
2019**

**MY PH.D WORK IS DEDICATED TO**

**MY PARENTS FOR THEIR SACRIFICE, BLESSINGS, PRAYERS AND  
LOVE**

**MY WIFE JYOTI FOR HER PERSEVERENCE, SUPPORT,  
UNDERSTANDING, WILL POWER, SACRIFICES AND LOVE**

**AND**

**MY DAUGHTER TANUSHRI AND SON KASHYAP FOR THEIR  
PATIENCE, UNDERSTANDING AND LOVE**

## **DECLARATION**

**I hereby affirm that the work presented in this thesis is exclusively my own and there are no collaborator and that it does not contain any work for which a degree has been awarded by any other university or institution. A part of this work has also been published.**

**Date:**

**(Biswash Gauchan)**

**Countersigned:**

**Supervisor**

**(Dr. Vishal Sarin)**

**Professor**

**Department of Economics**

**Mittal School of Business**

**Lovely Professional University**

## **CERTIFICATE**

**This is to certify that the thesis entitled, “Theoretical and Practical Aspects of Monetary Integration in South Asia” embodies the work carried out by Mr. Biswash Gauchan himself under my supervision and that the thesis is worthy of consideration for the award of PhD degree.**

**Date:**

**Supervisor**

**(Dr. Vishal Sarin)**

**Professor, HOD**

**Department of Economics**

**Mittal School of Business**

**Lovely Professional University**

## **Abstract**

In more than three decades of the establishment of South Asian Association of Regional Cooperation (SAARC), very little progress has been made towards economic and monetary integration of the region. The very relevance of SAARC has been called into question in recent years amid protracted conflict between India and Pakistan as no summit could be held since last time it was held in Kathmandu, Nepal in 2014. Therefore, the study of the prospects of the regional monetary integration has never been more important than now. It serves to analyze both theoretical and practical aspects of the monetary integration in South Asia. The theoretical aspects examine the case using the methodology available in the literature, while the practical aspects dwell on best possible ways of achieving greater monetary integration grounded on the geopolitical and economic realities of the region with forward looking approach.

The theoretical undertaking of the research evaluates various prerequisites of the monetary union laid down by available literatures on the subject. In this regard, the empirical studies assess whether South Asia is an Optimum Currency Area (OCA) or not by examining the nature and the symmetries of different structural shocks faced by the member countries in the region. For this, Structural VAR analysis is used. The empirical studies show that South Asia is not an optimum currency area. The conclusion is also supported by other crucial indicators such as correlation of output growth, degree of trade openness, intraregional trade, Herfindahl-Hirschman Index (HHI) etc.

As the region is not an OCA, the possibility of a regional monetary union with a common currency is ruled out because the cost of monetary integration is likely to outweigh the benefits. Using the Structural VAR technique the empirical studies are extended to examine whether India plays the role of anchor economy in the region by contributing to the business cycles of the member countries. The studies show that despite being the largest economy with favourable factors such as contiguous border with central location; historical and cultural ties; and greater political influence India fails to establish its central role in contributing to the business cycles of the member countries in the region.

By applying Johansen co-integration test the empirical study is further extended to examine the existence of long run relationship of the currencies of the region with respect to Indian rupee. The study shows that there is no long run relationship between the movements of exchange rates of the currencies of the member countries with Indian rupee. This comes from the fact that countries in the region follow different exchange rate regimes amid low trade and financial integration. The test excludes Bhutan and Nepal given that they maintain fixed exchange rate with Indian rupee.

Survey is carried out to draw insights on the evolution of economic and monetary integration in South Asia. The respondents are identified from each member countries from policy makers, private sector, practitioners and academia who have reasonable degree of understanding of the subject matter. Majority of respondents are of the opinion that the advance form of economic and monetary union similar to that of European Economic and Monetary Union (EMU) will not be feasible in the region. At this stage even the preliminary goals of an economic union such as custom union and single market seem far-fetched idea compared to what has been achieved so far. Therefore, monetary union in South Asia with a single currency remains unconceivable.

Nonetheless the status quo with very little regional monetary integration is not an option. This calls for innovative yet practical approach for achieving greater monetary integration in South Asia. Monetary cooperation rather than a goal of monetary union with a single currency should be the basis of monetary integration in South Asia. This new outlook is needed because whatever measures that help in advancing the goal of greater monetary cooperation essentially aimed at facilitating greater economic and financial integration shall serve as the practical goal of monetary integration in the region. This adds a new dimension to the objective of the regional monetary integration grounded on the geopolitical and economic realities of the region. Hence the concept of phased implementation and the role of Indian rupee in facilitating greater regional monetary cooperation is called for.

In fact, there already exists some form of monetary integration in South Asia at the sub-regional level. Bhutan and Nepal maintain fixed exchange rate with

Indian rupee. OCA apart from being a notional concept is an arrangement where the member countries either adopt a single currency or maintain irrevocable fixed exchange rate among each other. By virtue of adopting irrevocable fixed exchange rate for past many years, the monetary arrangements shared by these three countries practically manifest the arrangements of OCA. Such monetary arrangements have helped both Bhutan and Nepal in ensuring macroeconomic stability despite empirical studies showing non fulfillment of OCA prerequisites. Hence, this arrangement serves as the beacon of hope for the much larger and deeper monetary integration in South Asia in the coming days. Therefore, incremental and phased integration is the most practical and technically sound approach to achieve greater monetary integration in South Asia.

India, being the central economy of the region has a greater role to play in every regional initiatives including economic and monetary integration. Some regional initiatives can afford the exclusion of some member countries, not India. No country in the region is likely to give up its sovereign currency for the sake of regional monetary integration. In the absence of a common currency, Indian rupee has much larger role to play in the region for facilitating intraregional financial transactions and greater monetary cooperation. The role is similar to what German mark played prior to the launch of euro in Europe and what South African Rand is playing in Common Monetary Area of South Africa. The elevation of Indian rupee to take up regional role is commensurate with its size, its economic growth for the past several years and the larger role it can play in the regional cooperation. As India grows from the sixth to the third largest economy within next few years, the eventual emergence of Indian rupee as one of the key international currencies is inevitable.

Very little has been said and written about South Asia largely due to its own backwardness and underdevelopment in spite of the immense potential of the region. For the matters relating to economic and monetary integration, East Asia and Southeast Asia have become synonymous to Asia in the academic circle. Literature relating to economic and monetary integration of East Asia and Southeast Asia is in abundance but very little on South Asia.

Therefore, the outcome of the research contributes immensely to the literature of monetary integration in South Asia. The research concludes by providing list of policy recommendations including the *modus operandi* of monetary framework grounded on geopolitical and economic realities that would likely strengthen monetary cooperation among the members of the SAARC.



## ACKNOWLEDGEMENT

*I spent all my life away from home. My journey began when I stepped out of my home at the age of six to study in a boarding school. When my daughter reached six I realized what my family might have gone through sending off a six year old son to a boarding school that was three days walk from our village. I am truly privileged to be part of my family with six sisters where love and joys are in abundance. My parents' blessings, prayers and unconditional love made me a person that I am today. I would like to express my deepest gratitude and respect to my mother and father.*

*Life changed with the arrival of my lovely wife. She gave new meaning to my life and together we could set our priorities right. She made me realize the true meaning of a life partner. She has always been there for me through thin and thick. She took enormous courage and hardship to raise our children and has endured tremendous mental hardship during my absence from home. She is a person of strong will and determination. She has always been the source of my encouragement and strength. No words can express my gratitude for what she has done to me and our family.*

*The best gift that god gave to me in this life is my lovely daughter and son. They are the sweetest children that every parent would long for. They always showed the highest level of understanding and respect not only to us but also to each other. They are the best siblings with mutual respect, understanding and care. With such good natured children parenting has been simpler and enjoyable. I wholehearted express my deepest gratitude and love for them.*

*I started my PhD late in my life but the journey for last four and half years had been very enriching. It was like uncharted waters, never sure where you are heading or whether you'll ever reach your destination. Meaningful support was hard to come by. In nearly five years of PhD journey the only person I could lean on to is my supervisor Dr. Vishal Sarin. He has been extremely gentle, supportive and understanding. His encouragement, simplicity, intellectual caliber and commitment had been the constant source of inspiration throughout the journey of my PhD. He made himself accessible all the times. He is not only knowledgeable but also a very*

*good listener, a quality that is rare in academicians. His knowledge beyond his academic domain is remarkable. This made sharing and exchanging ideas easier, meaningful and enriching. I would like to express my deepest gratitude to Dr. Sarin for his guidance, support and encouragement in achieving this feat.*

*I am grateful to Dr. Rajesh Verma, Professor and Additional Dean, Mittal School of Business for his support, gentleness and accessibility. His presence in SOTA, Annual Seminars and Pre-submission presentation had been incredible source of inspiration as it served to build the thrust and credibility of the work being put in the research.*

*I would like to thank Dr. Sanjay Modi, Executive Dean of the University for his leadership in making Mittal School of Business visible and standout.*

*My sincere thanks to Mr. Ashok Mittal, Chancellor of the University for the opportunity awarded to me to pursue my Ph.D from India's one of the finest Universities. As his vision and leadership will take this University to new heights, so will our accomplishments become bigger and taller.*

*Finally I would like to thank all the faculties of the department who directly and indirectly contributed in the process of my research; panel members of SOTA, Annual Seminars and Pre-submission for their presence and invaluable feedback and suggestions; staff from Research and Development; administrative staff; librarians and other support staff who have been part of this wonderful journey.*

**Biswash Gauchan**

## TABLE OF CONTENT

<i>Chapter No.</i>	<i>Particulars</i>	<i>Page</i>
<i>I</i>	<i>Introduction .....</i>	<i>1-31</i>
<i>II</i>	<i>Review of Literature .....</i>	<i>32-60</i>
<i>III</i>	<i>Empirical Study on Optimum Currency Area.....</i>	<i>61-112</i>
<i>IV</i>	<i>Identification of Anchor Currency .....</i>	<i>113-137</i>
<i>V</i>	<i>Monetary Integration in South Asia: A Survey Analysis.....</i>	<i>138-150</i>
<i>VI</i>	<i>South Asian Common Monetary Area: A Model Framework.....</i>	<i>151-190</i>
<i>VII</i>	<i>Summary, Conclusion and Policy Recommendation.....</i>	<i>191-206</i>
	<i>References and Bibliography .....</i>	<i>207-227</i>
	<i>Appendices .....</i>	<i>i-vi</i>

## LIST OF TABLES

Table No.	Particulars	Page No.
1.1	List of Regional Monetary Unions	2
1.2	Overview of SAARC	5
1.3	List of SAARC Countries with Key Indicators	6
1.4	Human Development Index	7
1.5	Ease of Doing Business Index and Global Competitive Index	8
1.6	SAARC Intraregional Trade	9
2.1	List of Empirical Studies of the Effects of Currency Union on Trade	48
2.2	Role of International Money	58
3.1	Correlation of Output Growth with Summary Statistics	62
3.2	Correlation of Inflation with Summary Statistics	63
3.3	Correlation of Nominal Exchange Rate	64
3.4	Correlation of Real Effective Exchange Rate	65
3.5	Trade Openness	67
3.6	Number of Sensitive List of Goods and Targeted Reduction	68
3.7	Intraregional Trade on Goods	69
3.8	Intraregional Trade as a Percentage of Total Trade on Goods	70
3.9	Merchandise Concentration Index of Exports	72
3.10	Correlation of Output Disturbances	73
3.11	Correlation of Supply Shocks	74
3.12	Correlation of Demand Shocks	75
3.13	Forecast Error Variance Decomposition of GDP Growth and Inflation	76
3.14	Size of Disturbances and Speed of Adjustments	78
3.15	Correlation of Supply Shocks	82
3.16	Correlation of Exchange Rate Shocks	83

<b>Table No.</b>	<b>Particulars</b>	<b>Page No.</b>
<b>3.17</b>	<b>Correlation of Demand Shocks</b>	<b>84</b>
<b>3.18</b>	<b>Size of Disturbances and Speed of Adjustments</b>	<b>84</b>
<b>3.19</b>	<b>Forecast Error Variance Decomposition of Shocks</b>	<b>85</b>
<b>3.20</b>	<b>Correlation of Supply Shocks</b>	<b>90</b>
<b>3.21</b>	<b>Correlation of Exchange Rate Shocks</b>	<b>90</b>
<b>3.22</b>	<b>Correlation of Demand Shocks</b>	<b>91</b>
<b>3.23</b>	<b>Correlation of Nominal Shocks</b>	<b>91</b>
<b>3.24</b>	<b>Forecast Error Variance Decomposition of Shocks</b>	<b>93</b>
<b>3.25</b>	<b>FDI Inflows</b>	<b>97</b>
<b>3.26</b>	<b>Intraregional Migration</b>	<b>100</b>
<b>3.27</b>	<b>Estimated/Assumed Population of Overseas Indians</b>	<b>102</b>
<b>3.28</b>	<b>Bilateral Remittance</b>	<b>103</b>
<b>3.29</b>	<b>Annual Budgetary Allocation of Grants and Loans of India to South Asian Countries</b>	<b>109</b>
<b>4.1</b>	<b>Key Indicators of SAARC Countries</b>	<b>114</b>
<b>4.2</b>	<b>Trade in Merchandize</b>	<b>115</b>
<b>4.3</b>	<b>List of 10 Countries with the Largest Bilateral Trade with India</b>	<b>116</b>
<b>4.4</b>	<b>Bilateral Trade between India and SAARC Countries</b>	<b>117</b>
<b>4.5</b>	<b>India's Trade Balance with SAARC Countries</b>	<b>118</b>
<b>4.6</b>	<b>Bilateral Trade between SAARC Countries and India</b>	<b>119</b>
<b>4.7</b>	<b>List of the Estimates of Informal Trade between India and SAARC Countries</b>	<b>121</b>
<b>4.8</b>	<b>Estimates of Informal Trade as a Percentage of Total Trade</b>	<b>123</b>
<b>4.9</b>	<b>Transaction cost of Merchandize Shipment from India to Pakistan</b>	<b>123</b>
<b>4.10</b>	<b>Unexploited Trade Potential of SAARC Countries</b>	<b>124</b>

<b>Table No.</b>	<b>Particulars</b>	<b>Page No.</b>
<b>4.11</b>	<b>Forecast Error Variance Decomposition of Output Fluctuations</b>	<b>127</b>
<b>4.12</b>	<b>Forecast Error Variance Decomposition of Output Fluctuations (Chelosky Decomposition)</b>	<b>128</b>
<b>4.13</b>	<b>Unit Root Test</b>	<b>133</b>
<b>4.14</b>	<b>Lag Length Selection</b>	<b>134</b>
<b>4.15</b>	<b>Unrestricted Co-integration Rank Test (Trace and Maximum Eigenvalue)</b>	<b>135</b>
<b>4.16</b>	<b>Unrestricted Co-integration Rank Test (Trace and Maximum Eigenvalue)</b>	<b>135</b>
<b>4.17</b>	<b>Currency Regime of SAARC Countries</b>	<b>136</b>
<b>5.1</b>	<b>Country Representation</b>	<b>140</b>
<b>5.2</b>	<b>Stakeholders Representation</b>	<b>140</b>
<b>5.3</b>	<b>Results of Survey on Economic and Monetary Integration</b>	<b>141</b>
<b>5.4</b>	<b>Results of Survey on Sub-regional Approach</b>	<b>144</b>
<b>5.5</b>	<b>Factors Constraining Monetary Union</b>	<b>145</b>
<b>5.6</b>	<b>Results of Survey on the Intraregional Role of Indian Rupee</b>	<b>146</b>
<b>5.7</b>	<b>Results of Survey on the Role of Indian Rupee on Monetary Integration</b>	<b>146</b>
<b>5.8</b>	<b>Results of the Survey on ACU and SAARC Development Bank</b>	<b>148</b>
<b>6.1</b>	<b>List of Prospective Monetary Unions</b>	<b>154</b>
<b>6.2</b>	<b>Role of International Money</b>	<b>159</b>
<b>6.3</b>	<b>Exchange Rate Regime and Monetary Policy Framework</b>	<b>161</b>
<b>6.4</b>	<b>Foreign Exchange Reserves</b>	<b>168</b>
<b>6.5</b>	<b>External Debt to GDP</b>	<b>169</b>
<b>6.6</b>	<b>Foreign Exchange Reserve to GDP Ratio</b>	<b>170</b>
<b>6.7</b>	<b>Foreign Exchange Reserve to Foreign Debt</b>	<b>171</b>

<b>Table No.</b>	<b>Particulars</b>	<b>Page No.</b>
<b>6.8</b>	<b>Short-term Debt to Foreign Exchange Reserve</b>	<b>171</b>
<b>6.9</b>	<b>Foreign Exchange Reserve in Number of Months of Imports</b>	<b>172</b>
<b>6.10</b>	<b>Fiscal Balance</b>	<b>173</b>
<b>6.11</b>	<b>Current Account Balance as a Percentage of GDP</b>	<b>174</b>
<b>6.12</b>	<b>Gross Debt to GDP Ratio</b>	<b>175</b>
<b>6.13</b>	<b>Bilateral Trade with India as a Percentage of Intraregional Trade</b>	<b>176</b>
<b>6.14</b>	<b>India's Intraregional Trade in Merchandize</b>	<b>178</b>
<b>6.15</b>	<b>Correlation of Variables between India and SAARC Countries</b>	<b>182</b>

## LIST OF FIGURES

<b>Figure No.</b>	<b>Particulars</b>	<b>Page No.</b>
<b>2.1</b>	<b>Symmetry, Flexibility and Integration Criteria of OCA</b>	<b>38</b>
<b>3.1</b>	<b>Impulse Response Function</b>	<b>80-81</b>
<b>3.2</b>	<b>Impulse Response Function</b>	<b>87-88</b>
<b>4.1</b>	<b>Daily Exchange Rate Graph</b>	<b>132</b>
<b>4.2</b>	<b>Monthly Exchange Rate Graph</b>	<b>133</b>



## LIST OF APPENDIX

<b>Appendix No.</b>	<b>Particulars</b>	<b>Page No.</b>
<b>1</b>	<b>Questionnaire</b>	<b>i</b>
<b>2</b>	<b>List of Respondents</b>	<b>iii</b>
<b>3</b>	<b>Remarks from the respondents on the role of Indian rupee on regional monetary integration</b>	<b>iv</b>

## LIST OF ABBREVIATIONS

ACU	Asian Clearing Union
AD-AS	Aggregate Demand – Aggregate Supply
ADB	Asian Development Bank
ADF	Augmented Dicky-Fuller
AFG	Afghanistan
AIC	Akaike Information Criteria
AIIB	Asian Infrastructure Investment Bank
AREAER	Annual Report on Exchange Arrangements and Exchange Restrictions
ASEAN	Association of South East Asian Nations
BBIN	Bangladesh, Bhutan, India and Nepal
BGD	Bangladesh
BIMSTEC	The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
BIS	Bank of International Settlement
BLEU	Belgium Luxemburg Economic Union
BOP	Balance of Payment
BTN	Bhutan
CEMAC	The Economic and Monetary Community of Central Africa
CMA	Common Monetary Area of South Africa
CMIM	Chiang Mai Initiative Multilateralization
CPI	Consumer Price Index
DOTS	Direction of Trade Statistics
EACB	East African Currency Board
ECB	European Central Bank
ECCA	Eastern Caribbean Currency Authority
ECCU	Eastern Caribbean Currency Union
ECOWAS	Economic Community of West African States
ECU	European Currency Unit
EDIS	European Deposit Insurance Scheme

EEC	European Economic Community
EMS	European Monetary System
EMU	European Economic and Monetary Union
EPU	European Payment Union
ERM	Exchange Rate Mechanism
EU	European Union
FDI	Foreign Direct Investment
FEDV	Forecast Error Variance Decomposition
GCC	Gulf Cooperation Council
GCI	Global Competitive Index
GDP	Gross Domestic Product
GEP	Group of Eminent Persons
GFC	Global Financial Crisis
GHDR	Global Human Development Report
GNI	Gross National Income
GNP	Gross National Product
HDI	Human Development Index
HHI	Herfindahl-Hirschman Index
IFC	International Finance Cooperation
ILO	International Labour Organization
IMF	International Monetary Fund
IMS	International Monetary System
IND	India
INR	Indian Rupee
IRF	Impulse Response Function
ISO	International Standards Organization
LDC	Least Developed Country
LR	Likelihood Ratio
LKA	Sri Lanka
MDV	Maldives
MIMIC	Multiple Indicator and Multiple Cause
MVR	Maldivian Rufiyaa
MW	Mega Watt

NDB	New Development Bank
NEER	Nominal Effective Exchange Rate
NLDC	Non Least Developed Country
NPL	Nepal
NPR	Nepalese Rupee
NRI	Non Resident Indian
OCA	Optimum Currency Area
ODA	Official Development Assistance
OIC	Over Identification Condition
PAK	Pakistan
PPP	Purchasing Power Parity
RBI	Reserve Bank of India
REER	Real Effective Exchange Rate
RMG	Ready Made Garments
SAARC	South Asian Association of Regional Cooperation
SACMA	South Asian Common Monetary Area
SACU	South Asian Custom Union
SAEU	South Asian Economic Union
SAFTA	South Asian Free Trade Agreement
SAPPI	SAARC Agreement on Promotion and Protection of Investment
SAPTA	South Asian Preferential Trade Agreement
SARB	South African Reserve Bank
SASEC	South Asia Sub-regional Economic Cooperation
SATIS	South Asian Trade in Services
SC	Schwarz Information Criteria
SDF	SAARC Development Fund
SDR	Special Drawing Rights
SITC	Standard International Trade Classification
SRB	Single Resolution Board
SRF	Single Resolution Fund
SRM	Single Monetary Mechanism
SVAR	Structural Vector Autoregression
TFEU	Treaty of the Functioning of the European Union

UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and Pacific
UNFPA	United Nations Fund for Population Activities
UNIDO	United Nations Industrial Development Organization
USA	United States of America
USD	US dollar
VAR	Vector Autoregression
WAEMU	West African Economic and Monetary Union
WDI	World Development Indicators
WEO	World Economic Outlook
WTO	World Trade Organization
WWII	World War II

# **CHAPTER I**

## **INTRODUCTION**

### **1.1 INTRODUCTION**

The introduction of euro on the first of January 1999 was the landmark achievement in the history of regional monetary integration. European Economic and Monetary Union (EMU) is the outcome of the relentless efforts of European nations for five decades. What seemed unthinkable in the aftermath of the World War II (WWII), the commitment and persistence of the political leaders of the Europe yielded in bringing European countries together into a monetary and economic union. The successful launch of euro ushered into a euphoria of optimism to many regional blocks around the world towards greater regional integration. South Asian Association of Regional Cooperation (SAARC) is not an exception.

In an effort to facilitate greater trade and investment, the concept of economic blocks has evolved across the world particularly among countries with geographical contiguity and proximity. These regional blocks have been instrumental in promoting economic and monetary integration among the member states for their overall development. During nineteenth century, four monetary unions were in existence, all of which were in Europe (Kenen & Meade 2008). They were Zollverein Monetary Union (1837-1871) comprising of twenty six independent German States; Latin Monetary Union (1865-1927) comprising of Belgium, France, Greece, Italy and Switzerland; Scandinavian Monetary Union (1873-mid 1920s) consisting of Denmark, Norway and Sweden; and Austro-Hungarian Monetary Union (1878-1922). While the Austro-Hungarian MU had single currency and one Central Bank rest of the other three monetary unions had multiple currencies with multiple Central Banks. Zollverein monetary union came to an end after the political unification of states into German. The other three monetary unions ceased to exist owing to the collapse of gold specie standard during World War I. Similarly, the economic and monetary union of Belgium and Luxemburg (BLEU) formed in 1922 was dissolved in 1999 when both the countries joined EMU. Likewise, British colonies in east Africa: Kenya, Tanzania and Uganda set up an East African Currency Board (EACB) in 1919 and the monetary arrangements lasted until 1977.

Till 1966 the monetary policy for the region was formulated by EACB. Since then each member state began implementing independent monetary policy through their respective central bank. The arrangement was formally disbanded in 1977 when each country started exercising exchange controls over the currencies of the other member states. Table 1 exhibits the list of regional monetary unions presently in existence.

**Table 1.1: List of Regional Monetary Unions**

Monetary Union	Member States	No. of Countries	Year of Establishment
Common Monetary Area (CMA)	Lesotho, Namibia, South Africa and Swaziland	4	1974
CFA Zone in West Africa (WAEMU)	Togo, Senegal, Niger, Mali, Guinea-Bissau, Cote d'Ivoire, Burkina Faso and Benin	8	1945
CFA Zone in Central Africa (CEMAC)	Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea and Gabon	6	1945
Eastern Caribbean Currency Union (ECCU)	St. Kitts and Nevis; St. Lucia and St. Vincent; Montserrat; Grenadines; Grenada; Dominica; Antigua and Barbuda; and Anguilla	8	1950
Euro area	Austria, Belgium, France, Finland, Germany, Ireland, Italy, Luxembourg, Portugal, Spain, The Netherlands, Greece, Slovenia, Slovakia, Cyprus, Estonia, Lithuania, Latvia and Malta	19	1999

Source: Author's compilation

Euro area is the largest regional monetary union in the world. Out of 28 countries in the European Union (EU), 19 countries are the members of the euro area sharing common currency. Euro was launched on 1 January 1999 with 11 member states of EU. Series of measures and reforms for over five decades led to the eventual emergence of EMU. Formation of European Payment Union (EPU) in 1950 is probably the first stepping stone in that direction followed by Treaty of Rome of 1957 which led to the formation of European Economic Community (EEC). The custom union was established in 1968 and EU was set up with the signing of Maastricht Treaty in 1991. European Central Bank (ECB) was created in 1998 to serve as the central bank of euro area with the overarching objective of price stability. ECB is responsible for issuing monetary policy and setting interest rate for the Eurozone, while monetary operations are conducted by the national

central banks. Similarly, the task of ensuring financial stability and conducting banking supervision was left to the respective national central banks until recently. In the light of sovereign debt crisis that unraveled in euro area since late 2009, there has been a call for deeper reforms necessary to address the challenges that this area faced. The euro crisis exposed the incongruity and limitations of the institutional and policy frameworks put in place at the time of euro launch.

Promotion of intraregional trade and investment, exchange rate stability, price stability, increased flow of investment, enlargement of market for the domestic goods and services, single market for factors of production, deepening and broadening of financial market are the key incentives of forming an economic and monetary union. It can also help in easing conflicts and rivalries that may exist among member states. The successful evolution of EMU is considered to be the outcome of political persistence on the backdrop of the long history of wars and conflicts in Europe.

There are various forms and extent of monetary integration, from a simple monetary cooperation to a complete monetary union with a common currency. Werner Report defines monetary union in terms of fulfilling following set of conditions (Werner, 1970):

1. Irrevocable fixed exchange rates with no margin of fluctuations within the union;
2. Free movement of capital within the union and
3. Full and free convertibility of currencies within the union;
4. Uniformity of monetary policy within the union.

Similarly, Corden (1972) outlines monetary integration as a full exchange rate union with irrevocable fixed exchange rates; centralization of exchange rate policy including some extent of monetary policy by a regional entity; and free convertibility of current account and capital account. For the purpose of this study, monetary integration is treated as a process with the eventual goal of achieving monetary union with a common currency. Thus, any measure that will advance monetary cooperation among the member states are considered part and parcel of the process of monetary integration. In this regard, review of the theory of optimum



currency area (OCA) is the first step in the study of the regional monetary integration.

## **1.2 SOUTH ASIAN ASSOCIATION OF REGIONAL COOPERATION (SAARC)**

SAARC is the association of eight countries of South Asia namely Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka and Afghanistan. South Asia comprises of nations situated along the Himalayan range and to the south, including two island nations: Maldives and Sri Lanka located in the India Ocean. SAARC was founded in 1985 by seven countries while Afghanistan joined it as the eighth member in 2007. All the member countries share common border with India with the exception of Afghanistan and two island nations. Afghanistan and Pakistan are the only other two member countries sharing border with each other in the region.

The goals of SAARC are to enhance welfare of the people and promote their quality of life through social progress, cultural development and accelerated economic growth of the region; to strengthen mutual cooperation in socioeconomic, cultural and technical fields; to enhance cooperation in the areas of shared interests; and to promote collaboration with developing countries and international organizations with common objectives (SAARC Charter).

The eleventh summit held in Kathmandu during January 2002 adopted key recommendation of SAARC Group of Eminent Persons (GEP) of setting up South Asian Customs Union (SACU) by 2015 and South Asian Economic Union (SAEU) by 2020 with a possibility of monetary union with common currency. The summit adopted GEP report as a vision document for future cooperation and endorsed the recommendation to implement the proposals included in the report.

Table 1.2 provides overview of South Asia for 2016. Nearly one fourth of world population (23.73 percent) lives in South Asia. However, it accounts for only 3.81 percent of global nominal gross domestic product (GDP) and 8.87 percent of GDP on purchasing power parity (PPP). Similarly, share of its merchandize trade is only 2.52 percent of global trade. Both human development index (HDI) based on

2015 data and gross national income (GNI) per capita are below global average signifying the level of efforts needed to bridge the gap. GNI per capital in PPP terms is less than 38 percent of the global average because it is home to the largest number of poor people.

**Table 1.2: Overview of SAARC**

	Area	Population <sup>1</sup>	Nominal GDP <sup>1</sup> (in US\$)	GDP PPP <sup>1</sup> (in US\$)	GNI per capita <sup>1</sup> PPP (in US\$)	Trade <sup>2</sup> (in US\$)	HDI <sup>3</sup>
SAARC	3.3%	23.73%	3.81%	8.87%	6,052	2.52%	0.621
WORLD		7.444B	75.871T	120.719T	16,176	31.994T	0.717

Source: 1. World Development Indicator (WDI) 2017, IMF; 2. IMF Direction of Trade Statistics (DOTS) 2017; 3. Global Human Development Report (GHDR) 2016  
Notes: B denotes billion and T denotes trillion

Table 1.3 shows country wise information on important indicators such as area, population, gross domestic product (GDP) and per capita income for 2016. These indicators not only demonstrate the extent of asymmetry that exists among the member countries in terms of size of area, population, GDP and Trade but also the central role of India in the regional cooperation. The region hosts both very small countries such as Maldives and Bhutan and very large country like India. For instance, comparison between the largest and smallest member states exemplify the case: India is 11,031 times bigger than Maldives in area, 3,172 times larger in population, 539 times larger in GDP and 271 times larger in trade. Similar differences also exist between India and the second smallest country Bhutan. The differences between India and the second largest member country – Pakistan is also not less significant: 4 times bigger in area, 7 times larger in population and 8 times larger in GDP. While asymmetries are commonplace in most of the regional economic blocks including Eurozone, the scale in SAARC is astounding.

Comparison of the socio-economic indicators including Human Development indicators however shows some similarities in socio-economic condition of the region as shown in table 1.4. The region’s overall socio-economic and human development indicators are heavily influenced by that of India given its

**Table 1.3: List of SAARC Countries with Key Indicators**

PARTICULARS	AFG	BGD	BTN	IND	MDV	NPL	PAK	LKA
Area in sq.km	652,230	143,998	38,394	3,287,263	298	147,181	796,095	65,610
Population <sup>1</sup> (in million)	34.656	162.952	0.798	1,324.171	0.427	28.983	193.203	21.203
GDP Nominal <sup>1</sup> (In USD billion)	19.5	221.4	2.1	2,263.8	4.2	21.1	278.9	81.3
GDP per capita <sup>1</sup> (in USD)	562	1,359	2,774	1,710	10,118	729	1,444	3,835
International Trade <sup>2</sup> (In USD billion)	7.2	71.3	2.2	618.2	2.3	8.6	67.5	29.3

Source: 1. WDI, October 2017, IMF; 2. IMF DOTS 2017.

very high share in the overall weight. Based on Global Human Development Report (GHDR) 2016, Maldives and Sri Lanka are the countries in the region to achieve High HDI rank while five countries including India find their place in Medium HDI rank. Afghanistan is the only country in the region to score Low HDI rank. Similarly, four countries: Afghanistan, Bangladesh, Bhutan and Nepal are also the members of the Least Developed Countries (LDC) that comprises 48 countries. The SAARC average score is below that of world average in every component of the HDI index.

**Table 1.4: Human Development Index**

Country	HDI Rank	HDI Value	Life expectancy at birth (years)	Expected years of schooling (years)	Mean years of schooling (years)	GNI per capita (2011 PPP \$)
Sri Lanka	73 High	0.766	75.0	14.0	10.9	10,789
Maldives	105 High	0.701	77.0	12.7	6.2	10,383
India	131 Medium	0.624	68.3	11.7	6.3	5,663
Bhutan	132 Medium	0.607	69.9	12.5	4.4	7,081
Bangladesh	139 Medium	0.579	72.0	10.2	5.2	3,341
Nepal	144 Medium	0.558	70.0	12.2	4.1	2,337
Pakistan	147 Medium	0.550	66.4	8.1	5.1	5,031
Afghanistan	169 Low	0.479	60.7	10.1	3.6	1,871
SAARC	Medium	0.621	68.7	11.3	6.2	5,799
WORLD	High	0.717	71.6	12.3	8.3	14,447

Source: GHDR 2016

The other important indicators on ease of doing business and global competitiveness are exhibited in table 1.5. Out of 190 countries considered SAARC countries rank between 75 to 183 position on the ease of doing business with Sri Lanka at the top and Afghanistan at the bottom. The region's average index puts it at 129<sup>th</sup> position. The index is on a scale from 0 to 100, with 100 representing the highest score. Similarly, the Global Competitiveness Index (GIC) measures national competitiveness in terms of the level of productivity. The GCI is measured on a 1–7 scale with 7 being the most favorable. Out of 137 economies considered by Global Competitiveness Report 2017–2018, South Asian countries rank between 40 to 115 position with India at the top and Pakistan at the bottom. Maldives and Afghanistan are not included in the report. The average index for the region puts South Asia in the 87<sup>th</sup> position. These indicators allude to the fact that the region is suffering from state of less favourable business environment and low productivity.

**Table 1.5: Ease of Doing Business Index and Global Competitiveness Index**

Country	Doing Business Rank <sup>1</sup>	Doing Business Index <sup>1</sup>	Country	Global Competitive Rank <sup>2</sup>	Global Competitive Index <sup>2</sup>
Bhutan	75	66.27	India	40	4.59
India	100	60.76	Bhutan	82	4.10
Nepal	105	59.95	Sri Lanka	85	4.08
Sri Lanka	111	58.86	Nepal	88	4.02
Maldives	136	54.42	Bangladesh	99	3.90
Pakistan	147	51.65	Pakistan	115	3.67
Bangladesh	177	40.99	Afghanistan	N.A.	N.A.
Afghanistan	183	36.19	Maldives	N.A.	N.A.
SAARC	129	53.64		87	4.06

Source: 1. Doing Business 2018, World Bank Group; 2. Global Competitiveness Report 2017-18, World Economic Forum; Note: N.A. stands for not available

For achieving greater trade integration, the Preferential Trade Agreement (SAPTA) was signed in 1993 and came into operation from the end of 1995. Similarly, South Asian Free Trade Agreement (SAFTA) was signed in 2004 and became operational from the first of January 2006. The objective of these agreements is to promote the intraregional trade among member states by removing both tariff and non-tariff restrictions and make South Asia a free trade area within 10 years. Further, SAARC Agreement on Trade in Services (SATIS) was rolled out

from 2012. The pace of reform necessary to implement FTA is however extremely slow and intraregional trade on goods is less than 6 percent of the region's total international trade. This puts South Asia as one of the least integrated regions in the world.

Over the last five years, the percentage of intraregional trade has barely changed from 4.3 percent to 5.8 percent as presented in table 1.6. In absolute terms the intraregional trade has peaked in 2014 to USD 51 billion. The intraregional trade contributes significantly to international trade of smaller member countries such as Afghanistan, Bhutan and Nepal accounting for the largest share in their respective global trade. Given that India alone accounts for 79 percent of region's international trade but trades less than 3 percent within the region, the share of intraregional trade to region's global trade would consequently remain minimal. Moreover, the geopolitical concerns take precedence over economic interests for India and Pakistan denting the prospects of potentially very high mutual bilateral trade. Much of the trade between these two countries is taking place through third country thereby hugely understating the official trade figure.

**Table 1.6: SAARC Intraregional Trade**

PARTICULARS	In US\$ billion				
	2012	2013	2014	2015	2016
SAAARC: Import from World	599.224	585.133	587.467	508.785	482.046
SAARC: Export to World	356.216	379.261	383.753	330.061	324.476
SAARC: Total International Trade	955.440	964.395	971.220	838.846	806.523
SAARC: Intraregional Export	21.149	22.667	26.578	23.778	22.573
SAARC: Intraregional Import	19.891	20.535	24.172	23.412	24.172
SAARC: Total Intraregional Trade	41.040	43.202	50.749	47.190	46.746
<b>SAARC Intraregional Trade %</b>	<b>4.30%</b>	<b>4.48%</b>	<b>5.23%</b>	<b>5.63%</b>	<b>5.80%</b>

Source: Author's calculation based on IMF DOTS 2017

A regional forum of Central Bank Governors and Finance Secretaries - SAARCFINANCE was set up in 1998. The objective of the forum is to promote cooperation among central banks and finance ministries in the areas of payment system; banking regulations; macroeconomic policies; assessment of the impact of global financial developments and collaborative response to that; monitoring of reforms in the global financial and monetary architect; and development of joint strategy, plan and common approach in the global arena in the context of liberalized

financial services. Apart from holding periodic meetings, no serious efforts seem to have been made towards promoting regional cooperation in the areas the forum is expected to collaborate.

Even in the midst of 2018, SAFTA and SACU are far from being achieved. The prospect of single market and SAEU by 2020 is likewise not conceivable at this stage. Based on what has been achieved so far, the goal of monetary union similar to EMU is far-fetched. Euro crisis that unraveled from the end of 2009 has further dampened the prospects of monetary union with a common currency in South Asia. In view of the above considerations, it is important to devise a monetary system that will help the region transiting from current level of very little monetary cooperation to the one with greater monetary integration without the necessity of giving up sovereign currency in favour of a common currency in the region.

In over 30 years of SAARC establishment though plethora of agreements are made and institutional frameworks were set up, the progress towards actual implementation of each of these initiatives have been very slow. The ensuing strained bilateral relation between India and Pakistan, the two biggest members of the geo-political block has dampened the spirit and speed of reforms essential in strengthening regional cooperation. In view of the fact that some of these initiatives are significant to a group of member countries despite not being so or agreeable to all, the concept of implementation at the sub-regional level was acknowledged. The case in example is BBIN – a sub-regional initiative among four countries: Bangladesh, Bhutan, India and Nepal introduced in 1996. A year later, the summit held in Male agreed to address specific challenges of three or more member countries and coordinate efforts at the sub-regional level. South Asia Sub-regional Economic Cooperation (SASEC) Programme which is the initiative of BBIN in 2001 was extended to include Maldives and Sri Lanka in 2014. Hence, this paradigm shift in cooperation is believed to provide some impetus to the regional cooperation by expediting the implementation of ongoing as well as future initiatives at sub-regional level. For instance, the proposal relating to the movement of vehicles among SAARC countries was agreed in the summit held in Nepal in 2014. Since Pakistan backed out from the agreement, the BBIN countries have decided to implement the proposal.

The central role of India comes with its size in terms of its economy, trade, population and area, location, future prospects and influence in the region. The subsequent chapters will show the importance of India in the regional cooperation. Without the participation of India, no major initiatives of regional importance can be feasible. Some initiatives can afford the absence of some member countries, but not India. India's role will remain central even in the case of sub-regional initiatives for their successful implementation. Monetary integration is much larger concept with very large economic, financial and monetary ramification requiring political commitment from all the stakeholders. Without the leadership of India and without the willingness of the member states, the monetary integration will remain distant goal of the SAARC. India shall play role similar to Germany in the evolution of EMU and South Africa in the functioning of Common Monetary Area (CMA).

One fourth of the world population lives in the region. Three out of 10 most populated nations in the world namely Bangladesh, Pakistan and India are the members of the SAARC. The area is the most densely populated region in the world and faster economic development of the region would therefore mean lifting millions of people out of poverty. The region has been consistent with robust economic growth for last several years led by India and Bangladesh lifting millions of people out of poverty.

### **1.3 RATIONAL AND RESEARCH GAP**

Despite the enormous prospects of the region, it has failed to generate enough interest and attention of the world. This is largely because the region is roiled down with underdevelopment amidst low level of foreign investment, high level of corruption, red-tapism, poor infrastructure, lack of skilled workforce, persistent strained relation between India and Pakistan and sense of antagonism that exists among member countries over India's dominance and coercive diplomacy. Very little has been said and written about South Asia largely due to its own backwardness and under-development in spite of the immense potential of the region.

Regional blocks like ASEAN have received huge interest and attention from academicians and international community alike not only because of its economic

rise in recent years, but also because of the engagement of major economies such as China and Japan. In academic realms, for the matters relating to economic and monetary integration, South East Asia has become synonymous to Asia (see Eichengreen & Bayoumi, 1999; Mundell, 2003). Much has been written on economic and monetary integration of South East Asia but very little on South Asia. Hence, this research is expected to contribute significantly in filling the gap in the literature of monetary integration in South Asia from the developing world's perspectives.

#### **1.4 SCOPE AND OBJECTIVES**

By undertaking empirical studies and survey the research contributes to the literature of monetary integration in South Asia. The research also proposes the *modus operandi* of monetary arrangements grounded on geopolitical and economic realities that would likely strengthen monetary cooperation among the members of the SAARC. The outcome of the research is also expected to contribute constructively to the policy debate on monetary integration in the larger interest of the region.

To this end, the study will have following objectives:

1. To validate the Optimum Currency Area (OCA) criterion on South Asia;
2. To identify currency suitable for serving anchor currency role in the monetary integration of South Asia;
3. To assess the possibility of regional monetary integration on the basis of the anchor currency;
4. To collect and compile views on the feasibility, challenges and prospects of monetary integration from various stakeholders.
5. To provide a model framework for South Asian Common Monetary Area (SACMA) for achieving higher degree of monetary integration;

#### **1.5 DATASOURCE**

The study is based on both primary and secondary data. Given the macroeconomic nature of the study, the data is mostly availed from World



Economic Outlook (WEO) 2017 from IMF database and World Development Indicator (WDI) 2017 from World Bank Group database. Apart from these two widely referenced database, specific type of data have been sourced from IMF Direction of Trade and Services (DOTS), Bank of International Settlement (BIS), World Trade Organization (WTO), various UN agencies such as UNDP, UNFPA, UNCTAD, UNIDO, ILO etc., SAARC secretariat, Central Banks, Ministry of Finance, Central Bureau of Statistics etc. The empirical studies are carried out by considering annual data from 1990 to 2016 spanning over 27 years. Similarly, the co-integration test is conducted by considering daily exchange rates of India, Maldives, Pakistan and Sri Lanka from the beginning of 1994 to 30 November 2018 while for India and Bangladesh by considering monthly exchange rates from January 2005 to November 2018. The data for empirical study is retrieved from the following sources:

1. ACU Annual Report 2016
2. ACU Annual Report 2014
3. Annual Report on Exchange Arrangement and Exchange Restrictions (AREAR) 2017
4. Bangladesh Bank for monthly exchange rates of Bangladesh taka
5. Bhutan Monetary Authority Annual Report 2016
6. Bilateral Remittance Matrix 2017, World Bank
7. Bruegel database on monthly REER, 2017
8. Currencies.Zone for daily exchange rate of Maldives
9. Doing Business 2018 World Bank Group
10. Global Competitiveness Report 2017-18, World Economic Forum
11. Global Human Development Report (GHDR) 2016
12. IMF Direction of Trade Statistics (DOTS)2017
13. IMF Exchange Rate Archive
14. NRB Annual Report 2015
15. Trading Economics Database
16. Travel & Tourism Economic Impact 2017 Maldives, World Travel & Tourism Council
17. Tourism Year Book 2017 Maldives

18. UN Migrant Stock by Origin and Destination 2017
19. World Development Indicator (WDI) 2017, World Bank
20. World Economic Outlook (WEO) 2017, IMF

## **1.6 RESEARCH METHODOLOGY**

Broadly two methodologies are adopted in this study. The first analysis is based on the results of the empirical study which is carried out using secondary time series data. The second methodology is the survey conducted to solicit views from stakeholders. The survey is intended to complement the outcome of the empirical studies and draw insights on the possible way forward for the greater economic and monetary integration in the region.

### **1.6.1 Empirical Study**

The empirical studies are carried out using macroeconomic variables from 1990 to 2016 spanning over 27 years. These macroeconomic variables include gross domestic products (GDP), inflation (GDP deflator), consumer price index (CPI), exchange rates, money supply etc. The choice of year 1990 as the beginning year is particularly important given that India, the central economy of South Asia initiated major economic reforms by opening up its economy amidst foreign exchange reserve crisis of 1991 while most of other member countries of SAARC began major reforms from mid-eighties. Afghanistan which joined SAARC in 2007 has been excluded from the analysis owing to the lack of adequate data for the period under study.

GDP, inflation index, broad money supply and exchange rates are log transformed for the purpose of econometric analysis and put on unit root test to examine if the data are stationary or not. Non-stationary data are not reliable for econometric analysis. The widely used test for checking data stationary is the Augmented Dickey-Fuller test. The non-stationary data is transformed into stationary data by taking first difference and second difference as the case may be. In our case, all the data are stationary at first difference and are therefore denoted by  $I(1)$ . The empirical studies are employed to investigate whether South Asia is an Optimum Currency Area and whether Indian rupee provides a nominal anchor for

the currencies of the region. The empirical study is largely based on the use of econometric models.

#### **1.6.1.1 Optimum Currency Area (OCA)**

There is no simple and straight forward technique to determine whether the countries under consideration constitute an OCA or not. By definition, OCA comprises of sovereign nations suitable for maintaining irrevocable fixed exchange rate among themselves or adopting a common currency. Analysis of the co-movement of macroeconomic variables across the countries presents the simplest measures of finding whether the countries might be suitable for greater monetary integration. The survey of OCA literature reveals that the econometric technique to examine whether a set of countries can indeed form an OCA is first introduced in early nineties. The most commonly used technique for assessing OCA criteria is analyzing the nature of structural shocks faced by the countries willing to form a currency union. Symmetric shocks allow the countries to respond with similar policies thereby lowering the economic cost of adjustment. On the contrary, if the countries are subject to asymmetric shocks, the cost of adjustment would be high given that uniform policy response across the region would not be appropriate.

The technique of analyzing nature of shocks is considered to be the most appropriate and advanced methodology to evaluate the suitability of optimum currency area as it pools the net impact of numerous criteria. Mongelli (2002) observed that *“The similarity of shocks, and policy response to shocks, is almost a “catch all” OCA property, or “meta” property, capturing the interaction between several properties”* (p. 21). Therefore, the analysis of the patterns of shocks is the most commonly used technique in the OCA literature. Together with the analysis of the patterns of shocks, impulse response function (IRF) is used to gauge how the macroeconomic variables of each country will respond to different shocks. Further, forecast error variance decomposition (FEVD) technique is employed for assessing comparative significance of various shocks in the variability of the key macroeconomic variables. These methodologies are enumerated as follows:

### 1.6.1.1.1 Simple Correlation of Macroeconomic Indicators:

Simple correlation of GDP growth, Inflation and Exchange rates is used to assess general patterns of macroeconomic indicators. This is the simplest technique to find co-movement of macroeconomic indicators. The notation of Pearson's correlation is as follows:

$$r = \frac{\sum_i (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_i (x_i - \bar{x})^2} \sqrt{\sum_i (y_i - \bar{y})^2}}$$

Where  $r$  is Pearson correlation coefficient and  $x$  and  $y$  are time series variables for which correlation is being determined.  $r$  assumes values between 0 and 1. The value inching towards one indicates higher degree of correlation between variables. However it has many limitations of being over simplistic and falls short of capturing underlying structural issues. Lee, Park and Shin (2003) are of the view that region wide co-movement would be more appropriate measures than bilateral correlation given that the interest of the study lies in evaluating the merits of a common monetary policy across the region. Furthermore, the simple correlation doesn't provide any information about the external shocks which are responsible for higher correlation across countries.

### 1.6.1.1.2 Trade Openness

Trade openness is one of the essential criteria to gauge if the countries are better positioned to be part of an OCA. It is a simple ratio between total international trade and GDP.

$$\text{Trade Openness} = \frac{\text{International Trade}}{\text{GDP}}$$

The literature on OCA shows that countries with high trade openness are better candidate for OCA because the use of exchange rate would not yield price stability and external balance in highly open economy.

### 1.6.1.1.3 Herfindahl-Hirschman Index (HHI)

HHI measures the degree of concentration of products that countries export. The following formula is used to derive HHI:

$$H_j = \frac{\sqrt{\sum_{i=1}^n \left( \frac{x_{ij}}{X_j} \right)^2} - \sqrt{1/n}}{1 - \sqrt{1/n}}$$

Where  $H_j$  is country index;  $x_{ij}$  is the value of export of product  $i$  for country  $j$ ;  $X_j = \sum_{i=1}^n x_{ij}$  and  $n$  is the number of products as per the SITC revision 3 at 3-digit group level classification. The indices assume values between 0 and 1. The value closer to one indicates that the economy is dependent on limited range of products for its export. On the other hand, the value closer to zero shows that the country's export is well diversified. The literature on OCA suggests that countries with diversified exports are less prone to external shocks and are better candidates for OCA.

### 1.6.1.1.4 Univariate Analysis of Output Disturbance

Under this technique, GDP growth is regressed upon its own lags and the residuals are extracted. These residuals represent real output disturbances which are then correlated across the countries to find their co-movements. Higher number of positive correlation that are statistically significant indicates higher symmetry of shocks signaling better candidate for OCA because they face similar shocks for which they can respond by adopting uniform policy measures. On the contrary, if the correlation is insignificant or negative, the countries in question are considered to be facing different types of shocks for which they need different set of policy responses. This will make these countries less suitable candidates for OCA because the cost of losing autonomy over policy might outweigh the likely benefits expected from the monetary union. The following equation is used for extracting output shocks:

$$Y_t = B_0 + B_1 Y_{t-1} + B_2 Y_{t-2} + \dots + B_n Y_{t-n} + e_t$$

$$Y_t = B_0 + \sum_{i=1}^n B_i Y_{t-i} + e_t$$

$$e_t = Y_t - (B_0 + \sum_{i=1}^n B_i Y_{t-i})$$

Where  $Y_t$  represents output growth at time  $t$ ,  $Y_{t-i}$  represents its lags at time  $t-i$ ,  $B_i$  represents coefficients and  $e_t$  represents the output disturbance. The series of output disturbances is extracted for each country by regressing output growth with its own lags. The appropriate number of lag is determined by considering the nature of the study and time series and the same lag is applied for all the countries. The correlation of output disturbances is estimated to determine the patterns of shocks between country pairs and standard deviation of output disturbance is calculated to determine its variability for each country.

Bayoumi and Ostry (1997) faced difficulties in applying structural vector autoregression technique for Sub-Saharan African countries when over-identification condition (OIC) didn't hold true in their estimation. They attribute it to their doubts over the reliability of data. So they resorted to adopting univariate approach by considering only one variable - real output where its behavior is analyzed. The same univariate technique was applied by Maskey (2001) for SAARC countries covering the period 1980 to 2000 and Jayaraman (2006) for Pacific Islands citing similar reasons that OIC might not hold true in their estimation. Wyplosz (2001) applied this technique for East Asia including Australia and New Zealand while Kannan and Mukherjee (2007) used it for the countries of East and South-East Asia including India.

The size of the disturbance is measured by standard deviation of residuals. Countries with large disturbances are not considered to be suitable for OCA as they need independent policy to respond to those shocks. Univariate model doesn't allow for the further decomposition of shocks. The sources of disturbances comprise of multiple factors including natural calamities such as floods, earthquake, drought; political instability such as civil unrest, frequent changes of government, rise of nationalist sentiments; security concerns such as terrorist attacks, internal and external armed conflicts; and economic issues such economic liberalization vs. protectionism, modification in the terms of trade and investment, economic sanctions, etc. to which the countries in the area may be subject to from time to time.

### **1.6.1.1.5 Structural Vector Autoregression (SVAR) Analysis**

The most widely used statistical technique to gauge whether a group of countries constitutes an OCA is the study of the nature and patterns of shocks faced by them. If they face shocks that are similar, they can respond by adopting uniform policy thereby obviating from pursuing independent country specific policy measures. Once the countries become part of OCA, they lose the autonomy of pursuing independent monetary policy and exchange rate management. If the economies in the OCA are structurally different from each other and face very different kinds of shocks, one policy designed for the whole union may not be appropriate to address country specific disturbances. Hence, identifying the nature of shocks and finding their symmetry across the economies provides a sound statistical approach to assess whether they are suitable candidate for OCA.

In this regard, a methodology used by Blanchard and Quah (1989) to decompose shocks into temporary and permanent with a set of macroeconomic variables applying vector autoregression (VAR) process and further extended by Bayoumi (1992) is the most widely used technique in the OCA literature. While Blanchard and Quah (1989) used it to assess dynamic effects of shocks on macroeconomic variables by decomposing them into shocks with permanent impact and short term impact, Bayoumi (1992) used it to measure the effects of Exchange Rate Mechanism (ERM) on patterns of shocks that European Monetary System (EMS) was facing and its response to those shocks by studying two periods. It was however Bayoumi and Eichengreen (1994) to employ this econometric tool for the first time in the context of OCA by comparing countries of Europe and regions within US; and countries of Western Europe, East Asia and Americas. This methodology has been used widely in literatures concerning OCA in various forms and extent ever since.

Considering a bivariate SVAR, the overriding assumption of this technique is to consider one set of shocks to have permanent impact on both macroeconomic variables and another set of shocks to have permanent impact on only one variable. Bayoumi and Eichengreen (1994) used output and inflation in their studies and used the terms supply shocks and demand shocks to represent corresponding structural

shocks respectively. The over-identification condition (OIC) is that the supply shocks have long run impact on both output and inflation while demand shocks have no permanent impact on inflation. As the impact of demand shock on output will be temporary, the output will eventually return to its long run equilibrium position.

It indeed follows the Aggregate Demand-Aggregate Supply (AD-AS) model. Even if both employment and output level rise in the short run following decrease in real wage as a result of the increase in price level, in the long run the output returns back to its long term full employment equilibrium level once the real wage adjusts to the price changes. This is represented by upward sloping short run aggregate supply curve and vertical long run aggregate supply curve. On the contrary, both short run and long run aggregate demand curves will be downward sloping signifying that lower prices will boost higher demand both in the short run as well as in the long run. The permanent supply shocks such as technological innovation will permanently shift the long run full employment output level to new equilibrium level thereby increasing the output level and lowering the price level. On the other hand, the permanent shock to aggregate demand will have only short run impact on the output which will eventually return to its long run equilibrium level once the real wage adjusts to price change which is permanent. This OIC is necessary to be able to estimate structural shocks from reduced form VAR process.

SVAR method is applied to a set of macroeconomic variables to extract corresponding structural shocks. Considering a system which can be represented by a model with infinite moving average of variables of vector  $Y$  with equal number of shocks  $\epsilon$  and a lagged operator  $L$ , the model can be represented as:

$$Y_t = A_0 \epsilon_t + A_1 \epsilon_{t-1} + A_2 \epsilon_{t-2} + \dots = \sum_{i=0}^{\infty} L^i A_i \epsilon_t \quad (1)$$

Where  $Y$  is the vector of macroeconomic variables and the matrix  $A_i$  represents the impulse response functions of the variables to structural shocks  $\epsilon_t$ . The above equation can be presented in the following matrix form:

$$\begin{bmatrix} \Delta y_{1t} \\ \Delta y_{2t} \\ \dots \\ \Delta y_{nt} \end{bmatrix} = \sum_{i=0}^{\infty} L^i \begin{bmatrix} a_{11i} & a_{12i} & \dots & a_{1ni} \\ a_{21i} & a_{22i} & \dots & a_{2ni} \\ \dots & \dots & \dots & \dots \\ a_{n1i} & a_{n2i} & \dots & a_{nni} \end{bmatrix} \begin{bmatrix} \epsilon_{1t} \\ \epsilon_{2t} \\ \dots \\ \epsilon_{nt} \end{bmatrix} \quad (2)$$



The above matrix can be presented in multiple equations form as follows:

$$\Delta y_{1t} = A_{11}(L)\varepsilon_{1t} + A_{12}(L)\varepsilon_{2t} + \dots + A_{1n}(L)\varepsilon_{nt} \quad (3.1)$$

$$\Delta y_{2t} = A_{21}(L)\varepsilon_{1t} + A_{22}(L)\varepsilon_{2t} + \dots + A_{2n}(L)\varepsilon_{nt} \quad (3.2)$$

$$\dots = \dots + \dots + \dots + \dots$$

$$\Delta y_{nt} = A_{n1}(L)\varepsilon_{1t} + A_{n2}(L)\varepsilon_{2t} + \dots + A_{nn}(L)\varepsilon_{nt} \quad (3.3)$$

Where  $\Delta y_t$  represents the change in the logarithm of a macroeconomic variable,  $\varepsilon_t$  denotes the corresponding structural shocks and  $a_i$  represents elements of matrix  $A_i$ . It is assumed that  $y_{nt}$  is a stationary random processes and  $\varepsilon_t$  is white noise series. The structural shocks  $\varepsilon_t$  are serially uncorrelated and orthogonal while their variance-covariance matrix is normalized to identity matrix as follows:

$$E(\varepsilon_t \varepsilon_{t+1}) = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \text{ where } E(\varepsilon_t \varepsilon_{t+1}) = 0 \text{ and } E(\varepsilon_t \varepsilon_t) = 1$$

The structural VAR is based on the concept of identification restriction. So depending upon the assumption of long run and temporary effects of shocks on the variables, the elements of matrix  $A_i$  will take their values. Those with no long run effect will take zero value as follows:

$$\sum_{i=0}^{\infty} a_{12i} = \sum_{i=0}^{\infty} a_{1ni} = \sum_{i=0}^{\infty} a_{23i} = \sum_{i=0}^{\infty} a_{2ni} = 0 \quad (4)$$

The other elements of the matrix will take non zero values. The equation 2 will become

$$\begin{bmatrix} \Delta y_{1t} \\ \Delta y_{2t} \\ \dots \\ \Delta y_{nt} \end{bmatrix} = \begin{bmatrix} A_{11}(L) & 0 & 0 & 0 \\ a_{21i} & a_{21i} & 0 & 0 \\ \dots & \dots & \dots & 0 \\ a_{n1i} & a_{n1i} & \dots & a_{nni} \end{bmatrix} \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \dots \\ \varepsilon_{nt} \end{bmatrix} \quad (5)$$

The infinite moving average process of equation 1 can be represented by autoregressive process by inverting the MA operator given that elements of X are covariance stationary. Hence, the above equations can be solved by using a VAR where all the variables of  $X_t$  are regressed upon their lagged values as follows:

$$\begin{aligned}
Y_t &= B_1 Y_{t-1} + B_2 Y_{t-2} + \dots + B_n Y_{t-n} + e_t & (6) \\
&= \sum_{i=0}^{\infty} B_i L^i Y_t + e_t \\
&= B(L) Y_t + e_t \\
&= [I - B(L)]^{-1} e_t \\
&= [I + B(L) + B(L)^2 + \dots] e_t \\
&= e_t + D_1 e_{t-1} + D_2 e_{t-2} + \dots \\
&= \sum_{i=1}^{\infty} D_i e_{t-i} \\
&= D(L) e_t & (7)
\end{aligned}$$

Where  $B_n$  denotes the coefficient of the lagged variables and  $e_t$  represents residuals from the reduced VAR process. Also termed as disturbances, they are assumed to be caused by the structural shocks  $\varepsilon_t$  of the economy. The residuals  $e_t$  can be transformed into shocks  $\varepsilon_t$  with the following equation:

$$e_t = C \varepsilon_t \quad (8)$$

Where  $C$  represents a matrix of coefficient of shocks. In an  $n$ -by- $n$ , we need  $n^2$  restrictions to identify the matrix  $C$  where  $n$  is the number of endogenous variables in the model. For example, in a 2 by 2 matrix four restrictions are required. Two restrictions come by way of simple normalization by setting variance of two shocks  $\varepsilon_{1t}$  and  $\varepsilon_{2t}$  equal to unity. One restriction comes from the assumption that these shocks are orthogonal. The final restriction comes from the inference that one of these shocks  $\varepsilon_{2t}$  will have no long run effects on output. Hence this allows matrix  $C$  to be uniquely identified and both shocks to be determined. Similarly, in a 3 by 3 matrix, nine restrictions are required. Three of them come from simple normalization assumption that each shock has a variance covariance matrix normalized to identify matrix. The next three assumptions come from the assumption that the shocks are orthogonal with final three come from the long run identifying restrictions. In a 4 by 4 case with 16 elements, such restrictions will be four, six and six in that order. By combining equations 1, 7 and 8 we get:

$$\begin{aligned}
Y_t &= \sum_{i=1}^{\infty} D_i e_{t-i} = \sum_{i=1}^{\infty} D_i C \varepsilon_{t-i} = \sum_{i=0}^{\infty} L^i A_i \varepsilon_t \\
\sum_{i=1}^{\infty} D_i C &= \sum_{i=0}^{\infty} L^i A_i & (9)
\end{aligned}$$

The above expression can be portrayed in a matrix form as follows

$$\sum_{i=1}^{\infty} \begin{bmatrix} d_{11i} & d_{12i} & \dots & d_{1ni} \\ a_{21i} & a_{22i} & \dots & a_{2ni} \\ \dots & \dots & \dots & \dots \\ d_{n1i} & d_{n2i} & \dots & d_{nni} \end{bmatrix} \begin{bmatrix} c_{11} & c_{12} & \dots & c_{1n} \\ c_{21} & c_{22} & \dots & c_{2n} \\ \dots & \dots & \dots & \dots \\ c_{n1} & c_{n2} & \dots & c_{nn} \end{bmatrix} = \begin{bmatrix} . & 0 & 0 & 0 \\ . & . & 0 & 0 \\ . & . & . & 0 \\ . & . & . & . \end{bmatrix} \quad (10)$$

At equilibrium  $Y_t = Y_{t-1}$ , hence

$$\sum_{i=1}^{\infty} D_i = (I - B(L))^{-1} = (I - B_1 - B_2 - \dots - B_n)^{-1}$$

So matrix C is uniquely defined as:

$$C = D(L)^{-1} A(L) \quad (11)$$

Consequently, the structural shocks are derived as:

$$\varepsilon_t = C^{-1} e_t \quad (12)$$

The inferences made under the long run restrictions may not hold as the long run effects of shocks are inaccurately estimated in finite samples and such imprecision may be transferred to the estimates of other parameters of the model (Faust & Leeper, 1997). It is also criticized on the ground that the estimated disturbances are intertwined with the underlying shocks. In spite of these criticisms, long run restrictions are generally more acceptable compared to other assumptions.

The shocks are assumed to be independent of each other implying different underlying sources. For example, demand shocks can be the outcome of monetary policy whereas supply shocks can be caused by technological innovation. However, when the causes of these shocks emanate from same source or similar events such as changes in the commodity price for countries that are heavily dependent on its exports, the assumption fails and methodology becomes redundant.

After estimating different shocks from the above methodology, pair-wise correlation of each shock is determined to evaluate the synchronization of shocks. Positive and significant coefficient of correlation would mean that the pairs of the countries share similar nature of shocks and thus suitable for common currency or greater monetary integration. On the contrary, negative or statistically insignificant coefficient of correlation would mean that the countries in question are not suitable for adopting common currency given that they face different nature of shocks for

which each country has to respond with country specific policy measures. This would mean that the cost of foregoing autonomy over policy choice would be much higher than the benefit that may come with the common currency.

The other important dimensions of measuring suitability of OCA are the size of the disturbances and speed of adjustment. The larger the size of disturbances the larger would be the impact on the economy necessitating a country specific policy measures to offset them. Similarly, the slower speed of adjustment to a shock would entail elongated disequilibrium in the economy in the absence of targeted policy measures. Thus large disturbances and slow adjustment would weaken the case for uniform policy across the region that adopts a common currency. The size of the disturbance relating to supply shock is measured by long run impact on output while that of demand shock is estimated by the sum of the first year's impact on both output and price or in other words nominal output with the help of impulse response function. Change in price is not factored in while estimating the size of disturbance caused by supply shocks given that the identification restriction assumes no change in price in the long run. Similarly, the speed of adjustment is measured by the proportion of response after two years to the long run effect following the procedure adopted by Bayoumi and Eichengreen (1994).

The statistical significance of correlation coefficient is determined by a statistic  $\ln(1+r)(1-r)/2$  where  $r$  is the sample correlation coefficient and has an asymptotically normal distribution with a variance of  $N-3$  where  $N$  is the number of observations<sup>1</sup> (Romano, 1970). For the analysis of the simple correlation of output growth, inflation and nominal exchange rate, the study is based on 27 observations from 1990 to 2016 while for shocks the total observations are 26 under single lag and 25 under two lags. Hence, the correlation coefficients above 0.380, 0.395 and 0.403 are significant at 5% level of significance for 27, 25 and 24 observations respectively. Similarly, the coefficients above 0.323, 0.337 and 0.344 are significant at 10% level for 27, 25 and 24 observations respectively. Signs \*\* and \* represent

---

<sup>1</sup> Formula:  $z = \frac{1}{2} \sqrt{(N-3)} \left\{ \ln \frac{(1+r)(1-\beta)}{(1-r)(1+\beta)} \right\}$  is used to test the significance of correlations with  $H_0: \beta = 0$ ;  $H_1: \beta \neq 0$  using  $\alpha = 0.10, 0.05$ .

significance at 5% and 10% levels respectively. 5% level of significance will be used for analysis.

#### **1.6.1.1.5.1 SVAR with Two Variables**

Under this model two variables are used. Blanchard and Quah (1989) considered output and unemployment while Bayoumi (1992) used output and inflation. In our empirical studies, we follow Bayoumi (1992) which is widely used in bivariate SVAR in the OCA literature. The corresponding shocks are termed as supply shocks and demand shocks. The OIC are that supply shocks have long run impact on both output and price while demand shocks have no permanent impact on output.

#### **1.6.1.1.5.2 SVAR with Three Variables**

Under this model, three endogenous variables are considered. Following Clarida and Gali (1994), the variables considered are GDP, real effective exchange rate (REER) and CPI with corresponding shocks termed as supply shocks, monetary shocks and demand shocks respectively. The OIC are that supply shocks have long run impact on all the three variables; monetary shocks have no long run impact on output; and demand shocks have no long run impact on both output and REER.

#### **1.6.1.1.5.3 SVAR with Four Variables**

Following Jeon and Zhang (2007) GDP, REER, money supply (M2) and CPI are considered under this model. The corresponding shocks are termed as supply shocks, exchange rate shocks, monetary shocks and demand shocks respectively. The OIC are that supply shocks have permanent impact on all the variables; exchange rate shocks will not have permanent impact on output; monetary shocks will not have permanent impact on output and REER; and demand shocks will not have long run impact on output, REER and M2.

#### **1.6.1.1.6 Forecast Error Variance Decomposition (FEVD)**

The variance decomposition shows relative importance of different types of shocks in explaining fluctuations in the variables across different time horizons. If the changes in the macroeconomic variables stems largely from same shocks across

the countries, the region could be good candidate for a common currency. The correlation of the structural shocks among member countries alone will not provide information on the relative significance of different shocks. Shocks with long run impacts are considered important than those with only short run impacts. Despite having positive and significant correlations of less important shocks if correlation is not significant for more crucial shocks, the countries may not constitute an OCA. FEVD is powerful econometric tool to evaluate relative importance of shocks with regard to their impacts on the key macroeconomic variables. FEVD is run once the structural shocks are determined.

#### **1.6.1.1.7 Impulse Response Function**

Impulse response function (IRF) shows how different variables respond to each unit of structural shocks. If variables across countries respond in similar ways to shocks, then there is a good case for adopting a single currency as the countries can respond to shocks by adopting similar policy measures. Together with correlation of structural shocks and variance decomposition, IRF provides useful insights on the impact on shocks on the key macroeconomic variables.

#### **1.6.1.2 Choice of Anchor Currency**

Two techniques are applied for determining the choice of anchor currency.

##### **1.6.1.2.1 Structural VAR Analysis**

This empirical analysis also uses the methodology developed by Blanchard and Quah (1989) using SVAR process. Chow and Kim (2003) used this methodology to examine relative significance of global, regional and country specific shocks in explaining business cycles of East Asian countries. The results were extended to show whether East Asia could adopt a regional currency peg by comparing their results with that of Western Europe. This model has since been replicated in the empirical studies of the other regions such as Pacific Island countries (Jayaraman & Choong, 2009), Franc zone (Zhao & Kim, 2009), East Asia (Hsu, 2010) among others. If the regional shocks have higher explanatory power compared to global shocks and country specific shocks, the region is likely to benefit more with a regional monetary integration given that they can respond with

uniform policy measures when subject to shocks. The model can be represented in econometrics form as follows:

$$\Delta y_t^d = \delta_0 + \delta_1(L) \mathcal{E}_t^g + \delta_2(L) \mathcal{E}_t^r + \delta_3(L) \mathcal{E}_t^d \quad (1)$$

where  $\delta_i(L) = \delta_{i0} + \delta_{i1}L + \delta_{i2}L^2 + \delta_{i3}L^3 + \dots$  is a polynomial function of the lag operator  $L$ . The key assumptions are that global shocks are large enough to affect global output including regional outputs across the globe whereas the impacts of regional shocks are limited to the countries in the region. Likewise, country specific shocks affect the particular country and do not extend to the regional or global level. Country level shocks normally arise from country's fiscal and monetary policy including changes in productivity and terms of trade. Global Financial Crisis (GFC) that began in 2007 is the very good example of the global shocks that shook the whole world while Euro launch in 1999 and Euro crisis that unraveled from the end of 2009 are good examples of regional shocks given their impact limited largely to within Europe. Asian crisis of 1997-98 is another good example of regional shocks that had huge impact on countries of East and Southeast Asia. Similarly, the 1991 foreign exchange reserve crisis of India and what followed in terms of the opening up of the economy is an example of country specific shocks.

Following Chow & Kim (2003), the economic relationship of global, regional and domestic outputs as represented by  $y_t^g, y_t^r$  and  $y_t^d$  respectively with the corresponding structural shocks  $\mathcal{E}_t^g, \mathcal{E}_t^r$ , and  $\mathcal{E}_t^d$  can be presented in matrix form as follows:

$$\begin{bmatrix} y_t^g \\ y_t^r \\ y_t^d \end{bmatrix} = \begin{bmatrix} \mathring{A}_{11}(L) & \mathring{A}_{12}(L) & \mathring{A}_{13}(L) \\ \mathring{A}_{21}(L) & \mathring{A}_{22}(L) & \mathring{A}_{23}(L) \\ \mathring{A}_{31}(L) & \mathring{A}_{32}(L) & \mathring{A}_{33}(L) \end{bmatrix} \begin{bmatrix} \mathcal{E}_t^g \\ \mathcal{E}_t^r \\ \mathcal{E}_t^d \end{bmatrix} \quad (2)$$

where  $\mathring{A}_{ij}(L) = \alpha_{ij}^0 + \alpha_{ij}^1 L + \alpha_{ij}^2 L^2 + \dots$  is a 3 by 3 matrix of polynomial functions of lag operators. In abbreviated form it can be presented as:

$$\Delta y_t = \mathring{A}(L) \mathcal{E}_t \quad (3)$$

The shocks are considered to be uncorrelated with each other and of unit variance:  $\text{Var}(\mathcal{E}_t) = I$ . The shocks are unobserved hence three additional restrictions

are imposed to retrieve them from reduced form VAR. They are: (1) Regional shocks do not have long run impact on global outputs; (2) domestic shocks do not have long run impact on global outputs and (3) domestic shocks do not have long run impact on regional outputs. In other words, both global shocks and regional shocks have long run impact on domestic outputs and global shocks have long run impact on regional outputs but not vice-versa. The underlying assumption is in agreement with the fact that regional economy is small part of the global economy and likewise domestic economy is small part of the regional economy, hence events in an economy will not affect regional economy and events in the region will not affect global economy. These restrictions small economy assumptions generalized in context of international economics. The corresponding coefficients are:

$$\hat{A}_{12}(I) = \hat{A}_{13}(I) = \hat{A}_{23}(I) = 0 \text{ where } \hat{A}_{ij}(I) = \alpha_{ij}^0 + \alpha_{ij}^1 + \alpha_{ij}^2 + \dots$$

#### 1.6.1.2.2 Co-integration Test

As per Engle and Granger (1987), two variables are considered to be co-integrated when they have long run or equilibrium relationship between them. Co-integration test is applied to find out if there exists long run relationship between the exchange rates of member states and Indian currency. Baillie and Bollerslev (1989) used co-integration test to examine the long run relations among the currencies of seven advance countries: Japan, Germany, UK, France, Italy, Canada and Switzerland. Hakkio and Rush (1989) applied it for German mark and UK pound. Aggarwal and Mougoue (1996) used it to find the influence of Japanese yen over the currencies of East and South East Asian countries. If there is long run positive relationship, Indian rupee might act as a nominal anchor for those currencies. The exchange rates are based on US dollar rates. The co-integration test can be applied when the data are non-stationary at level but are stationary at first difference. For testing stationary of the time series data unit root test is applied. The notation for unit root test is as follows:

$$\Delta Y_t = A_0 + A_1 Y_{t-1} + \sum_{i=1}^l B_i \Delta Y_{t-i} + \varepsilon_t \quad (1)$$

Where Y is the variable under consideration;  $\Delta$  is the first difference operator;  $A_i$  and  $B_i$  are constant parameters and  $\varepsilon_t$  is stationary stochastic process. l is the number of



lagged terms as per Akaike Information Criterion (AIC) to ensure that  $\varepsilon_t$  is white noise. The hypothesis is as follows:

$H_0: A_1 = 0$ , there is unit root or the time series is non-stationary

$H_1: A_1 \neq 0$ , there is no unit root or the time series is stationary

If the value of ADF test statistics is higher than McKinnon's critical values, the null hypothesis that the data has unit root is accepted. Alternatively, failure to reject null hypothesis will confirm that the data is stationary. When the data is non-stationary at level, unit root test is applied with successive difference until the data becomes stationary. The notation for successive unit root test is as follows:

$$\Delta^2 Y_t = K_1 Y_{t-1} + \sum_{i=1}^l C_i \Delta^2 Y_{t-i} + u_t \quad (2)$$

And the hypothesis would be

$H_0: K_1 = 0$ , the time series is non-stationary.

$H_1: K_1 \neq 0$ , the time series is stationary.

If the series becomes stationary with first difference the series is said to be the integrated of order one as denoted by I(1) and if it becomes stationary with second difference it is said to be integrated of order two and represented by I(2). The series are put on Johansen (1988) co-integration test to find out if there exist long run relationship between member countries' exchanges rates and Indian rupee once it is confirmed that they are integrated of order 1. The notation of co-integration test is as follows:

$$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \dots + A_i Y_{t-p} + B X_t + \varepsilon_t \quad (3)$$

Where  $Y_t$  is a m vector of non-stationary I(1) endogenous variables;  $X_t$  is a k vector of exogenous deterministic variables;  $A_1 \dots A_i$  and B are matrices of coefficients to be estimated and  $\varepsilon_t$  is a vector of disturbances that may be contemporaneously correlated but are uncorrelated with their own lagged values and all the variables on the right hand side. By transforming above equation into first difference form we get:

$$\Delta Y_t = CY_{t-1} + \sum_{i=1}^{p-1} D_i \Delta Y_{t-i} + BX_t + \varepsilon_t \quad (4)$$

Where  $C = \sum_{i=1}^p A_i$  and  $D_i = - \sum_{j=i+1}^k A_j$

Granger's representation theorem states that if the coefficient matrix  $C$  has reduced rank  $r < k$ , then there exists  $k \times r$  matrices of  $\alpha$  and  $\beta$  each with rank  $r$  such that  $C = \alpha\beta'$  and  $\beta'Y_t$  is  $I(0)$ .  $r$  is the number of co-integrating relations and each column of  $\beta'$  is the co-integrating vector and  $\alpha$  is the matrix of error coefficient parameters that measures the speed of adjustment in  $\Delta Y_t$ . Johansen co-integration test is carried out applying two test statistics: trace statistics and the maximum eigenvalue test statistics as proposed by Johansen (1988) and Osterwald-Lenum (1992).

The likelihood ratio statistic (LR) for the trace test ( $\gamma_{trace}$ ) as proposed by Johansen (1988) is presented as:

$$\gamma_{trace}(r) = -T \sum_{i=r+1}^k \log(1 - \hat{\gamma}_i) \quad (5)$$

Where  $\hat{\gamma}_i$  is  $i^{\text{th}}$  largest eigenvalue of matrix  $C$  while  $T$  is the total number of observations. The null hypothesis on trace test is - the number of distinct co-integrating vectors is less than or equal to the number of co-integrating relations ( $r$ ).

The maximum eigenvalue test proposed by Johansen (1988) examines the null hypothesis of exactly  $r$  co-integrating relations against the alternative of  $r+1$  co-integrating relations with the test statistics:

$$\gamma_{max}(r, r+1) = -T \ln(1 - \hat{\gamma}_{r+1}) \quad (6)$$

Where  $\hat{\gamma}_{r+1}$  is the  $(r+1)^{\text{th}}$  largest squared eigenvalue. In the trace test, the null hypothesis of  $r = 0$  is examined against the alternate of  $r+1$  co-integrating vectors. After detecting the number of co-integration, the normalized co-integration coefficients of exchange rates along with the test of significance of the variables is examined by imposing a general restriction of each variable ( $\beta_i = 0$ ) in the regression models. Finally Wald test is applied on the various null hypothesis involving sets of regress coefficients. However if no co-integration is detected, no further examination is required as is the case in this empirical studies.

Given that there exists fixed exchange rate arrangements between Bhutanese ngultrum and Nepalese rupee with Indian rupee, no co-integration test is required to examine long run relationship between them. The daily exchange rates of India, Pakistan and Sri Lanka are retrieved from IMF Exchange Rate archives for the period January 1994 to November 2018. Maldives daily exchange rate is retrieved from Currencies.Zone website (<https://currencies.zone/historic/us-dollar/maldives-rufiyaa>) for the period October 1996 to November 2018. Bangladesh's exchange rate is available accessed from Bangladesh Bank websites and is available only on a monthly basis. Co-integration test is performed on bilateral exchange rates of currencies of the region and Indian rupee. Co-integration is further performed by considering exchange rates of India, Maldives, Pakistan and Sri Lanka as well to examine multilateral long run relation.

## **1.6.2. Survey**

Given the complexity of the subject matter and absence of straight forward technique to gauge what forms of monetary integration is suitable for the region, a survey was conducted to solicit views from different stakeholders from across the member countries. The respondents include policy makers such as officials from central banks and ministry of finance; private sector such as the officials of chamber of commerce and industry and banks; practitioners; and academia who are well versed with the subject matter. The first point of contact is those officials listed in SAARCFIN website as the focal points from respective central bank and ministry of finance and SAARC Chamber of Commerce and Industry. Those from academia are identified from the papers on the subject matter. Out of 70 individuals contacted, only 31 responded.

A questionnaire was prepared containing 12 questions and provided in the appendix. First nine questions are prepared on a likert scale with ratings from 1 to 5 where 1 represents strongly disagree, 5 represents strongly agree and 3 represents neutral stance. The tenth question is ranking 5 most suitable reasons in the order of importance. The eleventh question is the choice between yes and no and if the answer is affirmative, listing number of countries on the phases of integration. Final

question is also about the choice between yes and no with the option of providing brief comments.

The survey is important exercise in understanding diverse views and getting crucial insights from different stakeholders. The outcome of the survey will be particularly important in shaping policy dialogue and contributing to the recommendation on greater monetary integration in South Asia.

The above studies are supplemented by stylized facts and relevant reports, figures, indices as appropriate.

## **1.7 DESIGN OF THE STUDY**

The remaining chapters of the thesis are organized in the following order: Review of Literature; Empirical Study on Optimum Currency Area; Identification of Anchor Currency; Monetary Integration in South Asia: A Survey Analysis; South Asian Common Monetary Area: A Model Framework; and Summary, Conclusion and Policy Recommendation. The references and bibliography are provided at the end of the thesis.

\*\*\*\*\*

## **CHAPTER II**

### **REVIEW OF LITERATURE**

The SAARC GEP report provides roadmap for the economic integration of South Asia with the establishment of South Asian Free Trade Area (SAFTA) by 2010, South Asian Customs Union (SACU) by 2015 and South Asian Economic Union (SAEU) by 2020. As the logical extension of the economic union, the report also proposes a single monetary system with a common currency. Monetary cooperation is a set of arrangements made among sovereign nations regarding the choice of legal tender, exchange rate mechanism and monetary policy framework with the objective of promoting exchange rate stability, monetary cooperation and economic development. Monetary integration in a general parlance is taken to mean a single monetary system. Though the goal of a monetary union with a single currency is achieved in euro area, the overall mechanism put in place to sustain such union is far from being complete as was exposed by euro crisis. The literature dwells extensively on the various aspects of monetary integration and what it takes to have a number of countries forming a monetary union.

The literature does not provide one uniform definition of monetary integration. In fact, Gandolfo (1992) finds some of the definitions contradicting. The widely held view of monetary integration in the literature is an arrangement among sovereign countries with irrevocable pegged exchange rates or a common currency. For the purpose of this research any steps taken or arrangements made either formal or informal among a group of sovereign nations towards greater monetary cooperation is considered to be a process of monetary integration. The degree of integration therefore differs between various forms and stages of monetary cooperation. For instance, the integration may be limited to the arrangements intended to facilitate cross border payments and settlement or extended to the arrangements of exchange rates or a currency union. Therefore monetary integration can be taken in the same light as economic integration which represents different phases of cooperation from an arrangement of free trade area to a custom union to a single market to the ultimate economic union. Monetary integration in a similar vein represents different stages of monetary cooperation with the eventual goal of monetary union with a common currency.

The concept of optimum currency area (OCA) is central to the literature of Monetary Integration. The wealth of literature available on OCA underpins the theoretical framework on monetary integration.

## **2.1 OPTIMUM CURRENCY AREA (OCA)**

The concept of Optimum Currency Area emerged during early sixties when the international monetary system was governed by Bretton Woods system of fixed exchange rate and capital control. The concept evolved as a matter of exploring comparative virtues of fixed versus flexible exchange rate system. It was propounded by Robert Mundell in his 1961's seminal work "A theory of Optimum Currency Area". Mundell (1961) describes OCA as an area comprising of different sovereign nations facing similar structural shocks. It is manifested in the form an area in which the member nations maintain fixed exchange rates against each other while maintaining variable exchange rate externally. Mundell (1961) emphasizes the significance of labor mobility in responding to asymmetric shocks. When the labour mobility is very high or the factor markets are highly integrated in a region, there is less of a necessity to make adjustments in real factor prices and nominal exchange rate in response to shocks. Assuming that the world can be separated into areas with free factor mobility and immobility, the regions with factor mobility can share a common currency which changes relative to the currencies of all the other nations with immobile factors of production. The flexible exchange rate with outside world promotes external equilibrium. Mundell (1961) notes that the lower transaction costs and the lower exchange risks are the key advantages of OCA. These conceptual frameworks have however many limitations notably mobility of factors of production in the short run; need for the reskilling of workforce; language, cultural and social barriers; limitations associated with assumption of two country model; exclusion of the impacts of capital mobility etc. It nevertheless laid down strong conceptual foundation for OCA and was further pursued with great academic interest in the years that followed.

McKinnon (1963) introduced a dimension of degree of openness of an economy into the literature of OCA. His description of the OCA is the area with single currency in which the use of common monetary and fiscal policies and

flexible external exchange rate with the outside world would provide an environment of stable price level, full employment and external balance. The degree of openness is measured by a ratio of tradable to non-tradable goods: the higher the percentage of tradable goods to the non-tradable goods, the higher is the openness of the economy. The tradable goods are those which are imported and exported while non-tradable are those which are produced and consumed domestically only. When an economy responds to a shock with the adjustment in exchange rate, the corresponding fluctuations in the general price level would be higher in the open economy. This is not consistent with the goal of internal price stability which is more important policy objective than maintaining external balance. Moreover, exchange rate only won't be sufficient to address the external balance in a relatively open economy.

Kenen (1969) considered the level of diversification of production and consumption an important criterion for OCA than labor mobility. When a well-diversified economy is hit by a shock, the same shock can be positive shock in one industry while it can be negative shock in another industry thereby limiting the overall impact of the shock in the overall economy due to cancellation effect. Diversification offers less need to rely on exchange rate adjustment in addressing external balances and provides insulation from disturbances. Hence economies with relatively higher diversification are suitable in forming single currency area. Kenen (1969) further highlighted the importance of fiscal integration which allows fiscal transfer from low unemployment region to high unemployment region to address disequilibrium caused by asymmetric shocks. For this to happen, advance level of political integration is indispensable.

The above three papers published in sixties are considered to have laid the foundation of the literature on monetary integration.

Cesarano (2006) believes that the basic tenets of monetary integration was already sown by authors like Lerner (1947), Friedman (1953), Meade (1957) and Scitovsky (1958) when they were underlying the importance of classical adjustment mechanisms for economic adjustment in the presence of exchange rate inflexibility. They suggested that the free movement factors of production and goods together

with unified macroeconomic policy would render exchange rate changes less desirable for economic adjustment in response to shocks. Friedman (1953, p. 193) mentioned that *“A group of politically independent nations all of which firmly adhered to, say, the gold standard would thereby in effect submit themselves to a central monetary authority, albeit an impersonal one. If, in addition they firmly adhered to the free movement of goods, people, and capital without restrictions, and economic conditions rendered such movement easy, they would, in effect be an economic unit for which a single currency – which is the equivalent of rigid exchange rates – would be appropriate”*. Though Friedman never used the term optimum currency area, he seems to have clear foresights of the underlying preconditions necessary to make an area comprising of different nations suitable for adopting a fixed exchange rate system similar to what Mundell and others have professed in the subsequent decade. The underlying difference between them was the orientation: Friedman directed his paper in justification of flexible exchange rate system while Mundell oriented his paper in favour of fixed exchange regime with new concept of OCA. Nevertheless both of their views seem to converge on the essential characteristics with which two opposing exchange rate regimes can work.

Thenceforth, several authors made incremental contributions to the literature of monetary integration especially centered around OCA. It mainly revolved around defining new sets of prerequisites of OCA.

Ingram (1962) considered extent of financial integration among countries an important criterion to assess whether the adjustment in exchange rate is necessary while responding to asymmetric shocks. The imbalance caused by trade can be addressed through the transfer of capital from surplus region to deficit region - which is possible in financial integration. Even a small change in interest rate can have equilibrating effect in the region through the movement of capital. This will not only help in efficient allocation of resources but also in balancing the long term interest rate and financing the external imbalances.

Mintz (1970) considers the political commitment among the partner countries as the single most important requisite to achieve OCA. Despite meeting all the essential conditions of OCA, it may not see light of the day if there is no political



will. Political will helps in channelizing efforts and resources in setting up policies, institutional framework, cooperation and institutional linkages necessary to set up a currency area.

Haberler (1970) attests the importance of compatibility of policy orientation. Those with similar policy preferences would form better candidates for monetary integration.

Fleming (1971) noted that low and similar level of inflation rates across countries in the region will help in smoothing the terms of trade, therefore less of a need to adjust exchange rate to any given disturbances. Despite differences in inflation levels, countries with high inflation may undergo “catching up” process before converging into a moderate level of inflation in a monetary union.

Corden (1972) and Fleming (1971) throw more weight behind price and wage flexibility for economic adjustment in response to shocks given that the countries forming an OCA can't pursue independent nominal exchange rate and macroeconomic policies. The notional cost of joining a currency area is equivalent to the extent of downward rigidity of wages and nominal prices. If they are flexible, the real exchange rate will be flexible to the similar extent. Thus, there is a trade-off between independence over the policy to influence the level and nature of expenditure in the economy and real exchange rate flexibility to ensure external balance. The mobility of factors of production may be limited in the short run but can eventually gain momentum in the medium to long run in response to the shocks thereby letting off pressure from the exchange rate adjustment.

Mundell (1973) in his subsequent contribution to the literature emphasizes financial integration as the important OCA criteria. The higher level of financial integration will make countries suitable for common currency even if they are subject to asymmetric disturbances. The financial integration among diverse sources of income, portfolios, assets and wealth spread over countries in the currency area allows it to lessen the impact of uneven disturbances due to wider risk sharing and mutual claims. In the absence of regulatory control, financial flows are much faster and efficient than labour and physical capital mobility.

Ishiyama (1975) emphasizes that there is no universal property that can be said to determine whether a country is suitable candidate for OCA underlying the limitation of the literature based on property. Every country has to assess pros and cons of entering into OCA considering its own interest. A set of properties that would likely to be more significant for a country based on its own preferences and policy choices could be less significant for another country with different set of preferences.

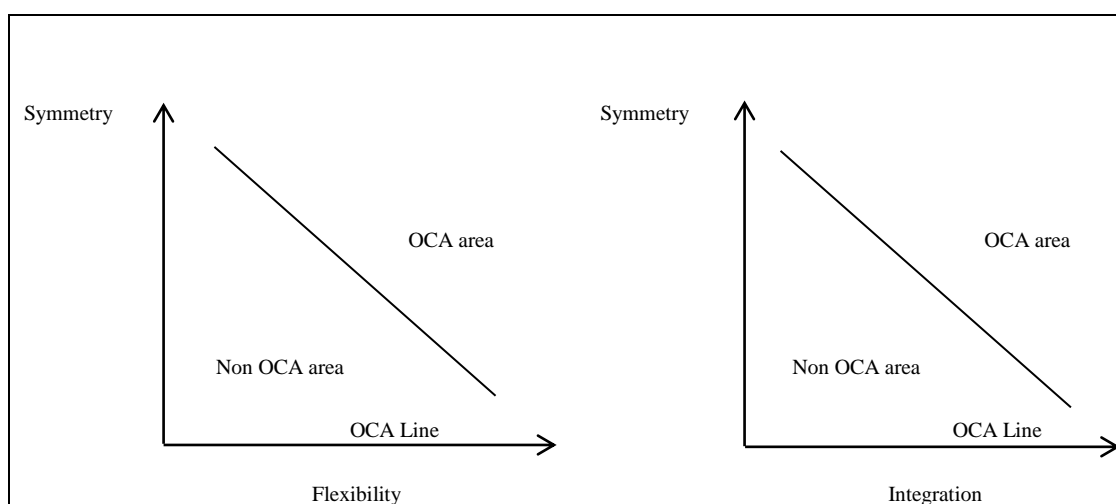
Tower and Willett (1976) consider that analogous level of preference over unemployment, growth and inflation and ability of the authorities to trade-off between goals will be crucial in making a group of countries into a viable currency union. They also point out that when an open economy joins a common currency area, it promotes overall effectiveness of money. However it also adds constraints to the effectiveness of the domestic policies in addressing internal imbalance given the larger influence of external environment in the currency area. The cost of adjustment rests on sources, nature and extent of external shocks. With no empirical methodology available at the time they also observed that it was not possible to assess the relative importance of different OCA properties.

Blanchard and Karz (1992) provide empirical evidence how labor migration plays instrumental role in economic adjustment in USA substituting the necessity of price flexibility. Similarly, Eichengreen (1997) finds capital movement as the alternative stabilizing tool. States with comparable economic profiles are better candidate for optimum currency area (Backus & Kehoe, 1992; Mills & Holmes, 1999; Lumsdaine & Prasad, 2002). Nations possessing similar characteristics and responding in similar patterns to disturbances make up a good currency area (Tavlas, 1994).

De Grauwe (2018) explains three essential criteria of OCA namely symmetry of shocks, flexibility of price and wage and the level of economic integration in graphical forms as shown in figures 2.1. The first part of the graph shows how the combinations of symmetry of shocks and flexibility of price and wage determine whether an economy is suitable to be part of an OCA or not. The OCA line demarcates the area between OCA and non OCA. The area to the left of OCA line

constitutes those economies with combinations of symmetry of shocks and flexibility of price and wage that are not suitable to be part of OCA. On the other hand, the area to the right of OCA line comprises economies with the combinations of the symmetry and flexibility that are suitable to be the part of OCA. In similar way, second part of the graph shows combination of symmetry of shocks and level of economic integration in demarcating areas between OCA and non OCA.

**Figure 2.1: Symmetry, Flexibility and Integration Criteria of OCA**



Source: De Grauwe (2018)

After initial resounding interest on the subject followed a long lackluster periods of almost two decades primarily due to some conflicting characteristics with no clear theoretical or empirical underpinning to facilitate their reconciliation coupled with the fact that the process of European monetary integration also lost its momentum during that period. Some of the properties were contradictory and at best were inconclusive. McKinnon (1969a) and De Grauwe (2018) highlight the paradox of diversification and openness criteria in relation to small economy. For instance, small economies tend to specialize in specific sectors so they are relatively less diversified and flexible exchange rate is appropriate for them. On the other hand, small economies are also relatively more open given their greater dependence on trade. This makes them suitable for fixed exchange rate system. Mundell (1969) puts forth another puzzle: if less diversified economies which are suitable for adopting flexible exchange rate form a single currency area, the area as a whole will become more diversified economy making it more appropriate for a fixed exchange system. He also reverses the whole idea of diversification with respect to OCA arguing that

countries with highly diversified economies are best suited to adopt flexible exchange rate rather than those with less diversified economies. Dellas and Tavlas (2009) who surveyed OCA literature cite at least six different combinations of characteristics to be mutually contradicting. On the issue of specialization led by openness put forth by Krugman (1991), they argue that sector specific shocks may transcend into country specific shocks rendering flexible exchange rate arrangement more desirable as opposed to the inference of openness criteria. Similarly, based on reasoning put forward by Kenen and Meade's (2008) on large and small countries, they observe that the relationship between a size of economy and OCA is also indeterminate. It seems that larger economy is more suited to join currency area compared to smaller ones given that the macroeconomic policy will in general follow the larger interest of the currency area as a whole which in turn will tend to represent the interests of the larger nations in the event of idiosyncratic shocks.

Johnson (1969) made an observation that the prescription of the slew of preconditions has rendered the subject too complicated to provide any meaningful insight and therefore the topic reached a dead-end. In similar light, Ishiyama (1975) labels theoretical construct of OCA as merely a scholastic discussion with little scope in contributing to the practical issues of monetary reforms and exchange rate management. Bayoumi and Eichengreen (1997, p. 199) said: *"There is an irony, then, that the variables identified by Mundell, McKinnon and Kenen have least explanatory power for the decade in which these authors wrote"*. It can be attributed to the fact that the theory of OCA emerged during sixties when the international monetary system was governed by Bretton Woods system with fixed exchange rate and limited capital mobility. Moreover, the development of OCA theory is rooted on the economic thoughts dominant at the time. They include price and wage stickiness; lack of factor mobility; and general belief that Philips curve can be exploited to obtain optimum mix of inflation and unemployment and ability of macroeconomic policies to find equilibrium position along Philips curve in response to the shocks.

It is because of the revival of the European monetary integration process that aroused the new phase of academic interests on this subject from late eighties and primarily from the beginning of nineties. Concomitantly, new developments in the

macroeconomic theory have helped cast the theory in new light and Tavlas (1993, p. 669) declares “*The theory of optimum currency area is back*”. De Grauwe (1992) calls it “new” theory of OCA. Krugman (1993a, p. 18) went on to say that “*It is arguable that the optimum currency area issue ought to be the centerpiece of international monetary economics*” as the interests on OCA literature gathered momentum from mid-eighties after years of intellectual neglect. The new development in empirical studies have further helped advance the subject from nineties.

In the subsequent phase of the evolution of OCA theory, the focus shifted towards evaluating the costs and benefits of an optimum currency area. In this direction, one of the first reports published was “One Market, One Money” in which potential benefit of the monetary integration is analyzed (European Commission 1990). Emerson et al. (1992) asserts that there is however no straight forward way of determining the cost and benefit of a monetary union.

The literature on monetary integration pins down the cost of joining a monetary union on two drawbacks that come with it:

1. Loss of control over the exchange rate management and
2. Loss of autonomy over the macroeconomic policies, particularly monetary policy.

These measures are critical in the process of economic adjustment while responding to the shocks. When the countries face asymmetric shocks they tend to respond by adopting policy measures that are best suited to their specific needs. Once they are part of the currency union, they lose the independence of pursuing their own policy. The measures taken at pan-union level might not be in the best interest of some countries to address their specific needs thereby impeding their macroeconomic adjustment.

When a country is subject to trade related shocks causing trade imbalance, the use of exchange rate adjustment is believed to be instrumental in responding to the shocks particularly when price and wage adjustment is not possible or when the factor mobility is weak. Sachs and Wyplosz (1986) have examined the impact of French devaluation of 1982-83 and De Grauwe (2018) has analyzed the Belgium

devaluation of 1982 and both have noted the use of exchange rate in effectively restoring the trade imbalance and internal equilibrium. Similarly, Broda (2001) has shown that countries with flexible exchange rates tend to do better when they are subject to trade related shocks.

Kawai (1987) suggests that the existence of downward rigidity of nominal price and wage makes exchange rate management an effective policy tool in addressing short run disequilibrium. Under such situations, the loss of autonomy over exchange rate management serves as important cost. In view of importance attached to monetary policy's role during seventies in finding equilibrium point along Philips curve by choosing optimum mix of inflation and unemployment, the loss of autonomy over monetary policy formulation is deemed to be a severe economic cost of joining monetary union (Tower & Willet, 1970, Corden, 1972).

Melitz (1991) infers that countries tend to respond differently even if they face symmetric shocks owing to different sets of preferences and the state of their economic conditions such as the extent of wage and price flexibility; trade and investment; internal and external positions; tax structure etc. Similarly countries can have different preferences for inflation and binding all of them to one inflation level with a monetary union might turn out to be counterproductive (Corden, 1972; Giersch, 1973; De Grauwe, 2018).

There are also several benefits of an optimum currency area. The most cited advantages are:

1. Utility function of a common currency is enhanced due to economies of scale, transparency in prices across the border and efficiency gains due to elimination of cost of conversion.
2. Elimination of exchange rate risks.
3. Credibility gain of macroeconomic policies due to price stability and
4. Growth in trade and investment.

Mundell (1961) points that in a system of flexible exchange rate with multiple currencies, the ability of money to serve as a means of payment decreases due to limited area within which the money can function as a legal tender and the cost of conversion for cross border transactions. Similarly, Tower and Willett (1976)

note that the risk associated with exchange rate tends to diminish a country's external trade. The economies of scale brought about by the use of a single currency enhances the unit of account function of money by reducing the cost of transactions, the uncertainty associated with cost of information and exchange rate risk (Grubel, 1981).

National currencies serve as an impediment to the smooth and seamless flow of financial transactions among nations. Using a gravity model, Rose and van Wincoop (2001) contend that national money acts as a significant barrier to international trade. Monetary union with single currency effectively removes those barriers, brings down distances and promotes trade within the union by raising incentives of the economic agents (McCallum, 1995; Engel & Roger, 2004). It eliminates exchange rate risk among countries in the union thereby avoiding the cost associated with exchange rate management such as hedging; enhances price transparency; lowers cost of information; curtails market segmentation and promotes competition (Skudenly, 2003).

The consolidation of currencies provides many advantages among which the most important are gains in efficiency and credibility (Kenen & Meade, 2008). The efficiency gain arises from elimination of currency conversion, greater price transparency and elimination of exchange rate risk. The efforts and cost involved in converting currency of one country to another could be very high when it is to be carried out repeatedly besides being inconvenient and cumbersome. Mundell (1973) also suggests that common currency reduces the necessity of maintaining large international reserves and generates seignorage from its wider circulation in the currency area.

There are several authors who downplay the cost relating to loss of independence over exchange rate management. Literature on OCA emerged during sixties when there was no cross border capital mobility and exchange rate was fixed with a provision of marginal adjustment. But as the seventies began to see greater mobility of capital Mundell (1973) ushered in important insights about exchange rate losing its stabilizing property in the light of free movement of capital. He explains how exchange rate becomes the object of speculative attack and the cause

of large asymmetric shocks due to instability created by international capital flows. So losing control over exchange rate management by joining a monetary union would in fact constitute a benefit given that it eliminates source of asymmetric shocks. Authors like Krugman (1991a, 1993), Tavlas (1993), De Grauwe (2018) show that exchange rate is not helpful in promoting external equilibrium, hence the cost of giving up autonomy over exchange rate management is less significant than is generally presumed.

Branson (1986) postulates that exchange rate operates with significant lag through portfolio-balance channel. Similarly, De Grauwe (1989) notes that current exchange rate is not affected if the economic agents can exercise perfect anticipation of the changes in macroeconomic policies. Canzoneri et al (1996) notes that the movements in the exchange rate of countries joining EMU are mainly due to monetary and financial shocks. As a result, the exchange rate can't perform the role of macroeconomic stabilizer hence, the cost of losing exchange rate flexibility is relatively low. Some empirical studies have even suggested that exchange rate flexibility has been the cause of instability instead of the instrument of economic adjustment in the times of external asymmetrical shocks (Collingnon, 1997; Calvo & Reinhart, 2000; Devereux & Lane, 2002).

There are numerous literatures that similarly downplay the significance of the monetary policy in responding to asymmetric shocks. Tower and Willet (1976) observe that the monetary union renders monetary policy ineffective in the context of Mundell-Fleming model when the change in monetary stance will not be able to alter the level of monetary base under the fixed exchange rate regime with perfect capital mobility due to latter's offsetting effect between regions within the union. The ability of monetary policy to find an equilibrium point along Philips curve by balancing levels of inflation and unemployment is also called into question. In fact there is increasing consensus on the role of monetary policy - the primary goal being price stability not low level of unemployment and higher output growth.

Dellas and Tavlas (2009) have studied Friedman's work and affirm latter's contribution to the literature of monetary economics as (1) monetary policy actions are subject to long and variable lags; (2) money is neutral in the long run; and (3) the



primary objective of monetary policy is to achieve price stability in the medium term. Friedman is of the view that even though flexible exchange rate provides independence over monetary policy, the latter's primary goal is price stability not the attainment of desired level of unemployment and output growth. These crucial insights that have since become mainstream macroeconomic theoretical underpinning demonstrate how the cost of losing monetary policy autonomy can be compensated by achieving price stability and policy credibility that comes with being part of the monetary union with the history and credibility of price stability.

In the similar vein, Artis (1991) asserts that the policy makers can choose desired inflation instead of unemployment level and output growth. Similarly, when the countries have not been using their monetary policies appropriately for the countercyclical purpose, the cost related to the loss of monetary independence is not that significant. For instance Calvo and Reinhart (2000) and Hausmann, Panizza and Stein (2001) in their studies find that many developing countries tend to pursue procyclical monetary policy especially when they increase interest rate to defend the value of their currency during the period of economic distress. Several authors including Akerlof et al (2000) have demonstrated varying degrees of inflation-unemployment trade-off different from the equilibrium positions along Philips curve.

Accordingly the perceived cost of joining a monetary union in terms of not being able to achieve the desired mix of inflation and unemployment differs from literature to literature. Emerson et al (1992) including several authors suggest that in the long run the higher level of inflation doesn't necessarily reduce unemployment and increase output. In fact, their studies show that higher level of inflation causes lower level of employment and lower real per capital income. Moreover, the stagflation of seventies and eighties further weakened both the theoretical and empirical underpinning of Philips curve.

The currency union will provide credibility gain to countries that are under persistent inflation, running high fiscal deficit and where the independence of central bank is being compromised. Giavazzi and Giovannini (1989) postulate that countries with the reputation of breaking the low inflation promises can gain credibility for

maintaining low inflation if they form a monetary union with a country with a proven record of low inflation. In many countries, the government expects the monetary policy to support fiscal policy in achieving full employment and higher economic growth. Because of this, the monetary policy fails to stick to its overriding objective of maintaining price stability. This will lead to a situation of persistent inflation, high fiscal deficit and high sovereign debt and in the process the central bank loses its credibility.

However, a well-constructed currency union will have robust institutional frameworks and safeguards to uphold the independence, integrity and credibility of the central bank to achieve the overriding goal of price stability in the union. The presence of a country with the proven track record of maintaining low and stable inflation is vital to anchor inflation expectation in the monetary union (Goodhart, 1989; Rogoff, 1996). In this regard, the country that provides nominal anchor to the monetary union shall be able to preserve the hegemony of institutions credited for maintaining low inflation (Tavlas 1993).

Alesina et al (2002) based on their empirical studies have shown that countries with greater co-movement of prices and output will bear insignificant cost from giving up independence over their monetary policy.

The first generation literatures mostly considered OCA criteria as a static condition to be fulfilled ahead of forming a currency union. However, successive literatures underlined the dynamic nature of OCA criteria as a result of which emerged the OCA endogeneity hypothesis introduced by Frankel and Rose (1997, 1998) and the specialization hypothesis tendered by Krugman (1991a, 1993). The stalemate in the development of the literature caused by the complex interplay of prerequisites including their inconsistencies together with the dearth of analytical and empirical techniques received fresh round of academic interests on the back of new development in economic thinking and empirical underpinnings.

The pioneering work of Frankel and Rose (1997, 1998) together with the works of Clark and van Wincoop (2001), Gruben et al (2002), Imbs (2004) including many others showed that as the common currency helps in reducing transaction cost thereby enhancing trade it will in turn help in improving business

cycle synchronization. Calderon et al (2007) by considering 147 developing countries showed the positive and statistically significant contribution of trade intensity on output synchronization. The underlying findings of these notable works are that OCA criteria are satisfied over time after joining monetary union even if not fulfilled *ex ante*. Endogeneity criteria hypothesis spells out how monetary integration would lead to higher level of trade, capital flows, financial integration, factor mobility, price stability etc. in the subsequent years.

Gandolfo (1992) iterates that the even level of low inflation across countries is the possible outcome of a monetary union if the inflation expectation is anchored around the country with the history and credibility of maintaining low inflation rather than a prerequisite to be fulfilled prior to joining a currency area. Monetary integration can induce greater trade integration thereby fulfilling the OCA criteria endogenously (Rose, 2000a; Tenreyro & Barro, 2003; McKinnon 2004; Rose & Stanley, 2005). It engenders trade integration, financial and economic integration, labor market flexibility and buildup of knowledge that together enhances benefits of monetary union and lowers both the cost and instances of asymmetric shocks (De Grauwe & Mongelli, 2005).

Though there is no consensus on the impact of monetary integration on labor market flexibility, authors such as Bertola and Boeri (2002) and Blanchard and Giavazzi (2003) assert that monetary integration promotes labor market flexibility. Contrary to the widely held initial views that the countries wanting to form a monetary union shall satisfy certain common characteristics upfront, the subsequent literatures assert that by participating in a currency union, both the cost and instances of asymmetric shocks tend to diminish on the back of economic convergence and fulfillment of OCA criteria over time.

Regarding the impact of trade integration on patterns of trade, there are two opposing views. One strand of literatures is of the view that trade integration increases intra-industry trade that leads to higher synchronization of business cycles (European Commission, 1990). The trade in Europe is characterized by intra-industry trade prompted by imperfect competition and economies of scale. Similarly Frankel and Rose (1997, 1998) find strong correlation between trade integration and

business cycle correlation and note that they are endogenous. Frankel (1999) suggests that OCA criteria like income correlation and openness do not remain fixed as they undergo changes in response to economic fundamentals, policies and exogenous factors. The higher trade integration driven by monetary integration promotes higher income correlation. The European Parliament (1998) went on to state in its report that *“many of the asymmetries might be removed by the coordination within EMU of economic policies.....and by the fact of monetary union itself”*.

On the other hand another set of literatures suggests that higher trade integration enhances inter-industry trade due to specialization in production caused by economies of scale and reduction in transportation cost (Krugman, 1991a; Krugman, 1993; Kalemli-Ozcan et al, 2001). This will lead to the concentration of similar industries in specific regions within the currency area based on their comparative advantage and will therefore increase income variability across the regions. When the economy is hit by industry specific shocks, it will lead to divergent business cycle correlations. As a result instead of promoting convergence it creates more divergence business cycles. While Frankel and Rose (1997) and Fidrmuc (2004) showed that intra-industry trade causes greater synchronization of output, Krugman (1991) noted that business cycles are more synchronized among economies with similar production structures.

Empirical research has shown varying degrees of trade integration and increase in investment across countries as a result of gains in efficiency and credibility brought about by monetary integration. The most notable work is done is by Rose (2000a, 2000b, 2004). His findings show that pairs of nations sharing same currency trade about three times more compared to other country pairs. Trade enhancing properties of monetary integration are confirmed by many studies but in varying degrees (Micco et al 2003; Frankel & Rose 2002). Study carried out by Ritschl and Wolf (2003) also shows higher trade between countries when small country adopts the currency of its larger trading partner. Similarly when two small countries adopt the currency of the same large country, the intensity of trade between two small countries would also increase (Tenreyro & Barro, 2003). The

table 2.1 provides the list of some important empirical studies that estimate the effects of currency union on trade.

**Table 2.1: List of Empirical Studies of the Effects of Currency Union on Trade**

Authors	Significance	Point estimate of increased trade from currency union
Frankel and Rose (1998)	s	290%
Rose (2000)	s	240%
Persson (2001)	ns	40%
Tenreyro (2001)	ns	60%
Pakko & Wall (2001)	ns	-55%
Rose & van Wincoop (2001)	s	140%
Lopez-Cordova & Meissner (2001)	s	100%
Levy (2001)	s	50%
Flandreau & Maurel (2001)	s	220%
Klein (2002)	s	50%
Engel & Rose (2002)	s	240%
Nitsch (2002)	s	85%
Rose (2002)	ns, s	-68% to 708%
Glick & Rose (2002)	s	100%

Source: Alesina, Barro & Tenreyro (2002)

Note: “s” stands for statistically significant and “ns” not significant

Efficiency and credibility gains are not limited to goods markets but extended to asset markets as well. This led to the convergence of long-term interest in the mid-1990s in EU from the highs of 3 to 4 percent difference between peripheral and central European economies (Kenen & Meade, 2008). There was also a surge on the issuance of euro dominated bond from both corporate as well as public sectors and it has continued to expand because of larger, deeper and broader integrated market on the one hand and on the other hand bond issues became substitute for each other amidst elimination of exchange rate risk across the Eurozone. European Commission (1990) estimates that the cost saved from the elimination of currency conversion is as big as 0.4 percent of gross national product (GNP) of EU. In fact, Asdrubali et al (1996) argue that only in the monetary union is it possible to achieve full capital market integration which will serve as insurance against asymmetric shocks.

Similarly, when the prices are quoted in single currency across the region it improves the transparency by making comparison of prices of similar goods and services convenient and rendering price conversion to home currency redundant. This in turn will promote competition and will help in bringing down price differences in the region. Further, the use of common currency across countries in the region will completely eliminate uncertainties over exchange rate risk.

Some authors have surveyed the literatures on optimum currency area (Tavlas, 1993; Mongelli, 2002; Dellas & Tavlas, 2009). Mongelli (2002) categorizes the stages of the development of OCA theory into four phases: (1) pioneering phase that ushered in the theory of OCA and enumerated its prerequisites; (2) reconciliation phase that helped to reconcile and combine different properties; (3) reassessment phase that led to new OCA theory; and (4) empirical phase that helped to put in test theoretical construct. Mongelli (2002) based on his survey of literatures on OCA asserts that the balance of judgment is in favor of benefits that comes with greater monetary integration compared to the cost associated with the loss of independence over macroeconomic policies.

## **2.2 ROLE OF EMU ON THE EVOLUTION OF LITERATURE ON MONETARY INTEGRATION**

It would not be an overstatement to state that the history of the literatures on monetary integration is largely influenced by the developments in Europe since the signing of Treaty of Rome in 1957 by six nations creating European Economic Community (EEC). The treaty was aimed at establishing custom union and single market in Europe. It was Maastricht Treaty of 1992 that explicitly put the goal of establishing full Economic and Monetary Union (EMU). The debate on single currency in Europe began since late fifties and some of the notable authors were Meade (1957), Scitovsky (1958), Mundell (1961) and McKinnon (1963). The successful launch of euro in 1999 among 11 countries of European Union instilled great deal of optimism in favour of regional monetary integration across the world. It aroused further academic interests with euro area becoming a living laboratory of monetary integration.

However, the euro area crisis that unfolded from late 2009 following global financial crisis of 2007-08 has thrown the literatures on OCA and monetary integration in the new lights. The crisis was mainly led by institutional and policy shortcomings in the architecture of EMU including OCA criteria not satisfied at the time of euro launch. In fact many of these inconsistencies and inadequacies are highlighted in the literature prior to the crisis.

In fact, European Commission (1990) in its report titled “One Market, One Money” discarded the theory of OCA in relation to EMU for being too narrow and outdated to be of any practical relevance. In its view, the developments in economics at the time were not in a position to corroborate uniform theory on monetary union.

The fiscal and monetary governance structure in euro area is primarily aimed at maintaining price stability and preventing moral hazards relating to public finance by its member states. European Central Bank (ECB), the central bank of euro area is responsible for printing euro and formulating monetary policy. Its overriding goal is the price stability in the Eurozone. The supervision of domestic banks is left to the national central banks which are responsible for ensuring financial stability in the home country. Moreover, there is no central fiscal authority that is responsible for fiscal policy for the area. All the national governments in the Eurozone are responsible for their own national fiscal policy. Under multilateral surveillance mechanism and excessive debt procedure, the Growth and Stability Pact lays down strict ceilings on fiscal deficit and sovereign debt which are 3 percent and 60 percent of GDP respectively. Similarly, article 123 of the Treaty on the Functioning of the European Union (TFEU) rules out purchase of government bonds and article 125 prohibits any bail-out by ECB. The arrangements are such that monetary policy addresses union level shocks while the national fiscal policy addresses country specific shocks. The architects of EMU believed that such mechanisms provide sufficient safeguards against asymmetric shocks that may hit Eurozone.

At the time of the introduction of euro in 1999, De Grauwe (1999) compared Eurozone with a beautiful villa that didn't have roof. As long as the weather condition is fine, everyone likes to settle in the villa but once the weather turns

unpleasant, everyone would regret it. De Grauwe (2006) makes an observation that the governance of Eurozone is largely guided by monetarist-real-business-cycle theory and concludes that the union remains fragile in the absence of political integration. He is referring to incompatible institutional arrangements that exist in Eurozone with a combination of ECB with the responsibility of formulating Eurozone monetary policy and several national governments with the responsibility of formulating domestic fiscal policies in contrast to what is prevalent in USA. In the event of large asymmetric shocks, such governance framework might become ineffective in fending off the impacts of shocks because the monetary policy alone has to take the burden of making economic adjustment in the absence of central fiscal policy.

Goodhart (1998) differentiates Eurozone from USA, Australia and Canada noting that while the main political, monetary and fiscal powers together with competencies have been shifted to federal authorities in latter countries, it is not so in Eurozone. Though ECB is equipped with union-wide monetary policy there is no union-wide fiscal authority to enforce fiscal policy. This in turn created unprecedented divorce between monetary and fiscal measures.

Fiscal integration criterion is the least fulfilled OCA criteria in Eurozone according to number of authors including Eichengreen et al (1990) and Feldstein (1992) while De Grauwe (2013) labels it the 'major design failure'. In fact the proposal for a fiscal union was part of 1970 Werner report, the first blueprint for forming a monetary union in Europe. It was indeed noted that a monetary union without a federal budget would likely to be unsustainable. Fiscal integration is essential in providing insurance against asymmetric shocks through fiscal transfers from the surplus countries to the deficit countries. With no central budgetary authority equipped with adequate financial resource, the fiscal capacity to deal with asymmetric shocks at the union level remained totally absent in EMU. This problem was also highlighted in the "Marjolin Report" in 1975 and the "MacDougall Report" in 1977. There exist large numbers of literatures around fiscal federalism as a necessary condition for the successful monetary union (Kenen, 1969; Kaldor, 1971; Oates, 1972; Mundell, 1973; Eichengreen et al, 1990; Eichengreen, 1992; Feldstein, 1992; Hallet et al, 1999; Buti & Franco, 2005; Sorens, 2008; Bordo et al, 2013) and



US federal structure is considered as a benchmark. Solow (2005) iterates that the less the Eurozone is an Optimum Currency Area the more it requires active fiscal policy for stabilization purpose. For fiscal integration to be successful it calls for the greater political integration.

Eichengreen (1992) made comparative empirical studies between Europe and its North American Counterparts based on variability of real exchange rates among provinces of Canada and among Italy, Germany, the United Kingdom and France; co-movement of security prices in Europe and Canada; and labor mobility in Europe and USA to assess whether Europe is an optimum currency area or not. On all three counts, the results show that Europe is not an optimum currency area in comparison to its counterparts in North America.

Similarly, Eichengreen and Frieden (1993) observe that the key criterion of symmetrical business cycles among member states was not met in the process of monetary integration in Europe. They noted that the political consideration took precedence over economic consideration in forming economic and monetary union in Europe.

De Grauwe and Ji (2013) observe that the macroeconomic policies in Eurozone are largely dictated by financial markets. Financial markets have divided Eurozone into two groups: Northern European countries (termed as “core”) that are running current account surplus and Southern European countries including Ireland (termed as “periphery”) that are running current account deficit. The excess saving thus created in core countries flowed to the periphery in the form of debt in financing latter’s deficit through banking channel enabled by greater financial integration. In the process the core countries became creditors while the peripheral countries became debtors. Such economic divergence pushed core countries into good equilibrium and peripheral countries into bad equilibrium.

De Grauwe (2013) finds that the unit labor cost in periphery has upshot since the introduction of euro in 1999 until the eve of the euro crisis in 2008/09. Since then there has been dramatic turn-around in unit labor cost because the periphery countries were forced to reduce wages and prices – a process known as internal

devaluation. On the contrary, the core countries were spared from making upward adjustment in the wage and price – a process known as internal revaluation.

De Gauwe (2013) further notes that the first set of policy prescription to fend off Eurozone crisis was inappropriate. The strict austerity measures were imposed on debtor countries while the creditor countries were allowed to continue with their policy of balanced budget. This pushed not only the debtor countries but also the whole euro area into recession. As a result unemployment particularly in Spain and Greece reached very high level and output fell significantly. The best combination of policy measures would have been for the creditor countries to augment spending by running twin deficits: current account deficit and fiscal deficit at a time when the southern periphery countries were tasked to spend less to trim down their current account deficit and the overall debt burden. Such measures would have offset deflationary pressures at the Eurozone level.

A growing body of literatures show emergence of economic divergence among EMU countries post 1999 period between northern core countries and southern peripheral countries. Northern core countries in particular Germany has grown stronger while the southern countries ended up by accumulating large debt and lost out in both competitiveness and productivity (Blanchard, 2007; Geppert & Stephen, 2008; Shelburne, 2010). Studies show glaring spreads in government bond yields in the aftermath of the euro crisis, the manifestation of differential macroeconomic fundamentals (Bernoth & Erdogan, 2012; Eichler & Maltritz, 2013; Maltitz, 2012). Some analysis has shown persistent inflation differentials (Campolmi & Faia, 2011; Caporale & Kontonikas, 2009) while Cavallero (2011) concludes that such differentials is the result of the growing asymmetries among countries in the Eurozone. Carlos & Isabel's (2012) study shows that the hypothesis of the endogeneity of OCA doesn't hold for peripheral countries in the euro area.

Schuknecht et al (2011) argues that in the first ten years of the introduction of euro, the credibility of fiscal rules under the framework of Growth and Stability Pact (GSP) was compromised amid lack of fiscal discipline by most of the member states. In fact, the credibility of GSP weakened much earlier in 2003 when the European Council failed to act against Germany and France that exceeded the fiscal

deficit limit. Pisani-Ferry (2012) finds that from 1999 to 2008 six out of first twelve euro countries had excessive fiscal deficit. He however observes that the fiscal situation alone fails to explain vulnerability of euro countries when compared with countries such as Japan, UK and USA that have similar level of public debt and fiscal deficit. Excessive emphasis on the lack of enforcement of fiscal rules as contemplated by European Commission to be the root cause of Eurozone crisis may lead to only partial diagnosis of the real problems. In fact, Piasani-Ferry (2012) observes that the lack of joint responsibility over public debt; no monetary financing and bank-sovereign interdependence are the real causes of the euro area's vulnerability. To address Eurozone fragility, he proposes broader mandate for ECB to immediately assure the market to prevent it from exasperating further and the establishment of banking federation and fiscal union with common bond in the medium term. Before the crisis, Veron (2007) suggested that the supervision of banks and the lender of the last resort function shall be shifted from national to the European level. Reforms initiated after euro crisis have addressed many of these issues.

### **2.3 LITERATURE ON DEVELOPING ECONOMIES**

The survey of literature shows the important contribution of the process of European monetary integration in the evolution of the literature on monetary integration. Likewise euro area has become the reference point for studies on monetary union with a common currency. Fritz and Muhlich (2006) acknowledge the dearth of literature on systematic theoretical and empirical research on regional monetary integration beyond Europe. The economic, financial and monetary dimensions of monetary union with an international currency such as euro will be different from the one without international currency. This is the additional challenge that the other regional blocks have to face in their bid to greater regional monetary integration. Except for the extension of empirical studies the availability of literature on monetary integration from the perspective of developing and emerging economies is fairly limited. It poses challenges in the advancement of literature on monetary arrangements relevant to the regional blocks such as SAARC. Besides, each regional block has its own specific context.

Fritz and Muhlich (2006) have made qualitative assessment of Common Monetary Area of South Africa (CMA), Association of South East Asian Nations (ASEAN) and South American Trade Block known as Mercosur from the perspective of developing economies. They advocate in favour of greater monetary cooperation among developing and emerging economies as an important strategy to avert instability created by external shocks. Even amid relatively low economic integration, cooperation on exchange rate management is vital especially during times of asymmetric shocks. The divergent policy responses wielded by the countries in response to external shocks can have adverse impacts on trade and output. They also argue that the hierarchy in the level of foreign debts tends to offer favorable environment for successful and deeper monetary integration among developing and emerging economies.

In this regard, setting up a regional anchor currency may help in developing regional financial market which makes possible borrowing in the regional currencies and strengthening financial stabilization within the region. Even in the absence of common currency, the coordinated regional monetary policy will assist in advancing the regional financial market with the enlargement of regional currency denominated financial assets and in turn strengthening the prospects of macroeconomic stability in the region with the reinforced lender of last resort function of regional central banks. They profess that intraregional exchange rate stability is the most pressing precondition to be met in making a successful regional monetary integration.

ASEAN along with East Asia is the region after EMU about which there exist plenty of literatures on economic, financial and monetary integration. This is largely because of the prospects of economic, financial and monetary integration as well as the economic development of the region. There is a dearth of literature around monetary integration in South Asia amidst being one of the least integrated and under developed regions in the world.

## **2.4 INTERANTIONAL MONETARY SYSTEM (IMS)**

Since the collapse of the Bretton Woods system in early seventies, the world economy has changed and so is the global political order. Notwithstanding, the international governance framework put in place at the end of World War II (WWII) has changed very little. The reform of international bodies such as International Monetary Fund (IMF), World Bank, United Nations (UN) representing the global governance system has been long overdue. International Monetary System (IMS) is not an exception. IMS is dominated by USA giving it disproportionate advantage over the rest of the world. In fact, no formal multilateral frameworks that govern the IMS exist since the end of the Bretton Woods system. Under Bretton Woods system, US dollar was pegged with a fixed quantity of gold and served as a nominal anchor for other currencies.

The IMS is dominated by US dollar. Euro is essentially regional currency (Pisani-Ferry and Posen, 2009), thus it is not in a position to challenge the supremacy of US dollar against what was initially perceived. The other currencies such as Yen, British Pound, Swiss dollar, Australian dollar and Canadian dollar are also convertible currencies yet limited in their scale and scope. The monopoly of US dollar has led IMS to dance largely in the tunes of US macroeconomic policies. It has helped USA in promoting and sustaining international hegemony over other countries (Cohen, 2006; Eichengreen, 2011). US Federal Reserve sets its monetary policy as per its domestic needs. Given that US dollar is the dominant international currency the US monetary policy will have global implications. Besides, international transactions are largely settled in US dollar necessitating the use of US banking system for settlement even if the countries involved have nothing to do with USA. Such mechanisms have forced the international transactions to come under the ambit of US regulation giving it upper hand in facilitation and scrutiny of international transactions. US financial sanction against Iran is a case in example that has forced countries around the world including India to limit financial transactions with Iran despite not necessarily endorsing US's unilateral move.

Global financial crisis has called for the reforms of the international monetary system essentially aimed at curtailing the dominance of US dollar. This

has provoked rethink of design and architecture of international monetary system in favour of alternatives to US dollar's monopoly. In March 2009, ahead of G20 summit in London, Zhou Xiaochuan, the governor of the People's Bank of China in a text released entitled "Reform of the International Monetary System" opined that the current international monetary system in which US dollar is serving as the international currency is not sustainable and therefore has to be replaced by a supranational currency. He went on to suggest that the world should make gradual move towards the use of SDR that IMF created in 1969 as a centrally managed global reserve currency. Since then, the debate on the issue has generated huge academic and public interests and has received global attention.

There is growing sentiments in favour of a global currency as well as diversification of currencies in the international monetary system so that volatility stemming from a particular country and its currency is restrained from excessively affecting the global economy. In a study carried out by Chatham House in the aftermath of the global financial crisis (GFC), a group of eminent economists has advocated for a multicurrency reserve system along with the increased role of supranational currency Special Drawing Right (SDR) in the light of multipolar world that has emerged in recent times (Subachhi & Driffill, 2010). There is a call for broadening and deepening the use of SDR to incorporate private transactions as well. It is believed that alongside US dollar, the use of SDR and other key currencies will instill the sense of credibility, stability and accountability in the IMS.

In the ever more integrated world with emerging economies embracing more open capital account convertibility, the liquidity of US dollar has become the most critical recipe for the market volatility. This has prompted the countries like China and India to explore the possibility of internationalizing their currencies. China seems to have already begun the process of internationalizing its currency (Gao *et al.*, 2011; Eichengreen, 2013; Lee, 2014; Shu *et al.*, 2015). The process was further underpinned by the debut of Chinese Yuan in the SDR basket of currencies in 2016 with a weightage of 10.92 percent - more than that of Japanese yen and British pound. However in the case of India, some studies show that it is not yet ready to take up the role of international currency on the back of less significant size in terms of GDP, trade and foreign exchange market and any move towards this goal would

warrant a more cautious and calibrated approach (Ranjan & Prakash, 2010; Gopinath, 2011).

Regional currencies could be one possible way to partly address the situation. Competitive monetary arrangements both at the regional levels and global level will help in stemming the monopoly of one currency and the negative implications that come with it. In this context, it is important to see how South Asia will seek to address the matter under the regional framework of South Asian Association of Regional Cooperation.

Money functions as a unit of account, means of exchange and store of value. When a currency undertakes these functions of money beyond its home territory, the currency assumes a role of an international currency. Economists like Swoboda (1969), Cohen (1971), McKinnon (1979), Kindleberger (1981), Krugman (1980, 1984) have contributed in the development of the theory of international money. The table 2.2 shows the role of international currency.

**Table 2.2: Role of International Money**

Function of money	Government	Private actor
Unit of account	Anchor for pegging local currency	Denominating trade and financial transactions
Medium of exchange	Vehicle currency for foreign exchange intervention	Invoicing trade and financial transactions
Store of value	International reserves	Currency substitution (private dollarization) and Investment

Source: Chinn and Frankel (2005), originally from Kenen (1983)

When the Indian rupee takes up these roles in regional level or functions as international currency in the region, it would mean a regionalization of Indian rupee. This would perhaps be the first steps towards eventual internationalization of Indian rupee. In the past, Indian rupee was used as official currency in few countries of Gulf and East Africa. Unofficial use of Indian rupee is common in the neighboring countries such as Bhutan, Nepal and Bangladesh.

Bhowmik (1998) proposed a composite currency called South Asian Currency Unit and Agarwala (2003) in similar vein proposed a parallel currency against which the exchange rate of each of the member country is fixed similar to European Currency Unit (ECU). The unit is created by including currencies of all the member countries in the region. The objective of such currency area arrangement is to ensure stability of exchange rates among the member countries to facilitate intraregional trade and investment. Dasgupta and Maskey (2003) have made reference of an alternative exchange rate mechanism anchored around Indian Currency similar to the role played by German Mark in Europe in the exchange rate mechanism prior to introduction of euro. Batra (2014) on the other hand has proposed regionalization of Indian Rupee for facilitating intra-regional trade in South Asia. Ranjan and Prakash (2010) also advocate for the proactive measure to increase the role of Indian rupee in the region. Given that South Asia will probably never see a single currency, it seems logical to explore if the regionalization of Indian rupee would bring about greater economic and monetary integration in the region.

## **2.4 SUMMARY**

The concept of OCA is central to the process of monetary integration. The concept was introduced in early sixties when the IMS was under Bretton Woods system with fixed exchange rate arrangements and little capital mobility. The initial literatures essentially revolved around iterating the prerequisites of OCA. These prerequisites included *inter alia* symmetries of structural shocks faced by the countries; free mobility of labour and factors of productions; diversification; openness; strong political commitment; similar preferences over policies on inflation, growth etc.; financial integration, fiscal integration etc. However many of these prerequisites were found to be contradicting.

The lack of development on economic theories underpinning the concept of monetary integration, lack of empirical studies together with the lack of progress towards European integration threw the literature into intellectual limbo for almost two decades before the interests in the subject revived especially from the beginning of the nineties. The focus shifted towards evaluating cost and benefits of the



monetary integration. The cost included giving up the autonomy over the exchange rate management to address external balances and the monetary policy to address structural shocks that the economies will be subject to from time to time. The benefits included elimination of exchange rate fluctuations; efficiency gains arising out of economies of scale, transparency over price setting, no currency conversion costs; increased trade and investment etc. The cost and benefit analysis was possible due to progress in the development of econometric tools in conducting empirical studies.

The new generation of literature also approached the process of monetary integration from the dynamic nature of the prerequisites unlike how they were viewed in the beginning. This paradigm shift ushered in the theories of endogeneity and specialization. The endogeneity theory essentially assumes that the so called prerequisites of OCA can be met endogenously over the period of time as the economies gradually converge by the very fact of integration. This will assist in achieving greater symmetries of shocks. On the other hand the specialization theory suggests that due to specialization augured by economies of scale and inter-industry trade, the countries in the union will further diverge and will therefore be subject to asymmetric shocks.

Much of the progress in the literature around monetary integration owes to the process of European economic and monetary integration. Hence very little literature exists on the monetary integration of developing countries including South Asia. Similarly, post GFC there was a call for reforms of IMS including multilateral institutions which were founded at the end of WW II and were essentially dominated by USA and its allies. As the world evolves into multipolar world, regional monetary frameworks would probably bring more stability and accountability in the IMS. With Chinese renminbi making its debut to the basket of SDR currencies in 2016, its gradual internationalization is just a matter of time. Indian rupee will follow suit on the back of the rise of Indian economy amid its bid to becoming the third largest economy by the end of next decade and can play larger roles in greater regional monetary integration in South Asia.

\*\*\*\*\*

## CHAPTER III

### EMPIRICAL STUDY ON OPTIMUM CURRENCY AREA

Empirical studies form the bedrock of economic analysis and provide critical insights on the behavior of macroeconomic variables. Much of the insights of the thesis are drawn from empirical results. In this chapter, OCA criteria are analyzed with empirical studies to examine whether South Asia is an OCA or not. The empirical studies include simple correlation of key variables to econometric techniques such as simple autoregression and more advance structural VAR methods. The empirical results are further supported by relevant indexes and qualitative assessments where data are not available. Given that the study is about the region, the analysis has been limited to what is central to the idea of the subject and therefore country wise analysis has been avoided to preserve the space and to make the findings more specific.

#### 3.1 SIMPLE CORRELATION OF KEY MACROECONOMIC VARIABLES

The macroeconomic indicators chosen for this analysis are GDP, Inflation, Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER). The data is for the period 1990 to 2016 for 27 years. For 27 observations, the correlation coefficient ( $r$ ) of or above 0.38 and 0.323 are significant at 5 percent and 10 percent level of significance and are represented by signs \*\* and \* respectively. Countries are represented by their respective three letter ISO codes: Bangladesh by BGD, Bhutan by BTN, India by IND, Maldives by MDV, Nepal by NPL, Pakistan by PAK and Sri Lanka by LKA.

##### 3.1.1 Correlation of Output Growth

The average output growth of SAARC countries ranges between 4 percent and 7 percent over the last three decades. Bhutan, India and Maldives have posted highest average growth rate of 6.64 percent, 6.59 percent and 6.48 percent respectively while Nepal and Pakistan have achieved lowest average output growth of 4.33 percent and 4.37 percent respectively over the same period. In terms of variability of the output growth, Maldives and Sri Lanka are with the highest standard deviation of 7.62 and 3.67 while Bangladesh is the country with the lowest

variability of 0.84 followed by Nepal with 1.68. It is interesting to observe that the variability of output growth of Maldives is greater than its average growth indicating much higher deviation from its mean value. Table 3.1 shows the correlation matrix of output growth from 1990 to 2016. Two third of the correlations are positive demonstrating co-movement of output growth. Nonetheless, only one correlation is statistically and positively significant: between Bangladesh and India. The other correlation that is statistically significant is between Bangladesh and Nepal but in a negative direction. Nepal shares the largest number of negative correlations in the region except with Maldives and Sri Lanka. On the other hand Bangladesh, Maldives and Sri Lanka hold positive correlations with all the member states but one. India shares positive correlation with all the countries except Nepal and Sri Lanka. Despite two third of the correlations being positive, in the light of the presence of only one statistically significant positive correlation the symmetric pattern of output growth is ruled out across the countries in the region.

**Table 3.1: Correlation of Output Growth with Summary Statistics**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	0.3137	1.0000					
IND	**0.5747	0.2072	1.0000				
MDV	0.1081	0.1157	0.0284	1.0000			
NPL	*-0.3593	-0.2849	-0.2123	0.0044	1.0000		
PAK	0.1855	-0.0029	0.2163	-0.0012	-0.0300	1.0000	
LKA	0.0809	0.1515	-0.0517	0.1166	0.2882	0.0515	1.0000
Mean	5.58	6.64	6.59	6.48	4.33	4.37	5.70
Standard Deviation	0.84	2.52	2.17	7.62	1.68	1.89	3.67

Source: Author's calculation

### 3.1.2. Correlation of Inflation

Similar to many developing countries, the inflation in the region in general is high and the average inflation in last 27 years ranges between 5.91 percent in the case of Maldives to 9.61 percent in Sri Lanka as presented in table 3.2. Interestingly, the variability of inflation measured by its standard deviation is the highest in the case of Maldives at 5.82 followed by Sri Lanka at 5.05. The lowest deviations are noted for Bhutan and Bangladesh at 2.47 and 2.58 respectively. India's variability

lies somewhere in the middle at 3.12 with an average inflation rate of 7.6 percent. Similarly, the average inflation in Nepal and Pakistan is at above 8 percent level. Baring correlation between Nepal and Sri Lanka, all the inflation correlations are positive representing more than 95 percent of total correlations. Further, more than 50 percent correlations (11 out of 21) are statistically significant at 5 percent level while the correlation between Bangladesh and Pakistan is statistically significant at 10 percent level. India and Maldives share statistically significant correlation with all the countries except one: Sri Lanka and Bangladesh respectively. On the other hand Sri Lanka shares only one statistically significant correlation with Maldives followed by Bangladesh with two countries: India and Pakistan though with the latter at 10 percent level of significance. There is clear indication that the overall patterns of inflation in South Asia are symmetric and in particular among Bhutan, India, Nepal and Maldives in which all the correlations are statistically significant at 5 percent level. This can be partly explained by the fact that Bhutan and Nepal maintain fixed exchange rate system with India and their bilateral trade with India is also significant.

**Table 3.2: Correlation of Inflation with Summary Statistics**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	0.1546	1.0000					
IND	**0.4797	**0.5986	1.0000				
MDV	0.1797	**0.4758	**0.4869	1.0000			
NPL	0.0992	**0.4627	**0.5083	**0.4654	1.0000		
PAK	*0.3710	**0.4224	**0.6703	**0.3995	0.2510	1.0000	
LKA	0.1114	0.0250	0.2414	**0.4706	-0.1679	0.0848	1.0000
Mean	6.43	7.02	7.60	5.91	8.05	8.54	9.61
Standard Deviation	2.58	2.47	3.12	5.82	3.63	4.00	5.05

Source: Author's calculation

### 3.1.3 Correlation of Nominal Effective Exchange Rate (NEER)

One of the prime objectives of the monetary integration is to eliminate exchange rate fluctuations among participating countries. It is therefore important to analyze the patterns of movement of exchange rates. Similar to inflation, the correlation of nominal exchange rate is positive for all but the one between Maldives

and Pakistan as tabulated in Table 3. 3. Twelve out of 21 correlations are statistically significant accounting for 57 percent of the total correlations though three of them are significant at 10 percent level of significance. Sri Lanka is the country with the largest number of statistically significant positive correlations with the exception of correlation with Maldives. Maldives is the country with the only one statistically significant correlation with Bangladesh. Similarly Bangladesh shares statistically significant correlations with two countries: Maldives and Sri Lanka. Due to fixed exchange rate arrangements between Bhutan and India and Nepal and India, the correlation between Bhutan and India is 1 owing to equal parity between their currencies while it is 0.99 between Nepal and India. As a result, the measurement of correlations that India shares with the rest of the member states is also reflected in the correlations of Bhutan and Nepal with other member states. India also shares statistically significant positive correlation with Pakistan and Sri Lanka while with Bangladesh and Maldives the degree of correlations are though reasonably higher but they fall short of being statistically significant. By virtue of pegged exchange rate to US dollar, the exchange rate fluctuation of Maldivian rufiyaa is found to be the lowest in the region followed by Bangladesh taka which is also de facto pegged with US dollar. The Indian rupee and therefore the currencies of Bhutan and Nepal are the most volatile given that India maintains floating exchange rate with US dollar. In an average, Pakistan depreciated most in last two and half decades followed by India including Bhutan and Nepal and Sri Lanka.

**Table 3.3: Correlation of Nominal Exchange Rate**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	0.2475	1.0000					
IND	0.2474	**1.0000	1.0000				
MDV	**0.3939	0.3173	0.3173	1.0000			
NPL	0.2519	**0.9900	**0.9900	0.2891	1.0000		
PAK	0.0957	**0.4847	**0.4846	-0.0461	**0.4616	1.0000	
LKA	**0.4627	*0.3307	*0.3305	0.0235	*0.3553	*0.3485	1.0000
Mean	0.034	0.057	0.057	0.020	0.055	0.064	0.054
Standard Deviation	0.035	0.079	0.079	0.034	0.074	0.059	0.048

Source: Author's calculation

### 3.1.4 Correlation of Real Effective Exchange Rate (REER)

The true measure of exchange rate variations is given by REER that also takes into account the relative price levels of the most traded partners. According to Table 3.4 more than 87 percent (18 out of 21) of the total correlations of REER are positively correlated and among which more than 50 percent (11 out of 21) correlations are statistically significant. This shows that the region in general has symmetric patterns of real effective exchange rates. Bangladesh shares positive and statistically significant correlation with all the member states but Sri Lanka. On the other hand Sri Lanka has equal number of positive and negative correlations with no statistically significant correlation. Maldives has only one statistically significant correlation though all the correlations are positive. Remaining four countries: Bhutan, India, Nepal and Pakistan have four statistically significant positive correlations each. Further, India has positive correlations with all the countries while other three have one negative correlation each. *Sans* Sri Lanka, all the correlations in the region are positive with more than 78 percent statistically significant correlations (11 out of 14). The correlation of REER shows high level of symmetry among the countries in the region.

**Table 3.4: Correlation of Real Effective Exchange Rate**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	**0.3965	1.0000					
IND	**0.4804	**0.7548	1.0000				
MDV	**0.4230	0.1187	0.0003	1.0000			
NPL	**0.3922	**0.7790	**0.8115	0.1766	1.0000		
PAK	**0.5509	*0.3535	**0.4713	0.1492	**0.3988	1.0000	
LKA	0.2819	-0.0279	0.1473	0.2140	-0.0321	-0.0256	1.0000
Mean	0.011	-0.005	0.002	0.017	0.007	0.002	0.019
Standard Deviation	0.057	0.038	0.060	0.059	0.054	0.052	0.050

Source: Author's calculation

Alesina et al. (2002) based on their empirical studies shows that countries with greater co-movement of prices and output bear insignificant cost of giving up independence of their monetary policy. In addition, the symmetrical pattern of exchange rates would render the management of exchange rate less important in

addressing external imbalances. While there is higher synchronization of inflation and exchange rate in the region, patterns of output growth are not symmetrical. Further, simple correlation of macroeconomic variables provides only the general overview of the patterns of economy and has limitation in providing meaningful information beyond it. Hence the results of correlation shall be taken together with subsequent analysis.

## **3.2 PATTERNS OF TRADE**

Trade openness and intraregional trade are covered under this chapter. Under both counts, South Asia fares poorly in comparison to its peers.

### **3.2.1 Trade Openness**

The openness of an economy is measured by volume of its trade in comparison to its GDP. The trade openness is defined as the total export and import of goods and services as a percentage of the GDP. The general characteristics of economy largely explain the degree of trade openness of the countries in the region. The smaller countries are more open in comparison to their larger peers in view of the fact that former are more reliant on external trade to meet their domestic demands. Coupled with the fact that the size of the economy serves as the denominator of the ratio, the smaller countries generally tend to have higher degrees of openness. Maldives and Bhutan being the smallest economies in the region are similarly the most open economies in the region with trade openness index of 155 percent and 83 percent respectively in 2016 as presented in table 3.5. The trade openness for the next group of smaller countries: Afghanistan, Nepal and Sri Lanka are 56 percent, 49 percent and 51 percent respectively. These five countries in fact fit the definition of small and open economy in the economic literature. The trade openness index of the three largest economies of the region: Bangladesh, Pakistan and India are 38, 25 and 40 respectively. The trade openness of Pakistan and Sri Lanka has declined in the last three decades while that of India and Bangladesh has increased significantly. India transformed itself from a closed economy at the beginning of nineties with trade openness at 16 percent in 1990 to a more open economy by achieving the highest percentage of 56 in 2012.

**Table 3.5: Trade Openness**

	1990	2000	2010	2012	2013	2014	2015	2016
Afghanistan	N.A.	N.A.	54.97	44.66	56.07	52.34	55.80	55.92
Bangladesh	18.97	29.32	37.80	48.11	46.30	44.51	42.09	37.95
Bhutan	57.48	77.66	113.18	101.76	102.74	93.62	94.96	82.81
India	15.67	27.19	49.69	55.79	53.84	49.01	42.20	39.81
Maldives	168.08	N.A.	142.98	160.05	161.80	164.29	147.63	155.40
Nepal	32.19	55.71	45.98	43.66	48.15	52.26	53.10	48.88
Pakistan	38.91	28.13	32.87	32.81	33.33	30.90	27.65	25.14
Sri Lanka	68.24	88.64	46.36	51.49	49.26	50.25	49.55	50.52
SAARC	19.74	29.23	47.44	53.00	51.44	47.25	41.32	38.91
East Asia & Pacific	39.92	51.87	61.30	63.32	63.17	62.87	57.69	53.99
Sub-Sahara	49.97	68.63	62.15	64.23	61.15	59.91	54.62	52.58
Euro area	51.99	70.06	76.43	83.72	83.35	84.14	85.02	84.27
World	38.94	51.31	56.94	60.57	60.13	59.84	57.81	56.21

Source: WDI 2017 October; Note: N.A. stands for not available.

The trade openness of the region is 38.91 against the world's index of 56.21. The region's trade openness index has declined in recent years from the peak of 53 percent in 2011 and 2012 and so is for the world from its peak of 60.94 percent in 2008. South Asia is the least trade openness region in the world. By the measure of trade openness, South Asia is less likely to be an OCA.

### 3.2.2 Intraregional Trade

Intraregional trade in South Asia is governed by SAPTA, SAFTA and SATIS. SAPTA was signed in April 1993 and came into force from December 1995 with the objective of enhancing intraregional trade which was barely 2.7 percent in 1990. Similarly, SAFTA was signed in January 2004 and became operational from January 2006. The objective of SAFTA is to eliminate both tariff and non-tariff barriers to allow free movement of goods in the region and it was expected to come into full implementation within ten years of its operations. In this regard, Pakistan and India were required to fully implement it by 2012; Sri Lanka by 2013; and Bangladesh, Bhutan, Maldives and Nepal by 2015. Special meeting of SAFTA Committee of Experts held on 4 July 2015 followed by the third meeting of Working Group on Reduction in sensitive lists under SAFTA (Phase-III) held on 6 July in



Islamabad agreed on further trade liberalization and reduction in the sensitive lists of goods as shown in table 3.6.

**Table 3.6: Number of Sensitive Lists of Goods and Targeted Reduction**

Member States	Original Sensitive List	Sensitive List under Phase II	Target Reduction under Phase III	Target Sensitive List	Target Tariff
Afghanistan	1072	850	20%	235 by 2030	0 to 5% by 2030
Bangladesh	1233 (LDCs) 1241 (NLDCs)	987 (LDCs) 993 (NLDCs)	20%	450 by 2030	0 to 5% by 2030
Bhutan	150	156	Not Applicable	100 by 2020	0 to 5% by 2020
India	480 (LDCs) 868 (NLDCs)	25 (LDCs) 614 (NLDCs)	20% of NLDCs only	100 by 2020 (for NLDCs)	0 to 5% by 2020
Maldives	681	154	Not Applicable	100 by 2020	0 to 5% by 2020
Nepal	1257 (LDCs) 1295 (NLDCs)	998 (LDCs) 1036 (NLDCs)	20%	500 by 2030	0 to 5% by 2030
Pakistan	1169	936	20%	100 by 2030	0 to 5% by 2020
Sri Lanka	1042	837 (LDCs) 963 (NLDCs)	10%	To provide commitments after consultation with stakeholders	

Source: SAARC Secretariat

SAARC Agreement on Trade in Services (SATIS) was signed during the sixteenth SAARC summit held in Bhutan in April 2010. The agreement was subsequently ratified by all the member states and came into force from November 2012. The goal of the SATIS is to promote intraregional trade in services. During eleventh meeting of the Expert Group on SATIS held in Islamabad on 5 July 2015, all the members *sans* Pakistan were ready to table their final offer lists. It was then agreed that the final offer lists once received from Pakistan would be examined by the member countries and tabled in next round of Expert Group meeting.

As shown in Table 3.7, intraregional trade in 2016 is 5.80 percent of the total trade compared to barely 2.70 percent in 1990. In the absolute terms, it has declined from the peak of 51 billion US dollar in 2014 to 47 billion dollar in 2016 on the back of decline in region's overall trade from 971 billion dollar in 2014 to 806 billion dollar in 2016. Among SAARC countries, the largest share of intraregional trade is attributed to India with 42 percent followed by Bangladesh and Nepal with 15 percent and 13 percent respectively. The shares of Sri Lanka and Pakistan in intraregional trade are 11 percent and 10 percent respectively. Two smallest

countries in the region: Bhutan and Maldives also hold smallest share of intraregional trade with over 4 percent and less than 1 percent respectively. Intraregional trade as a criterion for monetary integration is crucial and South Asia fares very poorly in this regard. In fact, South Asia is the economic block with one of the lowest intraregional trade in the world. Going by trade integration as an important prerequisite, South Asia is far from being an OCA. Nevertheless, the endogeneity school of thoughts (Frankel and Rose, 1998) advocates in favor of greater monetary integration in achieving higher level of intraregional trade.

**Table 3.7: Intraregional Trade on Goods**

	In US\$ million								
	1990	2000	2010	2012	2013	2014	2015	2016	2016 (%) <sup>2</sup>
Afghanistan	0.088	0.152	0.929	1.272	1.234	1.784	1.898	1.870	4.0
Bangladesh	0.319	1.152	4.798	5.932	6.412	7.304	6.815	6.876	14.7
Bhutan	N.A.	0.159	1.019	1.317	1.491	1.548	2.150	2.036	4.4
India	0.657	2.297	13.218	17.565	18.974	23.172	20.723	19.690	42.1
Maldives	0.024	0.103	0.211	0.260	0.279	0.321	0.390	0.435	0.9
Nepal	0.095	0.896	3.923	4.617	4.738	5.590	4.479	6.002	12.8
Pakistan	0.353	0.696	4.712	5.404	5.748	5.856	5.203	4.765	10.2
Sri Lanka	0.256	0.897	3.472	4.672	4.326	5.174	5.532	5.070	10.9
Intraregional Trade	1.791	6.352	32.282	41.040	43.202	50.749	47.190	46.746	
Total Trade	66.227	142.25	711.13	955.44	964.40	971.22	838.85	806.52	
Intraregional Trade (%)	2.7	4.5	4.5	4.3	4.5	5.2	5.6	5.8	

Source: IMF Direction of Trade Statistics (DOTS) 2017

Note: 1. N.A. stands for not available; 2. Percentage share of member states' trade in total intraregional trade

The main contributor to the low intraregional trade is the lowest share of India's intraregional trade in its total international trade. It stands at just over 3 percent in 2016 as exhibited in Table 3.8 in spite of holding the largest share of the intraregional trade in the region. Like India, the two other largest economies in the region: Bangladesh and Pakistan also trade significantly less within the region at 10 percent and 7 percent respectively. Countries like Bhutan and Nepal trade significantly within the region, the respective intraregional trade being 93 percent and 70 percent. Similarly, Afghanistan, Maldives and Sri Lanka also trade moderately within the region at 26 percent, 19 percent and 17 percent respectively. Given that the three largest economies of the region together account for 67 percent of the intraregional trade and 94 percent of region's international trade but trade

significantly less within the region, the overall intraregional trade is consequently affected to remain at 5.8 percent in 2016.

**Table 3.8: Intraregional Trade as a Percentage of Total Trade on Goods**

	1990	2000	2010	2012	2013	2014	2015	2016
Afghanistan	14.46	23.09	16.57	18.94	13.77	21.94	22.79	26.08
Bangladesh	5.98	7.98	10.84	10.52	10.12	10.42	9.83	9.65
Bhutan	N.A.	68.24	80.38	86.37	88.43	89.93	88.84	93.10
India	1.57	2.48	2.30	2.23	2.42	2.98	3.15	3.19
Maldives	12.66	22.16	17.99	15.09	14.62	14.95	18.97	19.10
Nepal	15.80	39.05	65.01	66.60	64.33	65.43	61.24	69.92
Pakistan	2.72	3.55	7.98	7.88	8.34	8.10	7.87	7.06
Sri Lanka	5.65	7.58	17.30	18.02	14.86	17.18	22.24	17.31
Intraregional Trade	2.70	4.47	4.54	4.30	4.48	5.23	5.63	5.80

Source: Author's calculation

Note: N.A. stands for not available

However, the extent of the informal trade that exists between India and its neighbors undermines the true picture of the official intraregional trade. SAARC Report (2001/2, 2002) puts an estimate of intraregional trade for the year 1999 at 6.48 percent of the region's international trade - almost 50 percent higher than the official figure of 4.46 percent. Taneja (2001, 2002) makes an estimate that informal trade between Bangladesh and India is as big as their formal bilateral trade while it is nearly one third of the total official trade between Sri Lanka and India. Similarly, Taneja and Bimal (2017) estimate the unofficial trade between Pakistan and India to be 2.43 times the official figure of 2012-13. Muni (1992) estimates the informal trade between Nepal and India to be as high as eight to 10 times considering 1989 official trade figure. The unofficial trade between Nepal and India is likely to be significantly high due to very long open and porous border.

A World Bank study carried out by Wilson and Otsuki (2007) shows that if SAARC countries raise their capacity even halfway to the average of East Asia, the intraregional trade would increase by approximately 60 percent. Similarly, if South Asia and the rest of the world would raise the extent of trade facilitation halfway to the levels of East Asia, the region would benefit by as much as US\$ 36 billion. Even if the rest of the world is not changed, 87 per cent of the total gains is likely to

accrue to the region merely by its own efforts. The study further finds that the trade facilitation in service-sector infrastructure would produce the largest gains followed by improvements in air and maritime ports.

On both trade openness and intraregional trade fronts, South Asia fares poorly in comparison to its peers and it is suggestive of the fact that the region falls far short of what is needed to be an OCA on these counts.

### **3.3 MERCHANDISE CONCENTRATION INDEX**

Merchandise Concentration Index also known as Herfindahl-Hirschman Index (HHI) is a measure of the diversification of exports of a country. The lower index indicates more diversified or less concentrated economy in terms of the composition of exports. One of the key OCA criteria is to have well diversified economy so that the external shocks are less likely to affect the economy and therefore a less of the need for an independent exchange rate management to address the external balance. Table 3.9 provides the overview of HHI of SAARC countries along with comparisons with other regions from 1995 to 2016. Maldives has the highest average HHI in the region with 0.542 followed by Bangladesh, Bhutan and Afghanistan. The index in recent years is higher compared to period average particularly for Maldives, Bangladesh and Bhutan with HHI of 0.760, 0.406 and 0.331 respectively in 2016. On the other hand India has the lowest average HHI in the region with 0.145 followed by Nepal with 0.201. Pakistan and Sri Lanka also fare reasonably better with average index of 0.213 and .218 respectively. These four countries have shown improvements in recent years in lowering their indices compared to the period average by diversifying their exports. On the other hand, the higher index particularly for Maldives, Bhutan, Bangladesh and Afghanistan invites risk of being vulnerable to external shocks. Sri Lanka and Pakistan demonstrate consistency of index with the least variability while Maldives and Nepal demonstrate largest variability of index in the same period.

South Asia as a region fares well in HHI compared to other regions such as ASEAN, CEMAC, Sub-Saharan, WAEMU etc. Export of Euro Area is much diversified while the index of the world is also better than those of the developing regions. It alludes to the fact that there is a need for these regions to diversify their

export in order to catch up with the global average. A well-diversified region is less prone as well as better positioned to withstand external shocks and is better candidate for being an OCA.

**Table 3.9: Merchandise Concentration Index of Exports**

YEAR ECONOMY	Average (1995-2016)								
	1995	2000	2010	2012	2013	2014	2015	2016	
Afghanistan	0.340	0.360	0.299	0.279	0.260	0.293	0.356	0.319	0.306
Bangladesh	0.336	0.375	0.405	0.401	0.404	0.403	0.409	0.406	0.386
Bhutan	0.290	0.309	0.344	0.358	0.382	0.366	0.359	0.372	0.331
India	0.138	0.146	0.164	0.173	0.184	0.175	0.120	0.120	0.145
Maldives	0.345	0.282	0.518	0.763	0.800	0.758	0.781	0.769	0.542
Nepal	0.391	0.324	0.144	0.142	0.136	0.133	0.137	0.147	0.201
Pakistan	0.235	0.215	0.199	0.183	0.189	0.193	0.202	0.214	0.213
Sri Lanka	0.217	0.231	0.212	0.203	0.214	0.204	0.204	0.201	0.218
SAARC	0.127	0.132	0.140	0.146	0.157	0.148	0.109	0.110	0.129
ASEAN	0.124	0.182	0.127	0.116	0.121	0.119	0.118	0.114	0.142
Sub-Saharan Africa	0.211	0.340	0.424	0.428	0.421	0.400	0.314	0.262	0.351
CEMAC <sup>1</sup>	0.580	0.659	0.714	0.726	0.692	0.680	0.654	0.631	0.672
WAEMU <sup>2</sup>	0.240	0.225	0.247	0.269	0.242	0.270	0.293	0.284	0.248
Euro area	0.052	0.071	0.067	0.066	0.066	0.065	0.067	0.067	0.065
World	0.052	0.074	0.077	0.086	0.084	0.078	0.064	0.062	0.071

Source: UNCTAD

Notes: 1. CEMAC stands for Economic and Monetary Community of Central Africa;

2. WAEMU stands for West African Economic and Monetary Union

### 3.4 PATTERNS OF STRUCTURAL SHOCKS

Analysis of the patterns of shocks that the member countries are facing is the most widely used technique in assessing the suitability of countries for a monetary union. Given that the countries with common currency lose their autonomy over key policy tools such as exchange rate management and monetary policy, symmetry of shocks across the countries ensure the effectiveness of the uniform policy that the currency area adopts. On the other hand if the countries in the monetary union face different shocks one policy that is aimed for the whole area may not be effective in addressing country specific disturbances. Hence it is important to find out if the countries in the region face similar shocks. For this purpose, empirical analysis is

carried out using one variable, two variables, three variables and four variables to assess the symmetry of structural shocks that each country in the region faces. The period covered for the study is from 1990 to 2016 for 27 years unless mentioned otherwise. Since the data is converted into first difference and two lags are used, the total observations is reduced to 24 for which the value of r is 0.403 and 0.344 for 5 percent and 10 percent level of significance and are represented by signs \*\* and \* respectively.

### 3.4.1 Univariate Analysis

This is the simplest of all the empirical study because of the consideration of only one variable – output growth. The GDP growth is regressed upon its own two lags to capture cyclical dynamics of the output growth and output disturbances. The residuals or the error terms of the auto-regression represent the output disturbances. These disturbances of each country are correlated with other member countries to find out the patterns of symmetry.

**Table 3.10: Correlation of Output Disturbances**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	0.1411	1.0000					
IND	**0.5401	0.2296	1.0000				
MDV	0.0487	0.0289	-0.2032	1.0000			
NPL	-0.2316	*-0.3667	-0.1077	0.0856	1.0000		
PAK	0.2794	0.1820	*0.3449	0.1548	-0.1307	1.0000	
LKA	0.2329	0.0066	-0.0492	0.0478	0.2151	0.1330	1.0000

Source: Author's calculation

The result is exhibited in Table 3.10. Only one correlation between Bangladesh and India is found to be statistically significant at 5 percent level of significance while at 10 percent level of significance, two correlations between Nepal and Bhutan and India and Pakistan are found to be significant. Nepal shares largest number of negative correlations except with Maldives and Sri Lanka followed. India shares equal number of positive and negative correlations and both statistically significant positive correlations are related to India. All the remaining

five countries have one negative correlation each. Though more than 71 percent of the correlations are positive (15 out of 21 pairs), only two correlations are statistically significant indicating that the region doesn't share similar output shocks.

### 3.4.2 Bivariate Analysis

Bivariate SVAR is the most commonly used technique among the shock extraction methodology. The two key macroeconomic variables considered for this study are output growth and price level. GDP deflator is used to represent the price level. Two lags are used. Long run restrictions that supply shocks will have long run effects on both variables whereas the demand shocks will have long run effect on price level only are imposed through structural VAR system. Supply shocks correspond to output growth and demand shocks correspond to inflation.

Table 3.11 shows the pairwise correlations of supply shocks with two lags. Only 57 percent (12 out of 21) of the total correlations are positive. Nepal has the largest number of negative correlations (four out of six) except with India and Maldives whereas Pakistan has the largest number of positive correlations (five out of six) except with Nepal. The numbers of positive and negative supply shocks are equal for Bangladesh, Bhutan and Sri Lanka. India and Maldives have two negative correlations of supply shocks each. India shares negative correlations with Maldives and Sri Lanka. Only two correlations are statistically significant at 5 percent level of significance: between Bangladesh and India and Pakistan and Sri Lanka. It points to the fact that the region is subject to asymmetric supply shocks.

**Table 3.11: Correlation of Supply Shocks**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	-0.0878	1.0000					
IND	**0.4547	0.2003	1.0000				
MDV	-0.0866	0.1121	-0.1264	1.0000			
NPL	-0.1563	-0.1382	0.2192	0.0457	1.0000		
PAK	0.0916	0.2044	0.0676	0.2853	-0.2513	1.0000	
LKA	0.0056	-0.0356	-0.1682	0.0542	-0.1695	**0.4238	1.0000

Source: Author's calculation

Similarly Table 3.12 shows the correlation of demand shocks for each pair of countries in the region. 76 percent of the total correlation of demand shocks is positive (16 out of 21) out of which four correlations are statistically significant at 5 percent level. They include India's correlations with Bangladesh and Sri Lanka; between Bangladesh and Bhutan and between Maldives and Pakistan. Similarly the correlation between Nepal and Sri Lanka is also statistically significant at 10 percent level but in a negative direction. All the correlations with India are positive with two being significant as indicated earlier. Bangladesh, Bhutan and Pakistan share one negative correlation each while Maldives and Sri Lanka share negative correlations with two countries each. Nepal shares even number of positive and negative correlations.

**Table: 3.12: Correlation of Demand Shocks**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	**0.4848	1.0000					
IND	**0.4645	0.1121	1.0000				
MDV	0.1860	-0.1477	0.1943	1.0000			
NPL	-0.0343	0.0664	0.0423	-0.0264	1.0000		
PAK	0.2643	0.0557	0.2163	**0.4333	0.2492	1.0000	
LKA	0.2369	0.1728	**0.5198	0.0420	*-0.3498	-0.1164	1.0000

Source: Author's calculation

Despite having relatively larger positive correlations, in view of the insufficient number of statistically significant correlations the demand shocks faced by the countries in the region are also asymmetrical. Comparing between supply shocks and demand shocks, the symmetry of former is considered to be the more important criterion for a currency union in the light of being exogenous in its nature while demand shocks are considered to be the outcome of the policy measures. Once the countries adopt common currency, they are subject to uniform policy across the monetary area. Bayoumi & Mauro (1999) confer that aggregate supply disturbances are more pertinent compared to aggregate demand disturbance given that the former is more related to private sector behavior than the effects of macroeconomic policy.



The correlations of shocks alone don't provide meaningful insights if they are not analyzed in conjunction with the relative importance of shocks in explaining the fluctuations of variables. Variance decomposition of shocks comes handy in determining the relative contribution of shocks in the fluctuations of macroeconomic variables. If the key macroeconomic variables of the member countries are affected by similar shocks to similar extent, the application of uniform policy would become tenable upholding the case for monetary integration. As presented in table 3.13, the supply shocks have been dominant in explaining output growth fluctuations both in the short run and in the long run for all the countries in the region though the extent of impact changes over time in some countries. In the first year, more than 90 percent fluctuations in output growth of India (96 percent) and Maldives (92 percent) have been explained by supply shocks compared to 75 percent in Bhutan and 78 percent in Sri Lanka. Similarly such contributions are 86 percent, 84 percent and 83 percent respectively for Bangladesh, Nepal and Pakistan.

**Table 3.13: Forecast Error Variance Decomposition of GDP Growth and Inflation**

Countries	GDP						Inflation					
	Supply Shock			Demand Shock			Supply Shock			Demand Shock		
	1	5	10	1	5	10	1	5	10	1	5	10
BGD	85.61	93.67	94.15	14.39	6.33	5.85	19.46	38.94	45.34	80.54	61.06	54.66
BTN	74.75	69.89	70.41	25.25	30.11	29.59	68.43	77.18	77.27	31.57	22.82	22.73
IND	95.78	80.11	79.78	4.22	19.89	20.22	4.14	2.52	2.28	95.86	97.48	97.72
MDV	93.51	90.63	90.64	6.49	9.37	9.36	17.66	20.72	20.33	82.34	79.28	79.67
NPL	83.81	73.86	73.69	16.19	26.14	26.31	20.11	31.29	31.29	79.89	68.71	68.71
PAK	82.85	76.91	76.69	17.15	23.09	23.31	50.51	42.99	42.86	49.49	57.01	57.14
LKA	78.24	69.25	69.14	21.76	30.75	30.86	0.88	20.10	20.88	99.12	79.90	79.12

Source: Author's calculation

In the long run, demand shocks explain around 30 percent of fluctuations in output growth in Sri Lanka and Bhutan while it is barely 6 percent in the case of Bangladesh and 9 percent in the case of Maldives. For the other four countries the

demand shocks explain output fluctuations from one fifth to one fourth. Supply shocks contribute highest to the fluctuations of India's output (96 percent) in the short run while in the medium to long run it is Bangladesh where the supply shocks contribute most to the output fluctuations (94 percent). On the other hand, the contribution of demand shocks in the output fluctuations is the highest in the case of Bhutan with 25 percent while in the medium to long run it is Bhutan and Sri Lanka with around 30 percent.

Similarly, the changes in the inflation is largely explained by demand shocks both in the short run as well as in the long run in India, Nepal and Sri Lanka though the effects of supply shocks tend to increase from one fifth to one third in the medium to long run in Nepal and from less than 1 percent to above 20 percent in the medium to long run in Sri Lanka. The effects of demand shocks in the variations of inflation in Bangladesh is higher than 80 percent in the first year but decreases over medium to long run to 55 percent. In the case of Maldives, 80 percent of inflation fluctuation is explained by demand shocks in all time horizons. In the case of Pakistan, the impact of both shocks is balanced in the first year but in the medium to long run the weightage moves in favor of demand shocks to 57 percent. Interestingly, Bhutan is the only country in the region whose fluctuations in inflation is explained more by supply shocks than demand shocks in all time periods. Proportion of supply shocks increases from 68 percent to 77 percent going from short run to medium and long run. Demand shocks have the highest impact on the changes in inflation in Sri Lanka with 99 percent followed by India with 96 percent in the short run though in the medium to long run the highest impact would in India with 98 percent.

In general, the relative contribution of shocks in explaining output fluctuations is more in sync than in explaining inflation variations. Supply shocks are found to be more important in explaining output fluctuations of all the countries in all time horizons. On the other hand, supply shocks are found to be more important than demand shocks in explaining variations in inflation of Bhutan for all periods. In the case of Pakistan, the contribution of supply shocks and demand shocks are found to be evenly balanced in the short run whereas in the case of Bangladesh the relative contribution of supply shocks becomes significant in

medium to the long run. Barring these specific cases, the demand shocks in general are found to be largely explaining the movement in price levels. In other words, the sources of output fluctuations and price level variations are by and large similar across the countries in the region.

The size of disturbances and the speed of adjustments are other important measures to evaluate the suitability of common currency. The larger the size of disturbances the larger would be the disruption in the economy. Similarly, the speed of adjustment will show how fast the macroeconomic variables will return to the equilibrium state. South Asia fares well in both counts compared to other regions of the world including Western Europe as depicted in table 3.14. For supply shocks, the size of disturbances of SAARC is the lowest in comparison to the other regions though the periods considered are different. Speed of adjustments to supply shocks is faster for SAARC compared to both Western Europe and Americas but it lags behind East Asia. In the case of demand shocks, the size of disturbances is slightly higher than Western Europe but lower than both East Asia and the Americas. The speed of adjustments to demand shocks is faster for SAARC than Western Europe but slower than East Asia and the Americas. Overall SAARC's performance under these two criteria is relatively better than other regions.

**Table 3.14: Size of Disturbances and Speed of Adjustments**

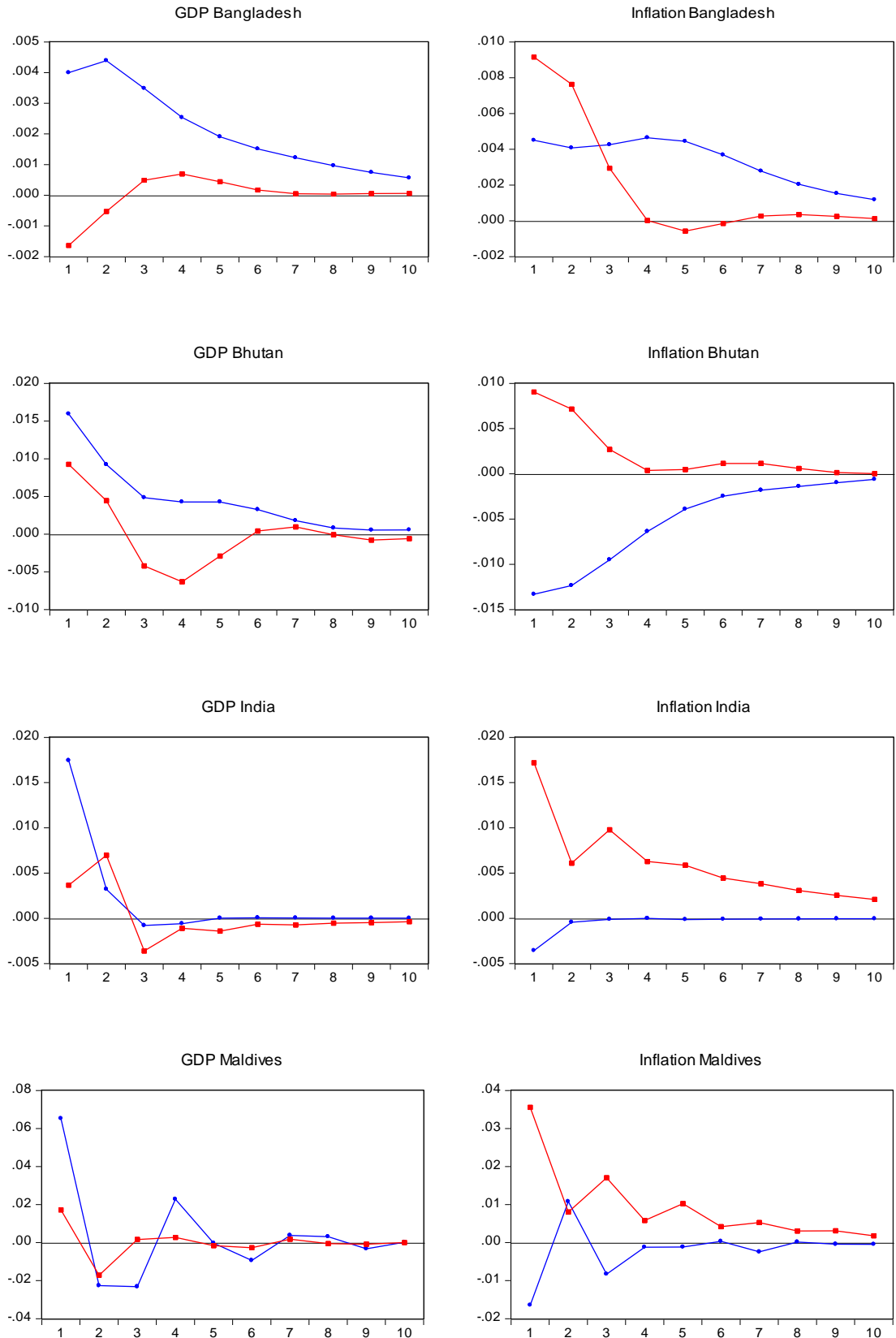
	Supply Shocks		Demand Shocks	
	Size	Speed of Adjustment	Size	Speed of Adjustment
Bangladesh	0.023	0.369	0.008	0.725
Bhutan	0.047	0.541	0.018	1.285
India	0.019	1.063	0.021	0.438
Maldives	0.037	1.141	0.053	0.438
Nepal	0.012	1.063	0.019	0.905
Pakistan	0.024	0.880	0.039	0.671
Sri Lanka	0.040	0.646	0.023	0.487
SAARC Average	0.029	0.815	0.026	0.716
Western Europe <sup>1</sup>	0.030	0.684	0.022	0.417
East Asia <sup>1</sup>	0.032	1.162	0.044	0.929
The Americas <sup>1</sup>	0.062	0.801	0.145	0.820

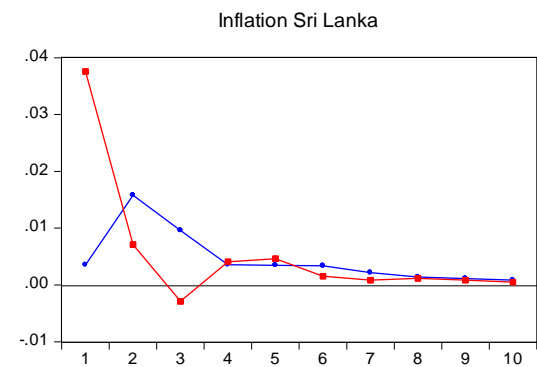
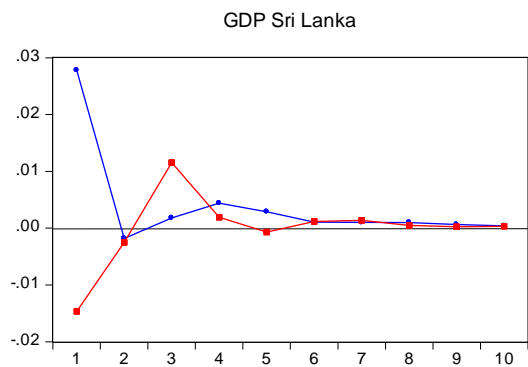
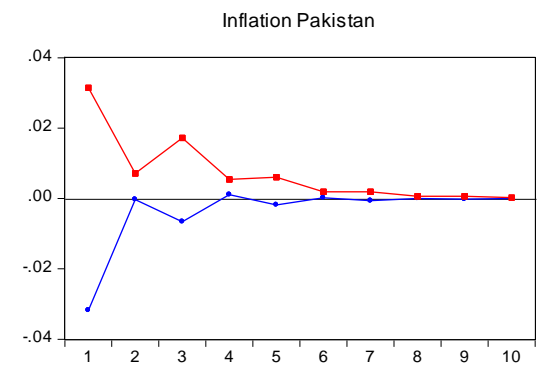
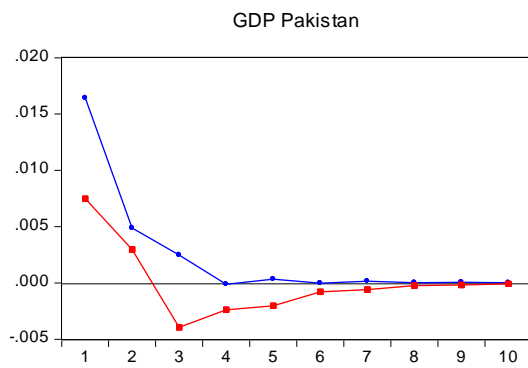
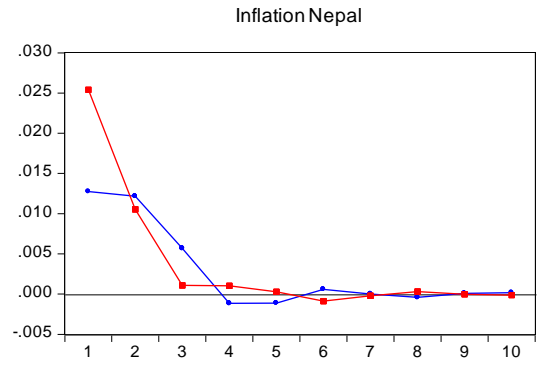
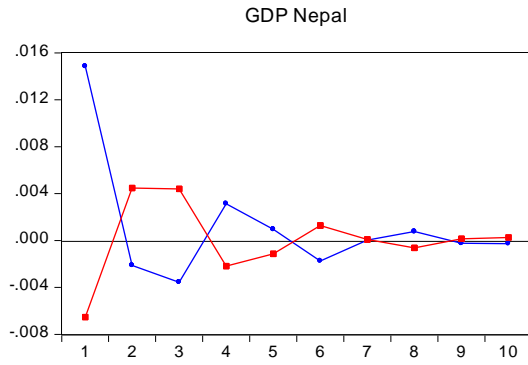
Source: Author's calculation; 1. Figures for Western Europe, East Asia and The Americas are taken from Bayoumi & Eichengreen (1994)

Impulse response function (IRF) provides the analysis of the responses of macroeconomic variables to the shocks as exhibited in figure 3.1. Similarity of impulse response function of key variables to specific shocks across different economies in the region would provide greater credibility to the use of uniform policy, therefore the basis for greater monetary integration. The analysis of the IRF shows varying patterns of responses of output growth to supply shocks and demand shocks across different economies. Bangladesh and Bhutan share similar patterns of output growth response to supply shocks from the second year though in varying degrees. Similarly Pakistan shares similar patterns of output growth responses to supply shocks but with one year lag vis-à-vis India. Likewise Nepal shares similar patterns with Maldives but with twice the intensity. The closer analysis reveals that output growth response of Sri Lanka is somewhat similar to India but with one year lead and with slightly different degrees. The output growth response to demand shocks in the short run are quite different across the economies before converging in the medium to long run given over-identification conditions that the demand shocks will have no long run impact on the output. The output growth response converges mostly between third year and fifth year. Among the output growth response to demand shocks, the only similarity observed is between Bhutan and Pakistan.

The patterns of inflation responses to supply shocks are also dissimilar across the economies in the region. The responses are mostly positive for Bangladesh, Nepal and Sri Lanka but are largely negative in the case of Bhutan, India and Pakistan. Maldives have both negative and positive responses in the first three years followed by the period of no response. On the other hand, inflation response to demand shocks shows some similar patterns in the sub-groups. Bangladesh, Bhutan and Nepal seem to share similar patterns though the first two are more in sync both in degrees and periods while Nepal responds with higher degrees and with one year lead. Such patterns are also similar between Maldives and Pakistan along with India though the latter responds with varying degrees compared to the first two economies. Sri Lanka shows somewhat different patterns from the rest of the member countries.

### Figures 3.1: Impulse Response Function





—●— Supply Shocks    —■— Demand Shocks

X axis represents years and Y axis represents impulse response to each unit of shocks

Overall, there are no specific and uniform patterns of responses of macroeconomic variables to supply shocks and demand shocks. This clearly points to the general observation that the key variables of economies in SAARC region behave and respond very differently from each other to the different shocks and therefore the uniform policy that the monetary union will impose may not be suitable for the region as a whole to address issues of specific economies.

### 3.4.3 Multivariate SVAR with three variables: Output, REER and Inflation

The empirical study using structural VAR methodology has been extended by considering three variables: GDP growth, Real Effective Exchange Rate (REER) and Inflation. The corresponding shocks are referred to as supply shocks, exchange rate shocks and demand shocks. For preserving space, the analysis has been limited to only relevant and important points.

Table 3.15 depicts the pairwise correlations of supply shocks corresponding to output growth with two lags. Two third of the correlations (14 out of 21) are positive while only two of them are statistically significant, both relating to Bangladesh one with India and another with Pakistan. Bangladesh shares positive correlation with all the countries in the region. On the other hand, Maldives share largest number of negative correlations (four out of six). Rest of five countries shares two negative correlations each. India shares negative correlation with Maldives and Sri Lanka.

**Table 3.15: Correlation of Supply Shocks**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	0.0809	1.0000					
IND	**0.4062	0.1569	1.0000				
MDV	0.1388	-0.1176	-0.2248	1.0000			
NPL	0.1360	-0.2767	0.1330	0.1962	1.0000		
PAK	**0.4898	0.2081	0.2198	-0.2214	-0.3092	1.0000	
LKA	0.1896	0.1969	-0.0211	-0.0149	0.2095	0.1811	1.0000

Source: Author's calculation

Table 3.16 exhibits pairwise correlation of exchange rate shocks corresponding to REER with two lags. Half of the correlations (11 out of 21) are positive with only one statistically significant correlation between India and Nepal. Bhutan and India have the largest number of negative correlations with four each. Pakistan and Sri Lanka have even number of positive and negative correlations. Remaining four countries have two negative correlations each. It is interesting to note that though Bhutan and India maintain fixed exchange rate with parity, the correlation of exchange rate shock is negative. India shares positive correlations with Bangladesh and Nepal only.

**Table 3.16: Correlation of Exchange Rate Shocks**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	-0.1737	1.0000					
IND	0.0596	-0.1232	1.0000				
MDV	0.1681	0.2686	-0.0714	1.0000			
NPL	-0.2914	0.2506	**0.5625	0.0572	1.0000		
PAK	0.1692	-0.3032	-0.0558	-0.2637	0.1605	1.0000	
LKA	0.1784	-0.0027	-0.0093	0.3277	-0.0241	0.0428	1.0000

Source: Author's calculation

Table 3.17 shows pairwise correlation of demand shocks with two lags corresponding to price levels. More than 85 percent of the total correlations are positive out of which four are statistically significant. The three correlations that are negative are all related to Nepal with Bhutan, Pakistan and Sri Lanka. The correlations of the other three countries are all positive. Bangladesh, Maldives and Pakistan have two statistically significant positive correlations each though the one between Pakistan and India is statistically significant at 10 percent level of significance. Despite higher positive correlations, only few are statistically significant. Similar to bivariate analysis, the multivariate analysis with three variables also confirms to the previous observation that the structural shocks that the economies in the region are facing are asymmetrical.



**Table 3.17: Correlation of Demand Shocks**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	**0.5744	1.0000					
IND	0.0675	0.0864	1.0000				
MDV	**0.5689	0.2602	0.1249	1.0000			
NPL	0.0859	-0.0994	0.1313	0.1508	1.0000		
PAK	0.2831	0.2596	*0.3878	**0.6354	-0.0714	1.0000	
LKA	0.0542	0.1652	0.1446	0.1694	-0.1384	0.2035	1.0000

Source: Author's calculation

The size of supply shocks is moderate while that of exchange rate shocks is larger as shown in table 3.18. The size of demand shock is small due to negative values corresponding to four countries. The speed of economic adjustments to supply shocks and exchange rate shocks are greater while it is moderate to demand shocks.

**Table 3.18: Size of Disturbances and Speed of Adjustments of Shocks**

	Supply Shock		Exchange Rate Shock		Demand Shock	
	Size	Speed of Adjustment	Size	Speed of Adjustment	Size	Speed of Adjustment
Bangladesh	0.038	0.173	0.068	0.663	0.012	0.100
Bhutan	0.031	0.503	0.025	0.762	0.016	0.599
India	0.020	0.945	0.043	1.126	0.016	0.586
Maldives	0.038	1.216	0.067	0.727	-0.014	0.160
Nepal	0.011	0.508	0.058	0.765	-0.002	0.526
Pakistan	0.026	0.452	0.056	0.852	-0.003	0.417
Sri Lanka	0.032	1.072	0.040	0.753	-0.010	1.020
SAARC Average	0.028	0.696	0.051	0.807	0.002	0.487

Source: Author's calculation

Analysis of the variance decomposition of shocks as shown in table 3.19 indicates that the supply shocks are important in explaining the business cycles of four countries: Bangladesh, India, Maldives and Sri Lanka. On the other hand, demand shocks contribute more to the fluctuation in output growth of Bhutan, Nepal and Pakistan. The exchange rate shocks are found to be important only in the short run for the changes in Bangladesh output. Similarly, the exchange rate shocks are found to be more significant in explaining the variations in REER of India and Nepal and to some extent Bangladesh and Maldives as well. In the case of Sri Lanka

**Table 3.19: Forecast Error Variance Decomposition of Shocks**

	Supply Shocks			Exchange Rate Shocks			Demand Shocks		
	1	5	10	1	5	10	1	5	10
<b>GDP</b>									
Bangladesh	49.21	70.86	79.02	46.73	23.92	17.33	4.06	5.22	3.65
Bhutan	20.60	34.02	33.86	7.39	11.66	12.07	72.02	54.32	54.07
India	88.76	74.28	69.94	2.44	6.18	6.50	8.81	19.54	23.56
Maldives	92.16	80.30	80.42	7.84	19.62	19.49	0.01	0.08	0.09
Nepal	31.23	21.18	20.50	3.71	14.34	14.05	65.07	64.48	65.44
Pakistan	14.62	28.15	27.82	0.56	5.50	5.76	84.82	66.36	66.42
Sri Lanka	95.87	84.95	84.83	4.11	5.87	5.89	0.01	9.18	9.28
<b>Exchange Rate</b>									
Bangladesh	27.86	27.36	32.73	68.05	53.09	49.20	4.09	19.54	18.07
Bhutan	67.73	56.10	55.88	31.17	35.34	35.56	1.09	8.57	8.56
India	12.10	15.24	15.52	86.23	80.29	79.71	1.67	4.48	4.77
Maldives	11.70	16.40	16.69	58.37	50.76	50.72	29.93	32.84	32.59
Nepal	0.34	1.10	1.14	98.29	95.58	95.32	1.37	3.32	3.54
Pakistan	42.32	41.12	41.02	39.18	39.04	38.99	18.49	19.84	19.99
Sri Lanka	8.84	14.62	14.63	55.79	41.97	41.97	35.37	43.41	43.41
<b>CPI</b>									
Bangladesh	11.29	19.35	23.02	13.15	15.14	14.62	75.55	65.51	62.35
Bhutan	19.83	36.91	36.83	65.63	22.74	22.90	14.54	40.35	40.27
India	4.13	13.15	13.59	1.94	9.16	11.79	93.93	77.69	74.63
Maldives	7.72	8.62	8.74	72.08	52.50	52.38	20.20	38.88	38.88
Nepal	45.08	40.51	40.17	16.32	25.95	26.68	38.60	33.54	33.15
Pakistan	30.68	34.31	34.02	62.28	22.65	22.84	7.05	43.03	43.14
Sri Lanka	5.45	6.78	6.80	68.57	40.76	40.74	25.98	52.46	52.46

Source: Author's calculation

though the exchange rate shocks are more important in the short run, both exchange rate shocks and demand shocks have similar impact on REER in the medium to long run. For Pakistan, the variation in REER is evenly contributed by supply shocks and exchange rate shocks. Supply shocks have the central role in explaining REER variation in the case of Bhutan. Similarly, the changes in the price levels are explained by demand shocks in Bangladesh and India; by exchange rate shocks in Maldives; and by supply shocks in Nepal. In the short run, exchange rate shocks explain most of the changes in the price levels in Bhutan, Pakistan and Sri Lanka but they give in to demand shocks in the medium to long run. In the case of Maldives and Nepal, the explanatory power of demand shocks increases in the medium to long

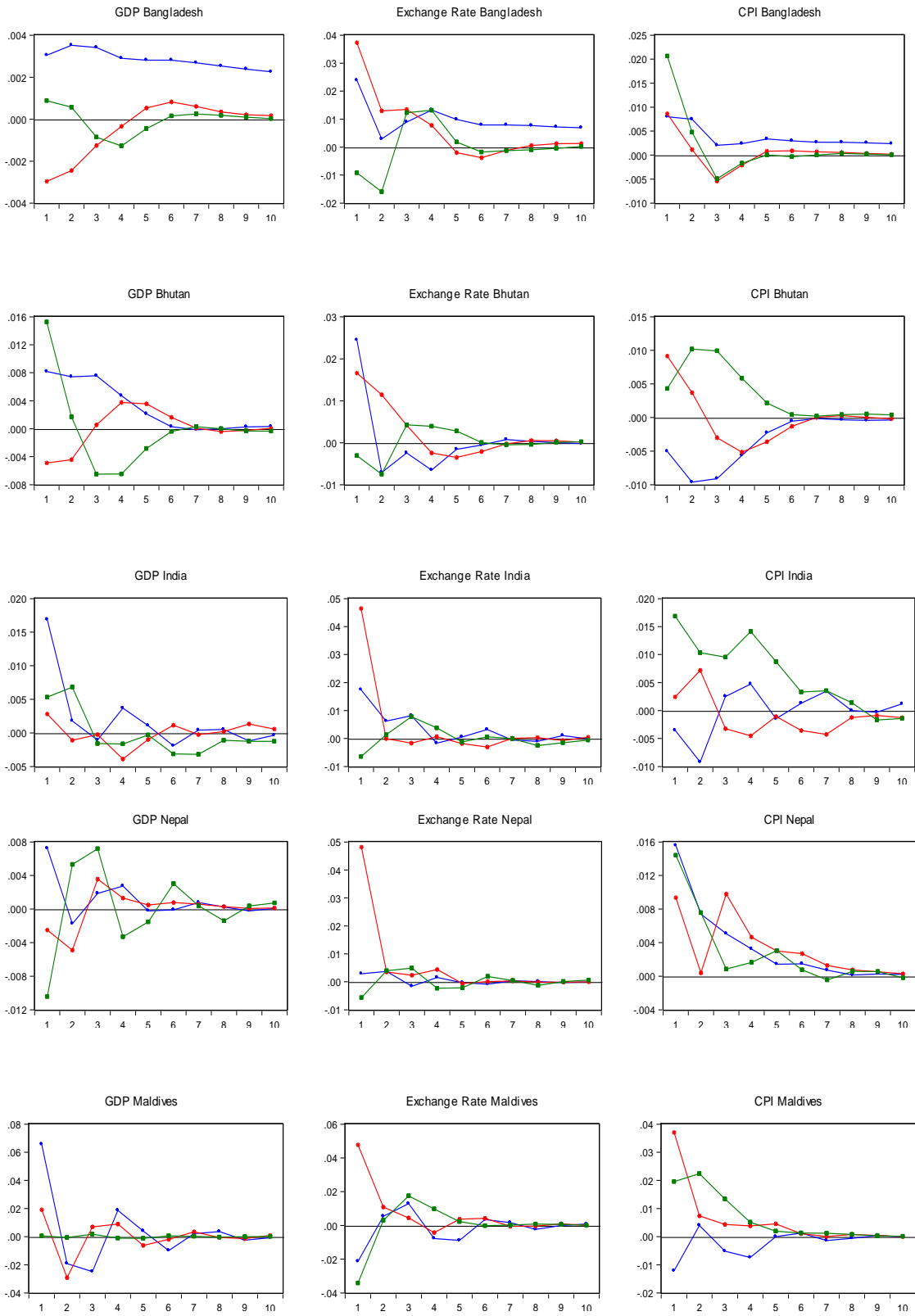
run. The foregoing analysis shows that the explanatory power of different structural shocks to the variations in the key macroeconomic variables vary across member states.

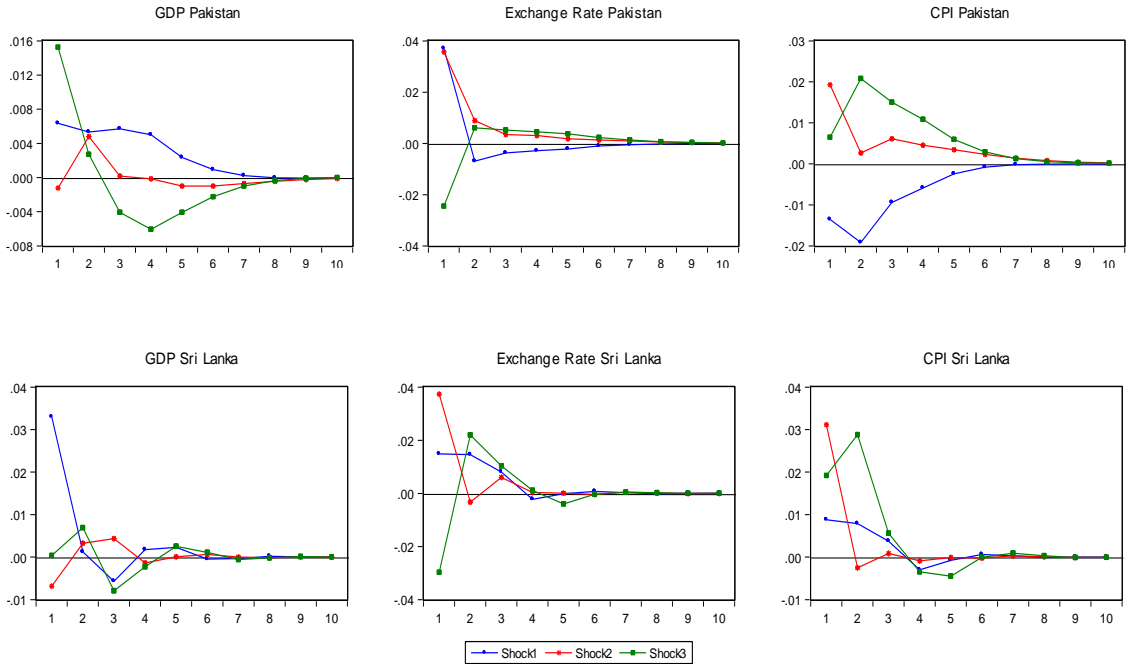
Figure 3.2 shows the IRF of three macroeconomic variables to one unit of each structural shock. The analysis of IRF is done in conjunction with the insights derived from the variance decomposition of shocks in the preceding paragraphs. The fluctuations in output growths are largely explained by supply shocks in Bangladesh (though exchange rate shocks is equally important in the short run), India, Maldives and Sri Lanka. However, Bangladesh demonstrates completely different adjustment process from the rest of the other three countries. Among those three countries, the patterns of output growth adjustment for India and Sri Lanka are more similar than Maldives. However the cyclical patterns of IRF signals some forms of resemblance in all the three countries.

For Bhutan, Nepal and Pakistan, the variance decomposition analysis exhibited demand shocks to be more important in explaining fluctuations in output growth. IRF shows that the response of output fluctuations to demand shocks is quite similar between Bhutan and Pakistan. In the short run (up to initial three years) the patterns of response of output growth to demand shocks of these two countries resemble with the output responses of India, Maldives and Sri Lanka to supply shocks. Nepal on the other hand shows completely different patterns of output growth adjustment to demand shocks. Thus, the response of output growth to the key structural shocks varies across the economies though some level of symmetric patterns can be observed among few sub-groups.

The variation in REER of Bangladesh, India, Maldives, Nepal and Sri Lanka are largely explained by exchange rate shocks though in varying degrees. There is some similarity between the patterns of IRF of India and Nepal while that of Bangladesh is different from the rest. Similarly, IRF for Maldives and Sri Lanka are also different from the rest. The variation in REER of Bhutan and Pakistan are largely explained by supply shocks though the patterns of REER adjustments to supply shocks are quite divergent from third year.

**Figure 3.2: Impulse Response Function**





X axis represents years and Y axis represents impulse response to each unit of shocks

Similarly, the changes in price levels of Bangladesh and India are explained by demand shocks in all time periods but the pattern of IRF of these two countries to demand shocks are very different. The pattern of IRF to exchange rate shocks in Bhutan, Maldives, Pakistan and Sri Lanka where exchange rate shocks are more important in explaining changes in the price level, are different in scale, period and direction. Unlike other countries, supply shocks are the main contributors to the fluctuation in the price levels in Nepal and they respond very differently to supply shocks while comparing with other countries.

The analysis of the patterns of IRF shows that key macroeconomic variables of different economies in South Asia respond differently to different shocks as a result of which they require different policy measures to fend off various shocks. It is unlikely that the region would make an OCA without bearing significant cost of foregoing independence over exchange rate management and macroeconomic policies.

#### **3.4.4 Multivariate SVAR with Four variables: Output, REER, Inflation and M2**

The final studies on patterns of shocks to examine whether South Asia constitutes an OCA is carried out by adding forth variable - money supply (M2) to the previous study. In this study, the analysis has been limited to the evaluation of the symmetry of shocks and the variance decomposition of the shocks. The analysis will provide adequate insights as far as the key objective of the study is concerned. The structural shocks corresponding to GDP, REER, Inflation and M2 are termed as supply shocks, exchange rate shocks, demand shocks and nominal shocks respectively for the purpose of our analysis. Like previous studies, two lags are used for structural VAR analysis.

Table 3.20 reflects the correlations of supply shocks with two lags. 62 percent of the total correlations (13 out of 21) is positively correlated. Only one correlation between Bangladesh and Pakistan is statistically significant. Bangladesh and Sri Lanka have the largest number of positive correlations (five out of six) while Maldives has the largest number of negative correlations (five out of six). India shares negative correlations with Maldives and Nepal. Presence of only one

statistically significant correlation proves that the region is subject to asymmetric supply shocks.

**Table 3.20: Correlation of Supply Shocks**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	0.0931	1.0000					
IND	0.2925	0.0837	1.0000				
MDV	-0.0461	-0.0366	-0.0977	1.0000			
NPL	0.0391	-0.0930	-0.0457	0.2751	1.0000		
PAK	**0.5826	0.1264	0.1824	-0.2863	-0.1095	1.0000	
LKA	0.1628	0.0969	0.0172	-0.1818	0.1574	0.3164	1.0000

Source: Author's calculation

Table 3.21 shows correlations of exchange rate shocks. Only 57 percent of the total correlations (12 out of 21) are positive. Further two correlations that are statistically significant are between Bhutan and Pakistan and India and Nepal of which the former is negatively correlated. Nepal and Sri Lanka share the largest number of positive correlations (five out of six) while Bangladesh shares the largest number of negative correlations (four out of six). India shares negative correlation with two countries: Maldives and Pakistan. It shows that the region is subject to asymmetric exchange rate shocks.

**Table 3.21: Correlation of Exchange Rate Shocks**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	-0.1365	1.0000					
IND	-0.0221	-0.0570	1.0000				
MDV	0.2185	0.0160	-0.0435	1.0000			
NPL	-0.2353	0.3024	**0.4228	0.2585	1.0000		
PAK	-0.0215	**0.4132	-0.0639	0.0468	0.1867	1.0000	
LKA	0.0286	0.1234	0.0102	0.2181	0.2074	-0.2353	1.0000

Source: Author's calculation

Table 3.22 depicts the correlations of demand shocks with two lags. More than 85 percent of the correlations are positive (18 out of 21) of which only three correlations are statistically significant. These correlations are between Bangladesh

and Bhutan; Bangladesh and Maldives; and India and Pakistan. All the correlations of Bangladesh, India and Sri Lanka are positive. On the other hand, it is with Bhutan that other three countries: Maldives, Nepal and Pakistan share negative correlations. In the absence of sufficient number of statistically significant correlations, the shocks are found to be asymmetric across the economies despite having large number of positive correlations.

**Table 3.22: Correlation of Demand Shocks**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	**0.4561	1.0000					
IND	0.0175	0.1295	1.0000				
MDV	*0.3717	-0.0354	0.0838	1.0000			
NPL	0.1149	-0.0614	0.1874	0.3072	1.0000		
PAK	0.0441	-0.1312	**0.4766	0.2634	0.0429	1.0000	
LKA	0.1979	0.1895	0.0282	0.0770	0.0313	0.2193	1.0000

Source: Author's calculation

Table 3.23 demonstrates the correlations of nominal shocks with two lags. Only 62 percent of the total correlations are positive. Two statistically significant correlations are both related to Bangladesh - with Bhutan and Sri Lanka. The correlation with Bhutan is negative. Bangladesh also shares the largest number of negative correlations (five out of six) and the only positive correlation is with Sri Lanka. Maldives and Nepal share the largest number of positive correlations (five out of six). India shares negative correlation with Bangladesh and Sri Lanka.

**Table 3.23: Correlation of Nominal Shocks**

	BGD	BTN	IND	MDV	NPL	PAK	LKA
BGD	1.0000						
BTN	** -0.6275	1.0000					
IND	-0.1256	0.2469	1.0000				
MDV	-0.2926	0.0689	0.1356	1.0000			
NPL	-0.0504	0.1036	0.1547	0.1161	1.0000		
PAK	-0.1199	0.1289	0.1038	0.2676	0.1053	1.0000	
LKA	**0.5333	-0.3004	-0.2562	0.1381	0.2914	-0.0655	1.0000

Source: Author's calculation



The analysis of the correlations of the four structural shocks indicates that the region is not an Optimum Currency Area given that they are subject to asymmetric shocks and thus adopting a uniform policy in the region would not be able to address country specific shocks. The cost of forming a monetary union with a single currency is likely to outweigh the benefit that comes with it in the event of shocks.

Table 3.24 exhibits variance decomposition of shocks useful in assessing the relative importance of shocks in explaining the fluctuations of important macroeconomic variables. Output fluctuations are mostly caused by supply shocks in the case of India, Maldives and Sri Lanka in all time horizons. Whereas in the case of Bhutan, Nepal and Pakistan, it is the demand shocks that cause output fluctuations. In the case of Bangladesh, exchange rate shocks contribute more in the short run but in the medium to long run, it is the supply shocks that explain mostly the fluctuations in the output growth. Similarly in the case of Sri Lanka, nominal shocks are equally important in influencing fluctuations in output growth.

For explaining variation in REER, the exchange rate shocks are crucial for India, Maldives and Nepal in all the time horizons. Though exchange rate shocks explain most of the variation in REER in Bangladesh and Sri Lanka in the short run, supply shocks and demand shocks respectively become more important in the medium to long run. For Bhutan and Pakistan supply shocks are more important in affecting REER in all time horizons though exchange rate shocks are also significant in the medium to long run especially in the case of Pakistan.

For fluctuations in the price levels, demand shocks play important roles in all time periods for Bangladesh and India. Similarly demand shocks contribute more in price fluctuations in the medium to long run for Bhutan, Pakistan and Sri Lanka. For Nepal, supply shocks are important. Exchange rate shocks are important in explaining price variations in Bhutan, Pakistan and Sri Lanka in the short run and in Maldives in both short run and long run while nominal shocks are important for Maldives in the medium term.

**Table 3.24: Forecast Error Variance Decomposition of Shocks**

	Supply Shock			Exchange Rate Shock			Demand Shock			Nominal Shock		
	1	5	10	1	5	10	1	5	10	1	5	10
	GDP											
Bangladesh	40.21	62.40	79.04	50.44	28.56	15.90	5.96	6.22	3.50	3.38	2.82	1.56
Bhutan	17.47	33.66	33.52	3.32	8.69	9.04	71.92	52.43	52.25	7.29	5.22	5.20
India	87.88	70.22	64.32	4.25	10.88	10.87	4.08	12.43	18.31	3.79	6.46	6.51
Maldives	65.26	60.16	60.07	8.89	14.72	15.03	12.27	11.02	10.89	13.59	14.10	14.02
Nepal	8.58	7.67	7.77	16.29	13.91	14.12	70.67	65.14	65.27	4.45	13.28	12.84
Pakistan	26.74	25.98	23.98	12.22	20.78	17.92	42.31	31.43	38.32	18.72	21.81	19.78
Sri Lanka	57.31	45.91	45.52	4.96	6.70	6.68	0.02	3.85	3.83	37.71	43.55	43.97
	REER											
Bangladesh	37.79	40.91	45.35	51.54	36.29	33.49	0.50	16.15	15.00	10.17	6.64	6.15
Bhutan	67.14	53.70	53.54	31.91	37.03	37.10	0.94	8.53	8.51	0.01	0.75	0.85
India	10.73	14.39	14.60	86.37	79.12	78.49	2.89	4.48	4.80	0.00	2.01	2.11
Maldives	0.00	6.32	7.17	67.16	57.99	56.83	30.36	25.62	25.00	2.47	10.07	11.00
Nepal	0.83	6.21	6.32	84.34	72.65	72.53	2.74	5.65	5.72	12.10	15.49	15.43
Pakistan	48.03	44.08	42.58	43.03	40.31	39.02	6.34	6.27	7.56	2.60	9.33	10.84
Sri Lanka	19.42	21.40	21.41	44.15	32.95	32.80	34.10	36.92	36.96	2.33	8.74	8.84
	CPI											
Bangladesh	8.88	14.98	19.14	7.80	8.59	8.23	83.32	74.43	70.64	0.00	2.01	1.99
Bhutan	22.59	38.78	38.70	55.78	21.45	21.56	16.01	38.37	38.33	5.61	1.40	1.41
India	8.07	18.81	17.04	4.78	10.23	15.64	76.42	66.74	62.30	10.73	4.22	5.02
Maldives	0.53	8.11	14.45	58.11	37.54	42.03	0.00	2.65	7.49	41.36	51.70	36.03
Nepal	41.73	42.65	41.22	3.71	20.76	23.76	37.24	27.06	25.67	17.32	9.53	9.34
Pakistan	14.10	27.02	25.67	74.33	22.25	19.62	0.09	41.43	43.75	11.47	9.30	10.95
Sri Lanka	4.49	5.04	5.20	72.85	34.81	34.57	16.72	55.51	55.30	5.94	4.65	4.92
	M2											
Bangladesh	46.27	44.95	47.54	17.95	16.82	15.99	0.01	6.30	6.24	35.78	31.93	30.24
Bhutan	4.89	7.02	7.22	22.69	26.53	26.53	1.43	3.16	3.21	70.99	63.29	63.04
India	11.71	11.70	11.49	2.73	19.84	19.82	58.02	47.41	48.05	27.53	21.04	20.65
Maldives	6.37	18.24	20.14	15.92	36.04	45.85	39.70	21.04	16.09	38.01	24.69	17.92
Nepal	74.15	49.94	48.39	2.35	16.55	17.37	0.78	17.17	18.21	22.72	16.33	16.02
Pakistan	0.04	6.59	7.93	8.17	7.45	8.54	39.83	35.90	37.34	51.97	50.06	46.19
Sri Lanka	50.98	45.91	45.97	28.31	27.06	26.97	9.78	16.95	16.94	10.92	10.09	10.12

Source: Author's calculation

Similarly for variation in broad money, supply shocks are important for Bangladesh, Nepal and Sri Lanka for all time horizons. Demand shocks are important for India and nominal shocks are important for Bhutan and Pakistan in all time periods. For Maldives, demand shocks and nominal shocks are equally important in the short run but in the medium to long run exchange rate shocks are more important.

Based on the preceding paragraphs it can be deduced that for different macroeconomic variables different sets of shocks are important in explaining their variations.

All the empirical studies carried out so far using single variable, two variables, three variables and four variables point to the same conclusion that South Asia is not an optimum currency area based on the analysis of the patterns of shocks the economies in the region are facing. They are subject to asymmetrical structural shocks which require country specific policy response. Uniform policy which is eminent by virtue of being a member of a monetary union with a common currency would not be suitable to address their specific needs.

### **3.5 Flexibility of Price and Wage**

Flexibility of price and wage has been one of the central ideas of the theory of optimum currency area. In the absence of autonomy over exchange rate management and monetary policy, the flexibility of price and wages would facilitate the economic adjustment in response to shocks. Price and wage adjustments are important to mitigate fluctuations in real aggregates in a business cycle. Moreover, the fundamental differences that have shaped the major economic thinking between Classical vs. Keynesians schools of economic thoughts are to what degree the prices and wages are flexible. Classical school of economic thoughts assumes that prices and wages are fully flexible in the free and open economy if the market is allowed to function independently without government intervention while Keynesian school of economic thoughts believe that they are not as flexible as classical economic theory assumes especially in the light of downward rigidity.

The formal sector of the developing economies is largely characterized by the lack of price and wage flexibility owing to powerful labour unions, trade unions and political interests. The minimum support price on essential goods to protect the interests of farmers and producers also come in a way to allow full flexibility of prices. Likewise the subsidies that exist in various forms in both advance countries and developing countries under both free market and administered price systems impedes the full adjustment by drawing large amount of resources from the government coffers. The largest farm subsidies exist in advance countries. Even in

the developed economies various social security measures such as minimum wages and minimum pay to safeguard the interests of wage earners would make it structurally difficult for the prices and wages to adjust fully to economic shocks. The flexibility in labour policies such as freedom in hiring and firing makes economic adjustment much efficient in developed economies compared to developing economies. Similarly, the inflation is relatively high in underdeveloped and developing countries compared to developed countries. This puts upward pressure on wage for maintaining at least its purchasing power rendering the economy uncompetitive in the long run. Owing to wage and price stickiness, the economic adjustment during economic slowdown may be slow and difficult. On the other hand compared to developed countries, the informal sector is large in developing economies including South Asia. Chances are high that the degree of wage flexibility in informal sector is higher given that the market is unregulated, unorganized and less transparent. In the absence of reliable studies on price and wage flexibility it is difficult to pin whether the onus of economic adjustment in response to asymmetric shocks can be placed on price and wage flexibility in South Asia as conceived in the theory of optimum currency area. The study on the degree of price and wage flexibility in South Asia is beyond the scope of current research.

### **3.6 MOBILITY OF FACTORS OF PRODUCTION**

Like flexibility of prices and wages, mobility of factors of production is considered to be important criterion necessary for the smooth functioning of the monetary union. Free and unhindered mobility of factors of production across the monetary area will serve as shock absorbers in case the region is hit by asymmetric disturbances. It allows movement of factors of production from surplus region to deficit region or from the regions and sectors under recession to more vibrant and growing regions and sectors. Except for the agreement on free trade, there is no regional framework on the free movement of factors of productions in South Asia. Free movement of people and capital are essentially what is considered under this criterion. SAARC Agreement on Promotion and Protection of Investment (SAPPI) considered important for promoting intraregional investment has not yet been adopted despite many rounds of discussions. The vision of Economic Union by 2020 envisages a single market with the free movement of people, goods, services and

capital in the region. However even at the end of 2018, full implementation of basic treaties such as SAFTA and SATIS remain elusive let alone the establishment of a custom union and a single market.

### **3.6.1 Intraregional FDI**

The foreign direct investment (FDI) in South Asian countries are tabulated in table 3.25. India is the largest recipient of FDI worth USD 44.5 billion in South Asia accounting for 88 percent of total FDI inflows to the region in 2016. The other larger recipient members are Pakistan, Bangladesh and Sri Lanka, but are nowhere close to India. There is large disparity of FDI inflows in South Asia in favour of India. In general, South Asia fares quite poorly in attracting FDI recording 2.72 percent of the total global FDI in 2016 with FDI stock of 1.41 percent.

Regarding the intraregional flow of capital, Bhutan is the major beneficiary of investment from Government of India particularly in the hydropower sectors. Bhutan has received sizable amount of investments from Indian Government for former's hydroelectric development in last several years. The three completed projects that generate 1,416 MW of electricity and three ongoing projects with a total capacity of 2,940 MW are fully funded by Government of India under intergovernmental Grant Debt funding models. For three ongoing projects alone, India has financed over USD 3 billion worth of total investment. Apart from India's investment in Bhutan, the intraregional investment is very low in the region.

India is a developing country which itself requires huge amount of investment for achieving its higher economic growth. Therefore India is unlikely to make any significant headway towards making major investment in the region. However any investment that facilitates greater regional economic integration would likely to benefit India disproportionately given large trade surplus it enjoys with every member countries in the region. Being the largest economy in the region with a population of over 1.3 billion, it enjoys economies of scale and can become a regional hub for the most of the industries.

**Table 3.25: FDI Inflows**

	In US\$ billion									
	1990	2000	2010	2012	2013	2014	2015	2016	Stock 2016	Stock 2016 (%)
Afghanistan	0.000	0.000	0.054	0.047	0.038	0.044	0.163	0.086	1.376	0.35
Bangladesh	0.003	0.579	0.913	1.293	1.599	1.551	2.235	2.333	14.539	3.72
Bhutan	0.002	0.0	0.076	0.049	0.014	0.032	0.017	(0.013)	0.171	0.04
India	0.237	3.588	27.417	24.196	28.199	34.582	44.064	44.481	318.487	81.41
Maldives	0.006	0.022	0.216	0.228	0.361	0.333	0.298	0.457	3.214	0.82
Nepal	0.006	(0.000)	0.087	0.092	0.071	0.030	0.052	0.106	1.343	0.34
Pakistan	0.278	0.309	2.022	0.859	1.333	1.868	1.621	2.479	42.238	10.80
Sri Lanka	0.043	0.175	0.478	0.941	0.933	0.894	0.680	0.897	9.845	2.52
SAARC	0.57	4.67	31.26	27.70	32.55	39.33	49.13	50.83	391.21	100
WORLD	205	1,359	1,372	1,575	1,425	1,339	1,921	1,868	27,663	
SAARC (%)	0.28	0.34	2.28	1.76	2.28	2.94	2.56	2.72	1.41	

Source: Author's calculation based on UNCTAD, FDI/MNE database

The region also offers inter-sectorial complementarity given that member countries are endowed with natural resources that can be harnessed for the overall development of the region. For instance, the countries in the Himalayan belt particularly Nepal and Bhutan are endowed with enormous clean water that can be harnessed not only for hydroelectricity but for multiple uses such as irrigation, drinking water, navigation etc. for the benefit of the entire region. Populous countries like India and Bangladesh can directly benefit from their investment in these countries for their clean energy and potable water needs. Similarly countries like Nepal, Bhutan, Sri Lanka and Maldives can become major tourist destinations in the region. Bangladesh has developed itself as the global hub for readymade garments (RMG) while Pakistan specializes in the export of textile; leather and sports products; and rice. Similarly Sri Lanka specializes in RMG, textile, tea, coffee, spices and rubber exports. India's exports are more diverse compared to the

countries in the region and its major exports include IT services; gems and jewelry; petroleum products; engineering equipment; manufactured goods, industrial products and chemicals; pharmaceuticals etc. including textile. Though the major economies in the region compete with each other in the exports of certain goods such as textile and RMG, complementarity can be built by harnessing the comparative advantage of the member countries.

India's role is central in facilitating intraregional investment by adopting simple and more open and friendly neighborhood economic policies that promote not only the investment from India but also intraregional investments across member countries. For instance if India plays constructive role in promoting intraregional investment, Bangladesh is ready to invest heavily in Bhutan and Nepal for its ever growing electricity needs. The distance between Nepal and Bangladesh border is less than 30 km while the distance between Bhutan and Bangladesh border is less than 100 km separated by India in both cases. Bangladesh has allowed India to connect its West Bengal State with its Northeast States such as Tripura thereby reducing the total distance by more than 1,000 km. Similarly, discussion is going on between these two countries to build electricity transmission lines through Bangladesh for the transmission of electricity from Northeast to other states. Bangladesh has instead proposed to develop it into intraregional transmission project benefiting Bangladesh, Bhutan, India and Nepal. The intraregional trade on electricity among these four countries alone would facilitate billions of US dollar of intraregional investment and trade. India's role in regional cooperation is extremely important in the areas of intraregional connectivity given that no two member countries in the region with the exception of Afghanistan and Pakistan have border with one another other than India.

The issue of free movement of people in South Asia is very sensitive and complex for the host of reasons. The fact that the partition of India that led to the eventual emergence of three different sovereign nations makes it even more complex. These three countries are also among the ten most populated countries in the world. There are other smaller countries in the region which have genuine fear of being swarmed by people from these most populated countries. Moreover, the employment opportunities are pretty limited in the region. There are also new threats

of terrorism. As a result, allowing unhindered access to domestic labour markets would remain the most sensitive and complex issue in the evolution of a single market in the region. Despite attaining robust economic growth in last several years, employment opportunity has been pretty limited in India. Moreover the hostility that exists between India and Pakistan doesn't permit free movement of goods and services let alone the free movement of factors of production.

Similarly, the very long stretch of border between India and Bangladesh has been much of a concern to India due to incessant inflow of large number of illegal migrants from Bangladesh. Maldives has large number of Indian immigrants compared to the size of its population. Similarly, Bhutan is very sensitive towards allowing immigrants into the country. The free movement of people truly exists between India and Nepal with no restriction of whatsoever. Thus large number of immigrants from each side is living in the other country though number of Nepali immigrants in India has decreased substantially in last one and half decades amidst new found attractive destinations such as Middle East and Malaysia. In fact, South Asia is the largest source of immigrants in the world and the second highest receiver of remittances after East Asia and Pacific.

### **3.6.2 Intraregional Movement of People**

Table 3.26 provides the overview of migration of people in South Asia. Bhutan and Maldives are the net recipients of immigrants while all the other members are the net exporters of the emigrants to the world. The largest beneficiary in terms of the ratio of outgoing to incoming migrants is Sri Lanka with the ratio of 43 times followed by Afghanistan with a ratio of 36 times. In terms of the absolute figure, India is the largest beneficiary in the world that contributes as much as 16.588 million emigrants to the world and in return hosts 4.94 million immigrants mostly from Bangladesh and Pakistan. Bangladesh, Pakistan and Afghanistan are the other three countries in the region that contribute substantially to the emigration with 5<sup>th</sup>, 7<sup>th</sup> and 11<sup>th</sup> ranks respectively in the world. At the same time, Pakistan also hosts large number of immigrants from Afghanistan and India.



**Table 3.26: Intraregional Migration 2017**

Country of Destination	Country of Origin								INTRAREGIONAL TOTAL	WORLD	INTRAREGIONAL (%)
	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka			
Afghanistan		..	..	..	..	..	95,041	..	95,041	133,612	71.13
Bangladesh	..		..	35,250	..	39,988	..	..	75,238	1,500,921	5.01
Bhutan	..	53		45,788	..	733	22	33	46,629	52,296	89.16
India	8,005	3,139,311	6,580		197	537,517	1,095,149	153,643	4,940,402	5,188,550	95.22
Maldives	..	38,620	..	13,936		..	315	7,062	59,933	67,026	89.42
Nepal	..	229	28,334	440,198	..		1,250	45	470,056	502,670	93.51
Pakistan	1,515,738	..	..	1,873,650	..	..		541	3,389,929	3,398,154	99.76
Sri Lanka	132	674	233	10,814	1,409	344	829		14,435	40,018	36.07
INTRAREGIONAL	1,523,875	3,178,887	35,147	2,419,636	1,606	578,582	1,192,606	161,324	9,091,663	10,883,247	83.54
WORLD	4,826,464	7,499,919	43,970	16,587,720	2,883	1,738,442	5,978,635	1,726,900	38,404,933		
PERCENTAGE	31.57	42.39	79.93	14.59	55.71	33.28	19.95	9.34	23.67		
ORIGIN/ DESTINATION	36.12	5.00	0.84	3.20	0.04	3.46	1.76	43.15		3.53	

Source: UN Migrant Stock By Origin And Destination 2017

As a proportion of the country's population, Sri Lanka and Nepal contribute significantly to the international emigrants. Nepal and India each hosts large number of each other's migrants (440 thousands vs. 538 thousands respectively). The number of Indian immigrants in Bhutan is very high (nearly 46 thousands) given the small population of Bhutan of nearly 800 thousands. Despite large number of intraregional migrants in the region, there is no free movement of people across the region except between India and Nepal that share 1750 kilo meter of open border. The large presence of intraregional migrants especially in India from Bangladesh and Pakistan and in Pakistan from India is attributed to the partition of 1947. Bharadwaj et al (2008) put estimates of 14.5 million total migratory inflows and 17.9 million total migratory outflows of primarily minorities with 3.4 million people missing during partition across these three countries. Moreover the issue of large number of Bangladeshi immigrants present in India has been the major economic, social and political concerns for both the countries given that the influx of illegal immigrants from Bangladesh have continued for years through 4,100 km of border. Similarly the large Afghani immigrants in Pakistan are because of historical relation between these countries and protracted armed conflicts in Afghanistan. The mobility of migrants across the countries in the region is highly restricted.

As a result the intraregional migration in South Asia won't be able to ward off the adverse effects of asymmetric shocks that the free mobility of labour is expected to bring about in an open economy. South Asia contributes 15 percent to the world's total diaspora. Intraregional migrants of 9.092 million account for nearly 24 percent of the region's total emigrants of 38.4 million. Similarly, nearly 84 percent of the total migrants of 10.883 million living in South Asia come from within the region. The ratio of outgoing to incoming migrants for the region is 3.5 times. In other words, for every two immigrants living in the region, there are seven South Asian emigrants in the world.

Table 3.27 provides the estimates of population of overseas Indians as of 1 January 2015. From the table it is obvious that Government of India doesn't officially recognize existence of Indian immigrants in Pakistan. This manifests complex political issues stemming from partition along religious line. The number of Non Resident Indians (NRI) in Maldives is staggering – twenty thousand in a

country of over four hundred thousand population. This supports the earlier statistics of Maldives being the net sender of remittance to India.

**Table 3.27: Estimates/Assumed Population of Overseas Indians**

	Afghanista n	Banglades h	Bhuta n	Maldiv s	Nepal	Pakista n	Sri Lanka	Total	Global	%
NRI	654	10,000	5000	22,000	600,00 0	-	14,000	651,654	11,379,74 6	5.7 3
PIO	3	5	-	-	-	-	1,600,00 0	1,600,00 8	17,075,28 0	9.3 7
Tota l	657	10,005	5000	22,000	600,00 0	-	1,614,00 0	2,251,66 2	28,455,02 6	7.9 1

Source: Ministry of External Affairs, India

Table 3.28 shows the bilateral remittance of SAARC countries for 2017. The countries in the columns are the recipients of the remittance while those in the rows are the sources of remittance. The region received the total remittance of 117 billion US dollar in 2017 accounting for 19 percent of the world remittance inflows second to East Asia and Pacific region that received 22 percent. 9 percent of remittance inflows in South Asia come from within the region. India that receives the largest remittance in the world accounts for 59 percent of the total remittance inflows in the region. It is also the largest source of remittance to South Asian countries accounting for 52 percent of the total intraregional remittance of 10.8 billion dollar. Pakistan and Bangladesh that account for 17 percent and 12 percent of the total remittance inflows in the region respectively are ranked 8<sup>th</sup> and 11<sup>th</sup> highest recipients of remittance in the world.

Interestingly, Nepal is the second largest source of the intraregional remittance accounting for 29 percent of the total intraregional remittance followed by Sri Lanka at 12 percent. Nepal despite being the least developed country is probably the largest sender of the remittance when compared to the size of its economy and level of its development in terms of the per capita income. Nepal is the largest source of remittance for Bhutan and the eighth largest source for India. It is also one of the top five countries in the world to receive largest remittances as a percentage of GDP. Bhutan receives largest proportion of remittance (94 percent) from within the region followed by Bangladesh and Afghanistan each of which

**Table 3.28: Bilateral Remittance**

In US\$ billion

Senders	Recipient Countries								Total	Intraregional (%)
	AFG	BGD	BTN	IND	MDV	NPL	PAK	LKA		
Afghanistan							0.119		0.119	1.10
Bangladesh				0.126		0.064			0.190	1.76
Bhutan		0.073		0.186		0.001	0.000	0.000	0.260	2.41
India	0.000	4.033	0.003		0.001	1.021	0.000	0.520	5.577	51.64
Maldives		0.067		0.081				0.028	0.176	1.66
Nepal		0.001	0.035	3.016			0.033	0.002	3.087	28.58
Pakistan	0.125	0.000							0.125	1.16
Sri Lanka				1.265			0.001		1.266	11.72
<b>INTRAREGIONAL REMITTANCE</b>	<b>0.125</b>	<b>4.173</b>	<b>0.038</b>	<b>4.674</b>	<b>0.001</b>	<b>1.086</b>	<b>0.153</b>	<b>0.549</b>	<b>10.80</b>	<b>100</b>
<b>TOTAL REMITTANCE</b>	<b>0.410</b>	<b>13.469</b>	<b>0.040</b>	<b>68.97</b>	<b>0.004</b>	<b>6.947</b>	<b>19.67</b>	<b>7.190</b>	<b>116.7</b>	
<b>PERCENTAGE</b>	<b>31</b>	<b>31</b>	<b>94</b>	<b>7</b>	<b>14</b>	<b>16</b>	<b>1</b>	<b>8</b>	<b>9</b>	
<b>RANK (TOTAL REMITTANCE)</b>	<b>106</b>	<b>11</b>	<b>156</b>	<b>1</b>	<b>178</b>	<b>22</b>	<b>8</b>	<b>21</b>		
<b>TOTAL MIGRANTS (In millions)</b>	<b>4.826</b>	<b>7.500</b>	<b>0.440</b>	<b>16.59</b>	<b>0.003</b>	<b>1.738</b>	<b>5.979</b>	<b>1.727</b>	<b>38.80</b>	<b>15</b>
<b>RANK</b>	<b>11</b>	<b>5</b>	<b>176</b>	<b>1</b>	<b>218</b>	<b>36</b>	<b>7</b>	<b>37</b>		

Source: Author's calculation based on Bilateral Remittance Matrix 2017, World Bank and UN Migrant Stock By Origin And Destination 2017

receives 31 percent from within the region. India is the largest source of remittance for Bangladesh; third largest source for Nepal and fourth largest source for Sri Lanka while Pakistan is the second largest source of remittance for Afghanistan.

The data shows no bilateral remittance between India and Pakistan though transfers through informal channels can't be ruled out given large number of families and relatives separated during the partition of 1947. Similar to trade deficits, most of the countries in the region also suffer from remittance deficit with India. Bangladesh is the only country in the region to benefit from the net inflow of remittance from India thus helping it recompense its large trade deficit with India. But for other less fortunate countries such as Nepal, Sri Lanka, Bhutan and Maldives, they are all subject to both large trade deficit and remittance deficit with India.

Blanchard & Katz (1992) noted the significance of labour mobility in US economy in addressing state specific disturbances. According to OECD, the labour mobility is much higher in USA and Australia compared to European Union. European labour markets are considered to be inflexible given persistent labour market rigidities and low labour mobility. Krugman & Obstfeld (2009) find geographical mobility of EU workers to be very low both across Europe as well as within their own countries. As a result, high level of unemployment remained persistent in economies badly hit by Euro crisis such as Greece and Spain. Recent studies have shown labour mobility to be less effective mechanism of adjustment to major disturbances. Dao, Furceri and Loungani (2014) find that despite high labour mobility in response to the financial crisis in US it was insufficient to address large scale unemployment and low labour force participation in some regions.

### **3.7 BANKING UNION**

The Euro crisis that surfaced in late 2009 exposed how the lack of banking union could handicap a monetary union in both preventing and responding to asymmetric shocks. Banking union essentially means an institutional framework where apart from the existence of a central bank that issues a common currency and formulates a monetary policy for the monetary union, there exists single regulatory and supervisory mechanism with a single set of rules applicable to all the banks and

financial institutions in the union irrespective of their origin and location; single resolution mechanism for failing banks with adequate funding capacity; and single deposit insurance scheme in the union. Banking union promotes effective private and public risk sharing across the member states and also helps in severing the bank-sovereign risk loops. These three integral parts of a banking union were missing from the original framework of the Economic and Monetary Union (EMU).

There was no single supervisory body with a single set of rules applicable to all the banks in the euro area. The regulation and supervision of the banks are carried out by respective national central banks with their own set of rules and policies. There is a home bias of domestic financial institutions in favour of domestic sovereign debt rendering the system less robust and less transparent. The exposures of domestic banks and FIs to domestic sovereign debts are therefore likely to be high given that there was no risk differentiation among different sovereign debts and there was also no exposure limit. Banks and Financial Institutions in euro area are the major conduits of cross border capital flows aided essentially by the absence of exchange rate risks and the statutory restrictions. The lending practices of banking system in home country will also have implications in its neighbors in a monetary union with a single currency. Therefore it calls for a common set of rules and procedures across the union to mitigate risks that may arise due to regulatory arbitrage. In response to the crisis, reforms are initiated to bring very large and systemically important banks under the direct supervision of ECB while the responsibility to oversee the supervision of less significant banks and FIs are left to the respective national supervisory bodies. Similarly, ECB is made the sole licensing authority for all the banks in the euro area effective November 2014. These are some of the major reforms that took place in EMU in the aftermath of the crisis. It shows how the legislative, regulatory and supervisory convergence is integral to a single integrated banking union.

The other important aspect of banking system is the resolution mechanism. If there exists a unified single resolution mechanism armed with funds necessary to prevent bank run or facilitate orderly resolution of failing bank and FIs, it helps to prevent crisis from propagating to broader economy. The danger of moral hazards arising from bailout of reckless institutions can also be dealt with when there is the

clarity and uniformity of procedures and objectives. In this regard, a Single Resolution Mechanism (SRM) has been put in place by setting up a Single Resolution Board (SRB) which liaisons with national resolution authorities of the member countries for issues relating to the resolution. Single Resolution Fund (SRF) prefunded by banking sector has been set up to arm SRB with the necessary fund. There is an EC proposal to provide fiscal backstop to SRF from proposed European Monetary Fund as well given the limited resources available under SRF.

Deposit insurance is an integral part of banking system and if uniform policy exists instances like beggar-thy-neighbor situations don't arise. In this regard, a proposal for setting up European Deposit Insurance Scheme (EDIS) has been forwarded by EC in November 2015. Attaining the goal of a full-fledge EDIS in restoring the confidence of depositors across banking union is central to a truly integrated banking system.

Banking union with single regulatory and supervisory body with uniform policy; single resolution mechanism; and single deposit insurance scheme across the union is important to sustain any monetary union with a common currency. Though Eurozone is back on track from the abyss of debt crisis despite not yet having a banking union similar to USA, it is important to carry on reforms initiated towards this goal to avert similar crisis in the future and sustain a monetary union in the long run. The experiences of euro area are crucial for regional blocks like South Asia that aims to achieve economic and monetary integration. Banking union of a kind explained above to sustain monetary union is however beyond what South Asia can achieve in the foreseeable future.

### **3.8 FINANCIAL INTEGRATION**

There is no financial integration of whatsoever in South Asia. No regional framework for financial integration exists in the region. The settlement of trade takes place through Asian Clearing Union (ACU) though Afghanistan is not part of this mechanism while the bilateral trade settlement, including transfers and capital flows between Bhutan and India and Nepal and India takes place directly through bilateral mechanisms. Moreover, there are informal ways of facilitating transfer and

settling informal intraregional trade among the member countries particularly with India which is the biggest beneficiary of informal trade.

The financial market in South Asia is fragmented along national lines. All the countries in the region have their own stock exchanges with the exception of Afghanistan. The region hosts some of the smallest stock exchanges in the world such as Bhutan and Maldives both in the number of listed companies as well as market capitalization. Even by international standard, India's capital market – the largest in the region is not that significant either. The four major economies of the regions have allowed foreign portfolio investments. As a result, capital markets of these countries are subject to the volatility arising out of global events that dictates the flows of foreign portfolio investment. There has been no initiative towards integration of capital markets in South Asia. Capital Market Union is central to the process of financial integration and achievement of single market for capital. Capital market union can complement the banking union and eventually contribute to the process of monetary union. These channels are crucial and effective in monetary policy transmission across the region.

The sovereign crisis in euro area has underpinned the importance of financial integration for resource mobilization and risk sharing across member nations of the monetary union and how such integration will be useful in averting crisis that euro area faced. The capital markets in euro area are fragmented and subject to home bias. However, there has been improvement over capital market consolidation and access to finances since the launching of Capital Market Union Action Plan in 2015. It is aimed at enhancing risk sharing across member states, ensuring financial stability by eliminating bank-sovereign link, creating deeper cross-border markets, ensuring resilience of financial system and lowering divergence in the effects of asymmetric shocks. In the context of European Union, it is also crucial to develop alternative sources of financing given excessive reliance on banks.

Convergence in regulation and supervision is integral part of the process of any integration. A single rulebook has been contemplated for EU capital markets. This should be supplemented by an appropriate supervisory architect with single European capital markets supervisor that will ensure supervisory convergence across



euro area. A capital market union demands increased supervision and oversight mechanisms across all financial sectors. While the greater capital market integration can facilitate efficient allocation of risks among market participants across region, it generally comes with the risk of financial instability due to contagion effect during financial crisis precipitated by sudden flows of volatile capital in a much larger scale. In this regard, there is a need to develop macro prudential policy by including non-banking sector as well given their importance to ensure the consistency of policy and enforcement across the region.

### **3.9 FISCAL UNION**

Fiscal transfer is one of the mechanisms to address the imbalance that may appear among countries in an economic and monetary union. When certain regions prosper in comparison to other regions, the redistribution of resources in the form of fiscal transfer from the prospering regions to the lagging regions would help in balancing the overall development of the union. For example, the higher tax collection driven by higher economic growth in the more prospering region can be rechanneled into economically backward regions or recessionary area so that the latter will catch up. In the literature of optimum currency area, it is considered to serve as an alternative to labour mobility. In the aftermath of euro crisis, EC has set up European Financial Stability Facility (EFSF) to make bailout payments. Each member state makes contribution to this facility and it functions pretty much like a fiscal transfer. Sala-i-Martin and Sachs (1992) estimate that fiscal transfers in the United States eliminate about 40 percent of the reduction in regional income in response to negative economic shocks.

There is no policy aimed towards fiscal transfer as the region is nowhere near the idea of monetary union. As a foreign policy, India has a tradition of allocating some financial grants to its neighboring countries despite being a developing country itself. These assistances are however guided by India's own commercial, security and foreign policy interests. Being a small and landlocked country which is economically dependent on India, the fiscal support is significant for a country like Bhutan. For others, it is merely a gesture of friendly neighborhood from India and therefore is of no significance in their resource mobilization.

Table 3.29 highlights the annual budgetary allocation of grants and loans to SAARC countries by India. The figures for 2016-17 are actuals while those for 2017-18 and 2018-19 are approved budgets. Bulk of the grants accounting for 71 percent in 2016-17 and 56 percent in 2018-19 of the total grants to SAARC countries is allocated to Bhutan. These grants and loans are primarily for the construction of ongoing three large hydroelectric projects in Bhutan with a total installed capacity of 2,940 MW under intergovernmental Grant Loan model with exclusive buying rights of electricity to India. Part of the grant is also meant for budgetary support. Such investments from India have been very effective in propelling economic growth and increasing per capita income of Bhutan - doubling to 2,600 US dollar within 10 years from 2006 to 2015.

**Table 3.29: Annual Budgetary Allocation of Grants and Loans of India to South Asian Countries**

Countries	Grants			Loans		
	2016-17	2017-18	2018-19	2016-17	2017-18	2018-19
Afghanistan	2,630	3,500	3,250		1,700	
Bangladesh	826	650	1,750			
Bhutan	21,600	17,791	18,135	12,816	8,001	8,365
Maldives	800	1,250	1,250			
Nepal	3,327	3,750	6,500			
Sri Lanka	992	750	1,500			
<b>Total</b>	<b>30,175</b>	<b>27,691</b>	<b>32,385</b>	<b>12,816</b>	<b>9,701</b>	<b>8,365</b>

Source: Ministry of External Affairs of India

Aside from aforementioned figures, there are specific bilateral arrangements made between India and member states for financial assistances. For example in August 2014, India pledged one billion US dollar line of credit to Nepal during India's Prime Minister Modi's visit to Nepal. Similarly, in the aftermath of Nepal's major earthquake of 25 April 2015, India pledged another billion US dollar worth of financial assistance for post-earthquake rebuilding one fourth of which would be grant. However these financial assistances are yet to be flowed into Nepal. Such bilateral arrangements were also made during PM Modi's visit to Sri Lanka in March 2015 for a line of credit of USD 318 million and to Bangladesh in June 2015 for a line of credit of two billion US dollar.

India benefits immensely from intraregional trade and remittances. India's total trade with the region is the fifth highest while the trade surplus with the region is the second largest after USA. The history of intraregional trade surplus provides India huge economic edge over its less developed neighbors. In 2016, such official trade surplus was USD 14 billion and if informal trade were to be accounted, South Asia might become India's largest trade surplus generating economy. Despite reaping enormous economic advantage, India has shown little reciprocity in terms of addressing burgeoning trade gap, cross-border connectivity, trade facilitation and intraregional investment and intraregional infrastructural development aimed at enhancing regional cooperation.

### **3.10 GIOPOLITICAL FACTORS**

The unrelenting hostility between India and Pakistan has seriously affected the prospects of the regional cooperation. SAARC summit has not been held since the last summit held in 2014 in Kathmandu. Moreover, India's attitude towards its small friendly neighbors is matters of concerns for strengthening regional cooperation. India's relations with Nepal and Maldives have strained in recent years due to India's highhandedness and interference in their internal affairs. India has shown little eagerness in earnestly promoting regional cooperation under the framework of SAARC as it finds it more effective to address them under bilateral framework. Jain (2005) notes that despite being the most powerful country in the region, India has refrained from playing pivotal role in shaping policies and initiatives in the larger interest of the region. Under multilateral settings, India is known to play acquiescent role. It is becoming increasingly evident that India is seeking to promote regional cooperation beyond SAARC such as BIMSTEC where Pakistan is not the member. Under such geo-political scenario, the goals of greater economic and monetary integration will continue to remain elusive in South Asia for many years to come. Monetary integration requires much larger political commitment and slew of reforms. Above all, without the involvement of India and its leadership role, the economic and monetary integration in South Asia will not be feasible.

### **3.11 SUMMARY**

Various tests are performed to establish whether South Asia constitutes an OCA. These tests include simple correlations of key macroeconomic variables and the correlations of different structural shocks across the region. For simple correlations output growth, inflation and exchange rates are considered spanning from 1990 to 2016. The result shows that while the region shares similar patterns of inflation and exchange rate movements, the output growth are not in sync.

Similarly, for the analysis of patterns of shocks two econometric methods are used namely simple autoregression by considering only one variable GDP growth by taking its own two lags and structural vector autoregression by considering different combinations of key macroeconomic variables such as GDP growth, Inflation, Exchange Rates and Broad Money by taking two lags. These shocks are then given different names such as supply shocks, demand shocks, nominal shocks and exchange rate shock depending upon the nature of their impact on the economy. The correlations of these shocks are determined to assess the similarity of the patterns of shocks. The shocks are further analyzed to find their relative significance in contributing to the changes in the macroeconomic variable using variance decomposition. Similarly, by using IRF the patterns of response of different variables to each structural shock have also been analyzed. All these results point to the same conclusion that the structural shocks the region is facing are different and asymmetrical, hence the region is not OCA.

These econometric techniques are supplemented by other measures both quantitative as well as qualitative such as degree of openness, diversity of exports measured by HHI, mobility of labour and factors of production, intraregional trade and investment etc. All these measurements also provide similar conclusions that the countries in South Asia do not possess conditions conducive for monetary union with a single currency.

Maskey (2001, 2003) in his series of paper confers that SAARC is not the optimum currency area based on the analysis of the disturbances affecting real output. He applied univariate auto-regression technique by considering real output growth for a period between 1980 and 2000. The countries in the region are subject

to asymmetric disturbances requiring country specific adjustments. The region is characterized by very low level of economic integration. The weak commitment and lack of ownership have stifled the process of economic and monetary integration despite more than 30 years of establishment of regional cooperation.

Saxena (2005) however provides different conclusions using structural VAR technique. Based on her empirical work that covers a period from 1973 to 2003 using GDP growth and price as two variables, she finds that about 50 percent of supply shocks and 80 percent of demand shocks are positive. As the size of shocks is small, the likelihood of major disruptions is also less. She also finds that since the countries are specializing in the production of similar goods they are subject to similar shocks requiring similar responses. She concludes that the countries are likely to benefit more by adopting a common currency. However Jayasuriya et al (2005) provide a contrary conclusion based on their empirical studies covering the period 1980-2000 using.

Artis et al (1998) identified four hypothetical OCAs: Almost entire Western Europe; Central America and Northern ridge of South America; Middle East and whole of ASEAN including China and Australia using two criteria namely symmetry of shocks and level of bilateral trades. South Asia didn't appear in their hypothetical OCA.

According to empirical studies presented in the preceding paragraphs, the countries in the SAARC falls in the area to the left of the OCA line signifying that on all counts including the ones mentioned in the figure 2.1, the region fails to meet the OCA criteria.

\*\*\*\*\*

## **CHAPTER IV**

### **IDENTIFICATION OF ANCHOR CURRENCY**

The empirical studies in the preceding chapter demonstrate that South Asia is not an OCA. Therefore the goal of a monetary union with a common currency is theoretically not feasible in the region. The practical challenges to achieve monetary union in the region are even higher. The extent of monetary cooperation in the region is minimal at the moment. It therefore calls for alternative mechanisms to achieve greater monetary cooperation in the region. Such monetary integration shall serve to facilitate greater regional economic integration. It is in this context, the role of Indian is being examined in this chapter for achieving greater regional monetary integration. Asymmetries in South Asia are in abundance. All the stylized facts allude to the central role of India. This is evident from the social, economic, cultural, geopolitical, security and demographic realities of the region. It is however crucial to establish empirically whether India in fact plays central role in the business cycles of the region and provides nominal anchor to the exchange rate movements of the currencies of the member countries.

The chapter begins with the display of series of data showing the significance of India in the region followed by empirical studies using variance decomposition technique to examine the contribution of India in the region's business cycles and co-integration test to evaluate whether Indian rupee provides nominal anchor to the currencies of the member countries.

#### **4.1. STATISTICAL SIGNIFICANCE OF INDIA IN SOUTH ASIA**

The asymmetries in South Asia are very large essentially in favour of India. The data that follow showcase the significance of India in the region. Table 4.1 highlights the significance of India in the regional cooperation. India alone accounts for 64 percent of land area, 76 percent of population, 78 percent of nominal GDP, 81 percent of GDP (PPP) and 77 percent of trade based on 2016 data.

The analysis of the patterns of trade in the region further demonstrates the significance of India in the region. India is the largest trading partner of Bhutan, Nepal and Sri Lanka. Similarly India is the second largest trading partner of

Bangladesh (after China) and the third largest trading partner of Maldives (after UAE and Singapore). Similarly, India is the second largest merchandise export destination of Afghanistan. While Pakistan is the largest trading partner of Afghanistan, the latter is the fourth largest merchandise export market of Pakistan. India in fact is the largest beneficiary of the intraregional trade in the region.

**Table 4.1: Key Indicators of SAARC Countries**

PARTICULARS	AFG	BGD	BTN	IND	MDV	NPL	PAK	LKA
Area as a percentage of South Asia (SA)	12.71	2.81	0.75	<b>64</b>	0.01	2.87	15.52	1.28
India larger by	5	23	86		11,031	22	4	50
Population as a percentage of SA	1.96	9.23	0.05	<b>74.96</b>	0.02	1.64	10.94	1.20
India larger by	38	8	1,660		3,175	46	7	62
Nominal GDP as a percentage of SA	0.67	7.65	0.08	<b>78.26</b>	0.15	0.73	9.64	2.81
India larger by	116	10	1023		536	107	8	28
GDP in PPP as a percentage of SA	0.63	5.45	0.08	<b>81.24</b>	0.07	0.67	9.45	2.44
India larger by	129	15	1,225		1,325	121	9	33
% of SA	0.89	8.84	0.27	<b>76.65</b>	0.28	1.06	8.37	3.63
India larger by	86	9	283		271	72	9	21

Source: Author's calculation based on WDI 2017

Table 4.2 shows trade related statistics of the countries in the region relating to 2016. India, Pakistan and Bangladesh, the three largest economies of the region are also the largest trading nations of the region accounting for 77 percent, 8 percent and 9 percent of the region's total international trade respectively. Sri Lanka is the fifth largest trading nation accounting for 4 percent while the rest of the four countries together account for less than 3 percent of the region's total international trade. Similarly, India is the largest intraregional trading nation accounting for 42 percent of the total intraregional trade. Bangladesh, Nepal, Sri Lanka and Pakistan account more or less evenly with 14.71 percent, 12.84 percent, 10.85 percent and 10.19 percent of the total intraregional trade respectively. The shares of Bhutan, Afghanistan and Maldives in the intraregional trade are 4.36 percent, 4 percent and less than 1 percent respectively. The intraregional trade contributes significantly to international trade of smaller member countries such as Bhutan and Nepal with the highest share of 93 percent and 70 percent respectively. Afghanistan (26 percent), Maldives (19 percent) and Sri Lanka (17 percent) trade moderately within the

region. The three largest economies of the region: India, Pakistan and Bangladesh trade significantly less within the region accounting for 3 percent, 7 percent and 10 percent of their respective total international trade. This is the main reason for very low intraregional trade.

**Table 4.2: Trade in Merchandize**

PARTICULARS	In US\$ million								
	AFG	BGD	BTN	IND	MDV	NPL	PAK	LKA	Total
Import	6,559	41,157	1,689	356,320	2,138	7,946	46,998	19,239	418,935
Export	613	30,131	499	261,862	141	638	20,547	10,046	387,588
Total	7,172	71,288	2,187	618,182	2,279	8,584	67,545	29,285	806,523
Member's trade to regional trade (%)	0.89	8.84	0.27	76.65	0.28	1.06	8.37	3.63	100
Total Intraregional Trade	1,870	6,876	2,036	19,690	435	6,002	4,765	5,070	46,746
Member's trade to intraregional trade (%)	4.00	14.71	4.36	42.12	0.93	12.84	10.19	10.85	100
Intraregional trade to Total trade (%)	26.08	9.65	93.10	3.19	19.10	69.92	7.06	17.31	5.80

Source: Author's calculation based on IMF DOTS 2017

Moreover, none of the countries features as the crucial trading partner of India while it remains the key trading partner of every member countries in the region. The two largest economies of the region India and Pakistan that share land boarder of more than 3,300 KM trade significantly less with each other despite enormous potentials. The political and security concerns have taken precedence over economic considerations thereby hugely undercutting the potential of bilateral trade between them. Since India that alone accounts for 77 percent of region's total international trade trades only 3 percent within the region compared to its overall international trade, the magnitude of intraregional trade is also adversely affected. Consequently, the proportion of intraregional is fairly low in South Asia.

Though none of the SAARC country individually features in the list of 10 largest trading partners of India, combined trade of the region with India at close to 20 billion dollar puts the region to the fifth spot as shown in Table 4.3 based on 2016 data. There are however some discrepancies in total trade data between Table 4.3 with 19.690 billion US dollar and Table 4.4 with 21.126 billion US dollar.



**Table 4.3: List of 10 Countries with the Largest Bilateral Trade with India**

											In US\$ billion
Bilateral Trade			Exports		Imports		Trade Surplus		Trade Deficit		
1	China	69.486	USA	41.951	China	60.540	USA	21.376	China	51.593	
2	USA	62.525	UAE	30.603	USA	20.575	UAE	11.327	Switzerland	13.863	
3	UAE	49.879	Hong Kong	13.225	UAE	19.276	Hong Kong	6.111	Saudi Arabia	13.401	
4	Hong Kong	20.339	UK	9.022	Saudi Arabia	18.447	UK	5.157	Indonesia	9.161	
5	Germany	18.659	China	8.947	Switzerland	14.898	Bangladesh	5.000	Iraq	9.009	
6	Switzerland	15.933	Singapore	7.572	Indonesia	12.304	Nepal	4.207	South Korea	8.661	
7	South Korea	15.766	Germany	7.174	South Korea	12.213	Turkey	3.349	Qatar	6.720	
8	Indonesia	15.447	Vietnam	5.956	Germany	11.485	Sri Lanka	3.279	Japan	6.016	
9	Singapore	14.292	Bangladesh	5.712	Iraq	9.983	Netherlands	3.046	Iran	5.872	
10	Japan	13.670	Belgium	5.361	Japan	9.843	Vietnam	2.849	Australia	5.822	
SAARC		19.690	3.19%	16.968	6.48%	2.722	0.76%	14.246			
World		618.182		261.862		356.320			94.459		

Source: Author's Calculation based on IMF DOTS 2017

Table 4.3 is constructed from the data available for India from IMF DOTS while Table 4.4 is compiled from individual member states from the same database. The figure from Table 4.4 puts SAARC in the fourth position after UAE but ahead of Hong Kong. Bangladesh is the ninth largest destination of Indian exports. India's combined export of 17 billion dollar to the region puts SAARC in the third position after USA and UAE with the export of 42 billion dollar and 31 billion dollar respectively. The region accounts for 6.5 percent of India's total export market. In contrast, India imports less than 1 percent from the region enjoying large trade surplus. Bangladesh, Nepal and Sri Lanka find their places in the list of top 10 countries with which India benefits the largest trade surplus putting them on fifth, sixth and eighth positions respectively. India's combined trade surplus of more than 14 billion with the region puts SAARC second to USA with which India enjoys more than 21 billion surplus. Historically, the region has contributed significantly to India's trade balance and therefore the overall macroeconomic stability of the country.

**Table 4.4: Bilateral Trade between India and SAARC Countries**

	In US\$ billion							
	AFG	BGD	BTN	MDV	NPL	PAK	LKA	Total
Total Intraregional Trade	1.870	6.876	2.036	0.435	6.002	4.765	5.070	27.056
Trade with India	0.383	6.160	2.006	0.277	5.930	1.992	4.377	21.126
Trade with India (%)	20.47	89.58	98.52	63.69	98.81	41.81	86.34	78.08
Other SAARC countries	Pakistan	Sri Lanka		Sri Lanka		Afghanista	Pakistan	
with major trade (%)	(79%)	(9.5%)		(34%)		n (36.5%)	(7%)	
		Pakistan				Bangladesh	Banglad	
		(8%)				(15%)	esh (3%)	
						Sri Lanka		
						(6.6%)		

Source: Author's calculation based on IMF DOTS 2017

Table 4.4 shows India's bilateral trade with countries in the region for 2016. India is the largest trading partner of intraregional trade for all the member states except Afghanistan. At 20 percent India is second to Pakistan with which Afghanistan's intraregional trade is at 79 percent. Ninety nine percent of Bhutan and Nepal's intraregional trades take place with India. Similarly, Bangladesh, Sri Lanka and Maldives trade significantly with India with 90 percent, 86 percent and 64 percent respectively for their respective intraregional trade needs. Despite political

rivalry and highly restrictive official trade policies, India remains the largest intraregional trading partner of Pakistan. Other SAARC countries with reasonable degree of bilateral trade with the member states other than India are Sri Lanka (34 percent) in the case of Maldives; Afghanistan (37 percent), Bangladesh (15 percent) and Sri Lanka (7 percent) in the case of Pakistan; Sri Lanka (10 percent) and Pakistan (8 percent) in the case of Bangladesh; and Pakistan (7 percent) in the case of Sri Lanka. Region's trade with India accounts for 78 percent of the total intraregional trade.

**Table 4.5: India's Trade Balance with SAARC Countries**

	In US\$ billion								
	1990	2000	2010	2012	2013	2014	2015	2016	2016 (%)
Afghanistan	0.045	0.003	0.249	0.331	0.266	0.201	0.218	0.191	1.34
Bangladesh	0.282	0.780	2.665	4.421	5.156	6.023	5.076	5.000	35.10
Bhutan	N.A.	0.018	-0.027	0.046	0.148	0.144	0.170	0.210	1.47
Maldives	0.005	0.020	0.069	0.115	0.106	0.135	0.164	0.175	1.23
Nepal	0.024	0.095	1.400	2.492	2.934	3.803	2.806	4.207	29.53
Pakistan	-0.001	0.098	1.930	1.173	1.874	1.652	1.551	1.184	8.31
Sri Lanka	0.079	0.560	2.794	3.555	3.554	5.841	4.672	3.279	23.02
Trade Surplus with SAARC	0.43	1.35	9.08	12.13	14.04	17.80	14.66	14.25	
Trade Deficit with World	6.18	7.80	127.87	193.21	152.85	142.78	126.07	94.46	

Source: Author's calculation based on IMF DOTS 2017

Note: NA represents not available.

Table 4.5 exhibits trade balance of India with the member states of SAARC and the world for 2016. In fact, India is the largest beneficiary of the intraregional trade. India enjoys trade surplus with all the countries in the region and in 2014 it reached the peak of 17.8 billion US dollar but has declined since then to 14.25 billion US dollar in 2016. India's trade surplus with Bangladesh, Nepal and Sri Lanka accounts for 88 percent of its total intraregional trade surplus and taken together with Pakistan the trade surplus would account for 96 percent. The actual trade surplus would be much higher than the official figures on account of large informal trade that exists between India and its neighbors. The intraregional trade surplus has been instrumental in lowering India's overall trade deficit which stands at close to 95 billion US dollar in 2016. India's trade deficit reached its all-time high in 2012 with 193 billion US dollar but has declined since then amid lower commodity price in the recent years.

**Table 4.6: Bilateral Trade between SAARC Countries and India**

	In Percentage								In US\$ Million
	1990	2000	2010	2012	2013	2014	2015	2016	2016
<b><u>Afghanistan</u></b>									
Export to India	9.76	23.64	16.50	22.13	26.92	37.70	32.72	37.51	230
Import from India	13.49	0.97	2.17	1.84	0.51	1.40	1.69	2.33	153
Total Trade with India	12.69	5.67	3.18	2.80	1.64	3.29	3.84	5.34	383
Trade Deficit with India	14.90	-7.06	0.99	0.80	-0.72	-0.72	-0.81	-1.30	77
<b><u>Bangladesh</u></b>									
Export to India	1.30	0.90	1.95	2.34	1.83	1.52	1.83	2.13	641
Import from India	4.66	10.67	13.90	13.77	14.00	14.83	14.15	13.41	5,518
Total Trade with India	3.60	6.89	9.44	9.26	9.02	9.43	8.83	8.64	6,160
Trade Deficit with India	7.48	27.37	31.39	35.14	41.27	43.50	53.00	44.23	(4,877)
<b><u>Bhutan</u></b>									
Export to India	N.A.	81.17	82.33	93.56	87.91	85.38	72.12	94.00	469
Import from India	N.A.	64.62	75.01	78.69	84.51	86.54	85.56	91.05	1,538
Total Trade with India	N.A.	67.12	77.40	83.88	85.42	86.22	81.76	91.72	2,006
Trade Deficit with India	N.A.	61.02	68.12	61.54	82.55	87.27	94.34	89.81	(1,069)
<b><u>Maldives</u></b>									
Export to India	0.09	0.31	3.41	1.76	1.52	2.00	2.04	1.11	2
Import from India	4.75	9.14	11.44	9.45	8.85	8.52	11.87	12.89	276
Total Trade with India	3.47	7.69	10.94	8.73	8.21	8.08	11.16	12.16	277
Trade Deficit with India	7.57	11.30	12.02	10.34	9.62	9.03	12.70	13.72	(274)
<b><u>Nepal</u></b>									
Export to India	7.00	42.57	64.04	67.51	65.44	63.27	61.71	56.51	360
Import from India	9.98	36.52	63.24	65.13	63.32	64.76	60.42	70.10	5,570
Total Trade with India	9.19	38.42	63.36	65.43	63.58	64.60	60.54	69.09	5,930
Trade Deficit with India	11.65	31.39	63.07	64.72	62.99	64.96	60.27	71.28	(5,210)
<b><u>Pakistan</u></b>									
Export to India	0.88	0.65	1.28	1.40	1.60	1.59	1.41	1.69	348
Import from India	0.62	1.66	4.16	3.59	4.28	4.43	3.79	3.50	1,644
Total Trade with India	0.73	1.20	3.11	2.80	3.30	3.45	3.00	2.95	1,992
Trade Deficit with India	-0.18	6.49	8.00	6.44	7.91	7.51	6.21	4.90	(1,296)
<b><u>Sri Lanka</u></b>									
Export to India	1.07	1.09	4.95	5.59	4.94	5.73	6.62	5.48	551
Import from India	4.48	9.20	24.26	22.25	17.46	20.70	28.33	19.89	3,826
Total Trade with India	3.05	5.56	15.05	15.77	12.64	15.28	19.82	14.95	4,377
Trade Deficit with India	13.23	44.29	222.91	51.41	38.42	40.32	67.66	35.63	(3,276)
<b><u>SAARC Total</u></b>									
Total Export to India	1.24	2.58	4.15	4.41	3.91	3.94	4.08	4.15	2,601
Total Import from India	3.12	8.57	13.73	13.59	13.30	14.61	14.91	14.73	18,525
Total Trade with India	2.38	6.06	10.29	10.36	9.98	10.96	11.08	11.22	21,126
Trade Deficit with India	6.48	23.99	25.91	24.46	24.67	26.16	28.05	25.23	(15,924)

Source: Author's calculation based on IMF DOTS 2017

Note: N.A stands for not available.

Table 4.6 provides individual member country's trade with India as a percentage of their total international trade along with figures for 2016. India is the largest trading partner of both Bhutan and Nepal accounting for 92 percent and 69 percent of their respective total international trades. India is the second largest trading partner of Sri Lanka and Bangladesh accounting for 15 percent and 8.4 percent of latters' respective total international trade. India at 5.5 percent is the third largest export destination of Sri Lanka after USA and UK that account for 28 percent and 10 percent of its total exports respectively. Similarly, India at 19 percent is the second largest source of Sri Lanka's import after China that alone accounts for 22 percent of its total imports. China that accounts for 15 percent of its total international trade is Bangladesh's largest trade partner followed by India. Bangladesh's largest export destinations are USA (13.12 percent), Germany (12.71 percent) and UK (8.57 percent) while India accounts for merely 2 percent of its total exports. India is Maldives' fourth largest trading partner accounting for 12.16 percent of latter's total international trade after UAE (14.64 percent), Singapore (13.40 percent) and China (12.53 percent). However, Maldives exports minimally to India accounting for only 1 percent of its total export. The bilateral trade of Afghanistan and Pakistan with India are limited to 5.34 percent and 2.95 percent of their respective total international trades. Total trade of the SAARC countries with India accounts for little over 11 percent of their total international trade and India enjoys 25 percent of their total trade deficit.

Differences have been noticed in the trade figures among different tables because the bilateral trade figures are different between countries. For example, India enjoys trade surplus with Afghanistan according to the former's data whereas India suffers trade deficit with Afghanistan according to latter's data. Similarly, based on individual country's data Nepal has the largest trade deficit with India in the region followed by Bangladesh whereas considering India's database Bangladesh is the one with the largest trade deficit with India followed by Nepal. The discrepancies on trade balances between India and Afghanistan, Bhutan, Maldives and Nepal are somewhat significant while with that of Bangladesh, Pakistan and Sri Lanka the trade figures are by and large consistent.

**Table 4.7: List of the Estimates of Informal Trade between India and SAARC Countries**

	Period	Formal				Informal				Percentage				Sources
		Exp	Imp	Balance	Total	Exp	Imp	Balance	Total	Exp	Imp	Balance	Total	
Bangladesh	1992-93	7.8	349.1	-341.3	356.9	14	299	-285	313	179	85	84	88	Chaudhuri (1995)
	2002-03		1210				512				42			World Bank (2006)
Bhutan	1993-94	3	7	-4	10	1.2	31.3	-30.1	32.5	40	447	753	325	Rao et al. (1997)
Nepal	1989	14.9	47.7	-32.8	62.6				626				1000	Muni (1992)
- India figure	2000/01	255	141	114	396	229	180	49	409	90	128	43	103	Taneja et al (2004)
- Nepal figure		359	614	-255	973	157	211	-54	368	44	34	21	38	
Pakistan	2004-05	92.7	509.3	-416.6	602	10.4	514.2	-503.8	524.6	11	101	121	87	Khan et al (2007)
- India figure	2005	95	521	-426	616	10	535	-525	545	11	103	123	88	Naqvi & Schuler (2007)
- Pakistan figure		288	552	-264	840	10	535	-525	545	3	97	199	65	
- India figure	2012-13	574	1747	-1173	2321	720	3990	-3270	4710	125	228	279	203	Taneja & Bimal (2017)
- Pakistan figure		348	1573	-1225	1921	720	3990	-3270	4710	207	254	267	245	
Sri Lanka														
- India figure	2000-01	45	640	-595	685	23	185	-162	208	51	29	27	30	Taneja (2002); Taneja et al (2004)
- Sri Lanka figure		56	600	-544	656	15	190	-175	205	27	32	32	31	

Source: Author's compilation

- Notes: 1. World Bank (2006) estimates are related to imports of Bangladesh from India only  
2. India and Pakistan's formal trade figure for 2012 is taken from IMF DOTS 2017  
3. Official bilateral trade figures tend to differ from countries to countries.

The informal trade that exists between India and its neighbors can be very large and obviously to the advantage of India. Different studies have shown different levels of informal trade as presented in table 4.7. Chaudhuri (1995) estimates that the informal trade between India and Bangladesh is as large as 88 percent of the formal trade between them while considering the year 1992-93. Similarly, World Bank (2006) finds that informal import is 42 percent of the total formal import from India to Bangladesh for 2002-03. While Taneja et al (2004) puts estimates of informal trade between India and Nepal at 103 percent of the official trade figures reported by India, such estimates are 38 percent of the official figures reported by Nepal for the period 2000-2001. The difference is owing to the large discrepancies between their official trade figures: Nepal's official trade figure is 2.5 times larger than that of India's official trade figures. Official trade figures between India and Pakistan is highly subdued given that significant level of trade takes place through third country UAE with which India enjoys large trade surplus of more than 11 billion dollar and the former is the third largest trading partner of India in accordance with 2016 trade statistics. Survey done by Taneja & Bimal (2017) finds that 68 percent of India's informal export to Pakistan and 17 percent of India's informal import from Pakistan is routed through Dubai. The informal trade between India and Sri Lanka is one third of the formal trade based on 2000-2001 figures to the advantage of India (Taneja, 2002; Taneja et al, 2004).

For more comprehensive estimation of informal trade, Abid (2017) carried out a study of 184 countries. Following multiple indicators and multiple causes (MIMIC) approach, the study made comprehensive analysis of informal trade covering the period from 2002 to 2013. As shown in table 4.8, Switzerland tops the chart with the lowest percentage of informal trade with the period average of 5.44 percent while Djibouti appears in the last with the highest percentage of informal trade with the period average of 43.79 percent. Informal trade is the lowest in East Asia and Pacific region with the average of 15.57 percent while the highest is in Sub-Saharan region with 25.23 percent. South Asia's percentage of informal trade (20.05 percent) is almost equal to that of the global average. Among South Asia, India is the country with the lowest informal trade with 13.32 percent while Sri Lanka is the highest with 26.04 percent. It is observed from this study that all the

countries in the region have fared well in recent years compared to the period average.

**Table 4.8: Estimates of Informal Trade as a Percentage of Total Trade**

Countries	2002	2010	2011	2012	2013	2002-2013 Average	Rank
Afghanistan	23.29	20.34	18.95	18.70	19.19	21.66	107
Bangladesh	21.61	20.71	19.30	19.04	19.36	21.07	103
Bhutan	17.86	16.93	15.77	15.55	15.81	17.25	66
India	14.10	12.80	11.90	11.74	11.93	13.32	46
Maldives	18.27	17.46	16.26	16.04	-	17.84	75
Nepal	22.31	21.83	20.35	20.07	20.41	21.98	110
Pakistan	22.20	20.41	19.02	18.77	19.08	21.19	104
Sri Lanka	27.00	25.48	23.77	23.45	23.85	26.04	143
SAARC Average	20.83	19.50	18.17	17.92	18.52	20.05	
Global Average	21.06	19.65	18.35	18.11	18.24	20.06	
Switzerland	5.66	5.48	4.95	4.78	4.75	5.44	1
Djibouti	45.07	37.94	35.33	34.85	35.45	43.79	184

Source: Abid, M. (2017)

The table 4.9 highlights the comparison of transaction costs relating to the shipment of goods from India to Pakistan between two routes: land route and sea route that are most commonly used for bilateral trades. ICRIER survey finds that despite more than 10 times distance covered by sea route via Dubai than the direct Delhi-Lahore land route, the efficiency in terms of the transaction cost per tonne per km is nearly three times less via sea route. UNESCAP (2017) estimates that by reducing trade cost by 40 percent to the levels of ASEAN countries, there will be a significant increase in intraregional trade and welfare gains: export will increase by as much as 11 percent and GDP will increase by as much as 3 percent.

**Table 4.9: Transaction Cost of Merchandize Shipment from India to Pakistan**

Route	Transaction cost per Tonne in INR	Distance in km	Transaction cost per Tonne per km (INR)
Delhi-Lahore	3,050	507	6.01
Delhi-Mumbai-Dubai-Karachi- Lahore	12,600	5,756	2.18

Source: ICRIER Survey



Further, Taneja et al (2013) estimates that the overall trade potential between India and Pakistan is USD 21 billion, more than 10 times the official figure of USD 2 billion in 2011. The earlier estimates of bilateral trade potentials between India and Pakistan are: USD 5.2 billion (The State Bank of Pakistan, 2006); USD 6.6 billion (Batra, 2004) and USD 6 to 8 billion (The Federation of Indian Chambers of Commerce and Industry, 2003). Similarly, UNESCAP (2017) in its study using Gravity Model by considering 2014 export data of South Asian countries finds that the potential intraregional export is USD 81 billion - three times bigger than the actual exports of USD 26.8 billion as presented in table 4.10. The largest beneficiaries of potential gain from exports in terms of the growth are Bangladesh (93.11 percent) followed by Maldives (87.65 percent), Pakistan (86.43 percent), Afghanistan (83.39 percent) and Nepal (76.17 percent). Bhutan has the lowest export potential of barely 9 percent. In absolute terms Pakistan is expected to benefit the most from the export potential by as much as USD 21.16 billion followed by India with USD 20.65 billion. The report also projects the total export potentials of more than USD 172 billion by the year 2020 – more than double the potential of 2014.

**Table 4.10: Unexploited Trade Potential of SAARC countries**

In US\$ million

Countries	Actual Exports to SAARC Countries	Potential Exports	Unexploited Potential	Unexploited Potential (%)	Potential Exports 2020
Afghanistan	396	2,397	1,999	83.39	4,609
Bangladesh	533	7,735	7,203	93.11	24,651
Bhutan	522	573	52	9.01	732
India	20,486	41,152	20,647	50.17	81,908
Maldives	14	110	97	87.65	332
Nepal	570	2,390	1,820	76.17	6,387
Pakistan	3,404	24,4803	21,157	86.43	47,467
Sri Lanka	881	2,326	1,446	62.14	6,476
South Asia	26,807	81,164	54,421	67.05	172,563

Source: UNESCAP (2017)

All the above statistics clearly suggest that India is the central economy of the region.

## **4.2 EMPIRICAL STUDY**

Having enumerated slew of statistics in favour of the central role of India in the region, it is imperative to support it with empirical studies. In this regard, two tests are conducted: Variance decomposition test to examine whether the India's economy provide regional anchor in terms of domestic business cycles and Co-integration test to examine whether Indian rupee provides nominal anchor to the exchange rate movements of the domestic currencies.

### **4.2.1 Variance Decomposition Test**

Variance decomposition test is employed to determine the relative contributions of different variables and shocks in explaining variations in the variables under consideration. In this study, it examines to what extent the structural shocks faced by India would explain the business cycles of the countries in the region. The variables considered are USA GDP growth rate representing global output and India's GDP growth rate representing regional output growth rate along with respective GDP growth rate of member countries. The idea of representing India as the regional economy is to examine the contribution of the shocks that India is facing in explaining the fluctuations in the domestic outputs of other member countries. If the results show higher proportion of regional shocks in explaining fluctuations in domestic output of member countries, India can be considered as an anchor economy for the region. This will then provide an empirical case in support of the central role of Indian economy in the greater monetary integration in South Asia. The study is carried out by considering three time periods: from 1990 to 2003; from 2003 to 2016 and for the whole period from 1990 to 2016 hereinafter referred to as period I, period II and entire period respectively. The analysis of variance decomposition over successive time periods will help in examining trends of contributions of different shocks in explaining fluctuations in the domestic outputs. For the sake of brevity, relative contributions of global, regional and country specific shocks have been analyzed by considering first year, fifth year and tenth year to represent short run, medium run and long run implications respectively.

Table 4.11 presents variance decomposition of domestic output attributed to global shocks, regional shocks and country specific shocks. The over identifying

conditions (OIC) for solving this structural vector autoregression (SVAR) process are: regional shocks and country shocks have no long run impact on global output fluctuations; country shocks will have no long run impact on regional output fluctuations; and both global shocks and regional shocks have long run impact on domestic output fluctuations.

Regional shocks contribute significantly to the fluctuations in the output of Bangladesh, Pakistan and Sri Lanka under period I though in varying degrees over different time periods. For example, regional shocks contribute significantly to Bangladesh's output fluctuations in the short run but cave in to global shocks in the medium to long run. The opposite is the case in Sri Lanka where the regional shocks with no role in explaining output fluctuations in the short run become more important in the medium to long run by lowering the contributions of domestic shocks. The contributions of regional shocks are very limited in the case of Bhutan, Maldives and Nepal. Contributions of global shocks to output fluctuations are significant in Bhutan and Maldives across all time horizons while in the case of Bangladesh, they become significant in the medium to long run. Only in the case of Nepal, the domestic shocks explain most of the changes in domestic output while in Sri Lanka it is in the short run that the domestic shocks contribute to the greater extent.

Under period II however, the situation reverses completely for Bangladesh, Bhutan, Maldives and Sri Lanka. The role of regional shocks become prominent in the case of Bhutan and Maldives and remain to be so in Pakistan while they lose their significance in the case of Bangladesh and Sri Lanka and continue to remain weak in the case of Nepal. Domestic shocks contribute significantly to the output fluctuations in Bangladesh and Nepal for all time horizons including Bhutan in the short run. Global shocks are important contributors to the output fluctuations in Sri Lanka for all time horizons. It is Nepal and Pakistan that shows consistency of results in the two consecutive periods where domestic shocks in Nepal and regional shocks in Pakistan play significant role in respective business cycles.

**Table 4.11: Forecast Error Variance Decomposition of Output Fluctuations**

Country	Period	1990-2003			2003-2016			1990-2016		
		Global	Regional	Country	Global	Regional	Country	Global	Regional	Country
Bangladesh	1	38.61	61.37	0.02	8.13	8.12	83.75	73.89	2.33	23.78
	5	51.62	40.96	7.42	22.05	12.94	65.01	86.38	3.08	10.54
	10	53.38	39.46	7.16	21.46	15.69	62.85	89.86	2.29	7.85
Bhutan	1	82.38	15.70	1.92	0.84	44.04	55.12	11.36	1.16	87.49
	5	83.74	14.34	1.93	20.95	42.91	36.15	24.35	7.69	67.96
	10	83.36	14.66	1.99	20.94	42.95	36.11	24.80	7.76	67.44
Maldives	1	98.93	1.07	0.00	0.72	62.40	36.88	4.03	6.67	89.30
	5	91.28	3.42	5.30	2.93	59.78	37.28	3.51	10.80	85.69
	10	75.68	3.07	21.25	3.54	56.84	39.62	3.53	10.63	85.84
Nepal	1	7.86	9.42	82.72	14.45	0.48	85.07	5.32	3.70	90.97
	5	22.39	7.61	70.00	25.11	12.78	62.11	5.30	4.70	90.00
	10	23.08	7.08	69.84	23.41	16.91	59.68	5.30	4.79	89.91
Pakistan	1	4.47	72.86	22.67	4.12	71.14	24.74	7.25	33.16	59.59
	5	24.21	58.45	17.34	22.32	64.00	13.68	8.25	51.27	40.48
	10	26.46	56.74	16.80	23.52	62.52	13.96	9.05	50.87	40.08
Sri Lanka	1	42.96	0.84	56.20	75.21	4.52	20.27	35.31	1.91	62.78
	5	30.68	63.43	5.89	68.16	17.87	13.97	31.44	29.59	38.96
	10	32.33	61.90	5.77	68.21	17.87	13.92	31.74	29.70	38.55

Source: Author's calculation

The variance decomposition of the entire period provides somewhat different and puzzling results from those two sub-periods. Accordingly except for Pakistan and to some extent for Sri Lanka, regional shocks don't play significant role in contributing to the business cycles of the remaining countries in the region. Domestic shocks contribute significantly to all the countries but Bangladesh in varying degrees over different time horizons. Global shocks contribute mostly to the output fluctuations in Bangladesh while regional shocks maintain its dominance in the medium to long run in Pakistan. The results for the entire period are consistent with the sub-periods only in the case of Nepal and to some extent in Pakistan as well.

The analysis is further extended to Chelosky ordering to examine the effects of the changes in global, regional and domestic outputs on the member countries' output fluctuations. Table 4.12 shows variance decomposition of domestic output fluctuations attributed to the fluctuations in global output, regional output and domestic output applying Chelosky ordering. In this process the ordering of the

variables is important and any changes therein will completely alter the results due to the changes in the underlying assumptions. The variables are ordered as follows: USA GDP, Indian GDP and domestic GDP such that the fluctuations in India's output and domestic output won't have any impact over global output fluctuations and similarly domestic output won't have any influence over India's output fluctuations. However, fluctuations in both global output and India's output will have the bearing on the fluctuations of domestic output. Like in the previous analysis India's output is treated as regional output for the purpose of this study.

**Table 4.12: Forecast Error Variance Decomposition of Output fluctuations (Chelosky Decomposition)**

Country	Period	1990-2003			2003-2016			1990-2016		
		Global	Regional	Country	Global	Regional	Country	Global	Regional	Country
Bangladesh	1	20.54	60.79	18.67	7.45	31.54	61.01	26.75	20.80	52.45
	5	18.21	69.56	12.23	7.96	30.42	61.61	14.15	33.29	52.55
	10	17.81	69.96	12.23	7.58	28.99	63.43	10.67	35.29	54.05
Bhutan	1	12.62	60.80	26.58	8.41	51.65	39.95	0.21	4.77	95.02
	5	21.00	53.25	25.75	11.51	63.22	25.27	3.03	26.42	70.55
	10	21.74	52.76	25.50	11.53	63.22	25.25	3.33	26.65	70.03
Maldives	1	5.48	21.41	73.11	4.16	39.06	56.78	2.50	4.12	93.37
	5	2.55	16.17	81.28	7.28	36.97	55.75	2.44	7.62	89.94
	10	10.63	15.30	74.07	7.52	34.91	57.57	2.44	7.61	89.95
Nepal	1	0.20	2.83	96.96	4.54	18.98	76.48	5.61	2.74	91.65
	5	7.47	7.24	85.30	21.75	19.81	58.43	6.36	3.28	90.36
	10	7.31	7.66	85.03	20.57	24.13	55.30	6.37	3.37	90.26
Pakistan	1	2.44	85.66	11.91	22.47	0.22	77.31	8.47	21.04	70.50
	5	18.32	70.59	11.09	47.67	9.02	43.30	12.47	39.02	48.52
	10	20.33	68.65	11.01	44.99	8.55	46.47	12.66	39.17	48.17
Sri Lanka	1	27.12	2.71	70.18	74.12	0.98	24.90	9.06	3.68	87.27
	5	19.49	73.88	6.64	58.04	25.35	16.61	11.22	33.11	55.67
	10	21.01	72.45	6.54	58.03	25.40	16.56	11.34	33.59	55.07

Source: Author's calculation

Under the period I, changes in India's output contributes significantly to the output fluctuations of Bangladesh, Bhutan and Pakistan including Sri Lanka (though in medium to long run) while their own domestic outputs are predominant in Maldives and Nepal including Sri Lanka (though in short run only). Under the period II, except in the case of Bhutan, India's output is not able to maintain similar contributions to other three countries. The case of Pakistan is quite remarkable as the

contribution reduces drastically from period I to period II. In the other two countries Maldives and Nepal, the contribution of changes in India's output is less in both periods though there has been some increase in the case of Maldives in the period II. For the entire period, the changes in India's output contribute between 20 percent and 40 percent of the domestic output fluctuations of Bhutan, Sri Lanka, Bangladesh and Pakistan. For Maldives and Nepal, the changes in India's output contribute insignificantly to their output fluctuations for all the three periods. Considering entire period, changes in the domestic output is the predominant source of the domestic output fluctuations across all the member countries in the region.

It is puzzling to find relatively higher contribution of India on Pakistan output fluctuations despite enormous state imposed economic and social restrictions between them on the back of political animosity and military confrontation along the border in the Kashmir region. Even more puzzling is the insignificant contribution of India's shocks on Nepal's output fluctuations in spite of maintaining fixed exchange rate and sharing open border with India that facilitates unrestricted flow of labor between these two countries. Similarly, though the changes in the India's output seem to have greater contribution in Bhutan's output fluctuations in both period I and period II, such contributions are limited when entire period is considered. Bhutan also maintains fixed exchange rate at parity and shares open border with India. Both Bhutan and Nepal are land-locked and rely heavily on India for their international trade and the informal trade between them is also estimated to be very high. Considering output fluctuations under period II Bhutan, Maldives and Pakistan seem to be more aligned with the shocks that originate from India suggesting that among all the member states in the region, these three countries together with India may be appropriate to begin the process of greater monetary integration given that in the recent period the regional shocks have played relatively larger role in these countries. In other words, the group of these countries can adopt similar policies to respond to regional shocks that have relatively higher contribution to the output fluctuations of these countries. While Bhutan is the obvious choice given its fixed exchange rate arrangements with India and overwhelming economic dependence over India, Maldives and Pakistan are structurally different economies

with less complementarity and interdependence to be part of sub-regional initiatives for greater monetary integration.

According to Travel and Tourism Economic Impact 2017 Maldives report, the direct contribution of Travel and Tourism is 41 percent while its total contribution is as high as 79 percent of Maldives GDP in 2016. Similarly, foreign visitors contribute 79 percent of Maldives total exports. According to Tourism Year Book 2017 Maldives, India contributed barely 5.2 percent of total tourist arrivals in Maldives in 2016 compared to more than 25 percent from China. Similarly, India accounted for merely 1 percent of Maldives total export and 13 percent of Maldives total imports during 2016 (IMF DOTS 2017). In terms of bilateral remittance also, Maldives is the net exporter of remittance to India though remittance doesn't play significant role in Maldives' economy unlike in other member countries in the region.

On the other hand, the political and security concerns between India and Pakistan dent the prospects of any monetary integration between these two countries. Political considerations were said to be the overwhelmingly important factor in the eventual formation of EMU. In fact Pakistan will be the last member country to join any initiatives on monetary integration if implemented at a sub-regional level in a phased manner. In addition, there are hardly any economic commonalities among Bhutan, Maldives and Pakistan. Due to worsening relations between India and Pakistan in recent years, the 19<sup>th</sup> SAARC summit scheduled for November 2016 in Pakistan could not be held till now dampening the overall prospects of regional cooperation. India seems to be pushing through parallel regional initiatives such as BIMSTEC where all the countries of the region are also the members *sans* Pakistan and Afghanistan. In recent times, India's attitude towards SAARC has raised concerns over the relevance of the SAARC.

Though many data show the significance of India in the region, the empirical studies however fails to validate India as an anchor economy in the region. Analysis of the contribution of structural shocks attributing to Indian economy on the business cycles of the countries in the region using variance decomposition technique falls short of confirming the central role of India.

#### 4.2.2 Co-integration Test

In this section, co-integration test is carried out to determine long run relationship between exchange rates of member nations in the region and Indian rupee. The long run relationship would mean that the exchange rate of India will have some influence over the exchange rate movements of the currencies in the region. The long run relationship will be further analyzed to find the nature of the relationship between the currencies. If no long run relationship is established, it can be concluded that exchange rates of member countries are determined independently of exchange rate movement of Indian rupee. In other words, the co-integration test assists in determining whether the Indian rupee provides a nominal anchor to the currencies of the member states. The test is not required for the currencies of Bhutan and Nepal because of their fixed exchange rate arrangement with Indian rupee. It means the currencies of these two countries are already anchored with Indian rupee. Such arrangements have indeed been instrumental in providing macroeconomic stability to these two smaller countries that depend heavily on India. Therefore the co-integration test is carried out between Indian rupee and the currencies of Bangladesh, Maldives, Pakistan and Sri Lanka.

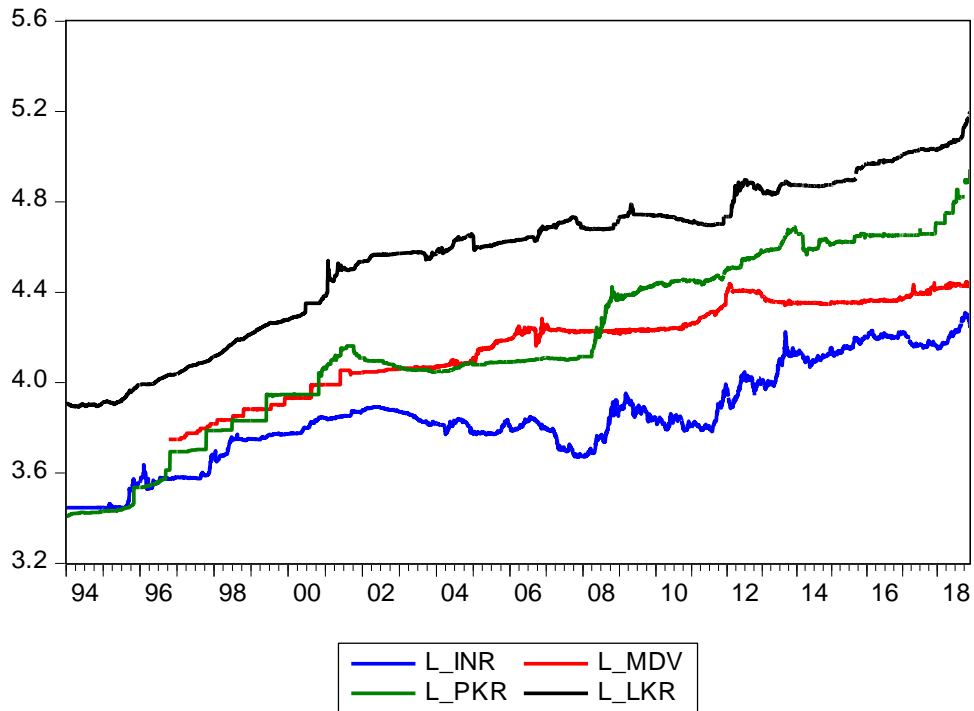
The data on daily exchange rate from 1994 to 30 November 2018 has been sourced from IMF Exchange rate Archive for India, Pakistan and Sri Lanka. The data on daily exchange rate for Maldives has been taken from online site Currency.Zone and is available from 9 October 1996. Similarly exchange data for Bangladesh taka is retrieved from Bangladesh Bank website and is available from January 2005 to November 2018 and it is on a monthly basis. Hence the co-integration test between Indian rupee and Bangladesh taka is done by first taking monthly average of Indian rupee exchange rate for periods corresponding to exchange rate of Bangladesh taka. The US dollar is taken as a base currency for all the exchange rates for the purpose of this test.

The figure 4.1 provides graphical representation of the movement of daily exchange rates of four countries for over two decades. The gaps between Pakistan and India and Sri Lanka and India have increased over the years and have escalated further during the course of 2018. The nominal exchange rate of Pakistan rupee that



started from almost same footing as Indian rupee in 1994 has shown much larger volatility and loss of value compared to its peer. Sri Lankan rupee has also lost its value to the larger extent compared to Indian rupee. Despite its peg to US dollar, the long run value of Maldivian rufiyaa is not much different from that of Indian rupee despite latter's larger variations in the interim periods.

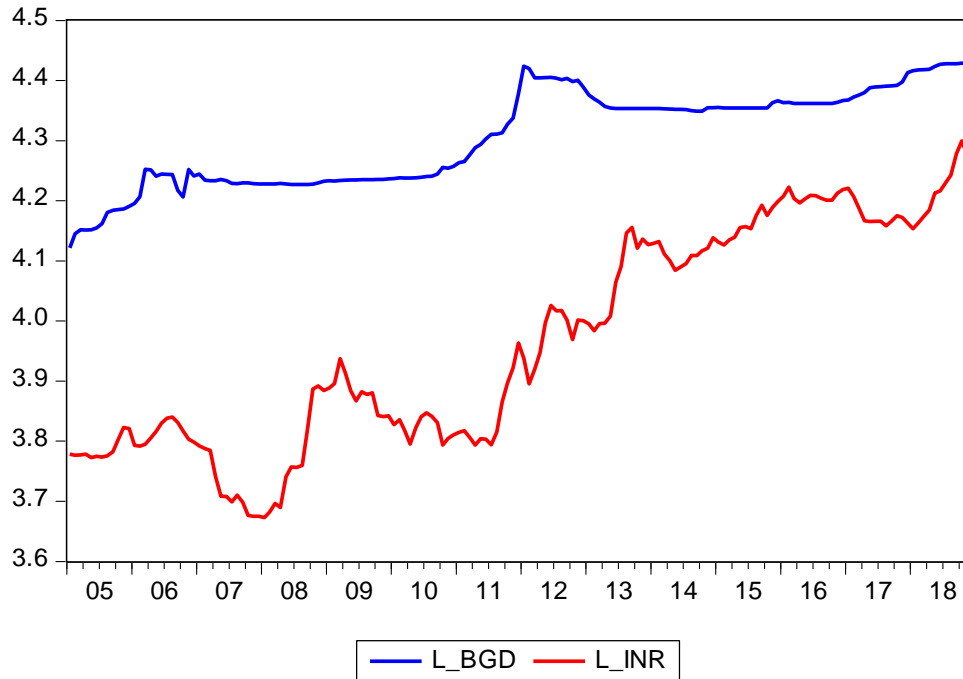
**Figure 4.1 Daily Exchange Rate Graph**



----X-axis represents Years and Y-axis represents percentage----

Figure 4.2 presents graphical representation of the movement of the monthly exchange rates of Bangladesh taka and Indian rupee since 2005 until November 2018. Bangladesh taka shows much stability compared to Indian rupee. Bangladesh taka has also maintained its long term value compared to other currencies in the region on the back of the adoption of stable exchange rate regime supported by sound macroeconomic fundamentals.

**Figure 4.2: Monthly Exchange Rate Graph**



-----X-axis represents Years and Y-axis represents percentage-----

All the series are put to stationary test using Augmented Dickey-Fuller test. The unit root test shows that none of the series is stationary at level. Natural log of series are taken. All the series become stationary at first difference. In other words, the series are integrated of order 1 represented as I (1). The result of unit root test is presented in table 4.13. The primary criteria of running Johansen Co-integration test is that all the series shall be I (1) or in other words shall be stationary at first difference.

**Table 4.13: Unit Root Test**

Particulars	Levels		First Difference	
	t-Statistic	Prob. <sup>1</sup>	t-Statistic	Prob. <sup>1</sup>
Bangladesh taka monthly exchange rate	-2.0470	0.2667	-6.1347	0.0000
Indian rupee monthly exchange rate	-0.5366	0.8797	-9.1439	0.0000
Indian rupee daily exchange rate	-0.7638	0.8285	-78.7299	0.0001
Maldivian rufiyaa daily exchange rate	-2.0080	0.2835	-63.4875	0.0001
Pakistan rupee daily exchange rate	-0.3234	0.9191	-76.5400	0.0001
Sri Lankan rupee daily exchange rate	-0.6311	0.8614	-29.9225	0.0000

Source: Author's calculation

Notes: 1. Test critical values: -3.4312 at 1% level

When series are non-stationary at level but their linear combination becomes stationary at level, there exists long run relationship between the variables. In other words the series are co-integrated. Since all the series are I (1), the long run relationship between the exchange rate of each currency and Indian rupee is examined by Johansen Co-integration test. Akaike Information Criteria (AIC) is used for determining optimum lag length for the purpose of this study. The optimum lag length using various criteria is presented in table 4.14.

**Table 4.14: Lag Length Selection**

Currencies	LR	FPE	AIC	SC <sup>1</sup>	HQ <sup>1</sup>
BGD-INR	2	2	2	2	2
MDV-INR	18	18	18	2	3
PKR-INR	25	8	8	1	1
LKR-INR <sup>1</sup>	24	24	24	5 <sup>1</sup>	5 <sup>1</sup>
INR-MDV-PKR-LKR	24	5	5	2	2

Source: Author's calculation

Note: 1. Selection of lag length according to SC & HQ provides different results for Sri Lanka and India pair

The selection of lag lengths using criteria other than AIC also gives similar results in the case of co-integration test between the exchange rate movements of the currencies of Maldives and India and Pakistan and India. However co-integration test yields different results from AIC when lag length is selected using Schwarz Information Criteria (SC) between Sri Lanka rupee and Indian rupee as presented in the table 4.15. The selection of the lag according to SC shows the existence of co-integration between exchange rates of India and Sri Lanka.

**Table 4.15: Unrestricted Co-integration Rank Test (Trace and Maximum Eigenvalue)**

Currencies	Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Prob <sup>1</sup>	Max-Eigen Statistic	Critical Value	Prob <sup>1</sup>
BGD-INR	None	0.046607	8.7115	15.4947	0.3928	7.8274	14.2646	0.3965
	At most 1	0.005376	0.8841	3.8415	0.3471	0.8841	3.8415	0.3471
MDV-INR	None	0.000805	6.5793	15.4947	0.6270	4.5039	14.2646	0.8027
	At most 1	0.000371	2.0755	3.8415	0.1497	2.0755	3.8415	0.1497
PKR-IND	None	0.000937	6.0388	15.4947	0.6910	5.9227	14.2646	0.6232
	At most 1	0.000018	0.1161	3.8415	0.7333	0.1161	3.8415	0.7333
LKR-INR	None	0.001933	12.8315	15.4947	0.1211	12.1974	14.2646	0.1034
	At most 1	0.000101	0.6341	3.8415	0.4259	0.6341	3.8415	0.4259
LKR-INR <sup>2</sup>	None <sup>3</sup>	0.002428	15.9321	15.4947	<b>0.0430<sup>3</sup></b>	15.3696	14.2646	<b>0.0333<sup>3</sup></b>
	At most 1	0.000089	0.5624	3.8415	0.4533	0.5624	3.8415	0.4533

Source: Author's calculation

Note: 1. MacKinnon\_Haug\_Michelis (1999) p-values

2. Co-integration result with 5 lags as per SC and HQ

3. Rejection of null hypothesis at 5 percent level of significance

The co-integration test is further extended by considering all the currencies together: Indian rupee, Maldives rufiyaa, Pakistan rupee and Sri Lankan rupee. Table 4.16 shows results of co-integration test for all the four variables taken together using lag length criteria according to AIC. The result shows that there is no co-integration between the exchange rates of the four currencies. The results are similar for all lag lengths based on different criteria including SC. Hence, the long run relationship seen between Indian rupee and Sri Lankan rupee while using lag length based on SC as shown in table 4.15 is not taken further.

**Table 4.16: Unrestricted Co-integration Rank Test (Trace and Maximum Eigenvalue)**

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Probability	Max-Eigen Statistic	Critical Value	Probability
None	0.003885	40.5465	47.8561	0.2035	21.8205	27.5843	0.2297
At most 1	0.002190	18.7260	29.7971	0.5127	12.2884	21.1316	0.5195
At most 2	0.001126	6.4375	15.4947	0.6438	6.3168	14.2646	0.5729
At most 3	0.000021	0.1207	3.8415	0.7283	0.1207	3.8415	0.7283

Source: Author's calculation

The co-integration results can be corroborated with the exchange regimes that each of the countries in the region are following. AREAER 2017 shows that the countries in the region follow different exchange rate regimes as presented in table 4.17. Afghanistan and Indian follow floating exchange rate regime, Bhutan and Nepal follow conventional peg with Indian rupee, Maldives, Bangladesh and Pakistan follow stabilized arrangement while Sri Lanka follow crawl-like arrangement. The results of the co-integration test basically corroborate the presence of different exchange rate regimes in the region. The test would have been robust had all the countries adopted floating exchange rate system similar to Indian exchange rate regime. Moreover, the financial integration in the region is almost nonexistent and countries follow different degree of current account and capital account convertibility. The only transmission channel is the trade which is again dismally low to make any significant impact. All these explain the low synchronization and lack of long run relationship in the movement of exchange rates in the region.

**Table 4.17: Currency Regime of SAARC Countries**

	AFG	BGD	BTN	IND	MDV	NPL	PAK	LKA
Currency Regime	Floating	Stabilized arrangement	Conventional Peg (Fixed with INR at parity)	Floating	Stabilized arrangement (Fixed with USD at 1USD=12.85±20% MVR)	Conventional Peg (Fixed with INR at 1 INR = 1.6 NPR)	Stabilized arrangement	Crawl-like arrangement
Monetary Framework	Monetary aggregate target	Monetary aggregate target	Exchange rate anchor	Inflation Targeting	Exchange rate anchor	Exchange rate anchor	Other	Other

Source: AREAER 2017

### 4.3 SUMMARY

The countries in the region are highly asymmetrical in terms of size of economy, population, area though the level of social and economic development is somewhat comparable. All the data point to the fact that India is the central economy of the region. India provides a common platform for every intraregional undertaking largely due to its size, central location with common borders and geopolitical significance.

Empirical analysis is performed to establish whether the central role of India in terms of its size, economy, geopolitical significance etc. has translated into explaining the business cycles of the region and the patterns of exchange rates. In this regard, variance decomposition of structural shocks derived from SVAR analysis has been employed to analyze the patterns of business cycles. It fails to show the role of India and its structural shocks in explaining the business cycles of the countries in the region. The results of variance decompositions of outputs show that Indian economy has not been able to provide regional anchor to the countries in the region. Domestic factors are overwhelmingly predominant in explaining output fluctuations of the countries in the region.

Similarly Johansen test of co-integration is used to assess the long run relationship between the exchange rates of countries in the region with Indian rupee. Bhutan and Nepal are excluded from the analysis given their fixed exchange rate with Indian rupee. The co-integration test shows no long run relationship between currencies of the region and Indian rupee. This comes from the fact that the countries in the region follow exchange rate system different from that of India. India and Afghanistan are the only countries in the region that follow floating exchange rate while other countries in the region follow some kind of managed exchange rate.

Based on these empirical studies, it can be concluded that economic development taking place in India doesn't have significant influence over the economic evolution of the countries in the region. Empirically, both Indian economy and Indian rupee fail to provide regional anchor to the economies and currencies of the region in spite of disproportionate advantage over its smaller neighbors in terms of its size and socioeconomic and geopolitical influence in the region. The empirical significance of Indian economy and its currency would otherwise have given empirical legitimacy in favour of the relevance and importance of the economic policies and exchange rate management of India in fostering greater regional economic and monetary integration.

\*\*\*\*\*

## CHAPTER V

### MONETARY INTEGRATION IN SOUTH ASIA: A SURVEY ANALYSIS

The fifth objective of the research is to solicit feedback from the key stakeholders on the prospects of monetary integration in South Asia. The outcome of the survey is expected to supplement the empirical results and in the process contribute constructively by bringing out important insights pertinent to the process of regional economic and monetary cooperation. Surveys are powerful tool for undertaking both qualitative and quantitative analysis of simple to complex issues. Empirical studies relating to social science are generally based on historical data and might not always be relevant in projecting future direction. Moreover, research on social science generally involves issues that can't be represented in mathematical equations. Those results which are based on secondary data generally require further validation from the outcome of survey which is based on primary data. The issues of regional monetary integration are complex and multidimensional in nature intertwined between geopolitical, socioeconomic, security and cultural aspects of the sovereign nations and their people. It is therefore important to consider those aspects which can't be derived from empirical evidences alone. Due to highly technical nature of the survey, stakeholder's survey is found quite pertinent for this exercise.

Regarding the mode of survey, Questionnaire is preferred over Interview for the survey because of its simplicity and objectivity of the results. Questionnaire contains 12 questions comprising of broadly three types. The first nine questions are presented in a Likert-scale from 1 to 5 with 1 representing "strongly disagree", 2 representing "disagree", 3 representing "neither agree nor disagree", 4 representing "agree" and 5 representing "strongly agree". The tenth question is the rank order type with the selection of 5 statements in the order of preferences. The remaining two questions are "yes" and "no" type. While eleventh question further required the respondents to name the list of countries in three phases conditional upon the answer being the "yes", the twelfth question has an option of providing remarks. The sample questionnaire is provided in the appendix 1.

The stakeholders included academicians, policy makers, practitioners and private sectors from the region with the understanding of the subject matter. From

the policy makers, the high level officials of central banks and ministry of finance have been considered. These are two arms of the Government who deal with issues relating to regional economic and monetary integration. Similarly from academicians those who have been writing on the subject have been identified. From private sector officials of Chamber of Industry and Commerce were approached. Similarly from practitioners officials of research institutes and multilateral organizations were considered.

Due to the technicality of the subject matter, the choice of the respondents is limited. Five to 10 respondents are identified from each SAARC countries. A total of 70 respondents are identified from across the region including some associated with foreign institutions. The number of respondents identified for the survey fell short in Afghanistan, Bhutan and Maldives. In total 31 responded to the survey and the list of the respondents is provided in the appendix 2. Table 5.1 and 5.2 provide the general overview of the respondents in terms of the countries and the stakeholders respectively.

While the highest number of the respondents is from Nepal and India, none participated from Afghanistan and Maldives despite numerous follow ups. In spite of a good number of individuals identified from Pakistan, the actual respondents fell short of the expectation. Further none from State Bank of Pakistan, the central bank of Pakistan responded to the survey despite repeated follow ups. The respondents from Pakistan declined to respond questioning the very intent of the survey. In some cases, the respondents didn't feel technically competent to be able to provide their inputs. Similarly some respondents declined to respond due to the concerns of confidentiality of the institutions they are associated with while in other cases they did not respond citing that they don't represent the competent authority to respond on the subject. These issues came up despite clarifying that the views expressed are personal and do not represent the organization they are associated with; the process is highly confidential; and the participation in the survey is the right way to vent out their differences on the intent and content of the survey.



**Table 5.1: Country Representation**

Countries	Frequency	Percent
Bangladesh	3	9.7
Bhutan	3	9.7
India	8	25.8
Nepal	10	32.3
Pakistan	2	6.5
Sri Lanka	5	16.1
Total	31	100.0

Source: Author's calculation

Among the stakeholders, those from policy makers are the highest. They are mainly the senior officials of the central banks and the ministry of finance. Despite efforts to rope in larger number of academicians who have worked on this area, the turnout is below expectation. Similarly, the private sector which is the key stakeholder and is likely to benefit the most with greater regional economic and monetary integration also fell short of expectation in the participation of the survey.

**Table 5.2: Stakeholders Representation**

Particulars	Frequency	Percent
Academia	6	19.4
Policy Maker	15	48.4
Practitioner	5	16.1
Private Sector	5	16.1
Total	31	100.0

Source: Author's calculation

The use of Likert scale is particularly useful in quantifying the results when the survey deals with subjective and qualitative issues. It allows respondents to specify their level of agreement or disagreement to a series of statements. Hence the range portrays the intensity of their feeling for a given item. It helps in offering objective assessment to the qualitative issues. The results are assessed under following broader themes.

## 5.1 ECONOMIC AND MONETARY INTEGRATION:

There is broad consensus that the economic integration in South Asia is far from satisfactory and the region is still struggling with the basic tenets of the economic integration. Questions from 1 to 4 along with 10 are designed to garner opinions on various aspects of economic and monetary integration. The positive externalities of greater economic integration is obvious, but even after more than three decades of formally setting up the SAARC, the region remains one of the least integrated regions in the world. Table 5.3 presents the results of the survey covering issues relating to economic and monetary of the region.

**Table 5.3: Results of Survey on Economic and Monetary Integration**

Q.No.	Questions	Mean	Std. Deviation
1	Economic integration beyond the implementation of SAFTA, SATIS and agreement on intraregional Investment in the form of Custom Union, Single Market and Economic Union is not feasible in South Asia.	3.45	1.12
2	Monetary Union with a single currency in the likes of euro area is not feasible in South Asia.	3.77	1.20
3	The objective of Monetary Integration in the South Asian context should be the advancement of monetary cooperation necessary for deepening economic integration rather than a monetary union with a single currency.	4.29	0.69
4	Geopolitical issues and national sentiments supersede the prospects of economic and monetary integration in the region.	4.19	0.65

Source: Author's calculation

SAARC Group of Eminent Persons (GEP) envisaged Custom Union by 2015 and Economic Union by 2020 as the two deliverables of the successful economic integration of the region. The implementation of SAFTA that came into force from 2006 is far from satisfactory. Similarly the free trade agreement on services (SATIS) though came into force from 2012 is yet to become operational. The agreement on Investment has not been adopted yet. In more than three decades of its existence, SAARC has not been able to deliver even the basic frameworks of economic

integration. Under these circumstances majority of the respondents with the mean of value of 3.45 believe that the goal of custom union and economic union with a single market might not be feasible in South Asia. Therefore full implementation of SAFTA, SATIS and the proposed agreement on Investment remain the cornerstone of the successful economic integration in the region. The higher forms of regional economic integration look beyond the reach of the SAARC at least for now until the full implementation of the basic frameworks of regional economic integration is achieved.

Similarly, the goal of a monetary union with a single currency in the likes of euro area is even more challenging to achieve in the context of South Asia. It requires greater commitment and series of difficult reforms. It means giving up sovereignty over national currency and autonomy over exchange rate management and monetary policy formulation. At present, such objectives are far from realistic. The euro crisis has further unraveled the complexities of managing and sustaining a monetary union with a common currency. The euro crisis has taught many important lessons among which the most crucial is that monetary union is probably the last stage of the process of regional integration. Euro crisis has shown that monetary union without capital market union, banking union and fiscal union is difficult to sustain in the long run. Further, without political union it is difficult to achieve fiscal union. All these integrations are hard to come by in the South Asian context. Most of the respondents with the exception of few with a mean value of 3.77 are of the view that a monetary union with a single currency is not feasible in South Asia. The euro crisis has further dampened the mood of regional blocks towards a monetary union with a single currency.

The goal of monetary integration in South Asia if pursued in isolation won't yield desired result. It has to anchor around the primary goal of economic and financial integration. The term monetary cooperation rather than the monetary integration might be the true reflection of what can be realistically achieved and desirable to the region. Fostering economic and financial integration of the region should be the primary goal of monetary integration in South Asia. This is voiced by respondents across all the stakeholders and the countries with the mean value of 4.29, the highest score of the survey. The broad consensus is to promote monetary

integration that essentially promotes economic integration of the region and eases the intraregional financial transactions. The monetary union with a single currency will probably never be achieved in south regional context. Hence the practical definition of monetary integration in South Asia is not the one with a common currency similar to euro area, but a process of incremental monetary cooperation aimed at facilitating greater economic and financial integration.

Asymmetries though common in most of the regional economic blocks, are in plenty in South Asia. The region hosts the second most populous country in the world – India with a population of 1.3 billion along with a tiny nation of islands – Maldives with a population of little over four hundred thousand. Being landlocked and surrounded by India in three sides, Bhutan and Nepal are largely dependent on India. The region also hosts two rival countries armed with nuclear arsenals: India and Pakistan. In recent years, the bilateral ties between them have worsened further to the point of not being able to hold SAARC summit since 2014. These asymmetries require different set of priorities and policies. Moreover, India's both economic and political dominance in the region has always been a matter of concerns to the member countries. Security, political and national interests have taken precedence over economic cooperation and development among the countries in the region. This perception is echoed by all the respondents with the second highest score of 4.19.

## **5.2 MONETARY INTEGRATION FROM THE SUB-REGION**

Question number 11 pertains to whether the issue of monetary integration shall be approached from a sub-regional level. Most of the respondents supported the views that if monetary integration is to take place, it shall begin from a sub-region considering the fact that few countries are relatively better integrated than others with the potential of further integration. The inputs seem to be largely based on both technical and practical grounds. Bhutan and Nepal have made separate bilateral arrangements with India out of economic necessity in the light of unique geopolitical realities. These arrangements are outside of the framework of SAARC and ACU. As exhibited in table 5.4 overwhelming majority of the respondents

endorsed the idea of approaching regional monetary integration in a phased and incremental manner from a sub-regional level.

**Table 5.4: Results of Survey on Sub-regional Approach**

Q.No.	Questions	Mean	Std. Deviation
5	Structural, economic and political realities of the region require the process of monetary integration to be approached in a phased and incremental manner from a sub-regional level.	4.07	1.00

Source: Author's calculation

Similarly, 24 out of 31 respondents accounting for 77 percent of the total respondents approved the idea of phased implementation of monetary integration. Majority of those who endorsed phased and incremental approach of monetary integration proposed the following order of implementation:

1. Phase I: Bhutan, India and Nepal
2. Phase II: Inclusion of Bangladesh and Sri Lanka
3. Final Phase: Inclusion of Afghanistan, Maldives and Pakistan

Though the final phase of monetary integration would consider all the countries, many respondents have serious doubts over Pakistan's participation and the relevance of Afghanistan. All the respondents from Pakistan including few from other countries seem to oppose the idea of incremental monetary integration from the sub-regional level. In their views, it further fragments the regional cooperation instead of bringing the member countries closer under a common framework. The phased approach of monetary integration from the sub-regional level is much of a concern to Pakistan given its exclusion from the regional initiative as is happening under BBIN and SESEC frameworks. The fear of isolation from the regional cooperation is the natural concern of Pakistan.

Question 10 is aimed at finding key reasons that constrain the prospects of monetary union with a common currency in South Asia. The respondents are asked to rank five statements in the order of importance. Table 5.5 provides the overview of the result.

**Table 5.5: Factors Constraining Monetary Union**

Rank	Particulars	Score
1	Large asymmetries among member countries	2.59
2	Fear of India's dominance in the region	2.45
3	The region is not an Optimum Currency Area, in other words the cost of monetary union outweighs the benefit	2.34
4	The reforms necessary to achieve monetary union in the region is difficult to implement in the absence of political will as evident from the disappointing progress towards economic integration	2.14
5	The member nations don't want to give up their sovereign currencies	1.97
6	Ongoing Indo-Pakistan conflicts	1.48
7	Lessons from euro crisis	0.86

Source: Author's calculation

The respondents were also asked to cite any reasons other than what was provided in the questionnaire which they feel are constraining the process of monetary integration in South Asia. Following reasons were cited:

1	Trade integration is incomplete
2	Monetary integration is incomplete
3	No political integration
4	No level playing field in the regional trade and commerce
5	Heterogeneous nature of socio economic and political fundamentals
6	Lack of trust among countries (Eg. India-Pakistan, Bangladesh-Pakistan etc.)
7	Lack of comparative advantage
8	Brexit has taught us even the best of integration is not safe. SAARC is so diverse.
9	The debt crisis also demonstrates, equity can be an issue.
10	However, Euro has also lots of positive impacts and effects.

### **5.3 ROLE OF INDIAN CURRENCY FOR GREATER MONETARY INTEGRATION**

The questions 6, 7 and 12 are related to regional role of Indian rupee. It is put in the context of achieving higher monetary integration without the necessity of giving up sovereign currency by the member countries. Table 5.6 presents the results of the survey. The score for the role of Indian rupee for intraregional invoicing and

settlement is 3.29 while for reserve currency is 3.26. These are the lowest scores among all the nine questions. However, the analysis of rating frequency provides more insights regarding the distribution of the score. For invoice role, apart from neutral rating by 8 respondents 15 respondents rated in favour compared to 8 who are against. Similarly for reserve currency role, 16 are in favour, eight are against and seven are neutral. Hence despite the low mean score essentially due to higher weightage of neutral scores, majority still believed that Indian currency can play greater role in intraregional invoicing and as a reserve currency.

**Table 5.6: Results of Survey on the Intraregional Role of Indian rupee**

Q.No.	Questions	Mean	Std. Deviation	Rating: Frequency
6	Indian rupee can serve as a unit of invoice and currency of settlement in the intraregional transactions.	3.23	1.30	5: 7 4: 8 3: 8 2: 3 1: 5
7	Indian rupee can serve as a regional reserve currency like in the case of Bhutan and Nepal.	3.26	1.32	5: 5 4: 11 3: 7 2: 3 1: 5

Source: Author's calculation

Similarly out of the total 31 respondents 14 feel that Indian rupee won't have role in promoting monetary integration in South Asia as presented in table 5.7. Two out of three from Bangladesh; one out of three from Bhutan; one out of eight from India; four out of 10 from Nepal; both from Pakistan; and four out of five from Sri Lanka voted against the idea.

**Table 5.7: Results of Survey on the Role of Indian Rupee on Monetary Integration**

Q.No.	Question	Yes	No
6	As the possibility of monetary union with a single currency is nonexistent, can Indian rupee being the currency of the central economy of the regional play pivotal role in the regional monetary integration of South Asia? Briefly explain your views.	17	14

Source: Author's calculation

The respondents in general seem to be more cautious on the issue given the likely geopolitical and economic ramifications of such developments. The concerns essentially emanate from the fear that India already wields considerable influence in the region and allowing Indian currency to play regional role would only further promote its political and economic interests in the region.

Even for countries like Nepal and Bhutan which are heavily dependent on India for their trade and with whom the degree of economic integration is higher, the respondents from these countries are also concerned about India's influence. In the past Nepal had been subject to three trade blockades from India bringing immense hardship to the people. India had always played major roles in major political developments in Nepal and people openly express their dislikes over its unwarranted interference in their domestic issues. Such sentiment is quite subtle in Bhutan given its economic and political dependence on India. Bhutan relies heavily on India not only for trade but also for its overall development unlike Nepal whose dependency on India is primarily on trade. Bhutan is dependent on India even for its budgetary support apart from investment which has helped the small nation to advance from low income country to lower middle income country. By virtue of allowing Indian rupee to play a regional role, the member countries believe that India will have greater influence in the region to the disadvantage of the member states.

Some concerns are more rational and technical. The stability of the Indian rupee is the major concern for Bangladesh and Maldives. Bangladesh taka is the most stable currency in the region apart from Maldivian rufiyaa which is pegged to US dollar. Similarly the non-convertibility of Indian rupee is another major concern. Both these issues are likely to inhibit the process of the regionalization of Indian rupee in the short run.

The general sentiment against the idea of Indian rupee taking up regional role is that it would compromise the multilateral character of SAARC by accepting the hegemony of India in the region. The bilateral relationship between India and Pakistan has taken a heavy toll on achieving greater regional cooperation and undertaking reforms necessary for economic integration. It has been manifested in the form of India's consistent refusal to participate in a SAARC summit to be held



in Pakistan amidst deteriorating relation. The specific remarks made by the respondents are provided in the Appendix 3.

#### **5.4 REFORMS OF THE INSTITUTIONAL FRAMEWORKS**

The relocation of Asian Clearing Union and the establishment of South Asian Development Bank are considered under this section. This is covered in question number 8 and 9 in the questionnaire. Other important frameworks such as capital market union, banking union and fiscal union are far too unrealistic to be part of this survey. Table 5.8 presents the results.

The ACU is headquartered in Tehran since its establishment under the aegis of UNESCAP in 1974. Two non-SAARC countries: Iran and Myanmar and all the SAARC countries excluding Afghanistan are the members of the union. The main objective of the union is to facilitate trade settlement among the member countries. Due to US sanctions against Iran for the pursuit of nuclear arms, transactions with Iran has been settled completely out of ACU since 2013. Both Iran and India were the major beneficiaries of the union until 2011. In this context, it is important to evaluate the relevance of relocating ACU from Iran to India. The relocation is expected to bring about reforms necessary to broaden the scope of the union to encompass other forms of union such as payment union. Similarly the possibility of the use of Indian rupee in the settlement along with US dollar will be big positive for the region in terms of curtailing exclusive reliance on dollar.

**Table 5.8: Results of Survey on ACU and SAARC Development Bank**

Q.No.	Questions	Mean	Std. Deviation
8	The relocation of Asian Clearing Union (ACU) from Iran to India due to US sanctions against the former will facilitate greater monetary integration in the region.	3.36	1.25
9	Establishment of SAARC Development Bank to finance cross border infrastructure development will contribute to the greater monetary integration in the region.	3.97	1.11

Source: Author's calculation

The mean value of 3.36 though looks close to halfway, the further analysis provides better picture of the result. 16 respondents agreed (with 6 strongly agree), 8 disagreed (with 3 strongly disagree) and 7 neither agree nor disagree. Among those who strongly disagreed are one each from Bangladesh, Pakistan and Sri Lanka and those who disagree are three from Nepal and two from India. Despite close to mean value of 3, the majority respondents are in favour of relocating ACU to India for better regional cooperation and deeper integration.

Regarding the issue of SAARC development bank, majority believed that the establishment of SAARC development bank will foster greater monetary cooperation in the region. The idea was first mooted by the SAARC Group of Eminent Persons (GEP). The objective was to mobilize resources for the infrastructure development of the region. The matter gained some spotlight during the establishment of New Development Bank (NDB) by BRICS countries in 2014 and Asian Infrastructure Investment Bank (AIIB) led by China with the participation of more than 50 countries in 2015. It however lost its momentum on the back of India's indifference to the concept because of its concerns over its financial viability and presumption that it has to bear higher financial responsibility for its establishment.

## **5.5 SUMMARY**

The survey is intended to draw crucial insights from stakeholders across the region regarding the prospects of monetary integration in South Asia. The overwhelming majority of the respondents are of the view that monetary integration in South Asia shall be aimed at facilitating economic integration rather than achieving a distant goal of monetary union with a single currency. The economic integration beyond the implementation of free trade agreement on goods and services and possibly the investment looks increasingly uncertain. Under these circumstances, the goal of monetary integration shall be anchored on regional realities.

Majority are in favour of incremental and phased implementation of monetary integration starting from a sub-regional level. In this regard, a group of Bhutan, India and Nepal that share fixed exchange rate system with each other be

suitable countries to begin the process of monetary integration. In the second phase, countries like Bangladesh, Sri Lanka and possibly Maldives can participate. Pakistan and Afghanistan could join in the last phase though it would be rather hypothetical at this stage.

Regarding the role of Indian rupee, though the final outcome is in its favour the concerns are high. These concerns stem mainly from the fear of India's dominance. The other concerns are of stability and convertibility of Indian rupee. These economic concerns will however be addressed in the long run with the sustained economic rise of India.

Majority views are on the establishment of SAARC Development Bank to mobilize resources for financing cross border infrastructure development. Similarly, majority views are in favour of relocating ACU from Iran to India to make it more relevant and to contribute to the process of regional economic and monetary integration.

\*\*\*\*\*

## CHAPTER VI

### **SOUTH ASIAN COMMON MONETARY AREA: A MODEL FRAMEWORK**

The term South Asian Common Monetary Area (SACMA) is introduced to present the idea of workable regional monetary arrangement premised on sound theoretical and practical foundations rooted on regional context. It stems from the fact that the *status quo* with very little monetary integration is not an option for South Asia in achieving its goal of regional cooperation for the overall development of the region. At the same time it is also unrealistic to assume that the region will achieve economic and monetary union like EMU. It therefore calls for the reorientation of goals and realignment of efforts that can constructively contribute to achieving deeper integration based on geopolitical and economic realities of the region. Monetary integration is a process of attaining greater monetary cooperation among sovereign nations rather than overarching goal of achieving monetary union with a single currency. It is therefore important to find innovative yet practical arrangements for greater monetary cooperation aimed at facilitating intraregional payments, trade, investment and promoting macroeconomic stability and the overall development of the region. Euro crisis proved that even the euro area is far from being a perfect monetary union. Host of reforms have been initiated to make euro area more relevant and sustainable.

The history of SAARC demonstrates that reforms are extremely difficult to implement in the region. SAFTA came into operations in 2006 after two decades of the formation of SAARC. Preferential trade and free trade are the most basic forms of regional cooperation for economic integration. The goal of full implementation of free trade agreement within first 10 years of its operations is far from being achieved and based on what has been achieved so far it is going to take many more years for its full implementation. Implementation of free trade on services is even more sensitive and complex. Agreement on Investment has not yet been adopted. These reflect the challenges that the region faces in the regional cooperation. The goal of monetary integration if crafted without factoring in these realities is in similar vein less likely to be successful.

Before defining the modality of monetary cooperation in the form of common monetary area for South Asia it is first important to understand different types of monetary unions and forms of monetary cooperation that exists in different parts of the world along with other relevant factors contributing to the evolution of monetary integration.

## 6.1 CURRENCY UNIONS

Table 1.1 in Chapter I provides the list of regional monetary unions that are currently in existence. The brief descriptions of those five currency unions are presented in the following paragraphs:

1. Common Monetary Area of South Africa: Common Monetary Area (CMA) of South Africa established in 1920s comprises of four countries Lesotho, Namibia, South Africa and Swaziland. The member states issue their own currencies and have their own independent central banks. Currencies of member countries are pegged to South African rand at par and are required to be fully backed by foreign reserve with the exception of Swaziland. The Reserve Bank of South Africa sets monetary policy for the area while the other member states maintain a currency board linked to rand. Periodic consultations among the central banks provide inputs for the formulation of monetary policy for the area and the coordination on exchange rates. Rand also serves as a legal tender in Lesotho and Namibia but stopped doing so *de jure* in Swaziland since 1986. The monetary union has helped in promoting financial stability and economic growth in the region. Smaller member states have benefited from the seignorage from rand's circulation in their territories and exchange rate stability vis-à-vis their larger partner South Africa.
2. WAEMU and CEMAC: The former African colonies of France share common currency CFA franc (franc of French Community of Africa) in Western African Economic and Monetary Union (WAEMU) comprising of eight countries in the West Africa and Central African Economic and Monetary Community (CEMAC) consisting of six countries in the Central Africa. These two unions are separate and independent of each other but maintain same exchange rate parity with euro (French franc prior to launch of euro in 1999) and their currencies are

not exchangeable outside of their respective Union. These former colonies of France have continued to maintain and develop economic and financial relation with their former colonizer unlike British colonies which severed ties with Britain post their independence. Each union has its central bank that issues its currency CFA franc and sets its monetary policy for the union. However, French representatives participate in the monetary policy meetings and set thresholds on borrowing by the member states. Each central bank maintains operations account with the French Treasury which pools together the foreign exchange reserves of the member states. Exchangeability of CFA franc is underwritten by France through the window of overdraft facility, the terms of which together with the use of operations account are prescribed by French authorities. Both CFA regions are closely linked with France through policy surveillance, trade, official development assistance (ODA) and military support. Despite decades of forming monetary union, intraregional trade among member states is still low while the trade of each zone with France is very high. These monetary mechanisms have helped in instilling a sense of confidence in the system and financial stability of the regions as a result of which these monetary unions have continued to exist for such a long time.

3. Eastern Caribbean Currency Union: Eastern Caribbean Currency Union (ECCU) is a group of six small independent Caribbean states and two British territories (Anguilla and Montserrat) formed in 1950 with the aim of fostering economic development and ensuring financial stability in the region. Eastern Caribbean Currency Authority (ECCA) acts like a central bank of the union and issues East Caribbean dollar that is pegged to US dollar (sterling pound until mid-1970s). The pooled foreign exchange reserves that ECCA holds can be accessed by any of the member states to back the value of its currency. Seignorage revenue is distributed proportionate to each member's share of currency to the total currency in circulation in the union. Measures like common market; system of clearing and settlement; interbank payments; common regulatory and supervisory framework etc. have helped in supporting external value of the common currency of these small and open Eastern Caribbean countries.
4. Euro area: Euro area is the economic and monetary union of 19 countries of Europe with a single currency. European Central Bank (ECB) prints euro and is

responsible for monetary policy in the euro area. Much of the references in this thesis on monetary integration have been made with euro area. The launch of euro in 1999 triggered world-wide interest in favour of regional monetary union with a common currency.

Table 6.1 provides the list of regional blocks which at some point have the aspiration of forming a monetary union.

**Table 6.1: List of Prospective Monetary Unions**

Region	Countries	Year of Establishment
Economic Community of West African States (ECOWAS)	8 WAEMU countries plus Cape Verde, Gambia, Ghana, Guinea, Liberia, Nigeria and Sierra Leone	1975
Gulf Cooperation Council (GCC)	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE	1981
The Common Market of South America (MERCOSUR)	Argentina, Brazil, Paraguay, Uruguay and Venezuela	1991
East Africa	Kenya, Tanzania and Uganda	1999
Association of South East Asian Nations (ASEAN)	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Singapore, Thailand, The Philippines and Vietnam	1967
South Asian Association of Regional Cooperation (SAARC)	Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka	1985

Source: Authors compilation

In the same way that the launch of euro had incited interest among regional blocks, the euro crisis of late 2009 dampened the spirit of replicating euro area type monetary union in the other parts of the world. The regional economic blocks would take more cautious and pragmatic approach in the pursuance of a monetary union in the future. The important and fundamental difference between euro area and other currency unions is that latter's currencies are not convertible like euro. Euro is an international currency freely convertible and is one of the basket currencies of SDR. This is the additional challenge that developing countries have to face if they have the aspiration of a forming a monetary union with a common currency. South Asia has to factor this important constraint in the process of its monetary integration. The various forms of monetary arrangements are presented below.

## 6.2 MONETARY ARRANGEMENTS

Based on monetary frameworks and cooperation, the monetary arrangements can be broadly classified into following four categories:

1. Monetary union with a common currency: This is the most advanced form of monetary arrangements among sovereign nations. There is a regional central bank in the monetary union responsible for issuing the currency and formulating monetary policy for the region such as euro area, WAEMU, CEMAC and ECCU discussed in the preceding paragraphs.
2. Common monetary area with multiple currencies: It is an area where each country retains its national currency but makes necessary institutional arrangements to enhance greater monetary cooperation. A case in example is a common monetary area of Southern Africa where each of the four countries in the region namely Lesotho, Namibia, South Africa and Swaziland issue their own national currencies and their central banks formulate domestic monetary policies. The national currencies of the three countries are pegged at par with South African rand which also serves as a legal tender in CMA except *de jure* in Swaziland. There exists seigniorage sharing model based on the estimated circulation of rand in these countries. The domestic currency supply is determined by the amount of foreign exchange reserve holdings of each of those three countries. By virtue of being the issuer of a regional anchor currency, monetary policy formulated by Reserve Bank of South Africa prevails in the region for which inputs are drawn from member countries during its formulation.
3. Currency substitution (or Dollarization): Under this system, countries adopt foreign currency as their legal tender and completely lose out monetary policy to the foreign country whose currency is adopted. In other words, these countries import monetary policy from the foreign country and have no role of whatsoever in its formulation. As these countries do not print their currency, they lose seigniorage – the difference between the face value of the note and the cost of printing it. Dollarization is normally adopted where either the country is too small to merit having its own currency or is economically dependent on the neighboring larger economy or when the inflation spirals out of control. The recent case is that of Zimbabwe which was forced to stop printing its currency in



2009 by allowing foreign currencies to circulate in its economy to control its hyperinflation. As per AREAER 2017, 13 countries have adopted dollarization: Ecuador, El Salvador, Marshall Islands, Micronesia, Palau, Panama and Timor-Leste have adopted US dollar; Kosovo, Montenegro and San Marion have adopted euro; and Kiribati, Nauru and Tuvalu have adopted Australian dollar.

4. Currency Board System: Under this system, countries issue national currency that is fully backed by foreign exchange reserve. In other words, the monetary liability in the local currency is determined by the total foreign exchange holdings. The home currency is pegged to a foreign currency and the currency board stands ready to exchange national currency for foreign currency and vice-versa at all times to keep the domestic currency in balance. Currency Board can't pursue independent monetary policy given that it can't alter money supply at its will. The policy objective of such regime is the exchange rate stability unlike the conventional objective of price stability. Currency board system began from British colonies with the aim of ensuring the value of local currency and the stability of their financial system. There are 11 countries that follow currency board system (IMF AREAER 2017). They are Hong Kong dollar, Djiboutian Franc and East Caribbean dollar of six island countries which are pegged to US dollar; Brunei dollar is pegged to Singapore dollar; and Bulgaria Lev and Bosnia and Herzegovina Mark are pegged to Euro.

While the first two forms of monetary cooperation is established through the formal process of consultations and agreements among the member countries with set of institutional arrangements and frameworks, the last two forms of monetary arrangements may or may not involve formal agreement between the respective countries. It can take place through unilateral decision of the country without any involvement of the country whose currency is being used. For example, while San Marino has formalized the arrangement by signing agreement with EU for the adoption of euro along with its own coins in circulation, Kosovo and Montenegro have unilaterally adopted euro as their legal tender. As part of EU's monetary policy however, unilateral use of euro by nations outside of EU is not encouraged.

Every region has its own historical, social, economic, geopolitical and security context. The initiatives rooted on regional context have the better chance of

success than those crafted without those considerations. Except the similarity between WAEMU and CEMAC, the modalities and structures of currency unions currently in existence differ from each other. South Asia has its own historical context different from other regional blocks. The empirical studies in the previous chapters attest to the fact that South Asia is not an OCA. Whatever little has been achieved since the establishment of SAARC in the last more than three decades fall far short of what is needed to advance the goal of regional monetary integration. Without political commitment and sustained efforts from all sides at all levels, the accomplishment of monetary integration will continue to remain elusive for years to come. The incremental steps taken in the areas of monetary cooperation now can set a stage for a greater monetary integration in the future. It is in this light that the role of Indian currency is envisioned in achieving gradual and greater monetary cooperation in the region.

### **6.3 REGIONAL ROLE OF INDIAN RUPEE**

Global financial crisis of 2008 called for the reforms of the international monetary system which was disproportionately dominated by US dollar. In the ever more integrated world with emerging economies embracing more open capital account convertibility, the liquidity of US dollar has become the most critical recipe for the market volatility and the financial crisis. This has prompted the countries like China and India to explore the possibility of internationalizing their currencies. China seems to have already begun the process of internationalizing its currency (Gao *et al.*, 2011; Eichengreen, 2013, Lee, 2014; Shu *et al.*, 2015). The process was further underpinned by the debut of Chinese Yuan in the SDR basket of currencies in 2016 with a weight of 10.92 percent marginally ahead of Japanese yen and British pounds' weights. China is currently the largest merchandize trading nation in the world and it surpassed Japan in 2010 to become the world's second largest economy by nominal GDP. On the other hand, in 10 years since GFC India has upshot from being the eleventh to the sixth largest economy in the world. 2016 data shows that India is nevertheless 5 times smaller in nominal GDP and 6 times smaller in merchandize trade than China. Some studies showed that India is still not significant in its size in terms of GDP, trade, volume in foreign exchange market to be effectively able to pursue the ambition of internationalizing its currency along with

the fact that the series of reforms necessary to do so would warrant a more cautious and calibrated approach (Ranjan & Prakash, 2010; Gopinath, 2011).

The next few years would be significant for India in terms of its economic rise amidst slowdown in China and muted prospects of economic growth in advanced countries. With expected average annual economic growth of 7 percent, India serves as the engine of growth in the region and will gradually do so in the world in the coming years. After surpassing United Kingdom in 2019, it is a matter of few years for India to surpass Germany and Japan to become world's third largest economy. With the economic growth comes the growth in trade and foreign exchange turnover. This will gradually push India at the center of the global supply chain and international monetary system. It is therefore important to start exploring the prospects of the role of Indian rupee in facilitating greater monetary and economic integration in the region. If there is any currency in the region that can take up this role in South Asia, it is the Indian currency. The data presented in the preceding chapters along with what follows in this chapter provide ample ground for Indian rupee to assume this pivotal role irrespective of the outcome of the empirical studies.

Money functions as a unit of account, means of exchange and store of value. When a currency undertakes these functions of money beyond its home territory, the currency assumes a role of an international currency. Over the years, a number of economists, especially Swoboda (1969), Cohen (1971), McKinnon (1979), Kindleberger (1981), Krugman (1979, 1984) have contributed in the development of the theory of international money. The table 6.2 shows the role of international currency.

Governments use international currency as a unit of account for the purpose of pegging their currency; as a medium exchange for carrying out foreign exchange intervention in the domestic market to maintain the value of their currency and avoid volatility; and as a store of value in the form of foreign exchange reserves. Similarly, private sector denominates trade and financial transactions as a unit of account; invoices trade and financial transactions as a medium of exchange and holds them in the form of cash and financial assets as store of value (Krugman, 1984; Kenen, 1983, 2011; McKinnon, 2002). In the past, Indian rupee was used as official

currency in few countries of Gulf and East Africa. In mid-sixties, Gulf States dropped its use by adopting their own currencies. Recently, Zimbabwe has added Indian rupee along with other major currencies as the legal tender. Unofficial use of Indian rupee is common in the neighboring countries such as Bhutan, Nepal and Bangladesh. The following paragraphs highlight the prospects of Indian rupee taking up those roles at the regional level.

**Table 6.2: Role of International Money**

Function of Money	Government	Private Sector
Unit of Account	Anchor for pegging local currency	Denominating trade and financial transactions
Medium of Exchange	Vehicle currency for foreign exchange intervention	Invoicing trade and financial transactions
Store of Value	International reserves	Currency Substitution (private dollarization)
		Investment

Source: Chinn and Frankel (2005), originally from Kenen (1983)

### 6.3.1 Unit of Account

Monetary integration is an arrangement made among countries regarding the clearing and settlement of payments, choice of legal tender, exchange rate mechanism and monetary policy framework with the aim of simplifying payments and promoting exchange rate stability, monetary cooperation and economic development of the participating economies. IMF publishes annual report on exchange rate and monetary framework titled AREAER with the classification of all its member countries. The classification of countries based on exchange rate management and monetary policy framework as per AREAER 2017 is presented in table 6.3.

Indian rupee serves as the exchange rate anchor for the currencies of Bhutan and Nepal since many years while US dollar serves as the nominal anchor for Maldives with a band of 20 percent fluctuation in either direction from the pegged value. Bangladesh and Sri Lanka follow stabilized arrangement and crawl-like arrangement respectively primarily around US dollar as a nominal anchor.

Pakistan's exchange rate regime has also been re-categorized from "other managed arrangement" in 2016 to "stabilized arrangement" in 2017. On the other hand, both Afghanistan and India follow floating exchange rate system where the exchange rate is largely determined by the market. Regarding monetary policy framework, India is the only country in the region to adopt inflation targeting as the key monetary policy objective. By virtue of fixed exchange rate regimes in Bhutan, Nepal and Maldives the exchange rate anchor provides the overall guidance for their monetary policy operations. In the case of Afghanistan and Bangladesh monetary aggregate provides guidance for monetary policy formulation while exchange rate anchor also has a bearing on Bangladesh given its *de facto* stabilized arrangements anchored around US dollar. Pakistan and Sri Lanka's monetary framework has been classified as "other" which means that they follow policy guidance different from anchor, monetary aggregate target and inflation targeting for their monetary framework. The countries in the region use their own national currencies as a unit of account for their record keeping and denominating financial transactions.

### **6.3.2 Means of Exchange**

There is no history of Indian rupee ever serving as a vehicle currency for foreign exchange intervention given that it has never assumed the role of international currency. Even Bhutan and Nepal that have pegged their currencies against Indian rupee have never used it for this purpose. Nepal extensively uses its convertible foreign currency reserves to buy Indian rupee for servicing its ballooning current account deficit with India. For Bhutan, the surplus in its capital account on account of foreign direct investment and credit facility from India largely balances its current account deficit with India. Given fixed exchange rate system and high reliance on India on trade, the use of Indian rupee for invoicing and denominating financial transactions between these countries is convenient and effective. However for all the intraregional transactions with other member countries, US dollar serves as the means of exchange. There is a prospect of advancing the role of Indian rupee as a means of exchange by virtue of being the currency of the economy that accounts for 42 percent of the total intraregional trade.

**Table 6.3: Exchange Rate Regime and Monetary Policy Framework**

Exchange rate arrangement		Monetary Policy Framework							Total
		Exchange rate anchor				Monetary Aggregate	Inflation targeting	Other	
		US dollar	Euro	Composite	Other				
Hard Peg (24)	No separate legal tender	7	3		3				13
	Currency Board	8 (ECCU-6)	2		1				11
Soft Peg (81)	Conventional peg	14	18 (WAEMU-8 & CEMAC-6)	4	5 (Bhutan, Nepal & 3 CMA countries)			2	43
	Stabilized arrangement	5 (Maldives)	2	2		9 (Bangladesh)	2	4 (Pakistan)	24
	Crawling peg	2		1					3
	Crawl-like arrangement			1		4	1	4 (Sri Lanka)	10
	Pegged exchange rate within horizontal bands							1	1
Residual (18)	Other managed arrangement	3		1		8		6	18
Floating (69)	Floating					3 (Afghanistan)	27 (India)	8	38
	Free floating						10	21 (EMU-19)	31
Total		39	25	9	9	24	40	46	192

Source: Author's compilation based on IMF AREAER 2017

### **6.3.3 Store of Value**

Bhutan and Nepal hold part of their foreign exchange reserves in Indian rupee denominated financial assets. According to their respective Central Bank's Annual Report of 2015, Indian rupee denominated financial assets constitutes nearly 25 percent of Nepal's total foreign exchange reserves and 18 percent of Bhutan's total foreign exchange reserves held by respective central banks. In addition, Nepal's foreign exchange holdings exposure to India is as much as 46 percent. For the rest of the other member countries in the region, the available reports on foreign exchange reserve don't provide separate information on Indian rupee denominated financial assets or exposure to India. As per IMF's *ad hoc* survey on holdings of currencies of Official Foreign Currency Assets, six countries held 1 billion dollar worth of Indian rupee as part of their foreign currency assets accounting for merely 0.01 percent of the world's total foreign currency holdings in 2014.

### **6.4 ATTRIBUTES OF REGIONAL CURRENCY**

To serve a cross border role, Indian rupee shall possess some of the essential characteristics of an international currency. Given that Indian rupee is not an international currency the member countries in the region shall collaborate together to elevate its role to a regional currency. Based on what Kenen (2011) enumerated for an international currency, the criteria have been contextualized for South Asia as follows:

1. Any entity anywhere in the region shall be free to invoice in Indian rupee for transactions either relating to India or not. For example, an entity in Bangladesh can invoice its goods and services in Indian rupee whether exported to India or any other countries in the region.
2. Indian entities are entitled to hold financial assets denominated in Indian rupee whether issued by Indian entities or other entities in the region. For example, an Indian citizen or an Indian company can hold Indian rupee bonds issued by any governments or entities in the region.
3. Similarly, Indian entities can also issue financial instruments denominated in Indian rupee in regional markets. For example, Government of India (GOI) can

issue treasury bills in Bangladesh or an Indian company can raise money from Sri Lanka by issuing Indian rupee bonds.

4. Entities anywhere in the region can issue financial instruments denominated in Indian rupee in the Indian market or the regional markets. For example, a power company in Nepal can issue corporate bonds denominated in Indian rupee in any country in the region. Similarly, any Government from the region can issue bond denominated in Indian rupee in any of the capital markets in the region.
5. International financial institutions, such as the World Bank and regional development banks, can issue debt instruments in India and use its currency in their financial operations.
6. The countries in the region can peg their currency against Indian rupee or include it in their basket of currencies for managing their exchange rates.
7. There is no restriction whatsoever on the purchase and sale of Indian rupee in the region. GOI shall not impose any restriction on the exchange of its currency either in its domestic market or anywhere in the region.

Though they are the necessary conditions, fulfillment of all of them doesn't guarantee the regionalization of Indian rupee. Many currencies meet these attributes but not all of them enjoy the status of international currency or at least they differ widely in terms of their acceptability as international currency. For example, the South Korean won meets all the above criteria in spite of which it has not gained the status of an international currency. Regionalization of Indian rupee is a process that requires incremental but sustained steps towards meeting those conditions. Further, for a currency to achieve stature of a regional currency and to become the conduits of those roles, the country of the currency shall also possess at least following essential attributes:

1. Size of the economy and trade: The country shall have sufficiently large economy to support the reputation and acceptability of the currency in the region. US dollar, euro and yen are backed by respective economies which are the largest in the world. However it is not a sufficient condition in itself. For example, though China is the second largest economy in the world by nominal GDP, its currency Yuan still lacks international stature of dollar, euro, yen and British pound. In 2017, India became the sixth largest economy in the world in



terms of nominal GDP larger than each of Switzerland, Australia and Canada the currencies of which enjoy convertibility and acceptability as an International currency. In terms of trade, India stands at 9th position with more than 618 billion dollar trade in 2016 while accounting for less than 2 percent of global trade.

2. Liquidity of the currency: The currency shall be highly liquid both in terms of its acceptability as well as the availability. It shall be easily exchanged to any other currency or financial instruments or can be used for payment or settlement within the region. The acceptability of the currency in the region should be unquestionable. Similarly, the currency shall be easily available in the quantity required by the market.
3. Size and depth of the financial market: The size and depth of financial market of the currency should be large in proportionate to the requirement of the region with the availability of large number of financial instruments.
4. Confidence in the country of the currency: Given that the currency is a financial liability of a country issuing it, the region including the world at large shall have high degree of confidence in the country. Confidence is a broad measure of trust and credibility over country's system of governance, politics, security, judiciary, financial stability, economic development etc.

India fares well in each of the above areas to support its currency to take up cross border role in the region though the internationalization of rupee remains a distant goal. The momentum is however likely to build up once it becomes the third largest economy within next few years together with the increase in its share of global trade and its currency transactions in the forex market. In addition, India is gradually making its forays in elevating its role in the global stage. Such measures also help in providing strong support towards the regionalization of Indian rupee. These measures are presented in the following sections.

## **6.5 CURRENCY SWAP ARRANGEMENTS**

The use of currency swap became commonplace in the aftermath of GFC to provide liquidity in the financial markets around the world. US Federal Reserve entered into currency swap agreements with several Central Banks around the world

to provide US dollar liquidity to the market. Prior to GFC, ASEAN countries introduced currency swap facility of USD 2 billion in the wake of the Asian Crisis of 1997. It then transcended into a more sophisticated multilateral currency swap arrangement known as Chiang Mai Initiatives Multilateralization (CMIM) comprising of 10 ASEAN countries, Japan, China, Korea and Hong Kong with a total firepower of USD 240 billion. Similarly, currency swap agreement among BRICS countries was introduced in 2013 with the total facility of USD 100 billion.

Bilateral currency swap is a short term arrangement between two countries where one country would receive currency of another country in exchange for its own currency at the exchange rate prevailing at the time of transaction to be settled at the specified future date at the same exchange rate with some interest. Such arrangements facilitate financial settlement between countries in their own currencies avoiding the need for an international currency such as US dollar. The primary objective of currency swap is to provide short term liquidity support during the time of external imbalances. Post GFC, the currency swaps have become more common among countries with higher trading and investment flows.

During SAARC Governors meeting of 2012 held in Nepal, the Governor of Reserve Bank of India (RBI) announced a currency swap facility of USD 2 billion either in US dollar or in Indian rupee available to all the member countries in the range of USD 100 million to 400 million to each member countries. It is aimed at providing a short term liquidity support to the member countries which are facing adverse balance of payment (BOP) situations. In February 2015, RBI extended this facility until mid-November 2017. So far only Bhutan and Sri Lanka have signed bilateral swap agreements with India. Bhutan and India entered into 100 US dollar currency swap agreement in March 2013. Similarly, India provided Sri Lanka a currency swap line of USD 400 million dollars amid BOP pressures that Sri Lanka has been facing. In addition, a separate bilateral currency swap deal worth USD 1.1 billion was signed between India and Sri Lanka in July 2015 to allow the latter to draw funds up to a period of six months. Compared to similar arrangements made in the other parts of the world, the swap facility that exists in South Asia on the behest of India's unilateral decision is too small to be really able to safeguard economies such as Sri Lanka and Pakistan which are under consistent BoP pressures since last

few years. In spite of friendly gesture from India on a unilateral basis, if a more robust and multilateral currency swap facility can be instituted similar to CMI, the region can benefit greatly during the time of global liquidity crisis and short term external imbalances.

As the central economy of the region on whose financial health the success of any regional level initiative will largely be dependent on, it is important that India also makes similar arrangements with major economies around the world to safeguard its own economy from external short term volatility. In this regard, India drew up a plan towards the end of 2013 to enter into bilateral swap arrangements with 23 countries with which India had major bilateral trades in the light of excessive volatility in the currency market triggered by taper tantrum. The largest swap agreement that India entered was with Japan worth USD 50 billion in September 2013 at the height of the excessive currency volatility. The agreement with Japan was first signed in 2008 amidst GFC with a modest facility of USD 3 billion which was increased to 15 billion dollar in 2011. During Indian Prime Minister Modi's recent visit to Japan in October 2018, the swap agreement is increased to USD 75 billion. Similarly in December 2018, India entered into currency swap agreement worth around 2 billion dirham with UAE, its third largest trading partner. Wide range of bilateral and multilateral swap facilities at various levels can help to prevent financial fallout from percolating across the region by providing additional liquidity safeguards. Such arrangements are instrumental in instilling a sense of stability and navigating through short term liquidity constraints arising mainly from adverse BOP situations and financial and economic crisis.

## **6.6 OFFSHORE INDIAN RUPEE BOND**

The first ever offshore Indian rupee bond was issued by International American Development Bank in 2007 in Luxembourg. The momentum however picked up only from late 2014 when International Finance Corporation (IFC), the private sector arm of World Bank issued series of Indian rupee bonds worth 1 billion dollar. Since then IFC has been issuing both offshore Indian rupee bond, the so-called masala bond and onshore Indian rupee bond, the so-called maharaja bond. For the first time in September 2015 Reserve Bank of India (RBI) approved issuance of

Indian rupee bond by private sector in the overseas market. The increased acceptance of Indian rupee bond in the overseas market is the right step towards gradual internationalization of Indian rupee. It signals the confidence of global investors in Indian economy. Similarly the success of Exim Bank's 10 billion dollar bond that was oversubscribed by 3 times in January 2018 and 44 masala bonds with a face value of 6.5 billion dollar in London Stock Exchange manifests the increasing interest and confidence in Indian economy. Further, the participation of institutions like IFC in issuing onshore rupee bonds since 2014 helps in deepening India's capital market and mobilizing resources for the development of the region.

Credibility of the currency comes with the overall macroeconomic stability of the country. In this regard, external position and fiscal situations are important considerations to be analyzed.

## **6.7 EXTERNAL POSITION**

The health of the external position is extremely important for the macroeconomic stability of the economies. Total external debt, foreign exchange reserve, debt servicing capacity, number of months import cover and proportion of short term to the total debt and total reserves are some of the important indicators that will help in assessing the health of the external positions. These indicators will also have direct impact on the stability of the exchange rate and the value of the currency. All the tables that follow will contain data for the years 1990, 2000, 2010 and five years ending 2016 in order to provide perspectives of last three decades together with recent trends.

Table 6.4 presents the general overview of the foreign exchange reserve positions of the member countries in 2016. Total foreign exchange reserve of the SAARC countries in 2016 is USD 440 billion accounting for 15 percent of the region's nominal GDP. To play greater role in the region, Indian rupee's stability is critical and it can only come with prudent macroeconomic policies, sound economic fundamentals, strong external position and manageable external debt. The composition of foreign exchange reserves in the region can change in favor of Indian rupee if elevated to the regional currency status. India has the comfortable foreign exchange reserve position.

**Table 6.4: Foreign Exchange Reserves**

PARTICULARS	AFG	BGD	BTN	IND	MDV	NPL	PAK	LKA	Total
GDP at market prices (in USD billion)	19.47	221.42	2.21	2,263.79	4.22	21.13	278.91	81.32	2,892
Total reserves (includes gold, in USD billion)	7.28	32.28	1.13	361.69	0.48	8.73	22.03	6.01	440
Total reserves (% of GDP)	37.40	14.58	50.95	15.98	11.31	41.33	7.90	7.39	15
Total reserves (% of total external debt)	302.92	78.50	48.01	79.29	41.37	205.46	30.30	12.89	70
Short-term debt (% of total external debt)	8.55	19.05	0.04	18.38	11.09	8.80	9.92	15.91	17
Short-term debt (% of total reserves)	2.82	24.27	0.09	23.17	26.81	4.29	32.74	123.43	24
Total reserves in months of imports	11.77	7.67	9.47	8.43	1.60	10.29	4.63	2.78	

Source: Author's calculation based on WDI 2017

Table 6.5 provides historical information on the levels of foreign debt as a percentage of GDP. In 2016, Bhutan has the highest percentage of external debt of 106 percent compared to Afghanistan with the lowest percentage of external debt of 12 percent of GDP. Similarly Bangladesh, India and Nepal have reasonably low external debt of around 20 percent of their GDP. Pakistan and Maldives' external debts are at 26 percent and 27 percent respectively while the external debt of Sri Lanka is on the higher side at 57 percent. India's relatively low level of external debt of 20 percent provides much better prospects for the region. It can be seen that most of the countries in the region have been able to reduce the burden of external debt as a percentage of GDP over the last decades with the exception of Bhutan whose external debt has increased by nearly four folds. For Sri Lanka, the external debt has decreased from the highs of 73 percent in 1990 to 57 percent in 2000 and has remained close to that level since then. The decline in the external debt levels of Bangladesh, Nepal and Pakistan as the percentage of GDP over the decades has been noteworthy.

**Table 6.5: External Debt to GDP**

	1990	2000	2010	2012	2013	2014	2015	2016
Afghanistan	N.A.	N.A.	15.22	13.24	12.85	12.87	12.95	12.35
Bangladesh	38.90	29.24	23.32	21.42	22.66	20.63	19.83	18.57
Bhutan	27.87	48.18	58.95	79.49	89.15	94.41	97.76	106.13
India	26.36	21.88	17.53	21.48	23.01	22.48	22.91	20.15
Maldives	36.25	32.52	35.42	30.81	27.28	28.67	24.12	27.35
Nepal	44.85	52.38	23.68	22.39	20.83	20.83	19.33	20.12
Pakistan	51.64	44.65	35.40	27.66	25.03	25.02	24.30	26.06
Sri Lanka	73.05	56.64	38.23	52.22	52.90	53.26	54.49	57.31

Source: WEO 2017

Note: N.A. stands for not available

Together with the level of external debt, the foreign exchange reserve position of the countries provides important insights about the debt servicing capacity of the countries. Table 6.6 provides the historical evolution of foreign exchange reserve position of the countries in the region. Bhutan has the highest percentage of foreign exchange reserve as a percentage of GDP at 51 percent in 2016 followed by Nepal at 41 percent and Afghanistan at 37 percent. On the other hand Sri Lanka and Pakistan have the lowest levels of foreign exchange reserve of merely 7 percent and 8 percent respectively. Both countries have the history of low reserves and are therefore vulnerable to external shocks. India was at the brink of balance of payment crisis amid extremely low foreign exchange reserve in mid-1991 which forced it to gradually open its economy and has made spectacular progress in building reserves from less than 2 percent in 1990 to 16 percent in 2016. Despite having the history of current account deficit, India has been able to build robust reserves due to sustained capital inflows on the back of economic growth. Bangladesh has also made remarkable progress in building its reserves from merely 2 percent in 1990 to 15 percent in 2016 amid sustained current account surplus. Afghanistan has the history of very robust reserves that averages above 35 percent while Nepal has also made tremendous progress in building reserves from 10 percent in 1990 to 41 percent in 2016 on the back of impressive growth in remittance inflows. Maldives foreign exchange reserve is 11 percent in 2016 down from 17 percent in 2014.

**Table 6.6: Foreign Exchange Reserve to GDP Ratio**

	1990	2000	2010	2012	2013	2014	2015	2016
Afghanistan	N.A.	N.A.	32.39	34.83	36.36	37.55	36.31	37.40
Bangladesh	2.09	2.84	9.69	9.56	12.06	12.91	14.09	14.58
Bhutan	29.63	72.33	63.21	52.35	55.12	64.02	53.57	50.95
India	1.78	8.88	18.08	16.44	16.05	15.97	16.91	15.98
Maldives	11.33	19.67	14.08	11.03	11.59	16.97	14.37	11.31
Nepal	9.76	17.97	18.76	23.43	28.20	31.08	38.04	41.33
Pakistan	2.62	2.82	9.73	6.10	3.31	5.85	7.40	7.90
Sri Lanka	5.57	6.93	12.68	10.38	10.09	10.35	9.06	7.39

Source: WDI 2017

Note: N.A. stands for not available

As long as the countries have adequate foreign currency reserves to service their external debts and support imports of goods and services, the higher level of external debt would not be of much concern. Table 6.7 exhibits the ratio of total reserve to external debt. Considering 2016 data, the foreign exchange reserve of Afghanistan is three times the size of its external debt while it is twice as large in the case of Nepal helping both of them insulate from the volatility that may arise from the external sector. India and Bangladesh are reasonably placed at 79 percent providing them enough firepower to withstand short term volatility that may arise due to sudden outflows of capital from the country. In the last three decades Nepal, India and Bangladesh have made tremendous progress in improving their external position from the lows of 22 percent, 7 percent and 5 percent respectively in 1990. Bhutan's reserve is almost half of its external debt while that of Maldives is only 41 percent of its total external debt. Sri Lanka's external position seems to be extremely vulnerable given that its reserve is less than 13 percent of its total external debt. With foreign exchange reserve at 30 percent of its total external debt, Pakistan is also vulnerable to external shocks. Both these countries need measures to raise reserves and reduce external debts to contain vulnerability likely to arise from the external shocks.

**Table 6.7: Foreign Exchange Reserve to Foreign Debt**

	In Percentage							
	1990	2000	2010	2012	2013	2014	2015	2016
Afghanistan	N.A.	N.A.	212.85	263.05	282.86	291.77	280.48	302.92
Bangladesh	5.37	9.71	41.57	44.66	53.21	62.59	71.06	78.50
Bhutan	106.33	150.13	107.22	65.86	61.83	67.81	54.80	48.01
India	6.75	40.60	103.11	76.52	69.76	71.05	73.78	79.29
Maldives	31.27	60.49	39.75	35.80	42.49	59.18	59.57	41.37
Nepal	21.77	34.31	79.25	104.65	135.40	149.21	196.80	205.46
Pakistan	5.06	6.32	27.48	22.05	13.22	23.40	30.46	30.30
Sri Lanka	7.62	12.23	33.18	19.89	19.08	19.43	16.62	12.89

Source: WDI 2017

Note: N.A. stands for not available

Table 6.8 depicts the proportion of short-term debt to the total foreign exchange reserves. This is important criterion in assessing the vulnerability of economies with respect to external situations. Short term liabilities if not managed prudently can quickly create financial instability in the system. Sri Lanka's position is the most precarious among all the member states with short-term debt at 123 percent of the total reserves. Afghanistan, Bhutan and Nepal are the most well cushioned economies with the short-term debts less than 5 percent of the total reserves. Short-term external liabilities of the rest of the four countries range between 23 and 33 percent reflecting moderate exposures to the short-term debt. IMF recommends maintaining foreign exchange reserve at least equal to short term debt. Accordingly, except for Sri Lanka, all the member states are reasonably cushioned against short term liabilities.

**Table 6.8: Short-term Debt to Foreign Exchange Reserve**

	In percentage							
	1990	2000	2010	2012	2013	2014	2015	2016
Afghanistan	N.A.	N.A.	2.01	3.65	1.43	3.27	3.29	2.82
Bangladesh	23.64	22.03	26.39	15.36	20.65	18.61	24.13	24.27
Bhutan	3.67	0.48	0.60	7.86	7.57	0.48	0.18	0.09
India	151.56	8.43	18.85	31.07	31.10	26.32	23.08	23.17
Maldives	57.43	14.66	40.05	31.73	23.20	23.34	24.94	26.81
Nepal	6.85	2.94	2.03	2.56	4.59	5.36	4.29	4.29
Pakistan	304.34	72.77	27.05	29.42	60.80	38.35	32.32	32.74
Sri Lanka	90.57	60.51	33.57	90.33	90.33	89.21	103.91	123.43

Source: WDI 2017

Note: N.A. stands for not available



Table 6.9 reflects the number of months of imports that the foreign exchange reserve can sustain. Afghanistan and Nepal fare very well with the reserves of nearly 12 months and more than 10 months imports respectively for the year 2016. Similarly Bhutan, India and Bangladesh with reserves equivalent to the imports of 9.5 months, 8.4 months and 7.7 months respectively are also well positioned. Maldives' foreign exchange reserve is highly vulnerable with only 1.6 months of import cover while the reserve of Sri Lanka is enough for barely 2.8 months of imports. Pakistan's reserve can support imports of 4.6 months. India with 8.4 months and Bangladesh with 7.7 months of import cover have made remarkable improvements over last three decades from the reserves that were enough to sustain barely two months of imports in 1990.

**Table 6.9: Foreign Exchange Reserve in Number of Months of Imports**

	1990	2000	2010	2012	2013	2014	2015	2016
Afghanistan	N.A.	N.A.	10.00	8.28	9.06	10.29	9.66	11.77
Bangladesh	1.91	1.56	4.32	3.85	4.91	5.58	6.83	7.67
Bhutan	N.A.	N.A.	11.75	8.56	9.26	11.87	9.54	9.47
India	2.04	7.45	7.73	5.90	6.03	6.60	8.00	8.43
Maldives	1.65	2.28	2.18	1.58	1.66	2.42	2.23	1.60
Nepal	5.03	7.37	6.01	7.61	8.56	8.43	12.53	10.29
Pakistan	1.10	3.58	4.72	3.11	1.71	3.07	4.43	4.63
Sri Lanka	1.66	2.17	5.34	3.69	3.85	3.92	3.48	2.78

Source: WDI 2017

Note: N.A. stands for not available

## 6.8 FISCAL POSITION

Monetary union requires greater fiscal coordination and convergence with the eventuality of a fiscal union. The recent events in euro area demonstrated not only the importance of fiscal discipline and fiscal convergence for the sustainability of the monetary union but also the fiscal union. When member states are subject to asymmetric shocks, mechanisms such as fiscal transfers are instrumental in responding to those shocks. Fiscal transfers are normally possible when there exists fiscal union.

Table 6.10 highlights fiscal positions of SAARC countries for the last five years including the averages for the periods that are different from country to country. The fiscal position is measured as a percentage of GDP. The fiscal situation of Nepal is quite stable in the recent years with an average deficit of 2.84 percent in the last 18 years. Though average fiscal balance of Pakistan for the last 27 years is positive with 1.84 percent of its GDP, the fiscal deficits in the recent years are the matter of concerns. Afghanistan has the highest average fiscal deficit accounting for 13.6 percent of GDP in the last 11 years though the situation has improved significantly beginning 2013. The average fiscal deficit of Maldives in the last two decades is close to 6 percent but in the last two years, the fiscal deficit is higher than the average showing some strains in the fiscal management. Sri Lanka's fiscal deficit is also high both in average as well as in the recent years. The fiscal deficit of Bangladesh in the last five years is higher than its average of 3.33 percent and has peaked to 4.7 percent in the last two consecutive years. India is making consistent progress towards lowering its fiscal deficit from its highs of 2009 (7.8 percent) following global financial crisis to the 3.5 percent level in 2016 which is lower than its period average. Sustained level of high fiscal deficit is considered vices from the fiscal management point of view. Stability and Growth Pact of EU provides for not more than 3 percent fiscal deficit. The key reason for euro crisis is the very high level of fiscal deficit practiced by Greece for several years that led to the accumulation of unsustainably high sovereign debt. IMF also recommends its members to maintain their fiscal deficit within the level of 3 percent of GDP.

**Table 6.10: Fiscal Balance**

	2012	2013	2014	2015	2016	Average (Period)	Highest (Year)	Lowest (Year)
Afghanistan	-16.3	-1.8	-1.8	-0.7	-0.7	-13.60 (2006-2016)	-0.7 (2015)	-26.8 (2008)
Bangladesh	-4.0	-3.6	-4.0	-4.7	-4.7	-3.33 (1991-2016)	-1.3 (1993)	-4.7 (2015)
Bhutan	-1.2	-4.4	4.1	1.6	-3.2	-3.42 (2002-2016)	4.1 (2014)	-12.8 (2002)
India	-5.8	-4.9	-4.5	-3.9	-3.5	-3.86 (1991-2016)	-2.04 (1997)	-7.8 (2009)
Maldives	-6.7	-3.5	-2.4	-6.7	-10.4	-5.9 (1997-2017)	-1.15 (2004)	-20.5 (2009)
Nepal	-1.5	-1.8	-0.7	-2.2	-1.7	-2.84 (1999-2016)	-0.7 (2014)	-5.9 (2000)
Pakistan	-8.8	-8.2	-5.5	-5.3	-4.9	1.84 (1990-2016)	8.8 (1990)	-8.8 (2012)
Sri Lanka	-5.6	-5.4	-5.7	-7.6	-5.4	-7.49 (1990-2016)	-5.4 (2013)	-10.2 (2001)

Source: Author's calculation based on Trading Economics database

Table 6.11 provides current account positions. The positions in the last five years essentially sum up the overall positions of the member states of the last three decades. Based on last 27 years of data from 1990 to 2016, Afghanistan, Bangladesh and Nepal are in general historically current account surplus countries while Bhutan, India, Maldives, Pakistan and Sri Lanka are current account deficit countries. The two smallest nations of the region Bhutan and Maldives have the highest and consistent level of current account deficit. The current account deficit of Bhutan at 29.14 percent level in 2016 with similar but lesser deficits in the previous years raise the question of sustainability of very large deficit. Likewise Maldives that had a deficit of 19.60 percent in 2016 from 7.35 percent the year earlier alludes to the macroeconomic vulnerability of these two smaller nations. India seems to have brought under control the current account deficit from the highs of 4.81 percent in the year 2012 to 0.67 percent in 2016 within a period of five years. The deficit of Pakistan has remained below 2 percent in the last four years while Sri Lanka's deficit has remained above 2 percent in the last three years and above 3 percent in the preceding two years.

**Table 6.11: Current Account Balance as a Percentage of GDP**

	1990	2000	2010	2012	2013	2014	2015	2016
Afghanistan	N.A.	N.A.	29.22	10.83	0.33	5.72	2.98	7.05
Bangladesh	-2.67	-1.24	0.42	0.69	1.18	1.16	1.59	0.61
Bhutan	-9.92	-9.10	-22.23	-21.49	-25.40	-26.39	-28.34	-29.14
India	-2.95	-0.56	-2.80	-4.81	-1.74	-1.32	-1.06	-0.67
Maldives	12.40	-6.42	-7.32	-6.65	-4.31	-3.21	-7.35	-19.60
Nepal	-7.55	6.38	-2.36	4.82	3.29	4.54	4.99	6.33
Pakistan	-2.63	-0.27	-2.23	-2.08	-1.08	-1.28	-1.00	-1.75
Sri Lanka	-3.98	-5.50	-1.90	-5.82	-3.41	-2.50	-2.37	-2.41

Source: WEO 2017

Note: N.A. stands for not available

Table 6.12 shows gross debt level of the member states for five years up to 2016 including the year 2000. It can be deduced from the foregoing paragraphs that those with twin deficits were the ones with the higher level of gross debts. Considering 2016, Afghanistan, Bangladesh and Nepal fare reasonably well in terms of the level of their debts measured as the percentage of GDP at 8 percent, 33

percent and 27 percent respectively. The other five countries' debt levels are in excess of 60 percent. Bhutan tops the list with the highest gross debt of 110 percent followed by Sri Lanka with 79 percent. India, Pakistan and Maldives' debt levels are 70 percent, 68 percent and 66 percent respectively. The disaggregated data of gross debt between external and domestic debt provides further insights regarding external vulnerability of the economy. Fiscal convergence criteria in the European Union (EU) specify an overall fiscal deficit of 3 percent and total public debt of 60 percent of GDP. Similarly, WAEMU requires its members to maintain the basic fiscal balances - defined as fiscal revenue minus expenditure excluding both grants and foreign financed investment to be positive or nil, and the ratio of overall public debt to GDP to be no more than 70 percent. IMF (2000) considers public debt of 60 percent of GDP to be important threshold for the macroeconomic stability of the developing countries.

**Table 6.12: Gross Debt to GDP Ratio**

	2000	2010	2012	2013	2014	2015	2016
Afghanistan	22.99 <sup>1</sup>	7.71	9.73	9.53	8.72	9.12	8.01
Bangladesh	44.32 <sup>2</sup>	36.62	33.83	34.47	33.87	33.91	33.02
Bhutan	45.61	57.94	76.28	93.64	93.77	94.35	110.24
India	73.65	67.46	69.12	68.55	68.51	69.54	69.58
Maldives	39.02	52.75	53.48	53.36	54.10	56.83	65.62
Nepal	57.93	34.04	33.94	31.88	28.30	25.03	27.33
Pakistan	76.80	60.58	63.24	63.86	63.47	63.32	67.57
Sri Lanka	81.87	71.57	68.71	70.82	71.33	77.64	79.29

Source: WEO 2017

Note: 1. Data for Afghanistan is for 2006; 2. Data for Bangladesh is for 2003

Analyzing fiscal situation and external position together, it can be deduced that countries with high and persistent twin deficits are prone to having adverse external positions as well. The case in example are those countries with consistent fiscal balance and current account surplus such as Afghanistan, Bangladesh and Nepal have low levels of both gross debt as well as external debt. On the other hand countries such as Sri Lanka, Bhutan, Pakistan and Maldives with consistent twin deficits have built up large gross debts both external and domestic debts. Despite persistent twin deficits, India has managed to build robust foreign exchange position

on the back of growing capital inflows. Being the central economy of the region, the stability of the Indian economy is extremely important should meaningful headway towards greater monetary cooperation and economic integration is to be achieved.

## 6.9 INTRAREGIONAL TRADE

The intraregional trade in South Asia revolves around India. India serves as the common trading partner for all the member countries. As mentioned in the previous chapters, the potential for intraregional trade is very high. Of the total intraregional trade of seven countries of the SAARC, their trade with India alone accounts for more than 84 percent in 2016 as shown in the table 6.13. Share of intraregional trade of Maldives, Bangladesh, Sri Lanka, Bhutan and Nepal with India is very high ranging from 64 percent in the case of Maldives to 99 percent in the case of Bhutan and Nepal. Given higher bilateral trade between Afghanistan and Pakistan, India's share of intraregional trade with these two countries is relatively less compared to other countries.

**Table 6.13: Bilateral Trade with India as a Percentage of Intraregional Trade**

PARTICULARS	1990	2000	2010	2012	2013	2014	2015	2016
Afghanistan	87.78	24.54	19.19	14.76	11.88	15.00	16.83	20.47
Bangladesh	60.24	86.39	87.14	88.07	89.19	90.45	89.83	89.58
Bhutan*	N.A.	98.36	96.29	97.12	96.60	95.87	92.03	98.52
Maldives	27.42	34.68	60.80	57.86	56.16	54.03	58.87	63.69
Nepal	77.34	98.39	97.46	98.25	98.82	98.73	98.85	98.81
Pakistan	26.84	33.85	38.94	35.54	39.61	42.64	38.08	41.81
Sri Lanka	54.04	73.36	87.03	87.51	85.04	88.94	89.12	86.34
Total Trade with India (In million dollar)	582	3,000	14,149	17,387	18,100	21,150	19,989	21,126
Total Intraregional Trade (In million dollar)	1,134	3,896	18,045	22,157	22,737	26,029	24,317	25,019
Intraregional trade with India (in percentage)	51.33	77.01	78.41	78.47	79.60	81.25	82.20	84.44

Source: Author's calculation based on IMF DOTS 2017

Note: N.A. stands for not available

This exemplifies the central role of India in intraregional trade though the overall intraregional trade is disproportionately low both in terms of percentage as well as absolute amount. The proposed arrangements with Indian rupee assuming

the role of means of exchange, invoicing and settlement will allow the member countries to both invoice and settle their intraregional trade in Indian rupee, in spite of India not being the counterparty. This will pave the way for much greater economic and monetary cooperation.

The key to the success of such mechanism is the adequacy of the liquidity of Indian rupee in the region without the necessity of drawing from the member countries' foreign exchange reserves. India has the responsibility of providing liquidity of Indian rupee in the region. This can be possible by running current account deficit and opening up its capital account in a scale necessary to make this mechanism function. Measures to run current account deficits is neither possible in the foreseeable future nor is it in the interest of India. In net, India suffers large current account deficit with the world and it is therefore in its interest to compensate it by promoting current account surplus with whomever it's possible. Table 6.14 highlights trade surplus that India enjoys with the region. The alternative is to open up capital account to boost foreign direct investment and debts denominated in Indian rupee in the region. The key issue however is the willingness and commitment of India to shoulder the responsibility of providing liquidity in a scale necessary to elevate the role of its currency in the region. This is critical in the light of India being the net importer of capital throughout the history of its economic development. Indian officials estimate that as much as 1.5 trillion dollar is needed to finance its own infrastructure deficits over a period of next 10 years while billions of dollars of foreign direct investment is received every year. Both current account and capital account reforms are necessary for the circulation of Indian rupee in the region's banking system.

The preceding paragraphs provide the overview of the macroeconomic situation of the region and in particular India. Since nineties, India has come a long way in opening its economy and achieving remarkable economic growth. All the indicators are in support of the view that India is in a position to provide a regional stability should the region rally around India in elevating its currency to a regional currency aimed at promoting greater monetary integration in the region.

**Table 6.14: India's Intra-regional Trade in Merchandise**

	In US\$ billion							
	1990	2000	2010	2012	2013	2014	2015	2016
Export from India to SAARC	0.545	1.823	11.148	14.849	16.506	20.486	17.690	16.968
Import of India from SAARC	0.111	0.474	2.069	2.716	2.468	2.686	3.033	2.722
India's Total Intra-regional Trade	0.657	2.297	13.218	17.565	18.974	23.172	20.723	19.690
India's Intra-regional Trade Surplus	0.434	1.349	9.079	12.134	14.038	17.800	14.657	14.246

Source: Author's calculation based on IMF DOTS 2017

## **6.9 COST AND BENEFITS OF ELEVATING THE ROLE OF INDIAN RUPEE IN THE REGION**

When Indian rupee takes up the role of regional currency, it is likely to promote regional economic, financial and monetary integration thereby contributing to the overall development of the region. There are hosts of benefits that the region can derive from the elevation of Indian rupee to the regional currency (Kenen, 2011; Cohen, 2011) and some of them are listed below:

1. It widens the choice of member countries in the region to finance part of their budget deficit and current account deficit by issuing debt denominated in Indian rupee;
2. It lowers region's dependence on foreign currencies for undertaking intra-regional transactions and helps in building foreign exchange reserves;
3. It helps importers and exporters to limit exchange rate risk for intra-regional trade given that the prices are invoiced in an anchor currency;
4. It allows domestic entities of the region to access regional financial markets for their borrowings with less exchange rate risk;
5. It helps in broadening and deepening regional financial market by providing access to international markets for raising borrowings in much larger scale at relatively lower interest rate through wide range of financial institutions and instruments;
6. India and the region will benefit from the seigniorage in two ways. The original meaning of seigniorage refers to the difference between the face value of the currency and the cost of printing it. Since the currency in question will be able to fetch a utility equivalent to its denomination, the benefit over and above the cost of printing the currency is called seigniorage. It is a one-time benefit that the

issuer will get when the currency enters into circulation. However, the most lasting advantage of seigniorage arises when the country will be able to raise borrowings in much cheaper rate from the foreign lenders to meet its domestic needs. While the first benefit is available to India only, being the printer of its own currency the second benefit will be available to other member countries of the region (MacKinnon, 1969; Grubel, 1969; Cohen 1971, 2011).

The regionalization of Indian rupee doesn't come without cost. Some of the inherent costs are as follows:

1. Regionalization of currency may result into losing effectiveness of country's monetary policy given that the currency is widely used in the region and intended domestic objectives of price stability may not be achieved by monetary policy alone.
2. To provide liquidity to the regional financial system, the country might have to consistently run net current account deficit which means that it has to import more than what it can export to make its currency available to the region to facilitate intraregional transactions. The phenomenon is called "Triffin's dilemma".
3. In the event that India faces large devaluation of its currency, the instability will spread across the region posing risk to the regional stability.
4. During the time of global crisis, the volatility in interest rates and exchange rates may pose risks to stability of regional financial system due to the presence of Indian rupee denominated financial instruments in the region.

#### **6.10 SUB-REGIONAL APPROACH TO MONETARY INTEGRATION**

In the last more than three decades of SAARC establishment, though plethora of agreements have been signed, initiatives are undertaken, institutions have been created and institutional frameworks have been set up the progress towards actual implementation of each of these arrangements have been painstakingly slow and frustrating. There has been hardly any tangible achievement in many spheres of cooperation. The ensuing strained relation between India and Pakistan and their rivalries have taken heavy toll on the speed of reforms essential in strengthening regional cooperation.



This has led to some level of segmentation in terms of the implementation of some initiatives despite genuine efforts to bring all the members on board. In view of the fact that some of these initiatives are significantly important to a certain group of countries despite not being agreeable to all, the concept of implementing at the sub-regional level has gained momentum in recent time. The case in point is the agreement relating to the movement of vehicles among SAARC countries introduced in last summit held in Nepal in November 2014. Since Pakistan backed out from the agreement, Bangladesh, Bhutan, India and Nepal (BBIN) have agreed to proceed with the implementation of the agreement which is expected to benefit these four countries in the movement of goods and people. The concept of BBIN was introduced as a sub-regional initiative among above four countries back in 1996. A year later, the summit held in Male agreed to address specific challenges of three or more member countries and coordinate efforts at the sub-regional level. South Asia Sub-regional Economic Cooperation (SASEC) Programme which is the initiative of BBIN countries in 2001 has been expanded to include Maldives and Sri Lanka in 2014.

“Either all else none” approach taken by SAARC in terms of agreements and initiatives has failed the region from delivering any tangible results in critical areas of cooperation. Hence the paradigm shift in cooperation is believed to provide fresh impetus to the regional cooperation by expediting the implementation of ongoing as well as future initiatives. However, the implementation of even the sub-regional initiatives is not without obstacles and the progress is similarly slow. Nevertheless, the concept of sub-regional initiatives has prompted the member states to reach an agreement in principle – the first step towards actual implementation. The role of Indian rupee to facilitate monetary integration can also be seen in the same light.

Table 6.15 presents the correlations of important macroeconomic indicators between SAARC countries and India for the period 1990 to 2016 taken from chapter 3. Only Bangladesh shares significant correlation of output growth with India while the correlations with all the other countries are statistically not significant. It shows that the countries in the region are subject to different business cycles. The inflation in South Asia, being a developing region is generally high. The correlations of inflation are statistically significant between India and all the member countries

barring Sri Lanka. It shows that the countries in the region are subject to similar patterns of inflation compared to India. Regarding NEER, Bhutan, Nepal and Pakistan share statistically significant correlation with India. By virtue of fixed exchange rate arrangements between Bhutan and India and Nepal and India, the correlations are highly significant. The correlation between Sri Lanka and India is significant at 10 percent level of significance. The correlations with Bangladesh and Maldives are positive but statistically not significant. Considering REER, the correlations of Bangladesh, Bhutan, Nepal and Pakistan with India are significant while the correlations of Maldives and Sri Lanka with India though positive are not significant. The presence of positive and larger proportion of significant correlations suggest to the fact that the countries in the region by and large share similar patterns of NEER and REER with India. The analysis brings out the important insights that though the patterns of output growth of the countries in the region are not symmetric to India, the patterns of inflation as measured by NEER and REER are largely consistent with India.

The very idea of elevating Indian rupee's role will probably be received in bad taste by most of the member countries given the sensitivity of the matter on the backdrop of geopolitical context of the region. The matter therefore requires academic and economic discourse and political diplomacy among the stakeholders of the region. In critical issues like this, India shall demonstrate its leadership role by taking responsibility commensurate with its central role. If SAARC nations have to wait for all the members to come on board, then probably there will never be monetary integration in the region. However, if the member countries agree to pursue at least at the sub-regional level, it serves to fasten the process of monetary integration among participating member countries. Gradually, other countries may like to join the monetary cooperation when the benefits of the regional monetary integration begin to appear and India is able to demonstrate stability, prominence and credibility of its currency at the global stage on the back of its economic growth, fiscal discipline, monetary prudence and macroeconomic stability.

**Table 6.15: Correlation of Variables between India and South Asian Countries**

Particulars	Bangladesh	Bhutan	Maldives	Nepal	Pakistan	Sri Lanka
Correlation of GDP Growth	**0.5747	0.2072	0.0284	-0.2123	0.2163	-0.0517
Correlation of Inflation (CPI)	**0.4797	**0.5986	**0.4869	**0.5083	**0.6703	0.2414
Correlation of NEER	0.2474	**1.0000	0.3173	**0.9900	**0.4846	*0.3305
Correlation of REER	**0.4804	**0.7548	0.0003	**0.8115	**0.4713	0.1473

Source: Author's calculation

Note: \*\* and \* represent significance at 5 percent and 10 percent levels respectively

## **6.10 FRAMEWORK OF SOUTH ASIAN COMMON MONETARY AREA**

Based on empirical studies and survey, it is obvious that South Asia is not an optimum currency area. Hence the prospects of a regional monetary union with a single currency are not tenable. Further, no country in the region would be likely to give up its sovereign currency even if the empirical results would have shown that South Asia is an OCA. Hence the question of a monetary union with a single currency does not arise. The monetary integration in South Asian parlance should not be understood as the one with a monetary union with a single currency but rather a framework of a monetary cooperation aimed essentially at promoting greater economic and financial integration in the region. Any monetary initiatives such as regional payment, trade settlement, increased flow of investment etc. that would enhance monetary cooperation among the member states shall be treated as the process of a greater monetary integration in the region.

Based on the analysis of the empirical studies; stylized facts; progress made and the challenges faced in the regional cooperation; outcome of the survey; comparisons with other currency unions; evolution of International monetary system; and the host of all the relevant factors, the SACMA is proposed as follows:

1. Monetary integration in South Asia shall be approached at two levels for all the practical and technical reasons: the sub-regional level and the pan-region level. The sub-regional approach is important because not all the countries in the region have similar appetite and enabling economic conditions for the monetary integration. In fact, the existing monetary framework differentiates the region into two groups: the one comprising of Bhutan, India and Nepal and the rest. Bhutan and Nepal maintain fixed exchange rate with India. The present

arrangement in terms of exchange rate indeed is the partial representation of a currency union among these three countries. What is essentially a bilateral arrangement between these two countries and India, it is important to transform it into a truly multilateral framework so that the arrangements can be extended between Bhutan and Nepal as well.

2. The sub-regional monetary framework serves as the best starting point for the gradual and incremental monetary integration both at the sub-regional level as well as the pan-region level. In spite of the fact that Bhutan and Nepal together account for less than one percent of the regional GDP, their contribution to the intraregional trade is as high as 17 percent. Any development in the monetary integration of this sub-region would offer excellent lessons for the whole region.
3. The phased and incremental approach is the best way to implement the regional monetary integration in South Asia. More members such as Bangladesh and Sri Lanka will probably be the next group of countries to be part of this larger sub-regional monetary framework. The extension of existing framework to Bangladesh and Sri Lanka would bring much larger perspective to the monetary integration even if countries like Afghanistan and Pakistan would probably never be part of such arrangements. Such approach is also in line with BBIN and SESEC programs.
4. Indian rupee by virtue of being the currency of the central economy of the region shall play larger role in facilitating greater regional monetary integration. Its role is somewhat like the role of German mark in Europe prior to the launch of euro and South African rand in common monetary area. In spite of the empirical results showing no regional anchor role of Indian economy in the business cycles of the region and no nominal anchor role of Indian rupee in the exchange rate movements of the currencies of the member countries, the stylized facts still signal the central role of India in the region. In fact Indian rupee has been providing nominal anchor for the currencies of Bhutan and Nepal for last so many years. Such arrangements have been useful in ensuring macroeconomic stability and in particular exchange rate stability of those countries.
5. The idea of a parallel currency namely Asian Currency Unit (ACU) based on the individual weights of the member countries is difficult to implement for it requires series of institutional reforms. Moreover, as India would gradually

follow the footsteps of China in internationalizing its currency on the back of its economic rise, it is in the least of its interest to promote a notional currency for the sake of regional cooperation. Such a system of notional currency is nowhere in practice and to implement it in the region that is marred with very little cooperation would be extremely challenging. It will complicate further by adding host of new rules, regulations and procedures to be of any relevance to the monetary cooperation of the region.

6. Under these circumstances it is important to see whether with the least of reforms and changes, innovation can be brought in to auger monetary cooperation. Hence the roles of India and Indian rupee *per se* are seen as the catalyst to promote monetary cooperation in the region. It comes with the leadership of India and its commensurate responsibility to advance regional cooperation. Many might find it an attempt to advance India's interest, hegemony and dominance in the region as seen in the survey. However, it is probably the best way both technically and practically to bring the region into greater monetary integration. The increased role of Indian rupee is expected to facilitate intraregional payment, trade and investment, settlement, exchange rate stability - the basic fabrics of economic integration.
7. On the economic front two concerns were raised regarding the regional role of Indian rupee. The first being the exchange rate stability of the Indian rupee. Post GFC, Indian rupee showed major volatility during taper tantrum of 2013 amid Federal Reserve's announcement to unwind the quantitative easing and economic stimulus on the back of improving fundamentals of US economy. Again in 2018 the Indian rupee showed volatility amid rising crude prices and tightening of monetary policy by Federal Reserves. However compared to currencies of the emerging markets, Indian rupee has fared much better. Even within the region, Indian rupee has done much better compared to Pakistan rupee and Sri Lankan rupee whose currencies have suffered amid mounting debt servicing obligations and depleting foreign reserves. Bangladesh and Maldives' currencies are stable given that they anchor their exchange rates around US dollar on the back of robust foreign exchange reserves unlike Indian currency which is a floating currency. The preceding chapters show the robustness of

India's external position along with macroeconomic fundamentals which will lend support to the value and the stability of Indian rupee.

8. The second concern is the convertibility of the Indian rupee. South African rand is also not a convertible currency but has played important role in bringing the countries of CMA together towards greater monetary integration. The world has limited number of convertible currencies among which US dollar dominates international monetary system. The continuation of current system where US dollar is used for all the intraregional transactions only encourages status quo and does not contribute in advancing economic and monetary integration in the region. India enjoys current account surplus with each of the member countries in the region. This lends sufficient support to the credibility and acceptability of the Indian rupee in the regional transaction.
9. Sooner than later India will follow in the footsteps of China in internationalizing its currency. India alone accounts for 78 percent of the regional economy and 42 percent of the total intraregional trade. Instead of creating new frameworks for greater monetary integration, it is convenient and effective to adopt measures which are inevitable. Moreover, the goal of monetary integration in South Asia shall be rooted on the idea of promoting greater economic integration rather than having a uniform exchange rate and monetary policy with the creation of a monetary union with a single currency.
10. Indian rupee has been used as a currency of invoice for intraregional trade between Bhutan and India and Nepal and India. It can be extended for transactions between Bhutan and Nepal as well given their fixed exchange rate arrangements with India. It can also be extended to bilateral transactions of any member country with India. It assures stability of the price to at least to one party (India) unlike invoicing in US dollar in which case both the parties are subject to exchange rate risks. The use of Indian rupee as an invoice currency has much broader prospects in the intraregional trade including in particular power trade. For instances, Nepal alone has 52,000 MW of hydroelectric potential and together with Bhutan, they can be the regional supplier of hydroelectric power to Bangladesh and India to meet their growing electricity needs. Initiatives like this would be a game changer in the regional cooperation.

11. As much as it is important to maintain the external value of Indian rupee it is also equally important to maintain its internal value. In other words, inflation in India shall be stable to maintain the internal value of Indian rupee. Though the average inflation in India for last three decade is on the higher side (7.6 percent in 1990-2016), efforts to contain inflation has yielded results in the recent years particularly after RBI adopted inflation targeting as its monetary policy goal from 2015. A goal of 4 percent inflation has been fixed by RBI and the inflation has been close to that level since then.
12. Independence and autonomy of RBI is of supreme importance for the regional role of Indian rupee. Historically RBI has been known to uphold its autonomy and independence. Given that the greater monetary integration with Indian rupee serving as a regional currency role will have spillover effects of India's monetary policy to the region the independence of RBI is extremely important. Otherwise there would be a danger of political pilferage which will ultimately weaken the prospects of the greater monetary integration rooted on the idea of the regional role of Indian rupee.
13. The countries in the region shall gradually liberalize their capital account for the transactions denominated in Indian rupee. This is essential for the movement of capital in the region. For instance, Nepal has recently opened up its capital account to allow flow of Indian rupee deposits from Indian financial sector to arrest the liquidity constraints in the country's banking sector. It is however not a full capital account convertibility given that restrictions are placed on the volume, interest rate, periods and areas of investment. Only banks are allowed to mobilize deposits which can be used in specific sectors of the economy. Measures like these by the member countries will gradually help in fostering greater economic and monetary integration in the region.
14. There should be ample liquidity of Indian rupee in the region. This can be best achieved by India running current account deficit in the region. The situation is however opposite at the moment with India running a large intraregional current account surplus. Alternatively, India can provide liquidity in the region by liberalizing its capital account similar to what is done with Bhutan. Both measures will be challenging given that India is a country with a large capital needs and it is also in its interest to maintain large current account surplus with

the region to compensate for its ballooning current account deficit with the rest of the world. The reforms in capital account will help member countries suffering from large current account deficit with India to compensate with capital inflows from the regional financial market.

15. Once the role of Indian rupee is elevated to regional level, maintaining the credibility and the value of the Indian rupee is of paramount importance. India has the history of following more prudent and conservative economic policies. It is very unlikely that India will do something unconventional to destroy the credibility and the value of its currency. However events like 2016 demonetization of higher denominated Indian rupee notes should not repeat. Further, the way Indian authorities handled the issue with respect to currency in circulation in Nepal is rather unfortunate. The matter has not yet been resolved despite repeated follow ups at the highest level. This has led to recent decision by the Government of Nepal to ban higher denominated Indian currency. Matters like this in not helpful in building mutual trust and the credibility of the currency that is going to take up regional role. These are precisely the reasons that make the countries in the region to take extra-cautious measures while dealing with India. These concerns are shared in the survey by the respondents from across the region.
16. Among few monetary unions present today, the most relevant to the South Asian is the arrangements made in Common Monetary Area (CMA) of South Africa. Being the central economy of the region, South African rand provides nominal anchor to the currencies of the member countries in the area similar to Indian rupee's role for the currencies of Bhutan and Nepal. Both rand and rupee are non-convertible currencies, hence the challenges these regions face in managing their monetary areas would be somewhat similar.
17. Multilateral South Asian currency swap arrangements similar to Chiang Mai Initiative Multilateralization (CMIM) shall be created. CMIM was founded by ASEAN plus 3 countries (China, Japan and South Korea) in 2010. This provides safeguard against short term liquidity shortages and helps in stabilizing the currencies in the region.
18. The headquarters of ACU shall be shifted from Iran to India. The location of ACU has lost its relevance due to prolonged US sanctions against Iran. The



terms of reference of ACU shall be broadened and deepened to include all the intraregional transactions so that the settlement is convenient and effective. Moreover, the bilateral transactions between Bhutan and India and Nepal and India shall also be brought under the purview of ACU. This ensures single platform for all the intraregional settlement. The use of Indian rupee for ACU settlement looks inevitable.

19. SAARC Development Bank will be an important vehicle for mobilizing resources for building cross border infrastructure to facilitate the movement of goods, services, people and capital and foster regional integration. South Asia is highly infrastructure deficit region. Studies show that it is cheaper to trade with countries in other continent than among the countries within the region. Lack of cross border infrastructure is the major impediment towards greater integration of the region. India shall take leadership role commensurate with its economic size in the matters of regional significance like this. India's indifference to regional bank on the ground that it might have to take the burden of putting more resources in its establishment manifests its self-centered approach with the lack of commitment to the regional cooperation.

Along with the sub-regional approach to monetary integration whatever can be done to enhance monetary cooperation at the regional level shall be pursued in the larger interest of the region. The sub-regional initiative doesn't mean that the monetary cooperation shall be restricted to those three countries only. If there is any monetary cooperation that can be advanced at the regional level such as payment union, it shall be taken forward. This ensures implementation of monetary frameworks at two levels: the one at the sub-regional level to cater into the special interests of the member countries and the other at the pan-regional level. What works in one level can be replicated in another level.

## **6.11 SUMMARY**

This chapter lays down the modality of South Asian common monetary area based on both empirical and practical considerations. Monetary union with a single currency is not feasible in South Asia, hence it should not be the goal of monetary integration in the region. Monetary integration in South Asia would mean the

process of greater monetary cooperation aimed at facilitating greater economic integration. In this regard, the concept of incremental and sub-regional approach to monetary integration is introduced. Bhutan, India and Nepal already share an exchange rate framework which could be developed into advanced multilateral monetary framework. These two countries are more integrated with India compared to other member countries in the light of their economic dependence on India and open border. When deemed appropriate, other member countries in particular Bangladesh and Sri Lanka can join this sub-regional monetary framework to make it more relevant and significant in the region. In most likely scenario, Pakistan will remain out of this important cooperation given its worsening ties with India. In that sense, the central role of India in the region puts Pakistan in the disadvantageous position in spite of latter's best intentions towards regional cooperation.

In the absence of a monetary union with a common currency, it is important to institute alternative mechanisms that will lead to greater monetary integration. A parallel currency such as Asian Currency Unit (ACU) as suggested by few in the survey is also both technically and practically not feasible given difficulties in putting institutional framework for its implementation. Moreover, member countries don't find such mechanisms appealing which are loaded with new set of rules, regulations, institutions and reforms. There is hardly any economic incentive for the individual countries to participate in such a monetary framework.

Therefore Indian rupee is considered as the currency that can facilitate monetary integration in the region. To some extent it has already played the role of regional currency especially with respect to Bhutan and Nepal. Both these countries hold Indian rupee denominated assets as part of their foreign exchange reserves. Their bilateral trades with India are invoiced in Indian rupee. It is the matter of extending them to other member countries in their bilateral transactions with India before Indian rupee eventually assumes the role of regional currency in all the intraregional transactions.

The major concerns of India rupee assuming regional role are that of exchange rate stability and its non-convertibility status. India follows floating exchange rate system unlike other countries in the region which adopt some kind of

stabilized arrangement around US dollar such as Bangladesh and Maldives. Hence their currencies are comparatively more stable than Indian rupee. On the back of strong foreign exchange reserves and good external positions Bangladesh has been able to anchor its currency around US dollar. However, Indian rupee is much stable compared to both Pakistani rupee and Lankan rupee. Similarly, among emerging market currencies, Indian rupee has been faring better. This provides ample credibility to Indian rupee and its economy which are central to the idea of Indian rupee assuming regional currency role.

Assessment of macroeconomic stability of the region is reviewed with particular focus on the role of India, given its central role in promoting monetary integration. Stylized facts presented in this chapter and previous chapters are in support of the larger role of India in the regional cooperation.

\*\*\*\*\*

## CHAPTER VII

### SUMMARY, CONCLUSION AND POLICY RECOMMENDATION

#### 7.1 SUMMARY AND CONCLUSIONS

The study investigates whether the seven founding members of SAARC constitute an optimum currency area or not based on the analysis of patterns of structural shocks that they are subject to. The shocks are extracted from structural VAR process by considerable macroeconomic variables such as output growth, inflation, real exchange rate and money supply in different combinations. The structural shocks are correlated in pairs to estimate degrees of symmetry. The result shows that though the number of positive correlations is higher, the patterns of shocks are asymmetrical in the light of very less statistically significant positive correlations. The analysis of simple correlations of key macroeconomic variables such as output growth, inflation and nominal exchange rate and other criteria such as trade openness, diversification etc. also support similar conclusions.

The study also examines the contributions of structural shocks that India faces in explaining the business cycles of its neighbors in the region. The results show that the structural shocks that India is subject to, contribute relatively higher to the output fluctuations of Maldives, Pakistan and Bhutan compared to other member nations. In other words, the structures of the economies of these three countries are such that they are more likely to adopt similar policies that India adopts in response to the structural shocks affecting their business cycles.

However, while extending the inferences drawn from the empirical results to the economic structures of the region, probably both Maldives and Pakistan would be less suitable members of the region, to be part of any sub-regional initiatives in the areas of monetary integration. As mentioned in the previous sections, economic inter-linkages between India and Maldives are much less and unidirectional. Unlike Bhutan and Nepal, Maldives is much less dependent on India. Similarly, the political rivalry between India and Pakistan is likely to dent the prospects of any mutual monetary collaboration. This leaves Bhutan which is the natural ally of India to be part of any sub-regional initiatives as they share bilateral fixed exchange rate

framework. In addition, economic case for Bhutan, Maldives and Pakistan to be part of sub-regional monetary cooperation is less credible given no or very little economic inter-linkages among these three countries.

The pattern of shocks and variance decomposition of key macroeconomic variables across the region indicate that the member countries are subject to asymmetrical shocks. The asymmetrical shocks are largely attributed to very weak regional economic and financial integration. For more than 30 years since the establishment of SAARC, though many agreements have been reached aimed at promoting regional cooperation, the progress towards actual implementation has been snail-paced. Implementation of agreements such as SAFTA and SATIS primarily aimed at enhancing regional economic integration through increased intraregional trade are very much work in progress.

There is a puzzle in the outcome of results relating to Bhutan, India and Nepal which share fixed exchange rate system and are more integrated than others. While most of the correlations of structural shocks are statistically insignificant, more baffling is the existence of negative correlations among them. Bhutan and Nepal's share of trade with India as a percentage of their international trade is very large. Furthermore, the informal trade of these two countries with India is also likely to be substantial on account of open border. Fixed exchange rate would mean that the monetary policies of both Bhutan and Nepal are more aligned to the monetary policy of India, thus there is a likelihood of the demand shocks being more symmetrical compared to other shocks. This result thus, raises the efficacy of the endogeneity of the OCA criteria in the context of South Asia.

In the dynamic world the estimations based on purely historical data might not serve as the only guide to the future, what is famously known as "Lucas Critique" (Lucas, 1976). Moneglli (2008) states that the analysis investigating OCA properties are by necessity backward-looking. Many empirical studies have shown that the parameters of OCA are largely endogenous; thus can be fulfilled *ex post*. The implementation of various agreements under the framework of SAARC for facilitating greater movement of people and goods; and intraregional trade and investment would hopefully lead to higher synchronization of shocks in the future.

The progress towards greater regional economic and financial integration would be therefore central to the process of monetary integration.

There are also inherent costs associated with the monetary union with common currency. The countries will have to forgo control over monetary policy to supranational Central Bank. While the Region Central Bank may take inputs from the countries in the union during the formulation of the monetary policy, it may not be possible for one pan-regional policy to address country specific challenges of each member states. Apart from giving up direct control over monetary policy, the country in the union are subject to strict fiscal stability framework which at times can be counterproductive to country specific situations. Similarly, the countries will no longer be able to exercise exchange rate flexibility to respond to specific shocks given that they share single currency and have no control over its exchange rate. Hence, exchange rate adjustment is not possible to address country specific disturbances.

In view of the above considerations, the member states may like to explore and devise such a regional monetary system that will help in transitioning from current state of almost no monetary integration to the one that will enhance monetary cooperation in the larger interest of the region. Thus, the notion of intermediating currency comes into picture in facilitating monetary transactions with the aim of achieving greater level of economic, monetary and financial integration, while the member states will continue to use their national currency for domestic purpose with autonomy over their macroeconomic policies.

It is critical that India understands its instrumental role in promoting monetary cooperation in the region. So far the matter has not been pursued with the level of commitment necessary to make any tangible progress in this direction. Monetary union with common currency is what GEP report has mentioned as a vision for the monetary integration of SAARC. It's a long and arduous process and having witnessed delays and difficulties in almost every initiative, it is very unlikely that it will be achieved in the foreseeable future. The euro crisis is also likely to dampen the spirit and enthusiasm of the member countries towards monetary union and force them to take extra-cautious approach towards this goal.

Similarly, the political and security concerns between India and Pakistan weaken the prospects of monetary integration between these two countries. Political considerations are overwhelmingly important in the process of economic and monetary integration. In fact Pakistan would probably be the last country in the region to participate in any initiative towards monetary integration even if implemented in a phased manner. Due to worsening relations between India and Pakistan in recent years, the 19<sup>th</sup> SAARC summit scheduled for November 2016 in Pakistan could not be held until this date denting the overall prospects of regional cooperation. India seems to be pushing through parallel regional initiatives such as BIMSTEC where all the countries of the region are also the members *sans* Pakistan and Afghanistan. In recent times, India's attitude towards SAARC has raised concerns over the very relevance of the SAARC.

It is apparent that none of the member countries in the region is ready to give up its national currency in favour of common currency. It is therefore sensible to devise a monetary framework grounded on the political and economic realities of the region and gradually transition from the current state of very little monetary cooperation to the one with greater monetary integration through series of incremental steps. In this regard, monetary arrangements similar to Common Monetary Area (CMA) adopted by the four nations of South Africa: South Africa, Namibia, Lesotho and Swaziland can serve as an important reference point for SAARC's monetary cooperation. Some parallels can be drawn between CMA and the monetary arrangements that exist between India and its two smaller neighbors: Nepal and Bhutan though the former is by far the more organized, advance and formal multilateral monetary arrangements.

As a matter of fact, there already subsists a prototype OCA at the sub-regional level among India and two of its small landlocked neighbors - Bhutan and Nepal. By virtue of fixed exchange rate that exists between them, it fits Mundell's (1961) version of OCA in spite of fundamental prerequisites of OCA not unfulfilled. The current bilateral exchange rate arrangements that exist between India and Bhutan and that of India and Nepal shall be transformed into multilateral monetary framework among these three countries. The first step towards greater monetary cooperation in South Asia would be to make this multilateral framework work

effectively for the benefits of these three countries: as a stepping stone for other member countries to join in a gradual and phased manner. It is in this context that the monetary integration in South Asia can be seen as a sub-regional initiative aimed at facilitating intraregional transactions, trade, payments, transfers, investment, invoicing etc.. However, it is also important to undertake whatever reforms necessary to promote monetary integration at the regional level to achieve greater economic integration. Hence, the monetary integration in South Asia has to be approached with two pronged strategy. The result of the survey overwhelmingly endorses the idea of phased and incremental approach to monetary integration in the region.

Given that the concept of single currency or a parallel notional currency are both practically and technically not feasible, Indian rupee being the currency of the central economy of the region has larger role to play in promoting greater regional monetary integration. Indeed, Indian currency has been assuming regional currency role as unit of account, means of exchange and store of value in Bhutan and Nepal. For instance, bilateral trades are invoiced in Indian currency, investments and grants from India are denominated in Indian currency, financial assets denominated in Indian currency are used as part of foreign exchange reserves, Indian currency is accepted in these two countries for private transactions and most importantly Indian rupee serves as a nominal anchor for maintaining bilateral pegs. Around 45 percent of Nepal's 10 billion US dollar foreign exchange reserves is placed in India and 25 percent is held in Indian rupee denominated assets such as GOI securities and bank deposits conferring Indian currency a somewhat an international currency status despite being a nonconvertible currency.

Sub-regional approach and regional role of Indian rupee underpin the basis for achieving greater monetary integration in South Asia given that it is not feasible to pursue a goal of a monetary union with single currency in the region. Similarly, overwhelming stakeholders believed that the primary objective of monetary integration in South Asia is not the pursuance of monetary union with a single currency rather a monetary cooperation that will bring the member state closer in strengthening economic integration.



## 7.2 POLICY RECOMMEDATIONS

The thesis concludes with following set of recommendations:

1. Monetary integration in South Asia shall be pursued in conjunction with economic and financial integration instead of pursuing it as an independent goal. Based on what has been achieved so far makes it less likely to achieve a monetary union with a common currency. Even after three decades, the basic tenets of economic integration such as free trade agreement on goods and services and regional cooperation in investment have not been attained. Even a goal of a custom union looks beyond reach let alone a single market or a monetary union in South Asia. A workable monetary union requires complex and comprehensive reforms. In fact, economic and financial integration are the important building blocks of a monetary union. Therefore, the objective of monetary integration in South Asia shall be commensurate with the level of economic and financial integration and it shall be primarily aimed at facilitating intraregional free trade and promotion of intraregional investment.
2. Any haste in advancing the idea of monetary union without first putting in place necessary institutional frameworks may invite complications. The process of European integration started with a Treaty of Rome in 1957 by creating European Economic Community (EEC) of six countries. The series of institutional steps taken since then, driven mainly by strong political commitment culminated into EMU. Establishment of free trade area, custom union (1968), a common market (1985), economic union (1986), European Union (1993) with a single market are the set of mechanisms put in place before achieving monetary union with a single currency in 1999. The fact that SAARC is far from achieving free trade area shows that the economic integration in South Asia is still in a nascent stage.
3. Despite quite meticulously worked out institutional frameworks, the euro area is far from being somewhere close to the monetary union of USA. Recent events in euro area have further exposed institutional and policy gaps and complexities in managing and sustaining a monetary union with a single currency. EMU is undertaking series of reforms to address those gaps in sustaining the monetary

union. These reforms include, inter alia, banking union, capital market union, fiscal transfer mechanism, policy harmonization and implementation of macro-prudential frameworks necessary to address the impact of periodic asymmetric shocks. All these measures and institutional frameworks necessary for a monetary union seem a distant reality for South Asia. Based on whatever progress has been made towards regional cooperation, political realities on the ground and what has happened in euro area the goal of monetary union similar to EMU is far-fetched idea in the context of South Asian.

4. It is very unlikely that the countries in South Asia are ready to give up their national currency in favour of a common currency. Under monetary union with single currency, the member countries lose control over exchange rate management and independent monetary policy to Supranational Central Bank responsible for printing common currency for the union. The countries are subject to strict fiscal convergence and stability framework which at times can be counterproductive to country specific situations. Even if they are subject to symmetrical structural shocks and would have benefited most by forming a monetary union, the countries in the region are less likely to form a monetary union with a common currency at this stage.
5. Hence, instead of harping on something that is not attainable, it is important to focus on more innovative yet practical mechanisms that will promote monetary integration in the region. The deeper economic integration and monetary cooperation is likely to bring about political and financial stability in the region. The modus operandi of the monetary system that would best suit South Asia would be the one which is anchored around its geopolitical and economic realities. The system shall help in transitioning from current state of very little monetary integration to the one with greater monetary cooperation in achieving greater economic and financial integration.
6. It is in this respect, the monetary integration in South Asia can be seen as a sub-regional initiative. The idea of sub-regional initiatives under SAARC is however not new as it began with the launch of BBIN in 1996 comprising of four members: Bangladesh, Bhutan, India and Nepal. Monetary integration can be seen in the same light by exploring the possibility of its implementation at the sub-regional level.

7. In fact, the exchange rate arrangements between Bhutan and India and Nepal and India mirror Mundell's (1961) version of OCA by virtue of fixed exchange rate system that exists between these countries. This sub-regional exchange rate framework can be viewed as the important stepping stone towards greater monetary integration in South Asia. The current bilateral exchange rate frameworks shall be upgraded into a multilateral monetary framework among these three countries by addressing constraints that exist in the current system. Though Bhutan and Nepal have fixed exchange rate arrangements with India, there is no formal bilateral arrangement between them. India has greater role to play in reforming and advancing current system from merely an exchange rate framework to a broader monetary framework. The framework can be extended to include Bangladesh (like BBIN initiatives) followed by Maldives and Sri Lanka at the later stage (similar to SASEC project) as suggested in the survey. Pakistan and Afghanistan can decide at opportune time when to be part of the greater regional monetary cooperation.
8. Considering all the aspects of monetary integration in South Asia, a phased approach to monetary integration seems both pragmatic and technically viable. Devising a framework that will help the region in moving from very little monetary cooperation to the one with greater monetary cooperation considering concerns and interests of the countries in the region would be crucial. In this regard, the central role of India by virtue of being the largest economy and the most powerful country in the region shall be acknowledged. The concept of Indian currency assuming regional role in terms of the function of money viz. unit of account, medium of exchange and store of value can therefore be explored. Such arrangement is expected to facilitate intra-regional transactions anchored around Indian currency with the aim of achieving greater level of economic, monetary and financial integration. This will allow member states not only the continuation of their national currencies but also permitting them autonomy over their macro-economic policies.
9. For other member countries, the dependence on India is not as significant as Bhutan and Nepal, hence the question of Indian rupee's role in the regional monetary integration would naturally arise. It is also manifested in the choice of the exchange rate frameworks of these countries. While many studies have

shown much bigger prospects of the intraregional trade, the informal intraregional trade is also very high. The robust and sustained economic growth of larger economies such as India, Pakistan and Bangladesh would elevate the standing of the region. Being one of the least integrated regions in the world, the prospects of development that the greater integration can bring about is also high. Status quo in the monetary cooperation will however not help in realizing the potential of the region. It is therefore, important to advance monetary cooperation by elevating the role of Indian rupee to the regional level.

10. Mintz (1970) considers political will the single most important requisite to achieve regional economic and monetary integration. Despite meeting all the essential conditions of OCA, it may not see light of the day in the absence of political commitment. The studies based on endogeneity theory have shown that the benefits of monetary union resulting from higher level of trade and investment, exchange rate stability, financial stability, deepening financial market, more synchronized business cycles and likely positive impact on the relationship among member countries outweigh the cost of giving up autonomy over policies and exchange rate management. Hence, there should be a univocal political commitment from all the members for the workable monetary integration.
11. Cohen (1993) in his study of six currency unions finds that the economic criteria are largely dominated by the political considerations in successful currency unions. He also finds that the level of commitment of participating countries will be greater in the presence of dominant state which is not only committed but also competent to take up leadership role for monetary cooperation. The roles played by South Africa in CMA and Germany in EMU can therefore provide broader guidance on how India can play similar roles in steering monetary integration in South Asia. It is in this context important to pin down the larger role of Indian in facilitating greater monetary integration in South Asia.
12. Monetary frameworks similar to Common Monetary Area (CMA) involving four South African nations where the South African Rand serves as a regional anchor are more relevant to South Asia. CMA is a free trade area with a custom union. In principle, there is also a free mobility of capital and labour though in practice application of certain conditions restricts free movement of labour among

countries in the area. There is also revenue sharing or fiscal transfer framework which provides significant budgetary support to smaller member nations. Though institutional frameworks similar to CMA currently remain untenable in the context of South Asian, it serves as the most pertinent reference point for the region for its monetary integration goal. Like Indian rupee, South African rand is also nonconvertible currency unlike euro which is an international currency. This is an extra challenge that the emerging and developing economies have to face in their monetary integration.

13. Since the collapse of the Bretton Woods system in early seventies, International Monetary System (IMS) has undergone significant changes. Likewise the global order has changed. Despite the overhaul of the world's economic and political scenario, the global governance system put in place at the end of WW II has changed very little. The reform of international bodies such as IMF, World Bank, United Nations including the IMS has long been overdue. USA enjoys disproportionate advantage over the rest of the world. With the economic rise, China has initiated the process of internationalizing its currency. For India, regionalization of its currency would probably be the first step towards eventual internationalization of its currency. In this regard, India shall be able to demonstrate commitment and leadership in the region and undertake proactive measures in steering the process of greater regional monetary integration.
14. In a study carried out by Chatham House in the aftermath of the global financial crisis (GFC), a group of eminent economists has strongly advocated for a multicurrency reserve system along with the increased role of Special Drawing Right (SDR), the supranational currency in the light of multipolar world that has evolved in the recent times. There is a call for broadening and deepening the use of SDR extending its use to include private transactions as well. Along-side US dollar, the use of other key currencies will assist in instilling the sense of greater accountability in the international monetary system and help in managing risks by diversifying the portfolios of the reserve currencies. With the decline in the share of US economy in the world, the role of US dollar as a de facto world currency is likely to decline over time. Eichengreen (2011) postulates that as the world is gearing towards a multi-polar system where euro is dominant in Europe and US dollar is the anchor in the Americas, Chinese Renminbi will also become

key currency in Asia. In the same vein, Indian rupee is likely to take up similar roles in South Asia as India transitions into the world's third largest economy within next few years.

15. Since the emergence of Indian rupee as the regional currency will come with some added responsibility India has to evaluate whether it is in its interest to let its currency to take up that role by weighing potential costs and benefits. The process will however assist India in the eventual internationalization of its currency and realization of its rightful place in the international monetary system. Else with growing influence in the region, China may quickly fill the vacuum.
16. Regionalization of Indian rupee will help in deepening regional capital market in the region for raising funds for intraregional investment. For smaller countries like Bhutan, Maldives, Nepal and Sri Lanka their capital investment needs can be easily raised from the regional market without having to rely on convertible currencies. This will be a big boost for resource mobilization within the region. Larger economies such as Bangladesh can also partially raise their capital requirements from the regional financial center.
17. The increasing acceptance and popularity of offshore Indian rupee bonds (masala bonds) in the international financial center and onshore Indian rupee bonds (maharaja bonds) is the testimony of the increasing role of India in the global markets on the back of its economic rise and sound macroeconomic fundamentals. This lends further support to the credibility of Indian rupee and the idea of its regional role in promoting monetary integration.
18. Fritz and Muhlich (2006) have made qualitative assessment of CMA, ASEAN and Mercosur from the perspective of developing economies. They advocate in favour of greater monetary cooperation among developing and emerging economies as an important strategy to avert instability created by external shocks. Even amid relatively low economic integration, cooperation on exchange rate management is vital especially during times of asymmetric shocks. The divergent policy responses wielded by the countries in response to external shocks can have adverse impacts on trade and output. They are of the view that a regional anchor currency helps in strengthening financial stabilization and in developing regional financial market that makes borrowings

in the regional currencies possible. Even in the absence of common currency, the coordinated monetary policy in the region will assist in advancing the regional financial markets with the enlargement of regional currency denominated financial assets. It in turn strengthens the prospects of macroeconomic stability in the region with the reinforced lender of last resort function of regional central banks. They profess that intraregional exchange rate stability is the most important necessary condition in making a successful regional monetary integration.

19. Though intraregional trade is less than 6 percent, the increased monetary cooperation and economic integration will have the potential to increase trade significantly. The patterns of intraregional trade in the region are in favour of India. The extent of informal trade that exists between India and its neighboring countries is also substantial. Both formal and informal trade provides India unilateral advantage of substantial trade surplus. If Indian rupee were to serve as the regional currency India shall provide adequate liquidity of its currency in a sustained basis to facilitate intraregional transactions including the role of store of value.
20. However, neither the trade patterns in the region are expected to reverse any time soon nor would it be in the interest of India to run into consistent intraregional current account deficit. Buying Indian rupee in exchange of convertible currency on the other hand is not in the interest of the member countries as it only benefits India from seigniorage and increase in its forex reserves. Indian rupee liquidity in the region can be augmented through transfer of capital denominated in Indian rupee from India to the neighboring countries. This will help in funding intraregional current account deficits faced by the member countries leaving the use of forex reserves of the member countries to the minimum for the intraregional transactions.
21. UNESCAP (2017) puts an estimate that the intraregional export potential of South Asian countries is three times larger than 2014 export figures. The same study estimates that the bilateral trade between India and Pakistan could be 12 times higher than 2014 level while Taneja et al (2013) estimates that the trade potential between India and Pakistan is more than 10 times the official figures of 2011. The ensuing strained relation between India and Pakistan has not only

adversely affected the bilateral relation but has also constrained regional cooperation. The cost of doing trade in South Asia is very high owing to the host of issues such as poor connectivity, lack of proper infrastructure, bottlenecks on cross border trade facilitation etc. Hence, the development of cross border infrastructure to facilitate economic integration should be the priorities of the regional cooperation.

22. There is no financial integration of whatsoever across countries in the region. The capital markets are fragmented along national lines. All these make South Asia one of the least integrated regions in the world. The empirical results in the preceding chapters essentially reflect these economic and structural realities and challenges of the region. The gradual opening up of capital account across the region augured by the use of Indian rupee is likely to promote regional financial integration and mobilization of resources.
23. The establishment of SAARC Development Bank would be instrumental in mobilizing resources from the market required for large scale projects of regional importance. The region is strained by huge infrastructural gaps requiring large scale investment. Lack of intraregional connectivity is one of the most pressing challenges that the region is facing. Transport, Communication and Power are three main areas that need infrastructural boosts to stimulate further economic integration and growth in the region. The current funding framework such as SAARC Development Fund (SDF) can't be effective in mobilizing resources in a scale required in the region. India shall play instrumental role in the establishment of the regional development bank.
24. It is also important to assess the functioning and the location of Asian Clearing Union (ACU) given that the prolonged conflict between USA and Iran pushed the latter completely out of ACU settlement system. The ACU has been instrumental in settling intraregional trade. Given that Iran is completely out of its ambit since 2011, ACU can serve better by relocating it to India which is the largest beneficiary of the system. By doing so, the bilateral settlements between India and its two smaller neighbors Bhutan and Nepal shall also be brought under the ambit of ACU - which so far have remained out of it. ACU has essentially served the clearing platform for the countries in South Asia given that the transactions relating to Myanmar, the only other non-SAARC member apart



from Iran is negligible. The scope of ACU can similarly be broadened to include all the intraregional financial transactions. Such moves will also help in augmenting the role of Indian rupee for intraregional settlement.

25. For all the practical reasons, it would be prudent to consider monetary cooperation in South Asia sans Afghanistan and Pakistan. “Either all else none” approach will not yield any tangible result in taking forward monetary integration in the region. India’s role is central and it shall play the role of benevolent leader by being ready to bear disproportionate responsibility if necessary though India is likely to benefit the most through greater regional monetary integration. India must play constructive leadership role in driving the process of monetary cooperation in the larger interest of the region. Under bilateral frameworks, India has been known to play dominating role against its small neighbors in promoting its own interests even to the extent of interfering in their internal affairs. Given the extent of challenges showcased by euro crisis coupled with the fact that the conflicts between India and Pakistan have escalated in recent times it is important to find workable arrangements that will assist in enhancing monetary cooperation in the region.
26. Some authors have suggested for the introduction of a parallel currency in the likes of European Currency Unit (ECU) as a stepping stone towards eventual adoption of single currency by a regional block (Eichengreen, 2006; Mori et al., 2002; Agrawala, 2003). The parallel currency is a basket of currencies from the member nations whose corresponding weights are determined by the share of country’s trade or GDP in the region. The creation of notional currency unit and institutionalization of necessary mechanisms to implement it would be extremely challenging given that any initiative that requires reforms is very difficult to implement in South Asia. Moreover, it would not be in the interest of India to attach its currency to a regional currency unit to facilitate intraregional transactions when it can legitimately pursue much larger goal of internationalizing its currency on the back of its robust economic growth.
27. The currencies of Sri Lanka and Pakistan are under severe pressure amid growing external imbalances. While Sri Lanka has piled up mountain of external debts in the last several years and has been subject to large debt servicing obligations, Pakistan has been facing dwindling foreign exchange reserves. 2018

has seen major currency depreciation of these two countries. Sri Lankan rupee has lost as much as 18 percent of its value in 2018 while Pakistan has lost as much as 27 percent in comparison to 9 percent depreciation of Indian rupee against US dollar. Hence, these are important considerations to be factored in while designing the framework for regional monetary integration. India has extended currency swap facilities to Sri Lanka both within the framework of SAARC as well as separately on a bilateral basis to help the latter in managing its external positions. However, unsustainably high debt servicing obligation coupled with low level of foreign exchange reserves can become the source of macroeconomic instability to the region when the degree of integration is high.

28. The fear of India's dominance in the region is common and understandably legitimate. Large asymmetries in the region in favour of India perpetuate such fear. India is widely believed to adopt coercive diplomacy in bilateral relation. For instance, Nepal has suffered from the history of political interference from India and it has been the main source of the political instability in the country in the last three decades. The unofficial trade blockade of 2015 imposed by India against Nepal in the aftermath of the promulgation of latter's constitution was one of the darkest moments in the history of the bilateral relationship between Nepal and India. Incident like this shapes the perception of the people and the future of mutual cooperation and relation. While conflicts are common among neighboring countries, coercive diplomacy and political interference in the internal affairs are not conducive in promoting mutual and regional cooperation. China's significant advance to the region which is otherwise India's own backyard is a clear signal to India that its traditional neighborhood policy of coercive diplomacy, exploitation, highhandedness and political interference won't be effective in serving its larger interest anymore. The "Neighborhood First" policy announced by current Indian government shall be implemented in letter and spirit. The respondents in the survey share these concerns.
29. Regional initiatives can afford exclusion of some member countries but not India. In the past, implementation of many key initiatives has been stymied largely due to conflicts between India and Pakistan. As long as the initiatives are in the broader interest of the region, failure to secure agreement from one or two member states shall not come in a way provided India is also part of it.

Participation of India by virtue of its central role in the region is indispensable for any initiatives undertaken both at the regional and sub-regional levels.

30. As long as mutual rivalry exists between India and Pakistan, no meaningful cooperation can be expected at the regional level. And due to geopolitical and economic significance, any regional or sub-regional undertaking without the participation of India would be ineffective. Therefore as long as its relationship with India is not mended, Pakistan will continue to remain isolated from regional cooperation despite the best of its intention.
31. The SAARCFIN network comprising of authorities from central banks and ministry of finance shall take proactive role in discussing and sharing issues of common interest and relevance in promoting greater cooperation in the areas of economic, financial and monetary integration.

Twenty first century is touted as the Asian Century. Asia is back in the world map like in the preindustrial revolution era when Asian countries like China and India dominated the world's economy. Ten years from now world will be different with the further rise of China and India. This period would be significant for India as it transforms into world's third largest economy. Bangladesh will probably be the next frontier market. Along with the economic rise of these countries, South Asia will also gain traction in the world. Falling into middle income trap and China's advances in the region are the two key challenges that India has to face. India shall navigate carefully by taking the region into its confidence. In this regard, the region including India would benefit with greater regional economic and monetary integration. Improving cross border infrastructure to facilitate movement of goods, services, people and capital shall be the priorities of the regional cooperation. India should demonstrate the commitment and leadership proportionate to its size to contribute constructively to the process of greater economic and monetary integration for the overall development of the region.

There is large scope for future research in the areas of regional economic, financial, banking, monetary and fiscal integrations for achieving workable frameworks grounded on socioeconomic and geopolitical realities of the region.

\*\*\*\*\*

**SYNOPSIS**  
**OF**  
**ANALYSING THE PROSPECTS OF MONETARY INTEGRATION IN**  
**SOUTH ASIA**

**1 BACKGROUND**

The launch of euro on the first of January 1999 was the landmark achievement in the history of regional monetary integration. European Economic and Monetary Union (EMU) is the outcome of the relentless efforts of European nations for five decades. What seemed unthinkable in the aftermath of the World War II (WWII), the commitment and persistence of the political leaders of the Europe yielded in bringing European countries together into a monetary and economic union. The successful launch of euro ushered into a euphoria of optimism to many regional blocks around the world towards greater regional integration. South Asian Association of Regional Cooperation (SAARC) is not an exception.

In an effort to facilitate greater trade and investment, the concept of economic blocks has evolved across the world particularly among countries with geographical contiguity and proximity. The concept of regional blocks has been instrumental in promoting economic and monetary integration among the member states for their overall development.

Euro area is the largest regional monetary union in the world. Out of 28 countries in the European Union (EU), 19 countries are the members of the euro area sharing common currency. Series of measures and reforms for over five decades led to the eventual emergence of EMU. Formation of European Payment Union (EPU) in 1950 is probably the first stepping stone in that direction. However, the sovereign debt crisis that unraveled in euro area since late 2009 has called for deeper structural reforms necessary to address the challenges of sustaining EMU.

Promotion of intraregional trade and investment; exchange rate stability; price stability; increased flow of investment, enlargement of market for the domestic goods and services; single market for factors of production; deepening and

broadening of financial market are the key incentives of forming an economic and monetary union. It can also help in easing conflicts and rivalries that may exist among member states. The successful evolution of EMU is considered to be the outcome of political persistence on the backdrop of the long history of wars and conflicts in Europe.

## **2 SOUTH ASIAN ASSOCIATION OF REGIONAL COOPERATION**

SAARC is the association of eight countries of South Asia namely Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka and Afghanistan. SAARC was founded in 1985 by seven countries while Afghanistan joined it as the eighth member in 2007. All the member countries share common border with India with the exception of Afghanistan and two island nations.

The eleventh summit held in Kathmandu during January 2002 adopted key recommendation of SAARC Group of Eminent Persons (GEP) of setting up South Asian Customs Union (SACU) by 2015 and South Asian Economic Union (SAEU) by 2020 with a possibility of monetary union with common currency. The summit adopted GEP report as a vision document for future cooperation.

Table 1 provides overview of South Asia for 2016. Nearly one fourth of world population (23.73 percent) lives in South Asia. However, it accounts for only 3.81 percent of global nominal gross domestic product (GDP) and 8.87 percent of GDP on purchasing power parity (PPP). Similarly, share of its merchandize trade is only 2.52 percent of global trade. Both human development index (HDI) based on 2015 data and gross national income (GNI) per capita are below global average signifying the level of efforts needed to bridge the gap. GNI per capital in PPP terms is less than 38 percent of the global average because it is home to the largest number of poor people.

Table 2 shows country wise information on important indicators such as area, population, gross domestic product (GDP) and per capita income for 2016. These indicators not only demonstrate the extent of asymmetry that exists among the member countries in terms of size of area, population, GDP and Trade but also the central role of India in the regional cooperation. The region hosts very small

**Table 1: Overview of SAARC**

	Area	Population <sup>1</sup>	Nominal GDP <sup>1</sup> (in US\$)	GDP PPP <sup>1</sup> (in US\$)	GNI per capita <sup>1</sup> PPP (in US\$)	Trade <sup>2</sup> (in US\$)	HDI <sup>3</sup>
SAARC	3.3%	23.73%	3.81%	8.87%	6,052	2.52%	0.621
WORLD		7.444B	75.871T	120.719T	16,176	31.994T	0.717

Source: 1. World Development Indicator (WDI) 2017, IMF;

2. IMF Direction of Trade Statistics (DOTS) 2017;

3. Global Human Development Report (GHDR) 2016

Notes: B denotes billion and T denotes trillion

countries such as Maldives and Bhutan and very large country like India. For instance, comparison between the largest and smallest member states exemplify the case: India is 11,031 times bigger than Maldives in area, 3,172 times larger in population, 539 times larger in GDP and 271 times larger in trade. Similar differences also exist between India and the second smallest country Bhutan. The differences between India and the second largest member country – Pakistan is also not less significant: 4 times bigger in area, 7 times larger in population and 8 times larger in GDP. While asymmetries are commonplace in most of the regional economic blocks including Eurozone, the scale in SAARC is astounding.

**Table 2: List of SAARC Countries with Key Indicators**

PARTICULARS	AFG	BGD	BTN	IND	MDV	NPL	PAK	LKA
Area in sq.km	652,230	143,998	38,394	3,287,263	298	147,181	796,095	65,610
Population <sup>1</sup> (in million)	34.656	162.952	0.798	1,324.171	0.427	28.983	193.203	21.203
GDP Nominal <sup>1</sup> (In USD billion)	19.5	221.4	2.1	2,263.8	4.2	21.1	278.9	81.3
GDP per capita <sup>1</sup> (in USD)	562	1,359	2,774	1,710	10,118	729	1,444	3,835
International Trade <sup>2</sup> (In USD billion)	7.2	71.3	2.2	618.2	2.3	8.6	67.5	29.3

Source: 1. WDI, October 2017, IMF; 2. IMF DOTS 2017.

For achieving greater trade integration, the Preferential Trade Agreement (SAPTA) was signed in 1993 and came into operation from the end of 1995. Similarly, South Asian Free Trade Agreement (SAFTA) was signed in 2004 and became operational from the first of January 2006. The objective of these agreements is to promote the intraregional trade among member states by removing both tariff and non-tariff restrictions and make South Asia a free trade area within 10

years. Further, SAARC Agreement on Trade in Services (SATIS) was rolled out from 2012. The pace of reforms necessary to implement FTA is however extremely slow and intraregional trade on goods is less than 6 percent of the region's total international trade. This puts South Asia as one of the least integrated regions in the world.

Over the last five years, the percentage of intraregional trade has barely changed from 4.3 percent to 5.8 percent as presented in table 3. In absolute terms the intraregional trade has peaked in 2014 to USD 51 billion. The intraregional trade contributes significantly to international trade of smaller member countries such as Afghanistan, Bhutan and Nepal accounting for the largest share in their respective global trade. Given that India alone accounts for 79 percent of region's international trade but trades less than 3 percent within the region, the share of intraregional trade to region's global trade has consequently remained minimal. Moreover, the geopolitical concerns take precedence over economic interests for India and Pakistan denting the prospects of potentially very high mutual bilateral trade.

**Table 3: SAARC Intraregional Trade**

PARTICULARS	In US\$ billion				
	2012	2013	2014	2015	2016
SAAARC: Import from World	599.224	585.133	587.467	508.785	482.046
SAARC: Export to World	356.216	379.261	383.753	330.061	324.476
SAARC: Total International Trade	955.440	964.395	971.220	838.846	806.523
SAARC: Intraregional Export	21.149	22.667	26.578	23.778	22.573
SAARC: Intraregional Import	19.891	20.535	24.172	23.412	24.172
SAARC: Total Intraregional Trade	41.040	43.202	50.749	47.190	46.746
<b>SAARC Intraregional Trade %</b>	<b>4.30%</b>	<b>4.48%</b>	<b>5.23%</b>	<b>5.63%</b>	<b>5.80%</b>

Source: Author's calculation based on IMF DOTS 2017

Even in the midst of 2019, SAFTA and SACU are far from being achieved. The prospect of single market and SAEU by 2020 is likewise inconceivable at this stage. Based on what has been achieved so far, the goal of monetary union similar to EMU is far-fetched. Euro crisis that unraveled from the end of 2009 has further dampened the prospects of monetary union with a common currency in South Asia. In view of the above considerations, it is important to devise a monetary system that will help the region transiting from current level of very little monetary cooperation

to the one with greater monetary integration without the necessity of giving up sovereign currency in favour of a common currency in the region.

In over three decades of SAARC's formation though several agreements are entered and institutional frameworks are set up, the progress towards actual implementation of each of these initiatives is very slow. The ensuing strained bilateral relation between India and Pakistan, the two biggest members of the geo-political block has further dampened the spirit and speed of reforms necessary in strengthening regional cooperation.

In view of the fact that some of these initiatives are significant to a group of member countries despite not being so or agreeable to all, the concept of implementation at the sub-regional level has been acknowledged. The case in example is BBIN – a sub-regional initiative among four countries: Bangladesh, Bhutan, India and Nepal introduced in 1996. A year later, the summit held in Male agreed to address specific challenges of three or more member countries and coordinate efforts at the sub-regional level. South Asia Sub-regional Economic Cooperation (SASEC) Programme which is the initiative of BBIN in 2001 was extended to include Maldives and Sri Lanka in 2014.

The central role of India comes with its size in terms of its economy, trade, population and area, location, future prospects and influence in the region. Some initiatives can afford the absence of some member countries, but not India. India's role will remain central even in the case of sub-regional initiatives for their successful implementation. Monetary integration is much larger concept with very large economic, financial and monetary ramification requiring political commitment from all the stakeholders. Without the leadership of India and without the willingness of the member states, the monetary integration will remain a distant goal for the region. India shall play role similar to Germany in the evolution of EMU and South Africa in the functioning of Common Monetary Area (CMA).

### **3 RATIONAL AND RESEARCH GAP**

Despite the enormous prospects of the region, it has failed to generate enough interest and attention of the world. This is largely because the region is roiled down with underdevelopment amidst low level of foreign investment, high



level of corruption, red-tapism, poor infrastructure, lack of skilled workforce, persistent strained relation between India and Pakistan and sense of antagonism that exists among member countries over India's dominance and coercive diplomacy. Very little has been said and written about South Asia largely due to its own backwardness and under-development in spite of the immense potential of the region. Much has been written about economic and monetary integration of South East Asia but very little about South Asia. Therefore, this research is expected to contribute significantly in filling the gap in the literature of monetary integration in South Asia from the developing world's perspectives.

#### **4 SCOPE AND OBJECTIVES**

By undertaking empirical studies and survey the research contributes to the literature of monetary integration in South Asia. The research also proposes a framework for monetary arrangements grounded on geopolitical and economic realities that would likely strengthen monetary cooperation among the members of the SAARC. The outcome of the research is also expected to contribute constructively to the policy debate on monetary integration in the larger interest of the region. The objectives of the study are as follows:

1. To validate the Optimum Currency Area (OCA) criterion on South Asia;
2. To identify currency suitable for serving anchor currency role in the monetary integration of South Asia;
3. To assess the possibility of regional monetary integration on the basis of the anchor currency;
4. To collect and compile views on the feasibility, challenges and prospects of monetary integration from various stakeholders.
5. To provide a model framework for South Asian Common Monetary Area (SACMA) for achieving higher degree of monetary integration;

#### **5 DATA SOURCE**

The study is based on both primary and secondary data. Given the macroeconomic nature of the study, the data is mostly availed from World

Economic Outlook (WEO) 2017 from IMF database and World Development Indicator (WDI) 2017 from World Bank Group database. Apart from these two widely referenced database, specific type of data have been sourced from IMF Direction of Trade and Services (DOTS), Bank of International Settlement (BIS), World Trade Organization (WTO), various UN agencies such as UNDP, UNFPA, UNCTAD, UNIDO, ILO etc., SAARC secretariat, Central Banks, Ministry of Finance, Central Bureau of Statistics etc. The empirical studies are carried out by considering annual data from 1990 to 2016 spanning over 27 years. Similarly, the co-integration test is conducted by considering daily exchange rates of India, Maldives, Pakistan and Sri Lanka from the beginning of 1994 to 30 November 2018 while for India and Bangladesh by considering monthly exchange rates from January 2005 to November 2018

## **6 EMPIRICAL STUDY & RESULTS**

Empirical study is conducted broadly along two objectives: (1) Whether South Asia an Optimum Currency Area (OCA) or not and (2) Whether Indian rupee provide nominal anchor to the currencies of the region.

### **6.1 Optimum Currency Area**

The empirical study is carried out using key macroeconomic variables of 27 years spanning from 1990 to 2016. These macroeconomic variables include gross domestic products (GDP), inflation (GDP deflator), consumer price index (CPI), exchange rates and money supply. The choice of year 1990 as the beginning year is particularly important given that India, the central economy of South Asia initiated major economic reforms by opening up its economy amidst foreign exchange reserve crisis of 1991 while most of other member countries of SAARC began major reforms from mid-eighties. Afghanistan which joined SAARC in 2007 has been excluded from the analysis owing to the lack of adequate data for the period under study.

There is no simple and straight forward technique to determine whether a group of countries constitute an OCA or not. By definition, OCA comprises of sovereign nations suitable for maintaining irrevocable fixed exchange rate among themselves or adopting a common currency. The most commonly used technique for

assessing OCA criteria is analysing the nature of structural shocks faced by the countries forming a currency union. Symmetric shocks allow the countries to respond with similar policies thereby lowering the economic cost of adjustment. On the contrary, if the countries are subject to asymmetric shocks, the cost of adjustment would be high because uniform policy response across the region would not be effective.

In this regard, a methodology developed by Blanchard and Quah (1989) to decompose shocks into temporary and permanent with a set of macroeconomic variables applying structural vector autoregression (SVAR) process and further extended by Bayoumi (1992) is most widely used in the OCA literature. SVAR technique helps to extract structural shocks. For purpose of our study, it is used in different combinations of variables by taking one variable, two variables, three variables and four variables.

The above methodology is extended to analyse other important dimensions of shocks. Together with the analysis of the patterns of shocks, impulse response function (IRF) is used to gauge how the macroeconomic variables of each country respond to different shocks. Likewise, forecast error variance decomposition (FEVD) technique is employed to assess comparative significance of various shocks in the variability of the key macroeconomic variables.

All the empirical studies under this objective point to the fact that the countries in South Asia are subject to asymmetrical shocks and therefore South Asia is not an optimum currency area. In other words, the cost of giving up autonomy over exchange rate management and monetary policy outweighs the benefits that may arise by forming a monetary union with a common currency.

## **6.2 Choice of Anchor Currency**

Two techniques are applied for determining the choice of anchor currency. The first technique is SVAR methodology used for the analysis of OCA. Chow and Kim (2003) used it to examine relative significance of global, regional and country shocks in explaining business cycles of East Asian countries. If the regional shocks have higher explanatory power compared to global shocks and country specific

shocks, the region is likely to benefit more with a regional monetary integration given that they can respond with uniform policy measures to the shocks. Indian output growth has been considered as a proxy for regional output whereas US output growth has been assumed as a proxy for global output. Thus, if the contribution of regional shocks is significant India deems to provide anchor to the regional business cycles.

The second methodology is the test of Co-integration to find out if there exists long run relationship between the exchange rates of member countries in relation to Indian currency. If there is long run positive relationship, Indian rupee seems to provide a nominal anchor for those currencies. Given that there exists fixed exchange rate arrangements between Indian rupee and each of Bhutanese ngultrum and Nepalese rupee, no co-integration test is necessary to examine long run relationship between them.

The empirical result fails to show the role of India and its structural shocks in explaining the business cycles of the countries in the region. Domestic factors are overwhelmingly predominant in explaining output fluctuations of the countries in the region. Similarly, the co-integration test shows no long run relationship between currencies of the region and Indian rupee. This comes from the fact that the countries in the region follow exchange rate system different from that of India. Based on these empirical studies, it can be concluded that economic development taking place in India doesn't have significant influence over the economic evolution of the countries in the region. Empirically, both Indian economy and Indian rupee fail to provide regional anchor to the economies and currencies of the region in spite of disproportionate advantage over its smaller neighbors in terms of its size and socioeconomic and geopolitical influence in the region.

## **7 SURVEY**

Given the complexity of the subject matter and absence of straight forward technique to gauge what forms of monetary integration is suitable for the region, a survey was conducted to solicit views from different stakeholders from across the member countries. The respondents include policy makers such as officials from central banks and ministry of finance; private sector such as the officials of chamber

of commerce and industry and banks; practitioners; and academia who are well versed with the subject matter. Those from academia are identified from their papers on the subject matter. Out of 70 individuals contacted, only 31 responded.

The survey is important exercise in understanding diverse views and getting crucial insights from different stakeholders on technical and complex matters. The outcome of the survey is particularly important in shaping policy dialogue and contributing to the recommendation on greater monetary integration in South Asia. The survey is intended to complement the outcome of the empirical studies and draw insights on the possible way forward for the greater economic and monetary integration in the region.

The key outcome of the survey is that majority are in favour of incremental and phased implementation of monetary integration starting from a sub-regional level. In this regard, a group of Bhutan, India and Nepal that share fixed exchange rate system with each other are suitable to begin the process of monetary integration. In the second phase, countries like Bangladesh, Sri Lanka and possibly Maldives can participate. Pakistan and Afghanistan could join in the last phase though it would be rather hypothetical at this stage.

Regarding the role of Indian rupee, though the final outcome in terms of the number is in its favour the concerns are high. These concerns stem mainly from the fear of India's dominance. The other concerns are of stability and convertibility of Indian rupee. These economic concerns will however be addressed in the long run with the sustained economic rise of India.

## **8 COMMON MONETARY AREA FRAMEWORK**

For all the practical and technical reasons, the monetary integration in South Asia essentially means the process of greater monetary cooperation aimed at facilitating greater economic integration. A euro area type monetary union is inconceivable at this stage. The member states shall devise such a regional monetary system that will help in transitioning from current state of almost no monetary integration to the one that will enhance monetary cooperation in the larger interest of the region.

Hence, the concept of incremental and sub-regional approach to monetary integration is relevant for South Asia. Bhutan, India and Nepal already share an exchange rate framework which could be developed into advanced multilateral monetary framework. These two countries are more integrated with India compared to other member countries in the light of open border and greater economic dependence on India. When deemed appropriate, other member countries and in particular Bangladesh and Sri Lanka can join this sub-regional monetary framework to make it more relevant and significant in the region.

In the absence of a common currency, the role of intermediating currency comes into picture in facilitating monetary transactions with the aim of achieving greater level of economic, monetary and financial integration, while the member states will continue to use their national currency for their domestic purpose with autonomy over their macroeconomic policies. A parallel currency such as Asian Currency Unit (ACU) as suggested by few in the survey is also both technically and practically not feasible given difficulties in putting institutional framework for its implementation. Moreover, there is hardly any economic incentive for the individual countries to participate in such a monetary framework. Therefore Indian rupee is a natural choice of regional currency that can facilitate monetary cooperation in the region.

In fact, Indian rupee has been playing the role of regional currency especially with respect to Bhutan and Nepal. Both these countries hold Indian rupee denominated assets as part of their foreign exchange reserves. Their bilateral trades with India are invoiced in Indian rupee. It is the matter of extending them to other member countries in their bilateral transactions with India before Indian rupee eventually assumes the role of regional currency in all the intraregional transactions.

For it to take up regional role, there should be ample liquidity of Indian rupee in the region. This can be best achieved by India running current account deficit in the region. The situation is however opposite at the moment with India running a large intraregional current account surplus. Alternatively, India can provide liquidity in the region by liberalizing its capital account. It is however challenging given that India is a country with a large capital deficits and it is in its

interest to maintain large current account surplus with the region to compensate for its ballooning current account deficit with the rest of the world. Capital account reforms can help member countries suffering from large current account deficit with India to compensate with capital inflows from the regional financial market. Moreover India is likely to benefit the most with greater regional economic and monetary integration.

Among few monetary unions that exist today, the most relevant to the South Asia is the arrangements made under South African Common Monetary Area (CMA). Being the central economy of the region, South African rand provides nominal anchor to the currencies of the member countries in the area similar to Indian rupee's role for the currencies of Bhutan and Nepal. Both rand and rupee are non-convertible currencies, hence the challenges these regions face in managing their monetary areas would be somewhat similar.

Multilateral South Asian currency swap arrangements similar to Chiang Mai Initiative Multilateralization (CMIM) shall be created. CMIM was founded by ASEAN plus 3 countries (China, Japan and South Korea) in 2010. This provides safeguard against short term liquidity shortages and helps in stabilizing the currencies in the region.

The major concerns of Indian rupee assuming regional role are that of exchange rate stability and its non-convertibility apart from the dominance of India. These issues are however not unique to South Asia but is common to all the regional blocks of developing countries. This is the additional challenge that developing regions have to face in the pursuit of monetary union. Despite floating exchange rate regime, Indian rupee has been relatively stable compared to its peers. Similarly the increasing popularity of both onshore and offshore Indian rupee bonds in recent years is big positive for the region. These developments provide further credibility to Indian rupee and its economy which are central to the idea of Indian rupee assuming regional currency role.

In a study carried out by Chatham House in the aftermath of the global financial crisis (GFC), a group of eminent economists has strongly advocated for a multicurrency reserve system along with the increased role of Special Drawing

Right (SDR). Eichengreen (2011) argues that as the world is gearing towards a multi-polar system where euro is dominant in Europe and US dollar is the anchor in the Americas, Chinese Renminbi will also become key currency in Asia. In the same vein, Indian rupee is likely to take up similar roles in South Asia as India transitions into the world's third largest economy within next few years. The regionalization now will assist India in the eventual internationalization of its currency in the future.

Twenty first century is touted as the Asian Century. Few years from now world will be different with the further rise of China and India. South Asia will gain traction in the world with its growing geopolitical significance. Improving cross border infrastructure to facilitate movement of goods, services, people and capital shall be the priorities of the regional cooperation. India should demonstrate the commitment and leadership proportionate to its size to contribute constructively to the process of greater economic and monetary integration for the overall development of the region.

## **9 DESIGN OF THE STUDY**

The chapters of the thesis are organized in the following order: Review of Literature; Empirical Study on Optimum Currency Area; Identification of Anchor Currency; Monetary Integration in South Asia: A Survey Analysis; South Asian Common Monetary Area: A Model Framework; and Summary, Conclusion and Policy Recommendation. The references and bibliography are provided at the end of the thesis.

Signature of Candidate  
Name: Biswash Gauchan  
Date:

Signature of Supervisor  
Name: Professor Dr. Vishal Sarin  
HOD (Economics), Mittal School of Business  
Date: