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**Growth and Instability of Agricultural Exports of India:
An Empirical Analysis**

Baikunth Roy

**Determinants of Current Account Balance in South
Asian Economies – An Empirical Analysis**

Rajib Das, Narayan Chandra Pradhan and Rajat Malik

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A Gravity Model Approach**

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**Impact of FDI on Hotel and Tourism Sector in the
Indian Economy**

M Tamizharasan

Book Review

Good Economics for Hard Times

Authors: *Abhijit Banerjee and Esther Duflo*

Reviewer: *Saatthvik Pulipaka*




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From the Editor's Desk...

The issues that are engaging everyone's attention, as this issue goes into print are many. The victory of Mr Boris Johnson, the impeachment proceedings of Mr Donald Trump, the possible recession once again hitting the countries world over, energy issues, to name a few.

As far as India is concerned, the noble prize in Economics being shared by an Indian, made the headlines for quiet sometime. India improved its rank in the *Ease of Doing Business Report*, which is published by World Bank. But the slowdown in the economy was one of the most discussed issues. Economists, academicians, policy makers, debated whether the present slowdown is because of demand side reasons or supply side, whether the slowdown is cyclical or structural. The opinion was sharply divided. Experts, who argued that the slowdown is structural in character, opined that, Government needs to urgently think of land and labor reforms, infrastructure reforms, reforms of in the domain of health and education. The Government on its part is making earnest efforts, to turnaround the economy. It reduced the corporate taxes, followed an expansionary monetary policy. The disinvestment of PSUs, the Industrial relations code bill which will result in significant labor reforms are the other big ticket reforms that are being contemplated. In the forthcoming budget everyone is expecting a decrease in personal income tax rates. That in turn is expected to give a boost to the falling consumption which is supposed to be one of the reasons for falling GDP.

One of the setbacks was the failure of the COP25 climate talks in Madrid to frame rules for evolving a market for trading in carbon credits. This could have an adverse impact on targets set for renewable energy by countries world over including India. At a time, when almost every country on the planet wants to increase the proportion of renewable energy in its energy basket, the failure at Madrid does not augur well.

The present issue of this journal as usual contains six scholarly articles that throw light on important issues in international economics. We have included the book review of *Good Economics for Hard times* written by Nobel laureates Abhijit V Banerjee and Esther Duflo.

We are sure the readers will find this issue of immense value addition to their knowledge. We request the readers to send reviews of books, highlighting issues pertaining to international economics.

Dr G Rajesh

Journal of International Economics

Scope

Journal of International Economics invites original contributions in the form of articles and case studies in the area of international economics.

Types of Articles

The following types of articles and case studies will be considered for publication in the Journal:

- Theoretical and Empirical Articles
- Research Papers
- Case Studies
- Book Reviews

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A paper should contain 3000-5000 words. All contributions should be submitted in Times New Roman, 12-point type, 1.5 lines spacing in A-4 size page setup, with margins of one inch from all sides.

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Tables and illustrations complete with titles, labels and artwork should be placed in the text at the appropriate locations. Diagrams, graphs, etc., should be sent in original.

The abstract should be brief, self-contained, explicit and should not exceed 200 words.

The manuscript should be typed on one side in double spacing. Mathematical terms, symbols and other features that cannot be typed should be inserted neatly into the text by hand in black ink.

The author should also send an electronic version (soft copy) of the paper on a Compact Disc (CD) using standard software (preferably MS-Word).

Equations should be numbered sequentially in parentheses by the right margin. Theorems, propositions, corollaries, etc., should be numbered in one sequence: for example, (1) Proposition (2) Corollary (3) Theorem, etc. should be given by author's name and year of publication. They should be mentioned in alphabetical order in the Bibliography.

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Growth and Instability of Agricultural Exports of India: An Empirical Analysis

Baikunth Roy*

Abstract

The study examines trends in the exports of agricultural commodities from India. The major agricultural exports chosen in the study are rice, wheat, tea, coffee, fruits and vegetables, cashew nuts shelled spices, sugar, cotton lint and tobacco unmanufactured. Further, compound annual growth rate (CAGR) is calculated and a comparison between pre-WTO and post-WTO export growth scenario is made. An export instability index is constructed for pre-WTO and post-WTO period to measure instability in agricultural exports from India. The findings of the study suggest that agricultural exports have increased in the era of economic liberalization, however, there are wide fluctuations across commodities, validating the first hypothesis of this study that favourable policies have resulted in increase in agricultural exports and an increase in the value of agricultural exports is associated with high instability at the commodity level. Nevertheless, the paper shows that aggregate agricultural exports do not reveal much instability, validating second hypothesis of the study that variations are perceptible at the commodity level. In other words, variability in agricultural exports varies across commodities.

Keywords: Agricultural Growth, Export Instability, Regression Analysis, Trade Liberalisation, WTO

Introduction

Over the last seven decades of Indian planning and trade policies, the perception about the importance of external trade in economic development has gone through several changes. There has been a substantial increase in agricultural exports in the era of economic liberalization. Today India is a major supplier of several agricultural commodities like tea, coffee, rice, spices, cashew, oil meals, fresh fruits, fresh vegetables, meat and its preparations and marine products to the international market. Indian agricultural export basket has also become diversified. India is observed to have exported at least 27 principal agricultural commodities. India has emerged as a leading producer of agricultural commodities, endowed with rich natural resources and favourable soil and climatic conditions. India has huge potentiality in agricultural exports but overall potentiality has not been exploited. However, in the era of trade liberalization, agricultural export has been increasing but share of agricultural exports in total exports has steadily declined over the years. In addition, agricultural export is quite volatile and there are large year to year fluctuations in export growth. This has damaged India's image as a stable exporter (Bhalla, 2004).

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As far as global competitiveness of agricultural commodities is concerned, there are seven commodity groups where India has lost market share substantially. These are cashew kernels, fruits and vegetables, pulses, spices, sugar, tea and tobacco. Loss in market shares reflects reduced global competitiveness, which include both price and non-price factors. The country faces fierce competition from other major players in the field, both the existing and new entrants. Ironically, the major challenge is from within Asia itself where countries like China, Malaysia, Philippines, Thailand, Singapore and Indonesia among others pose a big threat to Indian agricultural products (Shinoj and Mathur, 2008). In the wake of global financial and economic crisis, agricultural exports of India have declined significantly. Weak global demands have further added volatility to the export basket. This raises serious concern on the part of government to take necessary steps to augment agricultural exports. In this backdrop, the study analyses trends in the exports of agricultural commodities from 1981 to 2010. The major agricultural exports chosen in the study are rice, wheat, tea, coffee, fruits and vegetables, cashew nuts shelled spices, sugar, cotton lint and tobacco unmanufactured. Further, compound annual growth rate (CAGR) is calculated and a comparison between pre-WTO and post-WTO export growth scenario is made. An export instability index is constructed for pre-WTO and post-WTO period to measure instability in agricultural exports from India.

Review of Literature

Taking into the consideration of the objectives of the study, this section provides a review of literature on the subject.

Bakare (2011) defined export instability as year-to-year fluctuations in exports. Quantitatively, it can be defined as the difference between the actual and estimated value of exports, expressing this difference as a percentage of average value of exports. According to the United Nations Secretariat in its 1952 study, "Instability in export markets of underdeveloped countries", instability index is the absolute difference in the value of export from year to year, expressing this difference as a percentage of larger of the two annual values. The literature on export instability centers on two distinct but related hypotheses-the LDCs experience a higher degree of export instability compared with developed countries, and such instability has a damaging influence on economic growth (quoted from Athukoralge, 1987).

As far as causes of instability are concerned, Bhattacharjee (1976) argued that instability in the export trade of a country is caused by a number of factors. The foremost among these are fluctuations in production partly due to the variations in prices (induced by external and/or domestic causes) but largely due to fluctuations in the weather conditions. Instability of this type will never be completely eliminated even though it may be mitigated to some extent with the completion of schemes like irrigation designed to stabilize agricultural production. Another reason for instability in export trade is changes in trade policy dictated by considerations of internal stability. Lastly, instability in export trade has also been the results of fluctuations in effective demand in the economies of the trading partners, fluctuations either of a general nature or relating to specific commodities. When these changes in effective demand abroad are accompanied by changes in internal supplies in the same direction, the resultant variations in export earnings are bound to be very large. As mentioned in Bakare (2011), it is generally agreed

that, excessive fluctuations in foreign trade originate from variations in supply or demand or other economic and non-economic factors. But most of the recent studies based on statistical evidence conclude, though inclusively that instability index of exports are largely positively correlated with the degree of commodity concentration of exports and with the proportions of exports receipts obtained from the sales of primary goods and negatively correlated with per capita income and with the concentration of exports by geographical area of destination (Murray, 1978).

In the context of consequences of export instability, Deckota (2004) highlighted that export instability of any country may create economic instability of the same country as well as other countries of the world because this world has been synchronizing by the process of globalization. In this regard, it is needed to give much attention to the effects of export instability on economic development. These issues have also been rising prominently in the UNCTAD Conference right from 1964 to present day, and as preliminary steps to counter the instability in LDC's exports earnings, price stabilization agreement in primary products and a compensatory financing scheme to compensate the loss in LDC's earnings due to the deterioration in terms of trade of primary product vis-à-vis manufactured goods have been advocated. It is argued that fluctuating prices of primary product retard the process of economic growth and then to economic development in poor countries. It also triggers a ratchet effect on wages and manufactured products in the industrialized countries, especially during the period after boom, and the inflationary consequences would reverberate on to the LDCs through the higher prices, they must pay for their imports of investment and consumer goods.

The very high export instability always constrained the capacity of LDCs to plan and to make the investment programmes through its impact on domestic saving, tax revenue, and above all, their capacity to imports. According to Bean (1966) the export fluctuations may affect not only the peasants who produce exports crops but also the entrepreneurs who undertake investments in the production of manufactured goods. The peasants may not desire to afford the risk of depending on exportable crops which are subject to severe price instability, while the industrialist may find it difficult to estimate the expected returns on investment and be certain that the necessary capital goods and raw materials which need to be imported could be available. As a result incomes of exporters and industrialists who are likely to have a higher marginal propensity to save will fall, resulting in a fall in domestic savings. In the following paragraphs, a brief review of empirical literature on export instability in Indian agriculture is undertaken.

Vyas (1999) studied the sources of instability in export earnings of selected spices of India. It was found that fluctuations in productions of these spices in the world market contributing widely to instability in export earnings. The study emphasized the need to maintain this upsurge because of the emerging threat from other producing countries.

Mahesh (2000) analyzed the instability in export quantity, value and unit value of Indian tea during the period from 1979-80 to 1998-99 and found that the instability index for the export quantity was 9.19 per cent whereas the export value and export unit value instability indices were 24.88 and 36.82 per cent, respectively.

Chand, et al. (2001) examined growth & instability in the exports of agricultural commodities from 1962-94. The exponential function was used to compute the growth rates and instability indices. The exportable commodities used in the study

are; fruits and vegetables, coffee, tea, cocoa and spices, fish and fishery products, feeding stuff for animals, textiles fibres, and tobacco. The growth in export of fruits and vegetables, oil seeds, fish and fishery products and feeding stuff for animals have been remarkable in early nineties as compared to previous decade (1980-90). The export of cereals and cereal preparations, and sugar and honey were observed to be most volatile during 1980-1994 as compared to 1962-1980.

Anjani Kumar et al. (2003) studied the growth instability in export of livestock and concluded that, India had a high growth rate of 11.15 per cent for livestock export during 1974 to 1994. Among different livestock products, exports of meat and meat preparations showed most stable and promising performance.

Bhalla (2004) analysed that agricultural exports have increased after economic liberalisation and rupee devaluation in 1991, however, agricultural exports are quite volatile and there are large year to year fluctuations. This shows that higher exports are associated with higher volatility.

In a detailed analysis during the post WTO period, Bhattacharyya (2004) examined that India's agricultural export performance since 1995 has not been satisfactory. India's agricultural exports since 1995 have shown extreme volatility. After registering positive growth rates in 1995-96 and 1996-97, agricultural exports from India showed negative growth rates for the next three years. In 2000-01, the growth rate has turned positive but the value of agricultural exports in 2000-2001 was less than that of the year 1995-96. Share of agricultural exports in total exports has gone down steadily in the post 1995 period. As against 19.2 percent in 1995, agriculture in 2000-01 contributed about 13.5 per cent of total exports.

Deshpande and Sathe (2006) have examined variability for agricultural exports during post-reform era. Using coefficient of variation (CV), the greatest stability is shown by the traditional exports like tea and cashew nuts shelled. The "new" exports like wheat, sugar show the highest level of variability. Cotton lint also shows very high level of variability. The findings of the study also suggest that wheat, sugar have high rates of growth but low share and high variability. Tea, cashew nuts shelled have high share and low variability; but the rate of growth is low. Cake of soya beans has fairly high share and variability on the lower side but its rate of growth is quite low. Milled paddy rice seems to be the only commodity, which has a high share, high rate of growth and moderate variability.

Kumar and Rai (2007) examined instability in tomato exports from India during Pre-WTO period (1985-1994) and Post-WTO period (1995-2004), using coefficient of variation (CV). The values of CV in export of all tomato and its products, except tomato juice have come down during the post-WTO than pre-WTO period, which indicate that export of tomato and tomato products (except tomato juice) from India has become more stable during post-WTO than pre-WTO period. However, stability of exports from India in comparison to that of the world has been highly dwindling during both the periods. The authors argued that high instability may be due to involvement of mainly small private traders having short-term interest in the business to earn profit during the period of high international prices.

To capture the variability and consistency in India's tea export in pre and post-WTO period, (Nagoor, 2009) has calculated Coefficient of Variation (CV). The findings of the study suggest that in post liberalization and post-WTO period, tea exports in terms of quantity and value show volatility more than for earlier period of 1981-1990.

Objectives of the Study

- To analyse the trends and growth rate in the exports of major agricultural commodities and whether agricultural exports have diversified from 1980-2010
- To examine instability in the value of agricultural exports in the pre and post-WTO periods

Hypotheses Tested

H1: An increase in the value of agricultural exports is associated with high instability

H2: The variability in agricultural exports varies across commodities

Database Used and Methodological Aspects

Geographically, the investigations are carried out at the all-India level and separately for ten important tradable commodities, viz., rice, wheat, tea, coffee, cotton lint, sugar, tobacco, spices, cashew nuts shelled, fruits and vegetables. The choice of these crops is determined by their increasing share in external trade. The analysis covers a time span of three decades from 1981-82 to 2009-10, broadly representing the pre-WTO period from 1981-94 and post-WTO period from 1995-2009. Data is collected from secondary sources. The data necessitated for the fulfilment of the above objectives was collected from Food and Agriculture Organization of the United Nations (FAO database), Ministry of Agriculture, Ministry of Consumer Affairs, Food and Public Distribution, National Accounts Statistics (NAS), Reserve Bank of India (RBI database), Agricultural Statistics at a Glance, International Financial Statistics, United Nations Center for Trade and Development (UNCTAD) and World Bank. The data given in nominal terms is converted into real prices at 2004-05 base.

Both descriptive statistics and empirical models have been employed to test the proposed hypotheses. Compound annual growth rates (CAGR) for value of major agricultural exports and their significance level was computed employing semi-logarithmic regression model. Export instability index was used to measure instability in value of agricultural exports of India.

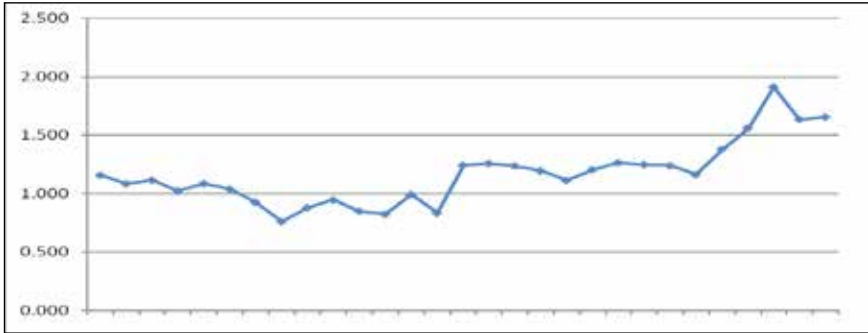
Analytical Framework for Growth and Instability of Agricultural Exports

Share of Agricultural Exports in World Agricultural Exports

India is a marginal player in international trade in agricultural products. India's share of agricultural exports in world agricultural exports was 1.15 percent in 1981, which came down to 0.85 percent in 1991. From Figure-1, it is clear that in the post-WTO era share of agricultural exports in world agricultural exports has slightly gone up. In 2001, the share increased to 1.26 percent, it reached to a maximum level of 1.91 percent in 2007, however, in 2009-10 it fell down slightly to 1.65 percent. In the wake of global financial and economic crisis, weak global demand and rupees appreciation, agricultural exports fell down significantly during this period. This may be one of the reasons behind falling share of agricultural exports in world agricultural exports from 2008 onwards. India's share in world agricultural exports has registered an increase only for a few commodities. The

biggest increase has taken place in the share of rice. The other commodities where there is an increase in India's share in world exports coffee, cereals, marine products, meat and meat preparations, and fruits and vegetables. However, spices, tea and tobacco are other commodities where India's share in total world trade has declined over time.

Figure-1: Share of Value of Agricultural Exports in World Agricultural Exports at 2004-05 Prices

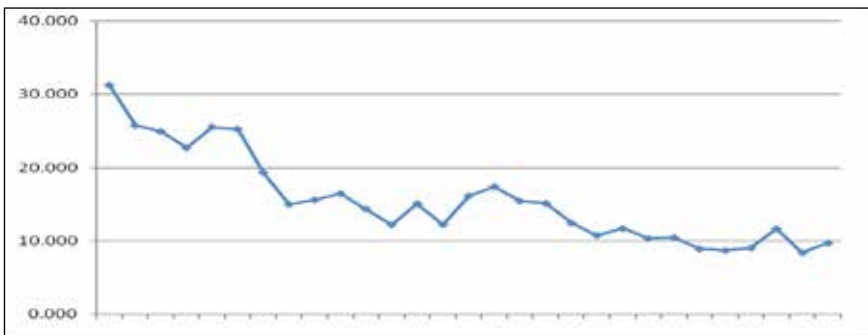


Source: Calculated from data taken from FAO trade database 2012

Share of Agricultural Exports in Total Exports

From Figure-2 shown below, it is clear that the share of agricultural exports in India's total exports has been declining continuously. This shows emergence of manufacturing and service sector exports, at a comparatively rapid rate, from eighties onwards. It has come down to 14.35 percent in 1991 from 31.23 percent in 1981. The share of agricultural exports in India's total exports declined to 11.69 percent in 2001 and has further declined to 9.68 percent in 2009-10. Therefore, this trend reflects that whereas agricultural exports are rising nevertheless, manufacturing and service exports are rising even faster and their share in India's exports is increasing over time. While the declining share of agricultural exports in total exports is explained primarily in terms of the relatively faster growth in the volume of merchandise exports, it appears that there are other and more reasons which underlie the sluggishness of agri-exports of India. These may relate to comparative advantage, steep decline in wholesale prices of many commodities after 1996, the East Asian crisis and appreciation of rupee some time in 2000.

Figure-2: Share of Value of Agricultural Exports in Total Exports at 2004-05 Prices

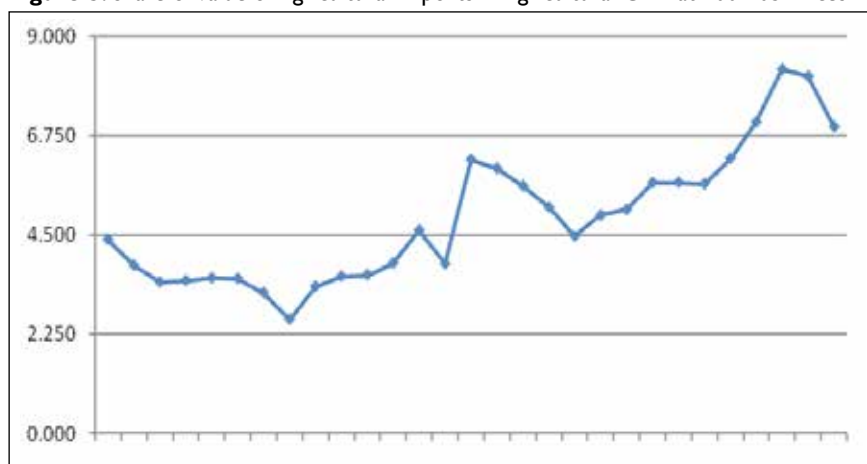


Source: Calculated from data taken from FAO trade database 2012

Share of Agricultural Exports in Agricultural GDP

Figure-3 shown below depicts the share of agricultural exports in agricultural GDP. In any economy, an increase in the share of agricultural exports in agricultural GDP shows rising level of value or volume of agricultural exports. In the case of India, share of agricultural exports in Agricultural GDP has been on rise with little ups and downs. However, right after the WTO agreements in 1995, the share kept on declining till 1999. It shows that Indian exports fell during this period, consequently, share of agricultural exports in agricultural GDP declined. The growth rate of exports flattened after 1996 primarily because of large deceleration in the growth of international trade in agriculture consequent to the East Asian crisis. Simultaneously, the international prices started falling for most of the commodities making Indian-exports non-competitive. In addition, exports also became unviable because of large hikes given to administered prices of many commodities and this in turn contributed to the slowdown in the export growth (Bhalla, 2004). The share increased continuously from 2000 till 2007. However, from 2008 onwards, the share declined rapidly. In 1981, the share of agricultural exports in agricultural GDP was around 4.39 percent. In 1991, it fell down to 3.60 percent. However, the share improved in 2001, it increased to 5.01 percent. In 2009-10, it further increased to 6.95 percent.

Figure-3: Share of Value of Agricultural Exports in Agricultural GDP at 2004-05 Prices



Source: Calculated from data taken from FAO trade database and National Accounts Statistics, 2012

Agricultural Exports of India

The values of agricultural exports during the period 1981-82 to 2009-10 are presented below in Table-1. The analysis is based on comparison among the decades. Decadal average has been calculated for the purpose of comparison.

The exports of agricultural products increased more than three times during the period 2001-10 as compared to 1981-90. The average value of agricultural exports during the eighties was 10796 crore rupees. It increased more than double to 24118 crore rupees during nineties. The value of agricultural exports further increased to 42668 during 2001-10. This shows economic liberalization and post-WTO agreements have led to increase in agricultural exports significantly.

Table-I: Decadal Average Value of Exports of Selected Agricultural Commodities in Crore Rupees at 2004-05 prices

COMMODITIES	1981-1990	1991-2000	2001-2010
Rice	1007.41	4124.33	6832.48
wheat	50.47	253.68	904.04
Tea	2216.17	2196.15	1806.52
Coffee Green	804.39	1325.81	987.44
Cashew nuts Shelled	878.30	2027.87	2150.28
Spices	101.03	235.58	421.03
Sugar	152.73	428.15	1912.01
Tobacco Unmanufactured	579.61	804.65	1295.94
Cotton Lint	522.31	630.65	2889.98
Fruits and Vegetables	1549.89	3785.40	6176.45
Total Agricultural Products	10796.20	24118.63	42668.03

Source: Calculated from FAO trade database 2012

As far as analysis at the commodity level is concerned, the values of rice and wheat exports have increased. Rice has emerged as a leading export item. During eighties India exported rice worth 1007 crore rupees at real price. In 2001-10, its export has increased by more than six times to a level of 6832 crore rupees. Tea export has been almost constant during 1980-00. However, it has fallen during 2001-10. The decline may be because of increasing domestic consumption and reduced world demand for Indian tea. In addition, the decline also may be because of increased competition in the world tea market from Srilanka and China. Coffee export was worth rupees 804 crore rupees during eighties and increased to 1325 crore rupees during the nineties. However, coffee exports further fell down to 987 crore rupees during 2001-10. This decline may be because of absence of adequate exportable surpluses and increased competition in the world tea market. Cashew exports were almost stagnant during 1990-2010, to a level around 2000 crore rupees. However, during this period cashew exports were more than double what it was during eighties.

Spices and tobacco unmanufactured have also increased continuously from their eighties level. The value of sugar exports in eighties was 152 crore rupees. During nineties, it increased to 428 crore rupees. However, between 2001 and 2010, sugar exports increased noticeably to 1912 crore rupees. Like sugar, cotton has also the same trend of export. During eighties cotton export was 522 crore rupees, in nineties it increased slightly to 630 crore rupees. However, during 2001-10, cotton exports increased significantly to 2889 crore rupees. This may be because of improved production, better international prices and increased world demand. Exports of fruits and vegetables have also shown buoyancy in the era of economic liberalization and post-WTO agreements. India exported fruits and vegetables worth rupees 1549 crore rupees during eighties, these improved to 3785 crore rupees in nineties and further increased significantly to 6176 crore rupees during 2001-10.

In a nutshell, as far as exports of agricultural commodities are concerned, the table shows that agricultural exports between 1990 and 2010 were much higher as compared to eighties. This shows that agricultural exports have increased significantly in the era of economic liberalization and post-WTO regime.

Share of Major Agricultural Export Commodities in Total Agricultural Exports

An analysis of the composition of agricultural export of India from 1981-82 to 2009-10 for the above mentioned ten commodities is presented in Table-2, which includes the percentage share of each of these commodities in the total agricultural export of India. This is arrived by taking decadal average of major agricultural exports as well as total agricultural exports.

Share of rice exports in total agricultural exports during 1990s and 2000s is almost constant, at around 16 percent. However, the share is much higher as compared to eighties, which was only 8 percent. Share of wheat has also gone up to 2.12 percent in 2000s against 0.47 percent during eighties. However, the relative importance of tea in total agricultural exports has been continuously declining from 20.53 percent during eighties to 9.11 percent in 1990s and 4.23 percent in 2000s. Like coffee, share of coffee has also been declining in the post-liberalisation period. The share of cashew nuts in total agricultural exports was almost stagnant at 8 percent during 1980 and 2000 and further fell to 5.04 percent in 2000s. The share of spices too has been almost constant and less than 1 percent from 1980-2010. The share of sugar during 2000 increased to 4.48 percent against 1.41 percent and 1.78 percent during eighties and nineties respectively. Share of tobacco in the post-liberalization period has fallen. The share during this period was around 3 percent as compared to 5.37 percent during eighties. Export share of cotton has shown mixed trend. During eighties, the share was 4.84 percent. However, in 1990s it declined to 2.61 percent. Though, in 2000s, the share improved to 6.77 percent. The share of fruits and vegetables in total agricultural exports has been almost stagnant around 15 percent.

Table-2: Decadal Average Share of Exports of Selected Agricultural Commodities in Decadal Average Value of Total Agricultural Exports at 2004-05 Prices

COMMODITIES	1981-1990	1991-2000	2001-2010
Rice	9.33	17.10	16.01
wheat	0.47	1.05	2.12
Tea	20.53	9.11	4.23
Coffee Green	7.45	5.50	2.31
Cashew nuts Shelled	8.14	8.41	5.04
Spices	0.94	0.98	0.99
Sugar	1.41	1.78	4.48
Tobacco Un-manufactured	5.37	3.34	3.04
Cotton Lint	4.84	2.61	6.77
Fruits and Vegetables	14.36	15.69	14.48
Selected Agricultural Products	72.82	65.56	59.47

Source: Calculated from FAO trade database 2012

In a nutshell, share of rice, wheat, cotton and sugar in total agricultural exports has increased in the post reforms era. However, the relative importance has declined in case of tea, coffee, cashew and tobacco between 1990 and 2010. However, the share of spices and fruits and vegetables has been stagnant from 1980 to 2010. Together, the share of these commodities contributed 72.82 percent of total agricultural exports in 1980s. However, the share fell to 65.56 percent during nineties and has further declined to 59.47 percent in 2000s. This shows

emergence of new commodities in the basket and diversification of agricultural exports in the post-WTO regime.

Compound Annual Growth Rates of the Major Agricultural Exports

The exponential function is employed to arrive at the growth rates in value of major agricultural exports of India in pre-WTO (1981-1994), post-WTO (1995-2009) periods and overall period (1981-2009). Compound annual growth rate (CAGR) is calculated using a semi logarithmic regression model ($\log y = a + bt$) that estimates coefficients and their significance level. After, the formula of the following form is employed:

$$CAGR = (\text{antilog}(\text{coefficient}) - 1) * 100$$

Compound annual growth rate of total agricultural exports during pre-WTO, post-WTO and overall period is depicted in Table-3. During the overall period (1981-2009), compound growth rate of agricultural exports was 7.04 percent, which is significant at 1 percent level. From 1981-94, compound growth rate was 5.23 percent, which slightly increased to 5.84 percent in the post-WTO period. The compound growth rates in value of total agricultural exports from India clearly indicated that there was a significant increase in pre and post liberalized periods as well as overall period. However, during the post-WTO periods total agricultural exports recorded higher rates of growth.

Fruits and vegetables recorded positive and significant compound annual growth rates. During pre-WTO, post-WTO and overall period, compound growth rates were 7.80, 5.75 and 7.20 respectively. This shows that during 1995-2009, export growth of fruits and vegetables was lower than the previous period, 1981-1994. Rice exports also recorded positive and significant rate of growth. Compound growth rate was 10.18 percent for the overall period. However, compound growth rate during post-WTO period (3.71 percent) was lower than the post-WTO period (7.62 percent). Wheat experienced a negative rate of export growth (-12.53 percent) during the post-WTO period. During the pre-WTO period, it registered positive rate of growth of 20.49 percent. During the overall period, it was very less, 1.42 percent.

Table-3: Commodity Wise Compound Annual Growth Rates (CAGR) of Major Agricultural Exports at 2004-05 Prices (in Percentage)

Commodities	Pre-WTO Period (1981-1994)	Post-WTO Period (1995-2009)	Overall Period (1981-2009)
Total Agricultural Products	5.23***	5.84***	7.04***
Fruits and Vegetables	7.80***	5.75***	7.20***
Rice	7.62***	3.71***	10.18***
Wheat	20.49	-12.53	1.42
Cashew nuts Shelled	8.78***	0.79	4.74***
Tea	0.01	-1.21	-0.69
Spices	5.38***	7.16***	7.46***
Coffee Green	1.47	-4.00**	1.52**
Sugar	0.26	11.67	10.40***
Tobacco Unmanufactured	-3.54	6.31***	3.77*
Cotton Lint	2.23	25.47**	6.00*

Note: ***, ** and * denote 1, 5 and 10 percent level of significance respectively.

Source: Estimated from data taken from FAO database 2012

However, the coefficients of wheat export growth are statistically insignificant. Export growth of cashew was found to be very less to the level of 0.79 percent. Though, it is statistically insignificant. During the pre-WTO period, it was found to be 8.78 percent, positive and significant at 1 percent level. For the overall period, compound growth rate of cashew export was 4.74 percent.

Tea is another commodity, which experienced a negative rate of export growth during the post-WTO period. Tea export growth was found to be very less, in the pre-WTO period. Even for the overall period, it registered a negative though insignificant rate of growth. The coefficients for tea export growth during pre-WTO, post-WTO and overall period were found to be 0.01, -1.21, and -0.69 respectively. However, the coefficients are statistically insignificant. Spices are traditional export items of India. It continued to perform well during the overall period. The coefficients were found to be positive and significant at 1 percent level. Exports of spices recorded 5.38 percent, 7.16 percent and 7.46 percent increase in compound growth rates during pre-WTO, post-WTO and overall periods.

Green coffee recorded negative rate of compound growth during the post-WTO period, it was found -4.00 percent and significant at 5 percent level. In the pre-WTO period it registered 1.47 percent export growth, however insignificant. For the overall period, compound growth rate of coffee export was 1.52 percent and significant at 5 percent level. Sugar export recorded a very high rate of growth of 11.67 percent during the post-WTO period, as compared to the pre-WTO period of only 0.26 percent. However, both the coefficients were statistically insignificant. During the overall period, it attained 10.40 percent compound growth rate and significant at 1 percent level.

Compound growth rate of tobacco export was negative during 1981-94. It registered -3.54 percent rate of growth, though insignificant. The situation improved in the post-WTO period and it recorded a positive compound growth rate of 6.31 percent and significant at 1 percent level. From 1981 to 2009, the compound growth rate of tobacco was 3.71 percent and significant. Cotton lint did extremely well in the post-WTO regime. The compound growth rate during this period was 25.47 percent and significant at 5 percent level. In pre-WTO period, it was only 2.23 percent and also insignificant. For the overall period, cotton lint export recorded a compound growth rate of 6.00 percent and statistically significant at 10 percent level.

On the whole, the analysis shows that agricultural exports of India have shown buoyancy in the post-WTO scenario. At a disaggregated level, fruits and vegetables, spices, sugar, tobacco and cotton lint performed quite well in the post-WTO era. However, wheat, tea and coffee registered negative compound rates of growth during the same period. Rice and cashew achieved high rates of growth in the pre-WTO period. But there are large year to year fluctuations in the value of agricultural exports during the era of economic liberalization. To capture fluctuations in the agricultural exports, instability index has been constructed.

Instability in Agricultural Exports

The instability in agricultural exports was estimated by using the following instability index:

$$\text{Instability Index} = \text{Standard deviation of natural logarithm of } (Y_{t+1}/Y_t)$$

Where, Y_t is agricultural export values at real prices in the current year and, Y_{t+1} is for the next year.

India is a major producer and exporter of agricultural commodities. The export performance of a country for any commodity during any given period is measured not only from the point of view of increase in quantity exported, value and unit value but also on the extent of fluctuations taking place in the above aspects. Commodity level analysis shows that India's major agricultural exports have been more unstable and there are large year to year fluctuations.

Hence the instability index is constructed to understand the behavior of agricultural exports during pre-WTO period (1981 to 1994) and post-WTO period (1995 to 2009). The instability indices are constructed for major agricultural exports from India. The results are presented in the following table.

It can be seen from Table-4 that instability indices for total agricultural exports were 17.24 percent, 10.30 percent and 13.96 percent during pre-WTO, post-WTO and overall period respectively. This shows that total agricultural exports have shown little fluctuations in the post-WTO period than the pre-WTO period, which indicates that fluctuation across the crops are counterbalanced. For better understanding, instability is estimated at commodity level.

Table-4: Commodity Wise Instability Indices of Major Agricultural Exports at 2004-05 Prices (in percentage)

Commodities	Pre-WTO Period (1981-1994)	Post-WTO Period (1995-2009)	Overall Period (1981-2009)
Total Agricultural Products	17.24	10.30	13.96
Fruits and Vegetables	12.16	15.45	13.66
Rice	48.44	38.45	43.15
Wheat	256.11	324.47	292.76
Cashew nuts Shelled	18.01	22.19	19.98
Tea	20.84	21.23	20.66
Spices	27.42	14.29	21.54
Coffee Green	26.28	22.64	24.81
Sugar	133.87	188.81	161.00
Tobacco Unmanufactured	38.28	29.41	34.26
Cotton Lint	140.24	138.75	137.57

Source: Constructed from data taken from FAO database 2012

Fruits and vegetables have shown higher instability in the post-WTO period. In the pre-WTO period, fruits and vegetables fluctuated to the level of 12.16 percent. In the post-WTO, it increased to 15.45 percent. For the overall period the fluctuation was around 13 percent. Rice export exhibited high degree of fluctuations. The instability indices for rice during pre-WTO, post-WTO and overall period were 48.44 percent, 38.45 percent and 43.15 percent respectively. Though, fluctuations declined in the post-WTO period. Wheat export has shown extreme fluctuations. During pre-WTO period, wheat export exhibited 256 percent of variability. It further increased to 324 percent in the post-WTO period. The results of instability indices are quite high because, India exports little wheat and in many years India did not export any wheat at all. Cashew exports have shown high volatility in the post-WTO period, it registered 21.23 percent of variation, as measured by instability index. The volatility was lower in the pre-WTO period.

Instability indices in case of tea show a stagnant level of fluctuations in both the periods. In the post-WTO period it was only slightly higher to a level of 21.23 percent. During the pre-WTO period, it was 20.84 percent.

Coffee export exhibited high degree of volatility in the pre-WTO period than the post-WTO period. The volatility was 24.81 percent for the overall period. During the pre-WTO and post-WTO periods the fluctuations were 26.28 and 22.64 respectively. Sugar export has shown extreme fluctuations. For the overall period, the instability was around 161 percent. However, the fluctuations were more in the post-WTO period, it was around 188 percent. In the pre-WTO period, sugar export instability was around 133 percent. Tobacco unmanufactured exhibited 34 percent of export volatility. It fluctuated more in the pre-WTO period than the post-WTO period, the instability indices were 38 percent and 29 percent respectively. Like many other major exportables, sugar export has also shown extreme fluctuations. It fluctuated around 137 percent during 1981 to 2009. However, the rates of fluctuations were almost stagnant in both the periods. The instability indices of sugar export for pre-WTO and post-WTO period show 140 percent and 138 percent of volatility respectively.

From the above analysis it is clear that Indian agricultural exports are quite unstable and there are large year to year fluctuations. Cotton, sugar, rice and wheat were found extremely volatile in both periods. Fruits and vegetables, cashew and tea were more volatile in the post-WTO period. On the other hand, spices, coffee and tobacco recorded high degree of export instability in the pre-WTO period. At the aggregate level, instability in the value of agricultural exports is not indicated much.

Concluding Observations

The buoyancy in the exports of agricultural products is clearly visible in the post-liberalisation era. Even though, there is an increase in the absolute quantum of agricultural exports, there is consistent decline in the percentage share of primary products in total export from 31 per cent in 1981 to 10 per cent in 2010. This indicates a slow rise in agricultural exports in comparison to national exports.

There has been a considerable increase in the agricultural export since the onset of globalization and liberalization. However, India is still a marginal player in the world agricultural trade. India's share of agricultural exports in world agricultural exports was 1.15 percent in 1981. In the post-WTO regime, share of agricultural exports in world agricultural exports increased to 1.91 percent in 2007. However, the share fell slightly to 1.65 percent in 2009-10. The decline may be because of occurrence of global financial and economic crisis and recent rupees appreciation.

On the whole, agricultural exports have shown perceptible increase after economic liberalization and post-WTO agreements. But there are large year-to-year fluctuations in export growth. At a disaggregate level, fruits and vegetables, spices, sugar, tobacco and cotton lint performed quite well in the post-WTO era. However, wheat, tea and coffee registered negative compound rates of growth during the same period. Rice and cashew achieved high rates of growth in the pre-WTO period. The results of instability indices show that cotton, sugar, rice and wheat were extremely volatile in both the periods. Fruits and vegetables, cashew and tea were more volatile in the post-WTO period. On the other hand,

spices, coffee and tobacco exhibited high degree of export instability in the pre-WTO period. Therefore, findings suggest that agricultural exports increased in the era of economic liberalization however there are wide fluctuations across commodities, validating the hypotheses that favourable policies have resulted in increase in agricultural exports and an increase in the value of agricultural exports is associated with high instability at the commodity level. However, aggregate agricultural exports do not reveal much instability, validating the hypotheses that variations are perceptible at the commodity level. In other words, variability in agricultural exports varies across commodities.

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Determinants of Current Account Balance in South Asian Economies – An Empirical Analysis

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Rajat Malik*

Abstract

South Asian economies (SAEs) are facing persistent imbalances in their current accounts, though manageable, often invites questions about possible reasons behind it. We have identified the basic determinants of current account balance (CAB) of SAEs with special reference to the relative role of expenditure switching *vis-à-vis* expenditure control policies. This paper has hypothesised that factors beyond its borders like growth dynamics of advanced economies and associated spillover, often overlooked, possibly play a relatively powerful role in CAB adjustments. We have also tried to decipher the relative role of real exchange rate *vis-à-vis* expenditure controls in SAEs in adjusting CAB, when other important domestic determinants like budget balance, private credit and crude oil prices are incorporated in empirical model as additional variables within the aggregative framework. Our result indicates that besides real effective exchange rates (REER) and expenditure controls, fiscal adjustments and private credit growth offers better insights on CAB adjustment in SAEs. Growth dynamics of advanced economies and its spillover seems to be playing a relatively major role in CAB adjustments.

Keywords: Current Account Balance; Internal and External Balance; South Asian Economies

Introduction

In recent years, South Asian Economies (SAEs) revived their growth prospects primarily driven by domestic demand, with support from favourable financial conditions and improvement in external demand. Despite an acceleration of economic growth, export performance remains lacklustre throughout the region, while imports are growing rapidly. The trade deficits of the four biggest countries in South Asia (India, Pakistan, Sri Lanka and Bangladesh) have widened in 2017-18. While remittances are recovering, current account deficits have continued to widen, but among larger countries the deficits are mostly within safe boundaries except Pakistan (Table-1). The Indian and Pakistani Rupee depreciated recently, which may support an improved external balance. As usual, fiscal deficits in South

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Asia remain large by international standards, and government debt is high in many countries in the region.

Table- I: Current account balance of South Asian Economies (SAEs)

(per cent of GDP)

Country	Average (2001-2010)	2013	2014	2015	2016	2017	2018
Afghanistan	--	0.3	5.8	2.9	7.3	5.0	5.3
Bangladesh	0.5	1.2	1.3	1.9	0.6	-2.0	-3.2
Bhutan	-13.1	-25.4	-26.4	-28.3	-29.4	-22.8	-22.8
India	-0.8	-1.7	-1.3	-1.1	-0.6	-1.9	-3.0
Maldives	-12.6	-4.3	-3.2	-7.4	-24.5	-19.5	-18.2
Nepal	2.5	3.3	4.5	5.0	6.3	-0.4	-8.2
Pakistan	-1.5	-1.1	-1.3	-1.0	-1.7	-4.1	-5.9
Sri Lanka	-2.7	-3.4	-2.5	-2.3	-2.1	-2.6	-2.9
SAEs	-0.6	-1.5	-1.1	-0.9	-0.6	-2.1	-3.3

Source: World Economic Outlook, IMF.

Within the above background, this paper tried to analyse the general experience of South Asian Economies (SAEs) in managing their CAB in recent years in terms of quantifying the role of a few internal and external balance mechanism through relevant indicators. To the extent impact of the policies on important economic variables that can be measured in SAEs, we choose a set of economic indicators expected to influence their CAB, to focus on the delicate balancing act possibly followed by them. We have attempted to understand the relative role of real exchange rate in adjusting CAB when other important domestic determinants of internal balance like budget balance and private credit are considered amongst explanatory variables. The paper models the determinants of current account balance for a panel of 7 economies of South Asia: Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. Whereas, Afghanistan does not fit into the modelling framework being a current account surplus country mainly due to aid-receiving nature and internal economic problems facing today.

The rest of this paper is organized as follows. The next section deals with relevant literature on the current account balance. Its subsequent section details out our approach to analysing issues in the context of SAEs. The penultimate section discusses empirical model framework and results thereon. The final section concludes the paper by discussing some policy implications.

Literature Review

In the emerging market and developing economies (EMDEs¹), Central Banks and Governments use monetary and fiscal policy tools to focus on internal balance *i.e.*, to achieve their inflation and growth mandates, and their sustainability. Central banks also use foreign exchange interventions or other instruments to influence their external balance and sustainability through nominal exchange rates - explicitly

¹ In our sample of South Asian Economies (SAEs), we consider India, Pakistan and Sri Lanka as emerging economies and other five countries as developing and/or low-income countries – Afghanistan, Bangladesh, Bhutan, Maldives and Nepal – as per classification of World Economic Outlook, IMF.

or implicitly. To achieve internal and external balances simultaneously, it is well known that the policymakers require at least two set of instruments in the form of 'expenditure control' and 'expenditure switching'. In this context, the Nobel Prize lecture by Meade (1978) emphasised on allocating demand management (fiscal and monetary policies) to pursue price stability, reformed wage-fixing institutions to achieve full employment, and foreign exchange policies to maintain balance-of-payments equilibrium. With respect to price stability, he also advocated some form of a target for nominal income rather than the price level alone.

Earlier works of Meade (1951) chose not to focus on open-economy issues but on how to define and achieve internal balance in an economy. His pioneering work on Balance of Payments (BoP) focussed on how an economy could simultaneously achieve external equilibrium (external balance) and full employment or growth (internal balance). The focus was on a combination of demand management (expenditure increasing/reducing policies) and foreign exchange policies (expenditure switching). Viewed from this angle, Meade's thinking is still embodied in the current macroeconomic policy framework of achieving the internal and external balance, as practised by major economies of the world, although it varies with institutional setting of a country. Current account divergences² across SAEs appear to be a significant vulnerability as consistent with fundamentals and desirable policies. As we have eye-balled the CABs of SAEs, all the countries are having deficit at this point of time except Afghanistan. Overall, current account deficit at 3.3 per cent for SAEs is at manageable level (as depicted in Table-1).

With the progressive openness to capital flows, sterilised intervention may achieve the nominal exchange rate objective. However, capital flows pose challenges for the independent conduct of monetary policy unless exchange rate is flexible, and thus, it may have some consequences for internal balance (Sachs, 1981). The role of exchange rate to manage external balance, therefore, is not straightforward. The exchange rate-based expenditure switching policy may not work in the presence of capital flows if it is inflationary (depending on the size of the price pass-through), which will lead to real appreciation (RBI, 2018 & 2019).

In the context of South Asian Economies³ (SAEs), inflation has increased in line with more vibrant economic activity and higher crude oil prices, but it is aligned with other regions. However, the inflation rates of most countries in the region remain near or below inflation targets. A current account deficit arises when a nation saves less than it invests, meeting the difference with inflows of foreign capital. Since 1972, countries around the world have increasingly adopted floating exchange rates. If a nation's exchange rate floats, it will depreciate as needed to eliminate a current account deficit without any action by policy-makers (Dornbusch and Fischer, 1980).

Due to globalisation, technological innovation, financial deregulation, and opening of the economy, capital flows more freely and more quickly around the world. The capital inflows into a country are the mirror image of its current account deficit. Thus, because capital flows more freely around the world, it follows that many countries may now begin to experience bigger and more persistent current

2 Current account divergences represent surpluses/deficits that differ across countries. They may be appropriate or inappropriate depending on the level of development.

3 South Asian Economies (SAEs) referred to in the paper includes following 8 countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.

account imbalances. Because the government does not intervene in the foreign exchange market, such capital inflows result in equal, offsetting, current account deficits. Still, policy-makers cannot afford to be complacent, especially after the recent global recession. Financial markets are looking very closely at the economic fundamentals of nations with large current account deficits (Ghosh and Ostry, 1995).

Since 2008, global external imbalances have also been accompanied by financial instability and volatile capital flows which has complicated policies for many economies. Despite narrowing since the crisis, estimated global external imbalances and associated vulnerabilities are likely to be well above desirable levels without decisive policy actions. Arguments can be developed through the emerging market perspective of central bank's monetary policy framework as evolved over a period [Kydland and Prescott (1977), Bernanke *et al.* (1999), and King (2005)].

Households that expect higher future incomes may borrow against that (future income) to raise their consumption today. This will tend to lower savings ratio today, in turn raising the current account deficit. Fiscal and tax policies can have important influences on household saving for retirement. Households make judgements about what the government is likely to provide for them in retirement (Chinn *et al.* 2014).

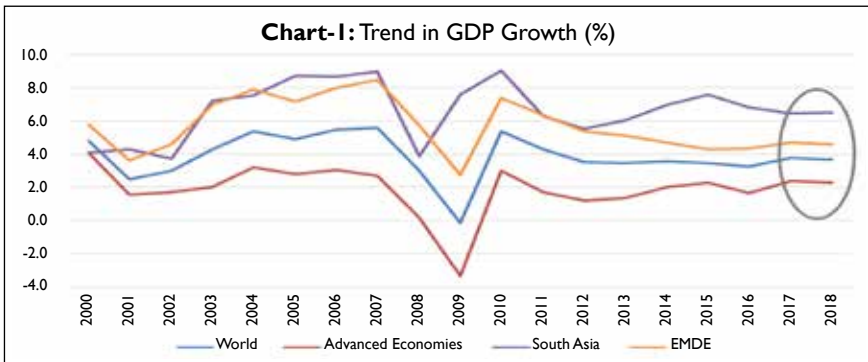
As it appears, the issue emerges as very important in view of global production network and associated growth spillover from advanced economies (AEs) to SAEs. There is enough evidence that the external demand for SAEs exports encountered stress after the global financial crisis, although CABs had not deteriorated to any significant extent. In fact, CAB of EMDEs improved in number of cases (other than in some countries like China) through commensurate internal adjustments with necessary policy interventions. Therefore, the growth dynamics of advanced economies and its spillover possibly played a relatively major role in CAB adjustments of EMDEs that is often overlooked. Conventional view is that the real exchange of EMDEs possibly played a role in influencing the external imbalances. In view of this, we tried to understand the relative role of real exchange rate in adjusting CAB when other important domestic determinants of internal balance like budget balance and private credit are considered.

Our Approach in Present Context

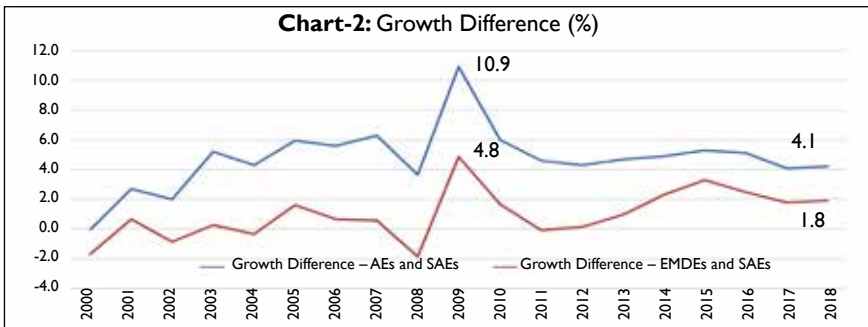
As global economic landscape has changed dramatically in the new millennium, we are testing the conventional hypothesis that if the Real Effective Exchange Rate (REER) can be held as the major determinant for deterioration of CAB. We hold that there could be few other factors that are of expenditure control varieties in nature. Another conventionally held view of high global growth elasticity of exports does not take into account the fact that emerging market economies themselves are the global drivers of growth in recent period. Therefore, a large part of the slowdown of global growth in fact happening through sharper slowdown of growths emanating from the growth spillover of Advance Economies (AEs). In that sense, what appears to be global factor making the necessary adjustments of CAB in SAEs through export demand, adjustments may also be happening through gradual adjustments of internal balances cutting their imports, where REER plays a relatively muted role. This fact indicates an important policy implication for SAEs in the present-day context.

Major Trends in Variables

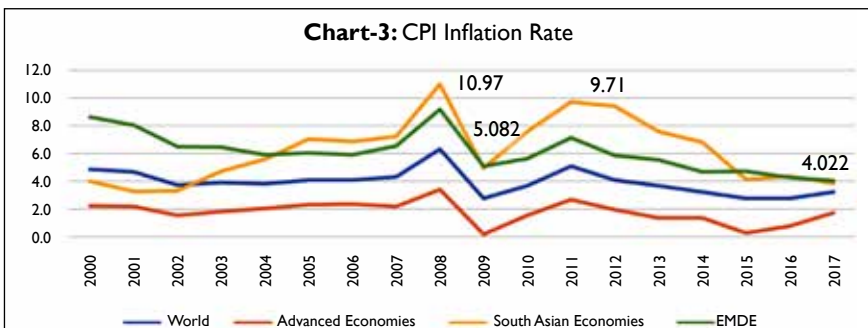
Following the global financial crisis (GFC), there is a steady decline in the growth across economies, which is also true for SAEs, in particular, that intensified post 2010 with a recovery that is visible for the more recent period. A close look at the trends across AEs, EMDEs and AEs shows considerable narrowing of growth differences in recent period (Chart-1). This is brought out more clearly in the Chart-2, which plots the difference between the GDP growth rates of: (i) AEs and SAEs, and (ii) EMDEs and SAEs. It declined steadily from 2009 onwards, and further widening with the signs of recovery. Clearly, there is an uneven slowdown of growth rates in the EMDEs within the overall slowdown of global growth that could have affected their CAB through domestic absorptions.



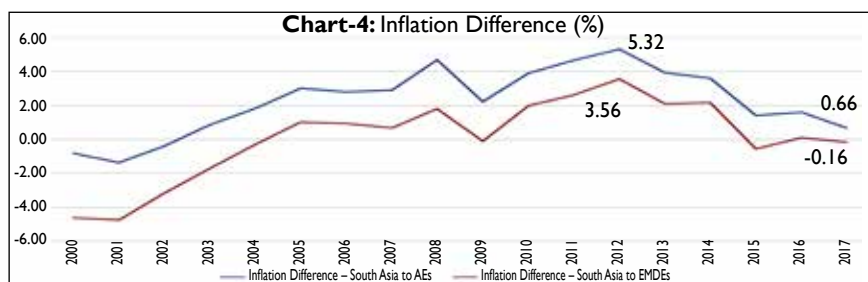
Source:World Economic Outlook Database, IMF



Source:World Economic Outlook Database, IMF



Source:World Economic Outlook Database, IMF

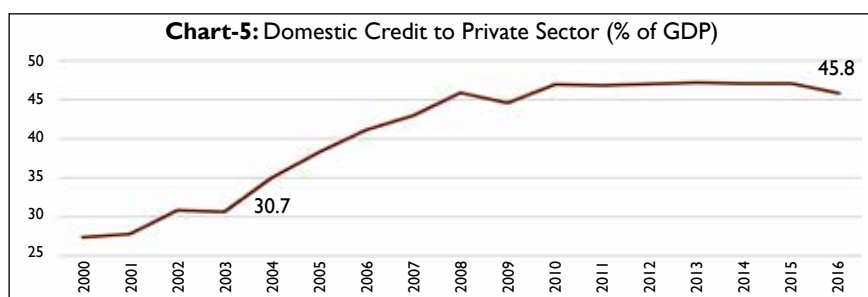


Source: World Economic Outlook Database, IMF

A similar trend is also observed in the inflation rates across EMDEs and SAEs (Chart 3 & Chart 4). The difference in inflation rate in the EMDEs and AEs has come down from 5.7 per cent in 2008 to 2.3 per cent in 2017 - corroborating the general slowdown of nominal growth rates of EMDEs and narrowing of growth spread over AEs. This further strengthens the internal balance channel. There is similar narrowing of trade growths too for the EMDEs *vis-à-vis* AEs, which is more secular and persistent in nature over the sample period than the trend of nominal GDP growths.

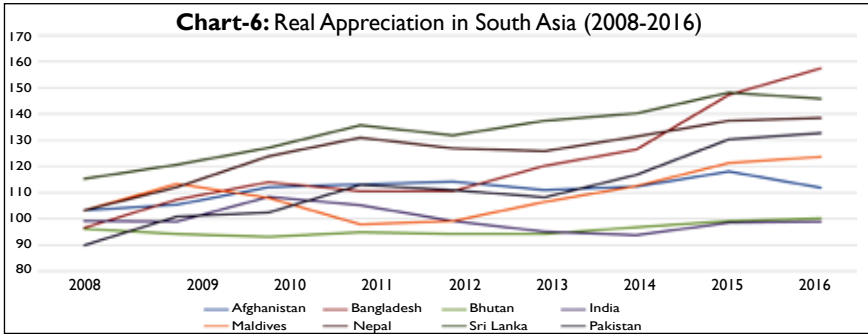
Overall, it underscores the role of internal absorption more clearly behind any changes in CABs of SAEs. It is possible that as the AEs output gap falls, growth slowed in SAEs, yet their CABs improved. At the same time, as growth slowed in AEs more than SAEs, there is a possible downward pressure on CAB. Overall, this framework suggests SAEs current account balance is also related to the internal balance along with real exchange rate and other determinants of CAB (Charts in Annexure-2, Annexure-3 and Annexure-4).

It is also observed that, even as the nominal growth rate slowed, the private credit flow to SAEs as share of GDP increased very sharply until 2008, although the credit to general government remained fairly contained as reflected in the fiscal balance figures. Such high credit growth is observed to be particularly associated with the deterioration of current account balance in general. A large part of the increase in credit is accommodated by foreign funding in a number of economies following the Quantitative Easing pursued by the AEs post global financial crisis of 2008 and until in the very recent period when the course of normalisation of balance sheets of major central banks took firmer grounds. Such abrupt rise in private credit flow without commensurate nominal income growth has implication for CAB besides financial stability for the EDMEs in general and SAEs in particular, given their general vulnerability to the current account (Chart-5).



Source: World Economic Outlook Database, IMF

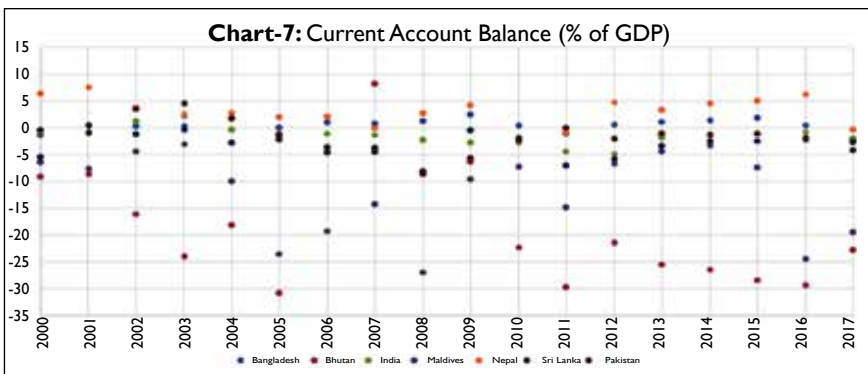
Despite the nominal growth slowdown and stagnated credit growth to private sector, currencies in some of the SAEs have experienced real appreciation, further putting pressures on their CAB (Chart-6). Normally, it defies correction of current account balance through exchange rate channel, which could happen as capital flows remain mostly robust on the back of quantitative easing masking the relation between CAB and real exchange rate to a considerable extent.



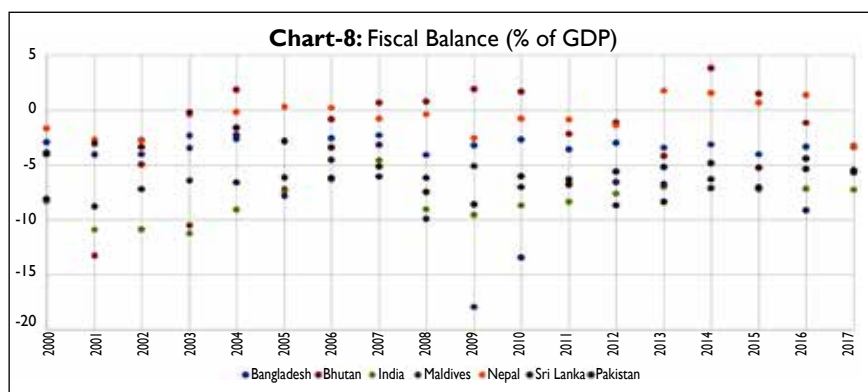
Source: World Economic Outlook Database, IMF

The fiscal consolidation appears to be the other channel of corrections in the current account that looks quite prominent, allowing for containment of domestic demand and CAB to a considerable extent. Fiscal discipline is being pursued by most of the EMDEs, although few countries like India and Pakistan are still finding fiscal consolidation difficult. Overall, fiscal containment could be one of the reason for better internal balance and general convergence of CAB across EMDEs. Generally, for the 7 SAEs in the sample, the direction of general government fiscal balance is consistent with their direction of CABs.

Overall, the current account balance (Chart-7) and fiscal balance (Chart 8) of the 7 SAEs seems to be converging towards a much narrower range in recent periods except for a few outlier countries. At present, the CAB (except Bhutan and Maldives) falls broadly in the range of (-)4 to 0 per cent of GDP, while the fiscal balance lies in the range of (-)7 to (-)3 per cent of GDP, which is narrower than the range during GFC. They, somewhat, help in anchoring currency expectations at a time when there are considerable uncertainties with the normalisation of global trade and financial markets are impacting capital flows.



Source: World Economic Outlook Database, IMF



Source: World Economic Outlook Database, IMF

Empirical Analysis

Understanding of the CAB adjustments of SAEs has been attempted in this section in the light of existing literature, emerging trends but in a more parsimonious framework. The IMF External Sector Report 2016 observes external imbalances is the confluence of factors like the stock of imbalances, sharp shifts in exchange rate, uneven recovery, commodity price dynamics, etc. A persistent deficit in CAB is perhaps indicative of economic malaise in a country and calls for policy interventions. If for some reason, exchange rates regime of the country does not allow its downward movement, then the country needs to have a conscious attempt to reduce trade balance. Despite the persistence of CABs generally held in the literature, which is also likely attributable to structural factors like very slow change in export structures, the experience over the past few years clearly shows that national positions are quite capable of switching over a period. This has been particularly demonstrated, for instance, by recent developments in some Euro-area countries which, as a result of extensive adjustment processes, have not only reduced excessive domestic absorption but have also improved price and non-price competitiveness alike. Assessing the role of various expenditure reducing policies like fiscal balance and moderate private credit growth merit adequate attention in this context.

International capital flows expanded strongly before the GFC aiding fast growth of private credit in key EMDEs. The crisis triggered a contraction in capital flows, which often forced a painful adjustment on countries running high external deficits. The low level of global interest rates and the high liquidity resulting from the quantitative easing policies adopted by advanced countries in the wake of the GFC of 2007-09 bolstered capital flows to many emerging market economies. However, this does not seem to be a case in SAEs, where credit expansion moderated after GFC, which could have contributed to restore balance in CABs.

To support the hypothesis, we have performed empirical test by pooling country-specific and world-level annual data in a panel regression for 7 SAEs for 18 years (2000-2017). A fixed-effects (FE) static model is specified with country specific effects as we are interested in analysing the average impact of variables on CAB. The equation is specified as follows.

$$Y_{it} = \alpha_i + \beta_1 X_{it} + \mu Z_t + \varepsilon_{it}$$

Where Y_{it} is the current account balance (CAB) of i^{th} SAEs for the t^{th} year; α_i ($i = 1 \dots 7$) is the intercept for each entity (7 country-specific intercepts), β_1 is the coefficient vector for independent variable; x_{it} is the country specific determinants matrix of CAB and Z_t is the matrix of macro variables for the t^{th} year that also influences current account balance (CAB). ε_{it} stands for the country specific residual for i^{th} SAE for the t^{th} year. Alternatively, we also tried for random effect model specification, but Hausman Test rejects the possible randomness of either in terms of country or time-specific parameters.

The above equation attempts to assess the impact of relevant variables in CABs of SAEs in recent years. Exogenous variables considered for analysis after having several alternative experiments are: lagged real effective exchange rate (REER), output gap in advanced economies (AE_Outgap), domestic lagged credit to private sector (PVT_CR), lagged government fiscal balance (Fis_bal), and average crude oil price (Oil_price). The estimates of fixed effects (FE) regression model are presented in Table-2. Annexure-1 outlines definitions and sources of the variables used. In view of the possible bi-directional causality of the CAB (current account balance) with REER and Fiscal Balance (FB), the model was run with first-lagged REER.

The results so derived have the expected signs, and all variables are individually, as well as collectively, statistically significant applying for the conventional test criteria. All the regression coefficients are statistically significant and are also in accord with prior expectations. R^2 is high and probability of F-statistics is less than 0.05 means that model is fitting well. We have tested the model with and without crisis years (2008 and 2013) as dummy variable.

From the above equation, we can conclude that real effective exchange rate, private credit, fiscal balance, and crude oil price have bearing on the CABs of SAEs.

Table-2: OLS Cross-section Regression Results - Fixed Effect Model
(Dependent variable: Current Account Balance, 2000-2017)

	Without Crisis	With Crisis
Constant	3.9157*** (3.48)	4.1537*** (3.37)
REER (-1)	-0.0351*** (-3.15)	-0.0352*** (-3.14)
Crisis periods	--	0.4884 (0.65)
PVT_CR (-1)	-0.0471** (-2.34)	-0.0465** (-2.32)
Fis_Bal	0.1339* (1.67)	0.1588* (1.94)
Crude Oil_Price	-0.0355*** (-4.64)	-0.0388*** (-4.46)
AE_Outgap	-0.2091* (-1.71)	-0.2440* (-1.93)
R ²	0.6084	0.6094
Prob.(F-statistic)	0.0000	0.0000

***: significant at 1% level; **: significant at 5% level; *: significant at 10% level.

Figures in parentheses are respective t-statistics

In more specific term, the coefficients of fixed effect model can be interpreted as follows:

- 10 per cent real effective appreciation of currency may lead CAB to worsen by about 0.3 per cent of GDP

- 1 per cent rise in output gap of AEs may lead CAB to worsen by about 0.2 per cent of GDP
- 10 per cent rise in private credit to GDP in SAEs may lead CAB to worsen by about 0.5 per cent of GDP
- 1 per cent improvement in fiscal balance to GDP may lead CAB to improve by about 0.13 per cent of GDP
- 10 dollars increase in the price of crude oil price may lead CAB to worsen by about 0.3-0.4 per cent of GDP

Conclusions and Policy Implications

External imbalances appear to be partly driven and sustained by capital account restrictions and reserve accumulation, and demand rebalancing implies real exchange rate appreciation by surplus regions. Easy money in the advanced country core has supported domestic and global activity, but also spills over into capital flows that complicate policies within the South Asian economies.

From the above empirical results, it can be assessed that while real exchange rate is important in management of CAB, growth spillover from AEs, other determinants of internal balance like fiscal balance and private credit growth in relation to GDP is also helpful for SAEs to manage their CAB. While all other determinants of CAB are relatively straightforward to understand, it shows that growth dynamics of advanced economies seems to be playing relatively major role in CAB adjustments of SAEs. Thus, the current set of findings can be a useful reference to the relative role of expenditure switching *vis-à-vis* expenditure control policies in restoring external balances in SAEs.

Policy actions are needed across many countries, as most of the analysed economies have balances that are to some degree out of line with fundamentals. Structural adjustments, such as product market flexibility, are central to reducing vulnerabilities from external imbalances over time.

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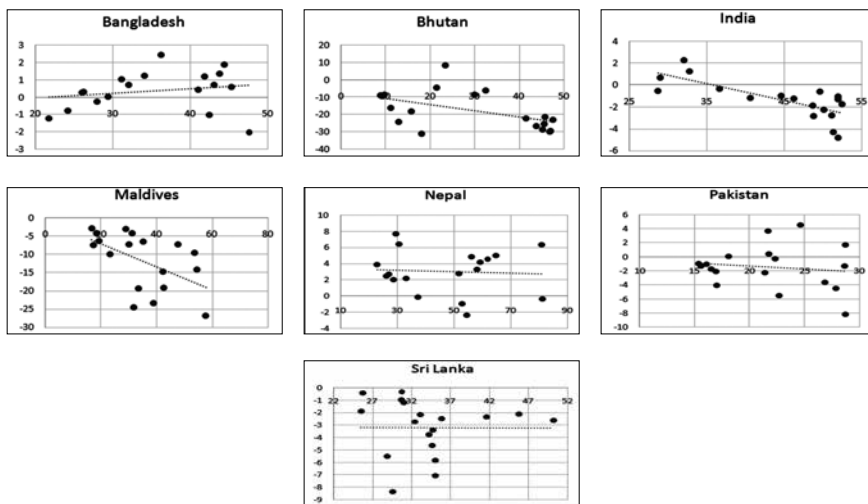
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Annexure-I

Variables	Definition	Source
CAB	Current account balance: major classifications are goods and services, income and current transfers.	IMF,WEO Database
REER	Real effective exchange rate (2005=100): weighted average of bilateral exchange rates adjusted by relative consumer prices.	UNCTAD
AE_Outgap	Output gap in percent of potential GDP for Advanced Economies	IMF,WEO Databases
PVT_CR: Domestic credit to private sector (percent of GDP)	Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations.	World Bank
Fis_Bal: General government fiscal balance (Percent of GDP)	The fiscal balance refers to the general government lending/borrowing.	IMF,WEO Database
Crude Oil_price	Simple average of three spot prices - Dated Brent, West Texas Intermediate, and the Dubai Fateh (US\$ per barrel).	IMF

Annexure-2

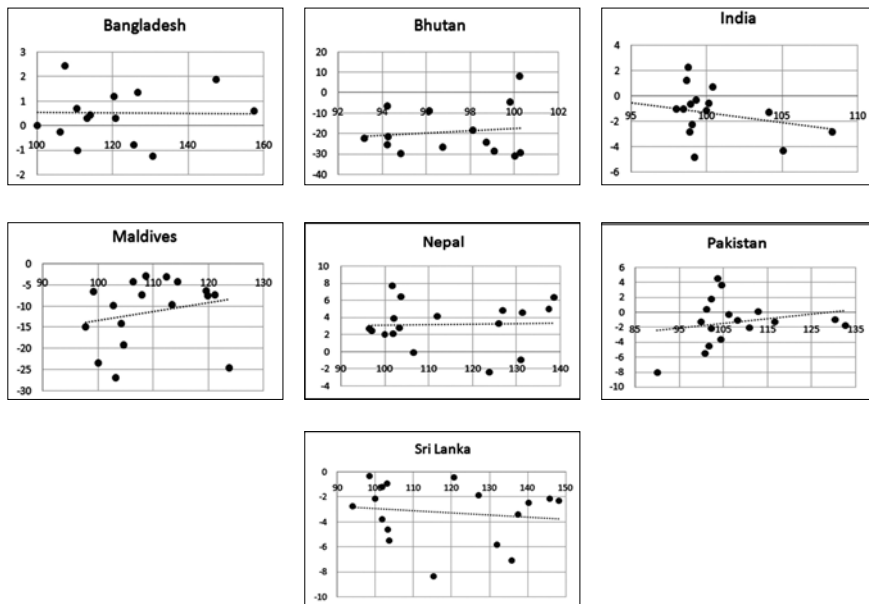
The scatter plots of CAB vs. Private credit to GDP for the 7 countries (2000-2017). Y-axis represents the CAB, while the X-axis is the Private credit to GDP.



Source: IMF

Annexure-3

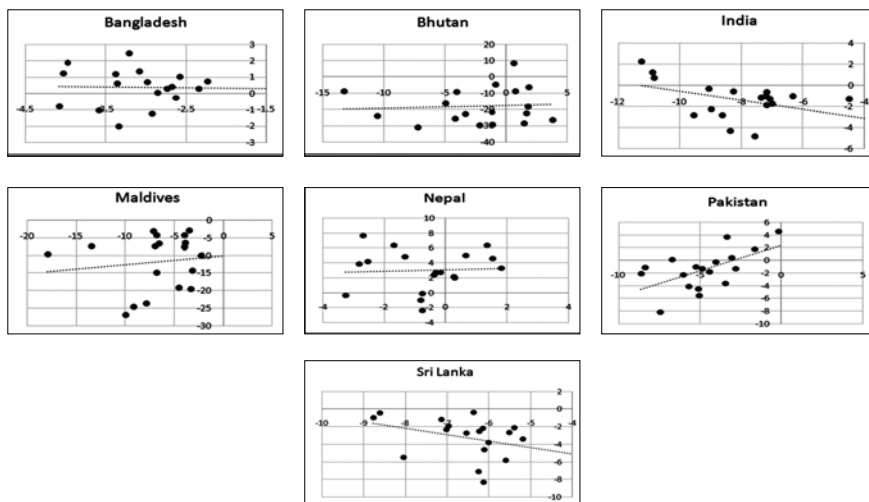
The scatter plots of CAB vs REER for the 7 countries (2000-2016). Y-axis represents the CAB, while the X-axis is the REER.



Source: IMF

Annexure-4

The scatter plots of CAB vs. Fiscal Balance (SB) for the 7 countries (2000-2017). Y-axis represents the CAB, while the X-axis is the Fiscal Balance.



Source: IMF



Bond Market Dynamics in BRICS

Priyadarshi Dash*

Abstract

BRICS has gone far beyond an acronym as a club of emerging markets with promising investment returns and economic opportunities. Growth rates in the past two decades accompanied by gradual financial sector development has made BRICS a distinct economic reference group in the world. Along with robust growth of stock markets, bond markets have witnessed significant growth in terms of volume of bond issuance, investor participation, issuer diversity, market infrastructure, and regulatory and institutional reforms. Bond market issuance in BRICS outpaced by China needs to be understood from two perspectives. One, deep and liquid bond market with active secondary market could offer an asset class to domestic enterprises with diverse risk-return packaging, and another, the grouping becoming a hotbed for synchronized response to global and regional shocks and higher financial integration-induced vulnerability to shocks originating from any country within BRICS. In that spirit, this paper offers the dynamic response of individual BRICS countries to shocks to BRICS bonds issued by governments, banks and non-financial corporations. The major finding of the paper is that bond markets in BRICS are integrated and pose strong risk of sensitivity to shocks originating from any other BRICS country.

Keywords: Bond, Cointegration, Shock

Introduction

Bond market development has been viewed as a pragmatic step towards financial market reforms in the developing countries. Bonds as asset class not only provide opportunities for larger debt with longer maturity but also help financial market to diversify and attain depth. BRICS countries have gained significantly in the past decade and half. During high growth phase of 2003-08 in global economy BRICS commanded higher attractiveness for global investors. Stock markets in BRICS are fairly developed whereas debt and foreign exchange markets are at different stages of development. With growing demand for infrastructure financing, the demand for efficient risk-return packaging with debt and equity features have contributed to growth of BRICS bond markets. BRICS bond markets are still evolving and show preference for US dollar-denominated assets even though

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local currency debt issues are given priority in government policies. For instance, India has issued rupee-denominated *masala* bonds in international markets for raising resources from the capital market. China has witnessed phenomenal growth in bond issuance, issuer diversity and market infrastructure. Most of the BRICS countries have undertaken measures to improve market-making with participation of institutional investors like insurance companies, pension funds, etc, increased scope of information technology applications and enhancing retail investor participation in local bond markets. As a result, bond markets in BRICS today are more integrated, liquid and deep which also signals the greater risk of synchronicity and shock transmission.

Trends in Bond Issuance

In order to sketch the progress and strength of local bond markets in the BRICS countries, it is imperative to relate the BRICS debt markets to the issuance trends in global as well as regional bond markets, both geographic and economic regions. Total bonds and notes outstanding issued by all countries as a whole recorded a precipitous fall over time. Total global bond issuance fell by 5.4 per cent from \$21,135 billion in December 2012 to \$20,002 billion in March 2015. This fall was mostly on account of decline in bond issuance by the developed countries particularly the United States and Euro Area since 2014. In contrast, Japan, emerging markets and the four regions such as Africa, Asia, Europe and Latin America registered healthy growth in bond and note issuance over the period 2012-15 (Table-1). Emerging Latin America witnessed a very strong growth in bond issuance by the non-financial corporations. It signals the rise of corporate bond markets in the developing countries. Moreover, bond market activity in the corporate segment assumed pace globally in this period.

Table-1: International Bonds and Notes Outstanding

(\$ Billion)

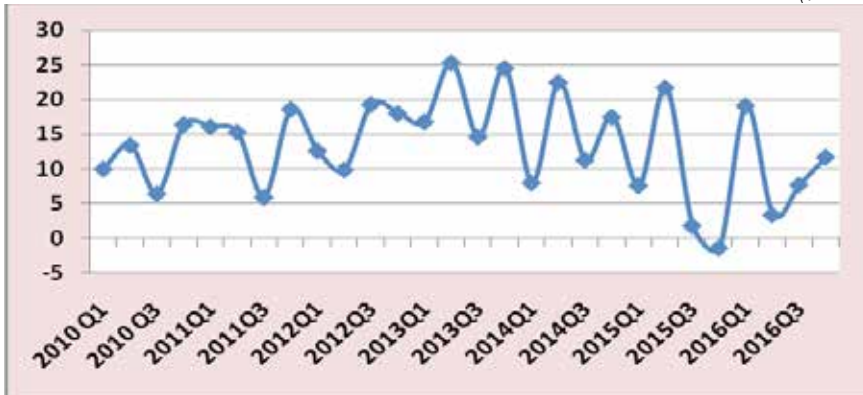
Country	Financial Corporations		Non-Financial Corporations		Governments		Total	
	Dec 2012	Mar 2015	Dec 2012	Mar 2015	Dec 2012	Mar 2015	Dec 2012	Mar 2015
Developed Countries	13822 (87.6)	11915 (83.8)	1980 (80.6)	2249 (78.4)	845 (53.5)	729 (47.4)	16647 (78.8)	14892 (74.4)
United States	1788 (11.3)	1725 (12.1)	243 (9.9)	375 (13.1)	5 (0.3)	4 (0.2)	2036 (9.6)	2105 (10.5)
Euro Area	7329 (46.5)	5957 (41.9)	966 (39.3)	1016 (35.4)	625 (39.6)	496 (32.2)	8920 (42.2)	7470 (37.3)
Japan	137 (0.9)	186 (1.3)	41 (1.7)	46 (1.6)	4 (0.2)	5 (0.3)	181 (0.8)	237 (1.2)
Emerging Markets	401 (2.5)	556 (3.9)	405 (16.5)	524 (18.3)	683 (43.2)	752 (48.9)	1491 (7.0)	1832 (9.1)
Africa	50 (0.3)	77 (0.5)	67 (2.7)	73 (2.5)	70 (4.4)	86 (5.6)	188 (0.9)	235 (1.2)
Asia	181 (1.1)	252 (1.8)	109 (4.4)	141 (4.9)	92 (5.8)	117 (7.6)	384 (1.8)	511 (2.5)
Europe	70 (0.4)	108 (0.7)	51 (2.1)	60 (2.1)	270 (17.1)	261 (16.9)	391 (1.8)	429 (2.1)
Latin America	101 (0.6)	120 (0.8)	177 (7.2)	250 (8.7)	251 (15.9)	288 (18.7)	528 (2.5)	657 (3.3)
All Countries	15768 (100)	14211 (100)	2456 (100)	2868 (100)	1579 (100)	1539 (100)	21135 (100)	20002 (100)

Note: Figures in the parentheses are percentages of the respective year total.

Source: Compiled from BIS Quarterly Review (Various Issues).

Figure-1: Net Flows of International Long-Term Debt Issuance by Developing Countries

(\$ Billion)



Source: Drawn by author based on data from BIS.

Bond market activity globally has expanded remarkably in the 2000s with significant diversification in terms of issuers and currencies. While a large volume of bonds are still denominated in US dollar, bonds denominated in other currencies particularly local currency issuance has increased over the years. In that sense, local currency bonds are not necessarily substitutes for the US dollar-denominated bonds rather both the segments are equally growing with deepening of financial markets in emerging markets and developing countries. For instance, the amount outstanding of bonds issued in local currency in developing countries by all types of issuers such as banks, non-financial corporations and the governments have increased in 2016 compared to 2010 whereas for all countries together only bonds issued by non-financial corporations registered growth during 2010-16. In fact, the local currency bond issues by non-financial corporations have doubled in this period from \$15 billion in 2010 to \$30.1 billion in 2016. In addition, the government issues have also witnessed dramatic growth from \$22.1 billion in 2010 to \$35.7 billion in 2016. This trend was broadly maintained for both resident and national issuers (Table-2). However, bonds denominated in US dollar, euro and other foreign currencies continued to grow both in developing countries as well as in the world. It signifies the untapped appetite for bond issuance in the global financial markets.

Table-2: International Debt Securities by Currency and Issuers of All Countries (Amount Outstanding)

(\$ Billion)

Issuers	Local Currency		US Dollar		Euro		Other Foreign Currencies	
	2010	2016	2010	2016	2010	2016	2010	2016
All Countries								
Resident Issuers								
Banks	3723.1	2135.0	1477.9	2390.3	1440.8	1047.9	1010.4	791.8
Non-Financial Corporations	995.1	1305.6	615.8	1238.9	252.6	450.1	172.7	194.3
General Government	640.5	412.9	597.4	940.8	185.0	196.8	91.9	62.4

Issuers	Local Currency		US Dollar		Euro		Other Foreign Currencies	
	2010	2016	2010	2016	2010	2016	2010	2016
National Issuers								
Banks	-	-	2090.3	2986.1	4838.5	2977.4	1981.4	1332.7
Non-Financial Corporations	-	-	1279.6	2682.3	1635.5	2049.2	790.0	816.9
Developing Countries								
Resident Issuers								
Banks	10.0	14.9	136.4	343.9	21.3	31.1	27.0	39.5
Non-Financial Corporations	15.0	30.2	230.7	476.2	26.0	52.0	11.5	23.7
General Government	22.1	35.7	368.4	665.2	132.8	150.4	26.3	27.7
National Issuers								
Banks	-	-	216.6	574.0	32.4	47.9	48.8	106.3
Non-Financial Corporations	-	-	417.8	1031.8	48.2	114.2	59.5	93.4

Note: Outstanding figures are reported for quarter 4.

Source: Compiled from BIS (<http://stats.bis.org/statx>).

Bond Market Development in BRICS

Financial markets in BRICS countries, debt markets in particular, have witnessed spectacular growth in the recent years. In 2016, the total outstanding domestic debt securities for BRICS as a whole was to the tune of \$11.75 trillion registering more than double growth over the six-year period 2010-2016. China alone accounts for 73.5 per cent of domestic bond market in BRICS in 2016. All the five BRICS countries have registered growth in their domestic debt markets with more pronounced growth in China. Brazil and Russia have experienced modest growth in domestic debt markets in 2016 over 2010 whereas South Africa has actually registered modest fall in issuance of debt securities across all categories of issuers. Unlike other BRICS countries the domestic debt market in India is primarily government bonds. Despite concentration of government bonds, domestic debt market has grown by 25 times during 2010-2016 from \$28.2 billion in 2010 to \$727.4 billion in 2017. China outpaced other BRICS peers in debt market activity in this period. All the three types of issuers such as financial corporations, non-financial corporations and governments in China have achieved extraordinary growth in domestic debt issuance which reflects in total outstanding of \$8639.1 billion in 2016. With a dominant share in the market, the total outstanding of domestic debt in 2016 for the financial corporations was more than twice of the level in 2010. Likewise, for non-financial corporations and governments the magnitude of growth was more than four times and more than two times respectively (Table-3). If one considers greater participation of non-financial sector in debt market as an indicator of diversification, Brazil and China appear to be more diversified than Russia and South Africa for whom the market activity fell compared to the level of activity in 2010. Interestingly, domestic debt market in Brazil, India, Russia and South Africa are mostly government securities whereas in China financial corporations and non-financial corporations together comprise of more than half of the domestic market of the country.

Table-3: Domestic Debt Securities Outstanding in BRICS

(\$ Billion)

Sector	Brazil		China		India		Russia		South Africa	
	2010	2016	2010	2016	2010	2016	2010	2016	2010	2016
	Q4	Q2	Q4	Q2	Q4	Q2	Q4	Q2	Q4	Q2
Financial	530.9	568.5	1513.9	3248.9			34.5	61.0	50.7	34.5
Corporations	(26.5)	(28.7)	(49.7)	(37.6)	-	-	(19.0)	(27.9)	(24.4)	(19.1)
Non-Financial	106.7	119.4	525.7	2467.1			62.7	66.7	30.8	20.6
Corporations	(5.3)	(6.0)	(17.3)	(28.6)	-	-	(34.5)	(30.5)	(14.8)	(11.4)
General	1368.6	1295.5	1006.0	2923.1	28.2	727.4	84.3	91.1	126.0	125.3
Government	(68.2)	(65.3)	(33.0)	(33.8)	(100)	(100)	(46.4)	(41.6)	(60.7)	(69.5)
Total	2006.2	1983.4	3045.6	8639.1	28.2	727.4	181.5	218.8	207.5	180.4
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

Source: Compiled from BIS (<http://stats.bis.org/statx>).

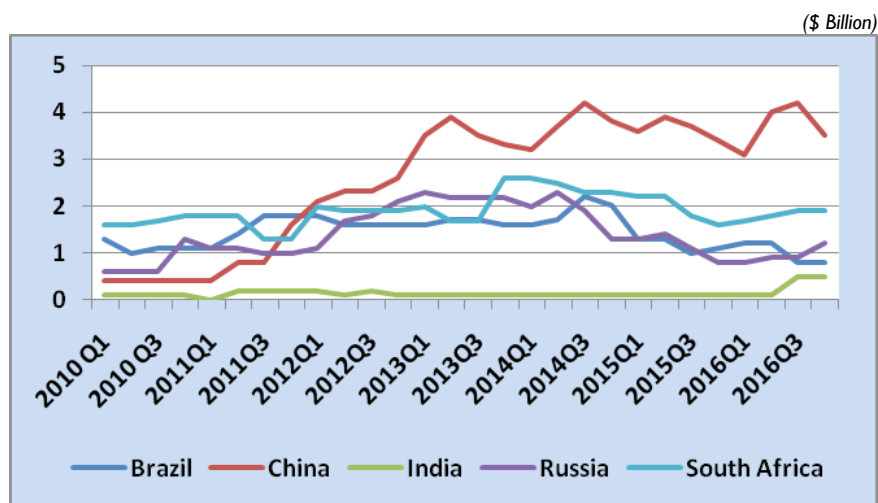
A look at the debt securities outstanding for the resident issuers presents a clearly different pattern for China. The volume of debt securities is much higher than of other BRICS countries. Government bonds still dominate the debt transactions in China, Brazil and Russia whereas in India and South Africa bonds by non-financial corporations are higher than the size of government bonds (Figure-2). In BRICS the issuance of local currency-denominated bonds has increased over the years. While it is hailed as positive development from the perspective of bringing efficiency in financial intermediation and diversification of borrowing choices in the home capital markets of BRICS, there are compelling reasons to examine the trends and dynamics in the evolution of local bond markets in BRICS countries. The quarterly data for the period 2010-16 demonstrates a steady rise in local currency bonds in the BRICS countries with clearly discernible pattern for China. The debt securities by non-financial corporations grew rapidly in this period maintaining a noticeable distance from other countries. While the rest of BRICS faced contraction in bond issuance, China maintained a declining growth rate after 2014 Q1 till 2016 Q3 (Figure-3). In essence, the bond issuance in BRICS exhibits some common trends for all the five BRICS countries in case of rise or fall. It hints at a deeper long-run evolution of bond markets in BRICS and adjacent risks of faster shock transmission. Empirical analysis of the causations and long-run co-movement in the BRICS bond markets would shed more lights for the strength and vulnerability of the BRICS financial markets.

Figure-2: Debt Securities Outstanding in BRICS by Resident Issuers



Source: Drawn by author based on data from BIS.

Figure-3: Local Currency Debt Securities Issued by Non-Financial Corporations in BRICS



Source: Drawn by author based on data from BIS.

Bond Market Integration and Shock Transmission

There are not many empirical studies on bond market integration in BRICS countries. However, the critical review of available literature presents interesting dynamics in bond markets of BRICS countries. While as a group BRICS appears to be highly integrated within itself, a considerable spillover exists among BRICS markets and the global markets particularly the United States. Moreover, BRICS markets individually reveal distinct patterns in terms of shock transmission originating from them individually as well as in groups. While examining financial connectedness between BRICS and global markets using return and volatility spillovers Ahmad, Mishra and Daly (2018) observe that risks arising from Russia and South Africa may have adverse impact on other BRICS countries. Both these countries transmit more shocks than they absorb compared to other BRICS countries. Likewise, Bianconi, Yoshino and de Sousa (2013) present a rigorous analysis of the behaviour of stocks and bonds using daily data from January 2003 to July 2010. The study finds that Brazil and India are the most affected countries among BRICS followed by China and India. BRICS markets behave more synchronically among themselves and deviate more from the United States. Interestingly, bond market in India is found to be more detached from other BRICS bond markets.

The extent of integration of bond markets in a region or among a set of countries depends on a plethora of factors. For instance, bond market development in developing and less developed countries is mostly driven by the public sector. In most cases, the markets are not deep and not very liquid. Among many other factors, economic size, trade openness, investment profile, GDP per capita, bureaucratic quality, and size and concentration of banking system are positively linked to bond market development (Smaoui, Grandes and Akindede, 2017). Of these factors, most of them favour a strong bond market in BRICS countries as economic size, trade openness, attractive investment profile, etc are favourably

better for the BRICS countries. Whether BRICS possesses enough organic impulse to be integrated within it or not can be assessed from the finding of a study for the European Union. Abad, Chulia and Gomez-Puig (2010) observe interesting trends in European Union markets. Their study confirms that euro markets are less vulnerable to the influence of global risk factors whereas a high degree of vulnerability is noticed for the countries in the European Monetary Union (EMU). It suggests that at certain level of market development, bond markets among BRICS may carry the risk of greater shock transmission originating from BRICS.

Bond market integration ideally moves along with the level of development. The more advanced an economy is, the more likely is the development of bond market. This logic motivates Simovic et al. (2016) to study the level of bond market integration and its drivers in government bond markets and Euro zone markets. Their study notes that economic development would continue to be the major determinant of bond market development whereas crisis-inspired bond market development is not actually realized. In fact, bond market integration has decreased with the financial crisis. In East Asia this wave of local capital market development assumed thrust after the catastrophic collapse of East Asian economies in 1999. Although in the immediate years there was visible momentum in bond market development and integration, the extent of integration was weak thereafter (Yu, Fung and Tam, 2007). Regardless of the degree of integration, the delinking of emerging market bond markets from the United States markets has happened. Piljak and Swinkels (2017) present stronger correlations between bonds issued by 29 countries and US corporate high yield bonds, US investment grade bonds and US dollar-denominated bonds. Similarly, Kim, Lucey and Wu (2006) observe robust contemporaneous and dynamic linkages between Euro zone bond markets and Germany. A similar pattern is observed for the BRICS bond markets as all five of them have grown steadily till 2014 with clear dominance of China. Even though all rest four BRICS countries have registered fall after 2015 China has maintained strong growth in its bond market. All these studies mentioned above present the degree of linkages between BRICS, the United States and other global markets.

In view of the dynamic interaction and response between BRICS financial markets, this paper provides an analysis of bond market dynamics in BRICS from the regional cooperation perspective. By using BIS data on bonds for all the five BRICS countries, this study employs Johansen (1995) cointegration model to examine the long-run evolution of bond issuance in net flows terms for the period 2010 Q1 to 2016 Q4.¹ Net flows of bonds issued by banks and non-financial corporations (private corporate sector) are considered for estimation of the cointegration model. Four different model specifications including two for long-term bonds and two for bonds denominated in US dollar are estimated. The results of all the four specifications suggest the presence of cointegration among the bonds issued by the BRICS countries in the study period. The joint evolution of bond markets reflects the interdependence among the financial markets in BRICS (Table-4). Further, it implies that the shocks to an individual BRICS country will affect transactions in other BRICS bond markets. While the cointegration results

¹ Due to discrepancy in time series data, issuance of government bonds is excluded from the cointegration model. Poor quality data for LCY-denominated bonds are not amenable for empirical analysis. The time period is conveniently chosen.

are not surprising given the similar market characteristics exhibited by the BRICS economies as emerging markets, it helps us to assess the magnitude of shock and the duration of adjustment to normalcy. In order to understand the persistence of shocks to bond market issuance in BRICS, the study undertakes the analysis of impulse response functions after the estimation of cointegrating vector error correction model (VECM).

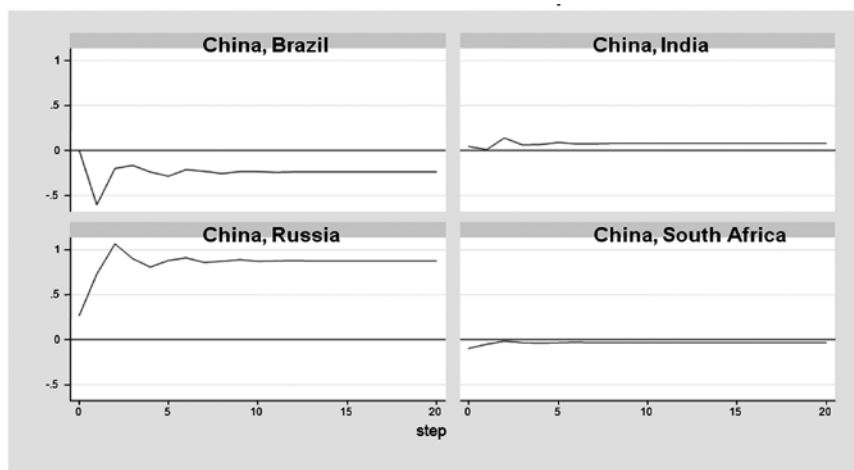
Table-4: Dynamic Long-Run Linkages in BRICS Bond Markets (Johansen Cointegration)

Variable	Long-term Bond		USD-Denominated Bonds	
	Banks	Non-Financial Corp.	Banks	Non-Financial Corp.
Brazil	0.654	1.260	-8.88e-16	0.538
China	(-7.197)	(4.51)	65.201	(2.23)
India	(-6.09)	(5.02)	(4.28)	(6.19)
Russia	-0.632	0.229	11.479	-
South Africa	(-2.77)	(1.34)	(4.09)	-
Constant	-4.247	-	-	-
	(-1.80)	-1.705	-10.749	-0.878
	-1.112			

Notes: Figures in parentheses are z-values. A particular country is dropped from estimations either due to stationarity of the series or poor data.

Source: Author's estimation.

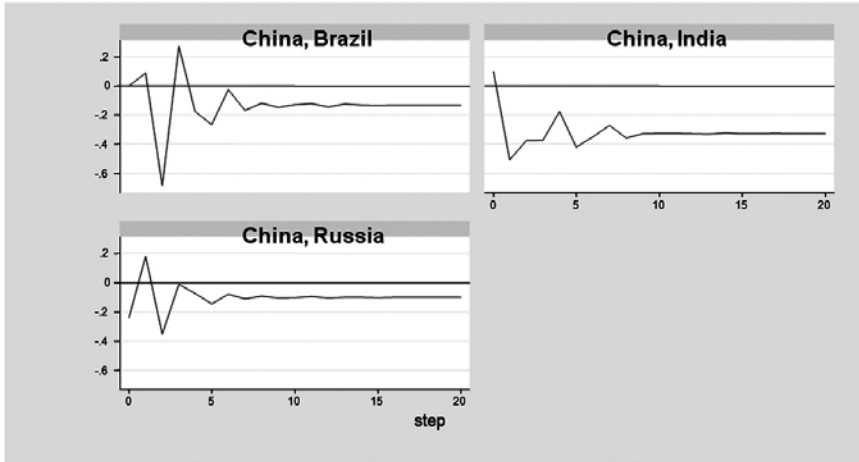
Figure-4: Impact of Shock to Chinese Long-Term Bonds on BRICS Markets Issued by Banks



Source: Author's estimation

The shock to Chinese long-term bonds issued by banks has large and permanent impact on the bond markets in Russia and Brazil compared to India and South Africa. Even though the after-effects of shock persist permanently, the magnitude of impact is relatively smaller for India and South Africa (Figure-4). Unlike the bonds issued by banks, the bonds issued by non-financial corporations exert more impact resulting from a unit shock. Relative to Russia and Brazil, India faces the greater risk of transmission of shock with strong durable impact (Figure-5).

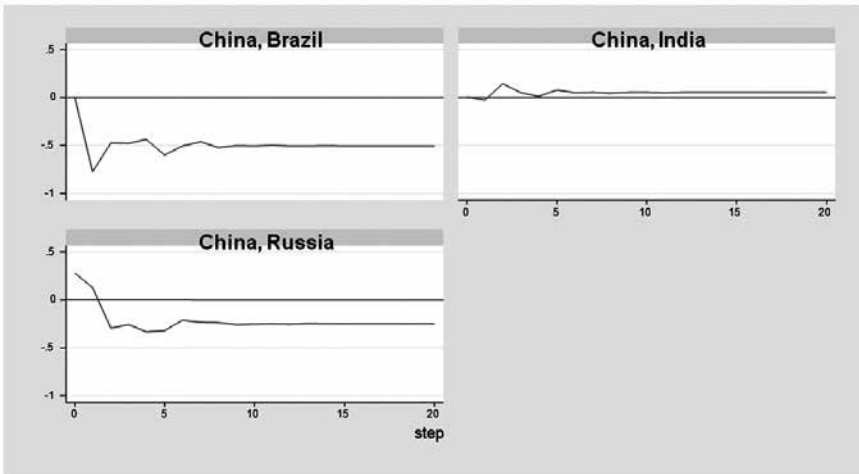
Figure-5: Impact of Shock to Chinese Long-Term Bonds on BRICS Markets Issued by Non-Financial Corporations



Source: Author's estimation

As illustrated above, shocks to Chinese bond market have differentiated impact on rest of BRICS as the issuer changes. Unlike the non-financial corporations the shock to Chinese government bonds generates large, negative and persistent impact on Russia and Brazil. For India the magnitude of shock appears to be negligible as compared to Russia and Brazil (Figure-6).

Figure-6: Impact of Shock to Chinese USD-Denominated Bonds Issued by Banks

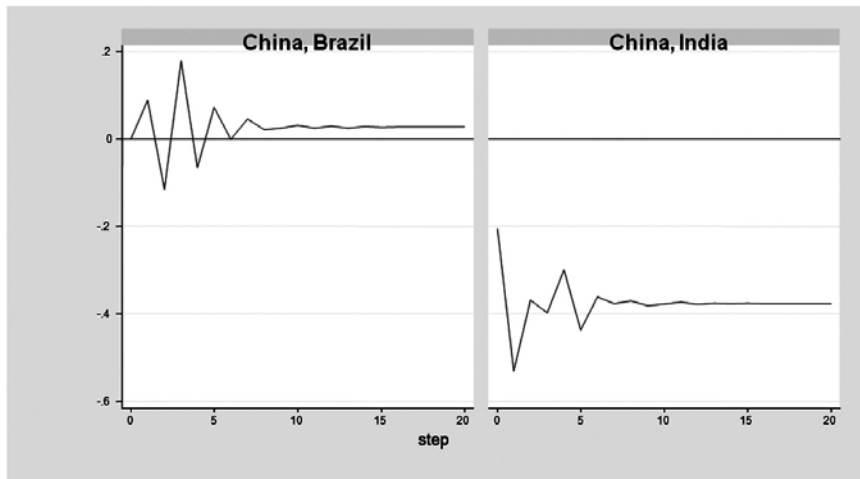


Source: Author's estimation

Unlike government bonds, response to shock to Chinese US dollar-denominated bonds is unusually high for India than Brazil. As observed in Figure-7, after five to six quarters, Brazilian bond market comes back to normalcy whereas Indian bond market undergoes a permanent shock adjustment. Unlike shocks to Chinese bonds, impulse response graphs showing the impact of shocks to the rest BRICS countries

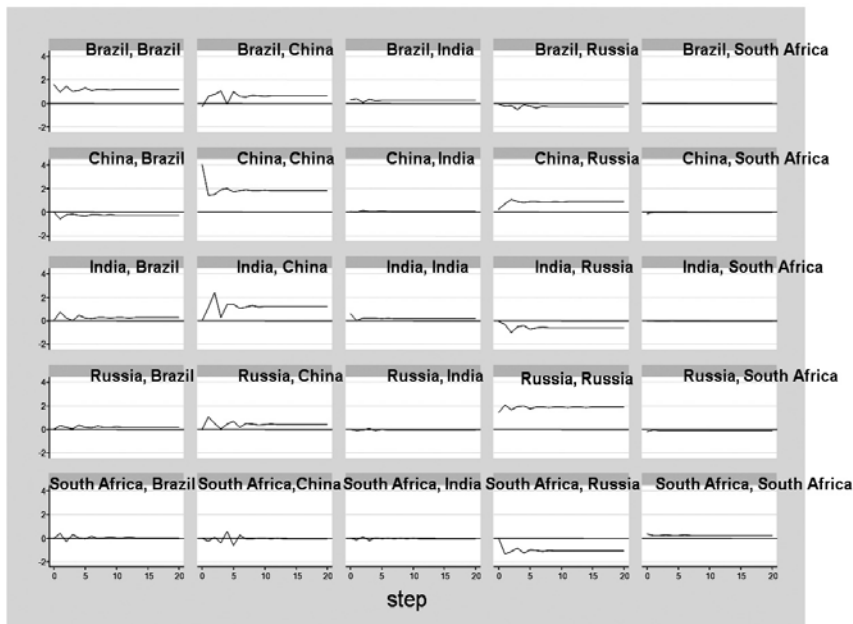
are presented in Figure-8 and Figure-9. As shown in Figure-8 and Figure-9 the transmission of shocks to bonds issued by banks and non-financial corporations in BRICS countries have mixed impact on BRICS markets in general. Further, it indicates that as bond markets become deeper and mature, the extent of integration would be higher and shock transmission faster. Figure A1 through A6 presents shock dynamics originating in different segments of BRICS bond markets.

Figure-7: Impact of Shock to Chinese USD-Denominated Bonds Issued by Non-Financial Corporations



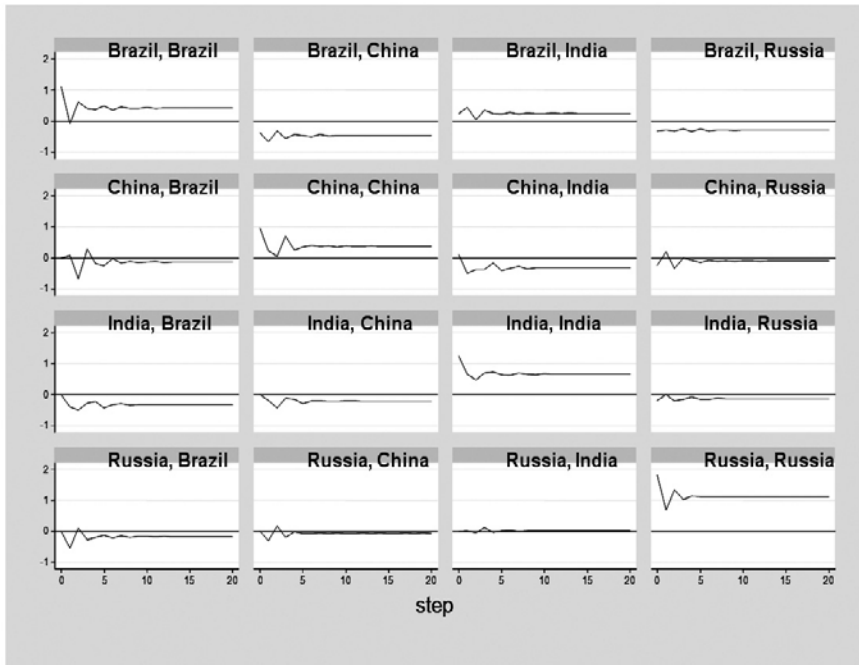
Source: Author's estimation

Figure-8: Impact of Shocks to BRICS Long-Term Bonds Issued by Banks



Source: Author's estimation

Figure-9: Impact of Shocks to BRICS Long-Term Bonds Issued by Non-Financial Corporations



Source: Author's estimation.

Conclusion

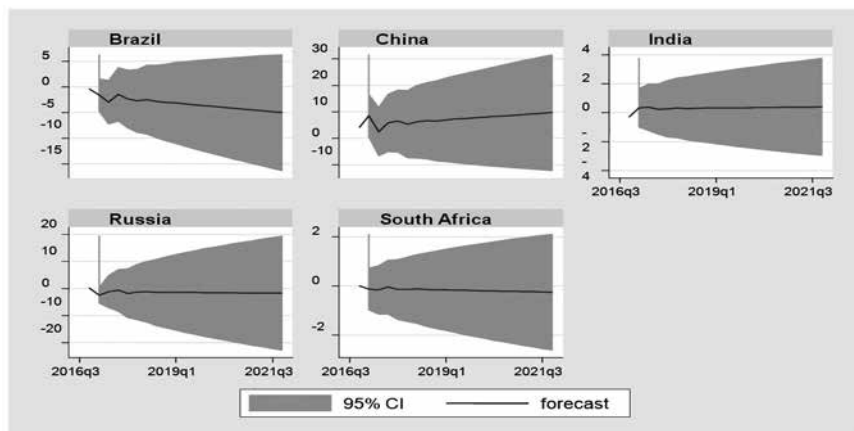
BRICS countries have witnessed robust growth of their bond markets in the recent years. This wave of local capital market development got further boost in view of the persistence of pessimistic outlook in the advanced economies following the slowdown in 2008-09. In the past decade, all the five BRICS markets registered relatively higher GDP growth, strong FDI inflows and export growth which resulted in domestic financial sector development. The bond markets, in particular, have assumed depth, issuer diversity, sophisticated market infrastructure, robust transaction and settlement platforms, enabling regulations, among others. While bond market development is perceived as a healthy stage of the sequential path of financial sector development for emerging markets and developing economies, the joint evolution of markets leads to higher proneness to financial crises originating in any countries in BRICS. In order to understand the nature of contagious risk transmission, this paper examines the extent of cointegration among bonds issued in BRICS countries by governments, banks and non-financial corporations. Interestingly, a strong cointegration is empirically established among the BRICS bond markets and each BRICS country shows a higher vulnerability to risks emerging from other BRICS bond markets. Since China presents strong growth in bond markets, the paper examines the impact of shock to Chinese bonds on other BRICS bond markets separately. It signifies that Chinese bonds can have durable and damaging impact on rest BRICS bond markets.

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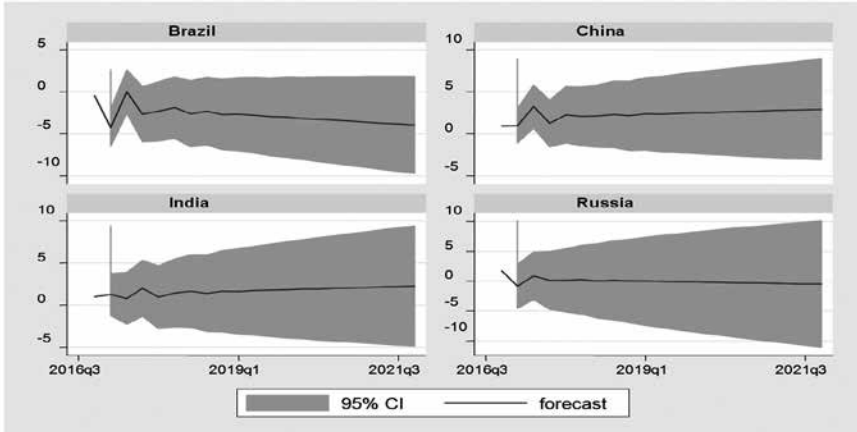
Appendix

Figure-A1: Forecasts of BRICS Long-Term Bonds Issued by Banks



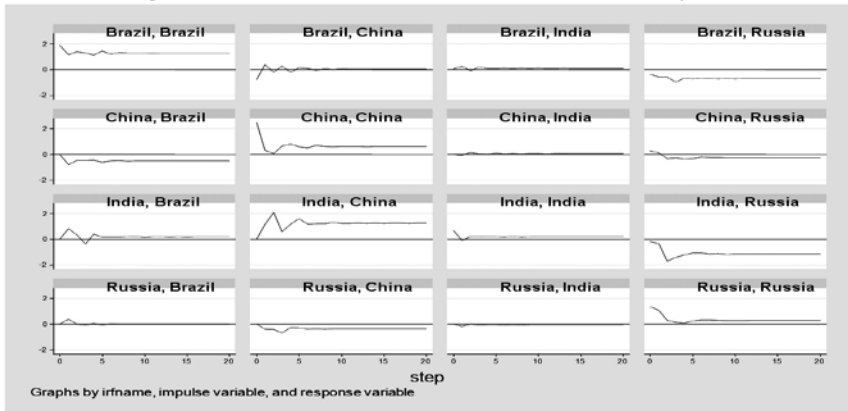
Source: Author's estimation

Figure-A2: Forecasts of BRICS Long-Term Bonds Issued by Non-Financial Corporations



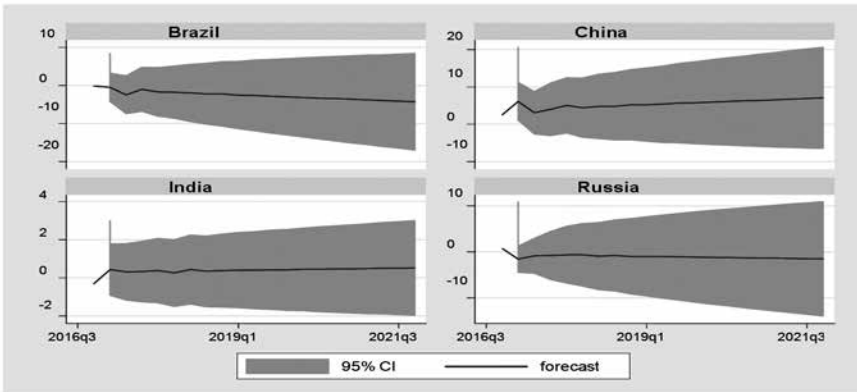
Source: Author's estimation

Figure-A3: Impact of Shocks to BRICS USD-Denominated Bonds Issued by Banks



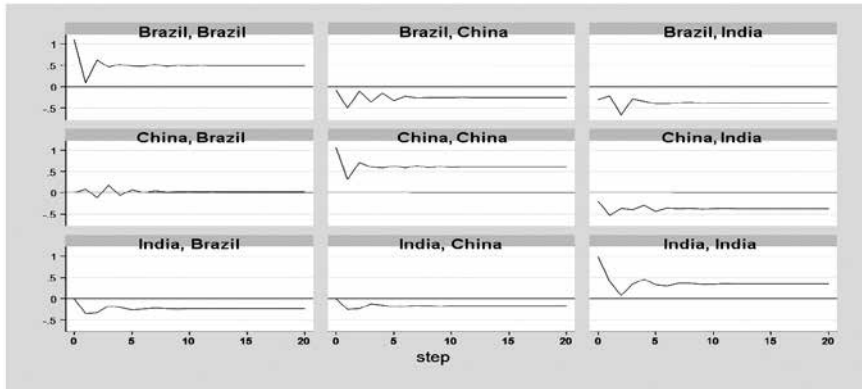
Source: Author's estimation

Figure-A4: Forecasts of BRICS USD-Denominated Bonds Issued by Banks



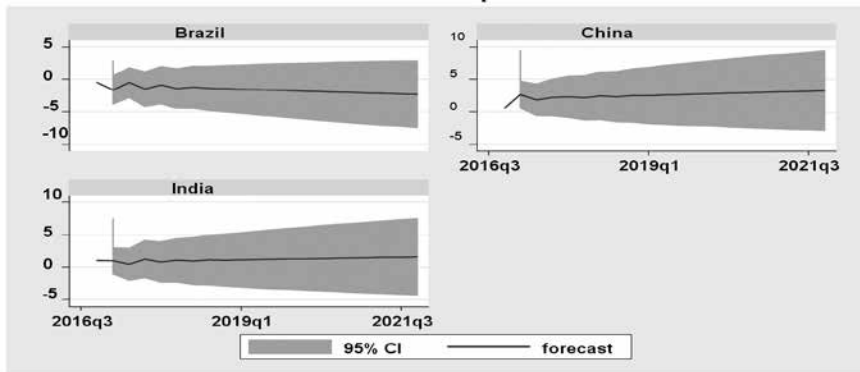
Source: Author's estimation

Figure-A5: Impact of Shocks to BRICS USD-Denominated Bonds Issued by Non-Financial Corporations



Source: Author's estimation

Figure-A6: Forecasts of BRICS USD-Denominated Bonds Issued by Non-Financial Corporations



Source: Author's estimation

Green Economy, Environment and International Trade for Global Sustainable Development

U Sarangi*

Abstract

The research paper under review studies the various concepts of 'green economy' including industrial and green technologies that could adopt to effect 'green economy'. The other aspects relating to green economy such as environment, industrial economy, international trade and global sustainable development including global peace for attaining SDGs through adoption of green industrial and environmental policies, resulting in creation of positive environmental externalities, have also been dealt with in this paper. It is observed that the vision of green economy is environmentally & socially tenable and compatible. The 'green economy' involves aspects from economy, science and civil society encompassing almost every field of economy including finance, labour, production and consumption. The study also focuses on the key issues in the implementation of green economy, concept of Bio economy, research on non-energy use of bio mass, carbon dioxide as a new source of carbon, efficient technologies and processes etc.,. The various other aspects of ecological research relating to green economy that have been studied include innovative solutions for adoption of green economy such as water sector, land, sea and related raw materials, Biodiversity and preservation of ecological systems, sustainability and financial services, green economy indicators and SDGs etc.,. Certain issues such as the 'Paris Agreement' on climate change, including response measures, international trade that have linkages with the adoption of a suitable 'green economy' have also been highlighted in the study. The role of MNEs and their impact on sustainable development, both through their social and environmental externalities and, as they are increasingly portrayed, as provider of solutions for adoption of better green economy measures have also been factored in the study. The paper concludes with the proposition that trade policy and trade-related policies could further the goal of economic diversification, helping to reduce response measure vulnerability, and in the process help to implement the goals of the Paris Agreements and in turn 'green economy'.

Keywords: Biodiversity, Carbon Emissions, Ecological Balance, Green Economy, Paris Agreement, Response Measure Vulnerability

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Introduction

The vision of the 'Green Economy' is an internationally accepted concept in a global competitive economy that is both environmentally and socially compatible and tenable to achieve global sustainable development. Green economy establishes a linkage and proper balance between ecology and economy with the objective to increase social welfare, reducing poverty and in attaining social justice. Green economy is affected by the broader issues concerning economics, finance and politics which has an impact on the green economy of various societies. The road map to attain Green Economy requires a process of change that affects all aspects of society. It involves comprehensive planning for ecological modernization of the entire economy and its various sectors, in particular with regard to use of resources, emissions reduction, improved energy and raw material productivity, supply systems and infrastructure. The living and working conditions relating to consumer behaviour, product life cycles are interlinked to these issues. The global challenges to achieve green economy are many such as limited resources, threatened ecosystems, climate change and demographic developments which require a systematic and pragmatic approach to ensure green economic development. The transformations to green economy could be achieved through proper and adequate technical progress, both on organizational and social front. The change in today's globalized transformational process is taking place on account of various interactive factors and players in the global economy such as rapid technological changes and leaps in innovation, changing market dynamics, consumer psychology and reacting ecosystems which could lead to unforeseen changes in the global transformational process. It is a matter of fact that an exclusive national vision cannot deliver such sustainable development; social sustainability, environmental compatibility and competitiveness unless until backed by sustained global value chains to transform the society to adapt to a complete green economy environment. According to the United Nations Environment Programme (UNEP) the transition to a social-ecological market economy can only be accomplished if 2% of global gross domestic product (GDP) currently around 1.3 trillion US dollars is invested annually until 2050 in the ecological transition of key sectors such as agriculture, construction, energy supply, industry, transport or the waste and the water sector. These investments can only be effective, if they are accompanied by systemic innovations, founded on evidence-based knowledge, along with political reforms at national and international level.

Review of Literature

The major players for achieving green economy rests on the science and civil societies enveloping and encompassing every field of economic activity in the current global setting to attain global transformation of various economies and in better upkeep of the environment. In fact, the green economy touches upon almost every aspect of human existence for which collaborative and sustained efforts are required to be undertaken by the major global players and stakeholders involved in the process. The transition to the green economy affects every industrial sector, from the raw materials industry through construction and the manufacturing sector to the trade and services sectors. This would entail developing appropriate

and effective new innovative business models in implementing innovations commercially to attain sustained green economy growth across various economies and in various sectors/segments of the society. This would give a fillip to the growth and development of the green economy. This is a long-drawn process which often requires longer-term assessment and approach for development of long-term strategies in business, as the targets related to transiting and transforming to the Green Economy generally span over periods of several decades. In fact, research and development work need to be taken up as a core activity in order to increase the scale of business. Businesses are involved in the development and application of research projects for attaining a sustainable economy.

- The current literature features less preoccupation with the question whether industrial policy is advisable, and more preoccupation with learning from the successes and many failures of the past, and getting it right (Rodrik, 2004; Suzigan and Furtado, 2006; Rodrik 2008; World Bank 2012; Hallegatte, Fay and Vogt-Schilb, 2013; Lall, 2013; Dietsche, 2017).
- It is particularly important to note that there is no single policy prescription that will work in all cases. There are, however, some elements of policy, some principles, on which most economists agree. As a starting point most agree on the desirability of “soft” (or “horizontal”) industrial policy measures that will improve investment conditions for a range of sectors and actors, without targeting specific sectors or firms (Harrison and Clare-Rodríguez, 2010).
- Since the earliest of those discussions it has been evident that economic diversification was one of the key avenues for reducing those impacts (Zhang 2003). The central problem is explored in depth in UNFCCC (2016:8); the most vulnerable states.
- “Transforming our world: The 2030 agenda for sustainable development”, the resolution adopted by the UN General Assembly (UN, 2015, p. 1), put it:
“This agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. All countries and all stakeholders, acting in collaborative partnership, will implement this plan.” The SDGs have already resonated strongly in the international policy debate and attracted considerable academic attention, especially in the realm of development studies and sustainability science (see e.g. Oldekop et al., 2016, and the thematic issues of *Current Opinion in Environmental Sustainability*, February 2017, and *International Environmental Agreements*, June 2016).
- An early study on MNEs, climate change and energy (Poduska, Forbes and Bober, 1992) indicates that environmental considerations were already viewed as central to business strategy at the beginning of the 1990s. Currently MNEs deal with many tensions (e.g. home versus host country requirements) as well as global isomorphic forces (Pinkse and Kolk, 2012a), yet IB research has given only limited attention to the tension associated with the standardization versus local adaptation of strategies on energy and climate change. Kolk and Pinkse (2008) show how firms can tackle issues such as climate change and develop advantages specific to “green” firms. Finally, when describing corporate citizenship initiatives to tackle climate change, Shinkle and Spencer (2012) show how automobile industry firms use similar themes across an industry with differences in implementation.

- Studies on this relationship started to appear in economics and political science in the 1980s and led to the formation of an entire segment of literature on this topic (for instance the seminal article by Polachek (1980), who showed that trade and conflict are inversely related). Yet, the volume of IB research that has focused on this issue has been rather limited (Henisz, Mansfield and Von Glinow, 2010). The first contribution in the 61 articles is Lee (1993), who investigated the relative importance of economic instability and economic variables on perceived creditworthiness and showed that both variables explain variation in credit ratings.

Research Methodology

The research paper under review adopts a theoretical approach towards green economy and tries to analyze the impact of various socio-economic factors on the growth and development of green economy indicators and aggregates. It also tries to establish certain linkages amongst the various macro variables such as industrial policy and green economy, infrastructure, production and labour standards, SDGs and green economy, environment and climate changes including carbon emissions and global warming issues. In fact, the paper deduces the fact that these factors are not only vital but also instrumental in determining the growth and development of green economies across various countries. Due to macro data limitations in a continuous time series pattern no quantifiable relationships and linkages could be established amongst the macro variables for attaining effective green economy and sustainable development. Thus, qualitative factors play a major role in effective green economy implementation.

Factors Affecting Green Economy

Science

Research for the development of the Green Economy needs to be application oriented and need-based. Science and technology develops the solutions to those research questions arising from the specific needs of users and stakeholders, identified and formulated through participatory processes. The research activities should develop and lead to the transformation towards a Green Economy. The road to the Green Economy need to be technologically and socially innovative because only those innovations that are socially accepted and broadly adopted can be significant to a sustainable way of life and economic management. This final outcome to a better green economy would be the resultant of a combination and integration of the social sciences with that of the natural and technical sciences leading to the development and implementation of sustainable innovations. Incremental innovations, such as in increased efficiency, are a key element for the development towards the Green Economy provided that they can be readily transferred in order to significantly affect the transformation process.

Civil Society

The transformation to the Green Economy affects the whole of society. It is increasingly a question of the public becoming part of the innovation process since it is actively involved at every stage. The views of individual members of the public

can be sought along with those of associations and other social organizations. Put another way, members of the public are putting their interests and needs into agenda processes and public dialogue. For example a new type of public research (i.e. “Citizen Science”), could take on new roles in the Green Economy, such as financing in crowd funding projects, participating in co-operatives, or as providers and users of products and services as part of alternative forms of ownership and consumption based on a culture of exchanging and sharing.

Action fields for Implementation of Green Economy

Realization of the Green Economy requires changes to production and consumption habits to become sustainable, factoring in mega-trends in order to ensure prosperity and high quality of life both globally and also for future generations.

Development of green economy would entail the following viz:

- Production and resources: raw materials, water and land
- Sustainability and financial services
- Sustainable consumption
- Sustainable energy supply and use in the economy
- Sustainable mobility systems
- Infrastructure and intelligent supply systems for the City of the Future

Transforming the entire national economy to a Green Economy is a long drawn process affecting the whole of society, consisting of a large number of individual developments. To improve control, it is important to record the extent to which the ultimate aims are actually being achieved. The overall economic success of a national economy is conventionally reflected through growth in gross domestic product (GDP). It is however self-evident that this value alone is insufficient to measure the success of a Green Economy, an economy focused on sustainability. In the context of discussion on sustainable development, prosperity and quality of life, various bodies at national and international level conduct discussions on what indicators over and above GDP are suitable to track the process of change towards the Green Economy. A set of indicators is needed in which the economic, ecological and social aims of the Green Economy are included equally. The consequences for future generations must also be incorporated into current decision making processes. Various commissions have, with scientific support, been working on the development of such a set of indicators.

National Research Strategy Bio-Economy 2030 and Policy Strategy Bio-Economy

The development of an internationally competitive bio-based economic management or even bio-based economy is an important pillar of the Green Economy. In terms of coherent policy-making, these decisions were supplemented by the “National Policy Strategy on Bio-economy” with further policy framework conditions and action fields (industrial and energy policy, agricultural, forestry and fisheries policy, climate and environmental policy, and research and development policy). Whilst the bio-economy uses and further develops biological processes

and resources and in doing so makes them more efficient, technology, economy and ecology are systemically and sustainably linked in line with the aims and guidelines of a Green Economy. It is also important to the development of the Green Economy to clarify how biodiversity and ecosystem services can be appropriately (economically) evaluated and better factored into business and national economic processes. This entails the development of corresponding concepts, models and management tools.

Research on the Non-Energy Use of Biomass

The substitution of mineral and fossil raw materials by sustainably produced biomass can contribute significantly to the careful management of financial resources in the bio-economy and in the Green Economy, but it is also important to ensure that production along the length of the value chain (soil, plants, conversion process and products) is sustainable. This has a bearing on technical innovations such as the avoidance of harvest losses and residues or the integrated production of various products through the total processing of various types of biomass, including food waste. The value chains of bio-economic products, for example, are increasingly interlinked or inter-linkable with each other in the various industries, so that the re-use of by-products and residues can be maximized in bio-renewable figures or in the use of by-products and bio cascading concepts.

Carbon Dioxide as A New Source of Carbon

The reduction of carbon dioxide emissions presents enormous challenges to policy, society and the economy. One particular problem aside from industrial feasibility is economic viability. Carbon dioxide abatement (mitigation) is comparatively expensive, due primarily to the low price of emissions certificates, while the use of carbon dioxide as a raw material has not to date been an economic alternative; this situation may however change suddenly with application in industrial manufacturing processes.

Innovative System Solutions for the Water Sector: Blue Innovations for A Green Economy

The annual increase in global per capita consumption of water is 2.5%, i.e. double the rate of population growth. Around 900 million people currently have no access to clean water and around 2.5 billion people have no access to basic sanitation. Some 5 million people around the world die annually from water-related diseases, 2 million of them children under the age of five. The anticipated drastic shortage of water reserves mean that innovative system solutions (blue innovations) are needed throughout the whole of the water sector. It is vital to develop new types of efficient processes and demonstrate their benefit and practicality, for example at national and international demonstration sites. Fair distribution in terms of social, ecological and economic aspects to balance competing needs requires effective management of water demand.

Food and Raw Materials from the Sea

There is a significant need for research into the development of sustainable methods and technologies for ecologically responsible and sustainable exploitation of marine resources. The economic utilization of mineral raw materials from marine sources has been highlighted by rising raw material prices and global shortage scenarios for certain raw materials and could become even more significant in the medium term, such as in expanding the renewable energy sector. Although enormous potential is forecast for raw materials in the sea, as described in the “World Ocean Review III – Raw materials from the sea”, there has not to date been any commercial deep seabed mining for metals. A number of countries together with private companies, are however on the starting blocks and have acquired rights to conduct exploration for a medium-term, although cost-intensive, extraction of resources.

Biodiversity and Ecosystem Services

Protecting and maintaining biodiversity is one of the core targets of sustainable development, and it is also important to be aware that the economic performance and prosperity of a country depend substantially on the state of its “natural capital”. Biodiversity and intact (functioning) ecosystems, for example, form the basis for plant and animal raw materials, food production, availability of water, and also health and tourism. The shrinkage or loss of biological variety and the ecosystem services reflects fundamental risks for the long-term economic success of businesses and national economies and therefore for quality of life.

The services provided by nature have (with the exception of “made” products, such as timber and food) until now been largely freely available and without definite ownership rights. Accordingly they are not integrated into the economic valuation system. As a result, despite legal requirements for the protection of nature, the value of ecosystem services is not adequately considered in political and economic decisions.

Sustainable Supply and Use of Energy in the Economy

Current Situation

The energy concept aims to reduce primary energy consumption by 50% by 2050. The industrial, commercial, services and trade sectors account for over 40% of total energy consumption and around 70% of power consumption. Improved resource and energy efficiency offer opportunities for the economy and open up new possibilities in global markets, making them key to creating a Green Economy. Innovations in every sector of industry and throughout the value chain are needed to raise the efficiency potentials, but in addition to technological innovations economic and social-ecological cross-cutting analyses are required to create a knowledge base taking the complex associations and path dependencies into account to support strategic decisions both in businesses and at the political level.

Implementing the Paris Agreement: Response Measures, Economic Diversification and Trade

The Paris Agreement opens up the prospects of a collective transformation, not just for individual economies, but for the global economy as well. This transformation would require a massive reallocation of resources at the international level. While at the domestic level, it would necessitate structural changes on a scale similar to the wave of economic liberalization, which are bound to raise equity and distributional concerns that have been central to UNCTAD's work for decades.

The most important feature of this transformation is the shared challenge of economic diversification. Countries would have to change the shape of their economies and the way in which they seek to develop the industries that would power their economies. There is also a related challenge of making this transformation a just and equitable one. In particular, countries would have to deal with its effects in terms of jobs to be gained or lost and the concomitant challenge of managing the transition and re-training of labour.

Economic diversification and a 'just transition' of the workforce are now front and centre in the work of the United Nations Framework Convention on Climate Change (UNFCCC) Forum on Response Measures. Although the just transition of the workforce is considered an objective, economic diversification is mostly seen as a tool to address the impacts of mitigation measures.

Response measures denote in the UNFCCC parlance mitigation measures with cross-border impacts. Historically related to compensation to oil-producing countries for not exploiting their reserves, the notion of response measures has evolved and is now seen in the context of sustainable development. The negative connotation still prevails though for developed countries, these measures tend to raise competitiveness concerns. For developing countries, they normally mean concerns relating to economic diversification.

Trade serves as a transmission mechanism for cross-border impacts and is largely seen as part of the problem, with competitiveness considerations dominating the policy discourse. Now that the Paris Agreement is in place, and as the protectionist pressures mount in various quarters, it is high time to take a look at trade as part of the solution and explore its potential in helping countries, particularly developing ones, diversify their economies and create jobs as they make their transition to the low-carbon future.

Climate Policies, Economic Diversification and Trade

The UNFCCC's Paris Agreement calls on Parties to strengthen the global response to the threat of climate change by, among other things, holding the increase in global average temperature to well below 2 degree below pre-industrial levels. This will require parties to reach global peaking of greenhouse gas emissions "as soon as possible," and to reduce emissions rapidly thereafter. This necessary level of ambition will entail an unprecedented social and economic transition in a relatively short period of time. The measures used to bring about that transition will have significant economic impacts, as parties seek to restructure toward "greener" systems of production and consumption. Some of those impacts will be felt internationally, as national measures affect demand and supply of traded

goods, affecting markets for exporters and importers in other countries. In the long-standing UNFCCC discussions on these matters, these have been called the impacts of the implementation of response measures. One of the key objectives in all those discussions has been to reduce any negative impacts to the extent possible, in line with various treaty obligations.

Green Industrial Policy

Economic diversification is an important path to increase resilience to the impacts of the implementation of response measures. Essentially this avenue involves structural economic change, moving the economy away from an over-dependence on the export of goods that, in their production and/or end use, have negative climate change impacts and are therefore vulnerable to reductions in demand as governments and consumers act to address climate change. Beneficial economic restructuring is routinely practiced by almost all governments, by a variety of means. But restructuring specifically in the direction of low carbon and climate-adapting goods and technologies is the territory of what has come to be called “green industrial policy”. Altenburg and Rodrik define green industrial policy as: “any tool at the disposal of a government that ensures the adherence of an industrial sector to nationally endorsed environmental rules and social standards or supports the emergence of a new sector that has the potential to advance structural change and competitiveness on the basis of low-carbon, resource efficient technologies.”

Green industrial policy, of course, covers more than climate-friendly activities; it can also be used to direct the economy toward goods and activities that achieve other environmental goals. But climate change is arguably the primary environmental challenge of our times, and is thus a key goal. Consequently, it is also one of the strongest drivers of new market opportunities; trade in climate-friendly goods now tops \$250 billion per year, almost a four-fold increase from 2002 levels (Adès and Palladini, 2017). The size and growth of that market make climate friendly sectors a desirable target for industrial policies.

Green industrial policy can increase resilience to the impacts of response measures by any of four basic types of forms, through measures to encourage:

- Cleaner production in the vulnerable sectors (e.g., promoting renewable energy as an input to the production of traded steel);
- Re-designing existing export goods such that they have less climate impact in their end use (e.g., promoting a shift from internal combustion engine vehicles to electric vehicle production; promoting production of higher-efficiency white goods);
- Phase out of significant climate-damaging sectors (e.g., removal of subsidies to entrenched vulnerable sectors), in the expectation that other greener sectors will take their place;
- The emergence of entirely new low-carbon and Climate-adapting sectors of activity (e.g., promoting the development of new water-saving technologies);
- The objective of such measures is ultimately two-fold. First, they aim to reduce the vulnerability to shocks from reduced exports of climate-damaging goods. They do this by reducing the importance of those goods in the basket of national exports, diversifying away from such goods by greening existing production, encouraging new green products and technologies, and discouraging or removing

incentives for existing “brown” sectors. Second, they aim to ensure that the sectors into which the economy diversifies have a beneficial climate profile and better long-term market prospects. Of course, even without this last element, any policy that decreased the relative share of climate-harming goods in the national export stream for example by diversifying away from carbon-intensive into climate-neutral goods could probably be counted as green industrial policy, and would have the benefit of reducing vulnerability to the impacts of response measures.

There are four key determinants of that sort of vulnerability:

- An over-dependence on the export of relatively few goods. As of 2015 sixteen states counted on fuel exports for more than 60 percent of total merchandise exports and nine states counted tourism receipts for over 60 per cent of total exports.
- An export focus on countries likely to implement response measures. The principle of common but differentiated responsibilities dictates that some countries have a heavier burden of responsibility for addressing climate change. An over-dependence on the markets in those particular countries will exacerbate vulnerability.
- Carbon-intensity of the exported goods. This could be carbon-intensity in extraction, processing, transport or end use; different types of response measures will target different stages of the life cycle.
- Capacity to adapt. Vulnerability is reduced by policy frameworks and institutions that are able to adapt to shocks. (Adler and Sosa, 2011). It is worth noting that much of the over-dependence is in developing countries, many with under-developed institutions for managing social and economic transitions.

Principles for Successful Industrial Policy

These sorts of measures are aimed at improving the investment and innovation climate, often with a focus on exports:

- Creating special economic zones with lower infrastructure costs;
- Investing in transportation-related infrastructure designed to increase trade;
- Promoting export clusters without sectoral discrimination;
- Promulgating science and innovation policies;
- Streamlining bureaucracy for business licensing and support;
- Investing in energy, transportation and communications infrastructure; and
- Providing non-sector-specific financing for start-ups, commercialization, export finance, etc.

The advisability of so-called “hard” (or “vertical”) industrial policy, however, is more contested (Pack and Saggi, 2006). This is government intervention designed to foster competitiveness in a particular sector. These might include such measures as:

- Protective import tariffs on final goods;
- Lower tariffs on specific inputs;
- Subsidies to specific sectors: outright grants, land grants, low-interest loans, R&D support, tax holidays, etc.;
- Domestic-content requirements; and
- Joint venture or technology requirements as a condition of foreign direct investment.

Multinational Enterprises and the Sustainable Development Goals

Multinational enterprises (MNEs) can play an important role in the implementation of the Sustainable Development Goals (SDGs). The paper examines what one knows about the MNEs and their participation in implementing the SDGs and their impact, both positive and negative, on people, the planet, prosperity and peace as identified in the United Nations (UN) 2030 Agenda. In view of the relatively limited research on MNEs and SDGs thus far, academic institutions and international business scholars in particular are well-positioned to offer important insights about the role of business in supporting the SDGs, for which suggestions can be made also in relation with other key actors.

The Sustainable Development Goals (SDGs) are a set of 17 goals with 169 accompanying targets that set out quantitative and qualitative objectives across the social, economic and environmental dimensions of sustainable development to be achieved by 2030 as targeted by the UN. However, the SDGs' impact on multinational enterprises (MNEs) is still unclear and they have been relatively underexposed in international business (IB) research.

Peace, MNEs, Environmental Externalities and SDGs

The research study focus on peace can be further clustered into four broad themes based on the specific foci examined: relation between business and conflict, MNEs' responses to conflict, employees' reactions to conflict, and MNEs and terrorism. The key findings in IB research on peace and contains the references to all research studies pertaining to this stream of research. The first cluster, relation between business and conflict, focuses on the very relationship between economic variables and political conflict. Specifically, the frequency of regime changes and armed conflict significantly affect the creditworthiness of especially less developed countries, which are then found to face difficulties in respecting their debt obligations. Conflict harms the ability to attract funds and respect international obligations and thus negatively influences the ability of firms to grow and flourish. This is because the resulting low creditworthiness of the government negatively affects the creditworthiness of firms in that country. This notion is corroborated by the case of Israeli business and the benefits that it would be able to enjoy from peace in the Middle East as discussed by Retzky (1995). More recently, Ramos and Ashby (2013) have examined the notion that conflict generated by organized crime has also a negative effect on foreign direct investment that is not weakened by foreign investors' home-country experience. The authors show that higher levels of organized crime in host environments are positively related with investments from high-crime countries, thus suggesting a heterogeneous firm response to organized crime. In addition, Dai et al. (2013) have recently contributed to this stream of research by examining the specific role of geography in the survival of MNEs' foreign subsidiaries in host environments afflicted by political conflict. Their study shows that greater exposure of the foreign subsidiary to geographically defined threats reduces the likelihood of its survival. Furthermore, the authors show that both concentration and dispersion with other firms affect the survival of firms, with the effect being dependent on not only where the firm is located (i.e. whether the zone is afflicted by a conflict) but also what other firms are nearby (i.e. with home-country peers or sister subsidiaries).

Overall, MNEs can clearly have an important impact on sustainable development, both through their social and environmental externalities and, as they are increasingly portrayed, as a provider of solutions. The MNEs have had a central role in creating the challenges faced and that sustainable transitions are unlikely to take place in a smooth manner. IB studies have dealt with the selected SDGs in a fairly broad way, with the requisite focus on trade and multinational firms. Nonetheless, it is obvious that MNEs will not aim to achieve the SDGs alone but in partnerships hence, the fifth P. While IB has a tendency to examine multinationals, a variety of other actors such as inter-governmental organizations, national governments, cities, the whole range of non-governmental organizations including grassroots organizations and trade unions, the media, small and medium-sized local firms, and sustainable entrepreneurs are central to dealing with the SDGs. Thus, various forms of partnerships and dialogues are necessary, as well as a critical assessment of the possibility of all actors to get their voices heard.

Environment and Trade Linkages

These environmental and economic trends are not isolated; rather, they are fundamentally related. Much environmental damage is due to the increased scale of global economic activity. International trade constitutes a growing portion of global economic activity, making it an increasingly important driver of environmental change. As economic globalization proceeds and the global nature of many environmental problems becomes more evident, there is bound to be friction among the multilateral, national and regional systems of law and policy governing both.

The research study aims to shed light on the physical, legal and institutional linkages between international trade and the environment. Two fundamental truths about this relationship should become clear in the process:

The links between trade and the environment are multiple, complex and important.

Trade liberalization as such is neither good nor bad for the environment. Its effects on the environment depend on the extent to which environment and trade goals can be made complementary and mutually supportive. A positive outcome requires appropriate supporting social, economic and environmental policies at the national and international levels.

At the most basic level, trade and the environment are related because all economic activity is based on the environment. Natural resources such as metals and minerals, soil, forests, and fisheries are basic inputs to production of any goods, and also provide the energy needed to process them. At the end of the cycle, the environment also receives the waste products of economic activity. Trade is also affected by the environment in many ways, from issues related to natural resource quality, safety and availability to the fact that exporters must respond to growing consumer and regulatory demands for greener goods and services.

From another perspective, environment and trade represent two distinct bodies of law and policy. Environmental law is embodied in various multilateral environmental agreements (MEAs) and as regional, national and sub-national regulations. Trade law is embodied in such legal structures as the multilateral trade agreements under the World Trade Organization (WTO), and in regional and bilateral trade agreements. The structure, goals and principles of these two areas are the subject on the international system of environmental management, and on the multilateral system of trade rules.

It is inevitable that these two areas of law and policy will interact. Environmental law, both national and international, and environmental policies such as promotion of renewable energy, environmental taxation and conservation measures help define how countries will structure their economic activities.

Definition and Evolution Towards the Green Economy

The recognition of the cross-cutting and inter-disciplinary nature of environment, trade and development issues is reflected in the traction for a new development paradigm: the “green economy.” The UN Environment Programme (UNEP) defines a ‘green economy’ as one that results in improved human well-being and social equity while significantly reducing environmental risks and ecological scarcities. The concept therefore recognizes the inseparability of the three pillars of sustainable development social, economic and environmental development with the aim of fostering triple-win situations and, where trade-offs are inevitable, of supporting sound decision making with adequate data and information. At the 2012 UN Conference on Sustainable Development, commonly known as the Rio+20 Conference, the ‘green economy approach’ was endorsed as an important tool for sustainable development and poverty eradication. Given the global challenges that countries face, this approach represents an opportunity for these two goals to permeate all three pillars of sustainable development.

The green economy responds to global economic, social and financial crises by reallocating natural, social and financial capital into creating benefits for economic development, social equity and environmental protection. It reflects a paradigm shift toward a holistic approach to valuing nature and the environment, human well-being, and economic development. In recognition of the three pillars of sustainable development, the green economy applies three overarching metrics for progress. First, it measures the degree of economic transformation toward investment and growth in green sectors. Second, it accounts for the foot print of development by factoring in the extraction and depletion of resources. Third, the green economy measures the well-being of society by factoring in a population’s access to basic resources, education, health and social security. UNEP’s Green Economy Report (2011) estimated that allocating up to 2 per cent of global GDP until 2050 to jump-start a green transformation of the global economy would generate as much growth and employment as a brown economy, and would outperform the latter in the medium and long run while also yielding significant environmental and social benefits.

There are a multitude of approaches that countries can take to move toward a green economy. Tools of choice range from fiscal incentives, such as ‘green subsidies’ and ‘carbon taxes’, to regulation of resource-intensive sectors and public investment in research and development for green innovation. Thus, a green economy will look different for each country, depending on the measures that it adopts based on its own national priorities and natural assets. However, these national pathways can be informed and assisted by an international framework of rules, best practices and actors. It is in this capacity that the UN system plans to support countries and regions in the global transition to an inclusive green economy.

The transition to a green economy is inextricably linked with, and crucially affected by, economic activities related to international trade. A green economy

transition can create enhanced trade opportunities, for example, by opening new export markets for environmental goods and services (EGS) and by greening global value chains. For example, the global market in low-carbon and energy-efficient technologies is projected to nearly triple to \$2.2 trillion by 2020. Hence, a green economy is increasingly seen as a gateway to new opportunities for trade, growth and sustainable development. In turn, trade, when accompanied by appropriate regulation, can facilitate the transition to a green economy by fostering the exchange of environmentally friendly goods and services. By effectively seizing the benefits of interstate synergies, international trade can play a key role in the transition to a green economy.

Concluding Observations

The research paper under review studies the various concepts of ‘green economy’ including industrial and green technologies that could be adopted to effect ‘green economy’. The other aspects relating to green economy such as environment, industrial economy, international trade and global sustainable development including global peace for attaining SDGs through adoption of green industrial and environmental policies, resulting in creation of positive environmental externalities, have also been dealt with in this paper. It is observed that the vision of green economy is environmentally & socially tenable and compatible. The ‘green economy’ involves aspects from economy, science and civil society encompassing almost every field of economy including finance, labour, production and consumption. The paper also explored the idea of green industrial policy, finding that it coincides well with the aims of reducing vulnerability to the impacts of response measures. International trade constitutes a growing portion of global economic activity, freely making it an increasingly important driver of environmental change. As economic globalization proceeds and the global nature of many environmental problems becomes more evident, there is bound to be friction among the multilateral, national and regional systems of law and policy governing both. Ultimately, the paper found a number of ways in which trade policy and trade-related policies could further the goal of economic diversification, helping to reduce response measure vulnerability, and in the process helping to implement the goals of the Paris Agreements on climate change. Given the need for all policy areas to consider how they can contribute to meeting those goals, this is a welcome result.

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A Panel Data Analysis on India's Export to African LDCs: A Gravity Model Approach

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Shahid Ahmed²

Abstract

The present paper tries to examine the factors underlying India's export flows to Africa with specific reference to 25 African LDCs as the partner countries for the time periods of ten years from 2008 to 2017. For the empirical analysis, an augmented panel gravity model has been used to capture the impact of some economic indicators and geographical differences on trade. The estimation results show that India's Bilateral export to African LDCs is positively determined by population, trade openness, quality of port infrastructure and Per capita GDP differentials; whereas, it is negatively determined by GDP of the home country, tariff imposed by the partner countries, bilateral exchange rate and the landlockedness of partner countries. Unlike the traditional theories, distance is not found to be significant to determine the volume of trade in this study indicating the 'death of distance' due to the common perception of globalization. In addition, this study hits upon the quality of port infrastructure as a trade facilitation measure suggesting Government spending on infrastructure as the instrument to promote bilateral trade.

Keywords: African LDCs, Bilateral Export, India, Panel Gravity Model

Introduction

Export plays an important role in the economy and most of the emerging economies like India have witnessed an Export-Led Growth strategy over the last decades. The emergence of Export-Led Growth (ELG) strategy came into force in 1970 which fostered static and dynamic gains from trade resulting from comparative advantage and increase in productivity. At present, there are a number of empirical researches that focus on the importance of trade as a driving force in stimulating economic growth where bilateral export plays a dynamic role (Were, 2015). So far as India is concerned, it has opened the economy and adopted a number of

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measures to raise the pace of foreign trade just after the reform period of 1991. But as the developing countries like India are trading more often with the developed and developing countries, the gains from trade have been confined to the emerging nations while leaving the Least Developed Countries (LDCs) overlooked. By realizing the trade potentialities of LDCs particularly the LDCs of Africa, the Indian economy has widened its economic partnership with Africa during the last decades.

India has maintained its historical journey with Africa witnessing a mutual cooperation over a period of six decades. Along with geo-political support and socio-cultural knot, India has been extending its hand to build good Economic relation with the continent particularly in the area of trade and commerce. In this ground, India Africa Forum Summit (IAFS) that came to force in 2008, has stood as one of the important official platforms to promote the partnership between India and the African continent. As per the report titled “India-Africa Facts and Figures 2015” by the Confederation of Indian Industry (CII) in collaboration with the United Nations Economic Commission for Africa (ECA), the annual trade between India and Africa stands 75 billion USD. Leaving behind some of the major economies like the United States of America, India has emerged as the third largest trading partner of Africa just after the European Union and China in 2014. Mohanty & Chaturvedi (2008) and Nayyar & Agrawal (2014) found that the traditional relationship between India and Africa was transformed into a dynamic trade and investment partnership. India’s engagement with Africa in terms of trade is one of the ways through which south-south tie can be enhanced. Nowak (2016) in this context, examined the trend and scale of merchandise trade of China and India with 54 African countries and found that India’s bilateral trade with Africa has been increased by 13% over the years 2000 to 2014. Further, in a study of India’s bilateral trade with African LDCs, Thakur and Ahmed (2019) explored that trade between India and African LDCs is intensive and stable where India has been enjoying bilateral comparative advantage extensively.

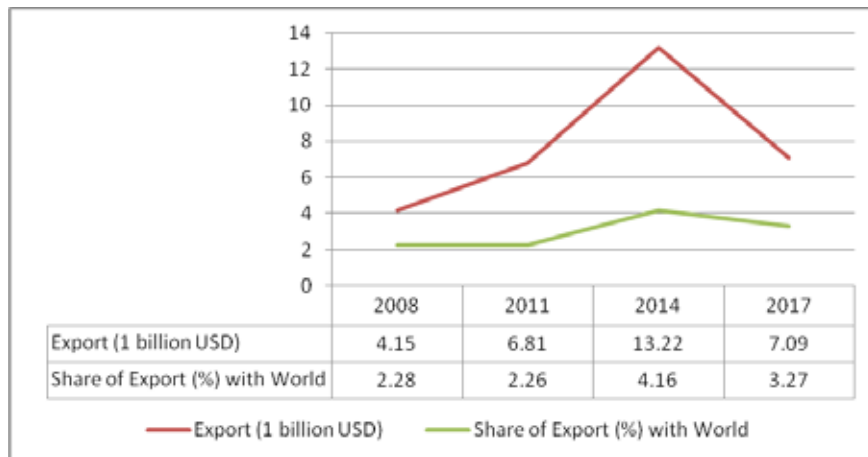
Brief Profile of India’s Trade with African LDCs

India has been one of the top trading partners of Africa since 2000, and in 2015 it became the second largest trading partner after China as per the report by African Economic Outlook, 2017. The Figure-1 depicts India’s Trade with African LDCs for the period 2008-2017. In the year 2014, India’s export to African LDCs stood at 13.22 billion USD showing an increase rate of 94.1 percent over the year 2011 sharing 4.16 percent of the world’s export. Similarly Figure-2 shows that there has been a sharp increase in the volume of India’s import from African LDCs up to 2014, thereafter it has decreased to an extent. But as the trade share with world is more or less constant for the years, this decline in trade volume is sought due to the slowdown in world’s trade profile in recent years.

The bond between India and Africa could be persuasive because both the partners accomplish the principles of South-South cooperation, people-to-people linkages and common development challenges. Further, in this context, it is important to know how to push up the bilateral trade flows between the regions through some economic and non-economic measures. Therefore, the present paper aims to find

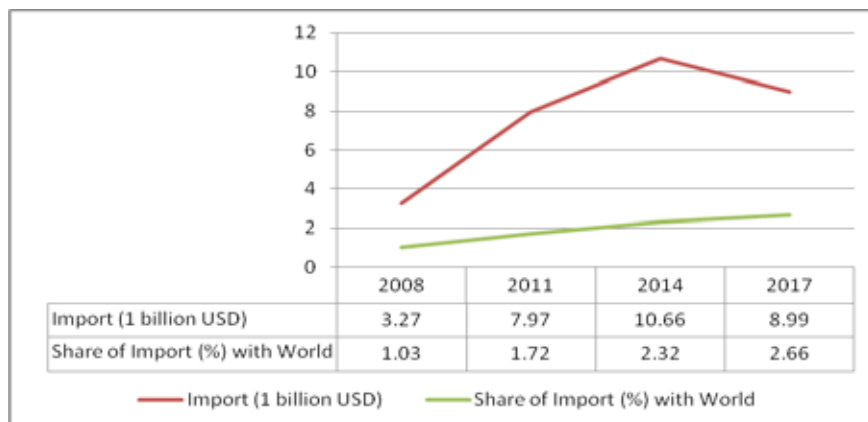
out the determinants of India's bilateral export flows with 25 LDCs of Africa with the help of an Augmented Gravity Model.

Figure-1: India's Export to African LDCs



Source: Author's calculation from UN Comtrade data

Figure-2: India's Import from African LDCs



Source: Author's calculation from UN Comtrade data

Review of Literature

Empirical Literatures on Gravity model have provided a clear picture of the important factors that influence the trade in partner countries. For this analysis, the dependent variables used are Bilateral Export or Import, and total trade of the country. The basic independent variables employed are GDP or GNP and Population to measure the size of the economy with Distance as a measure of cost of trade. Moreover, the Gravity model is augmented by taking some important factors like Tariff Rate, Exchange Rate, Per capita income differentials and some dummies like common language, common colony and common border whether

the country is landlocked or not. Rahman (2009) used an augmented gravity model to analyze Australia's trade potentials. The results reveal that Australia's bilateral trade is affected positively by economic size, per capita GDP, openness and common language, and negatively by the distance between the trading partners. Chakrabarty & Chakrabarty (2013) used an augmented panel gravity model to study the Indo-ASEAN trade fluctuations and swings where they took Per capita GDP and population to measure the size of economy. Kumar & Ahmed (2015) examined the factors influencing trade among Asian countries using a gravity model and found that GDP, distance, population and Free Trade Agreement determine trade among these regions. Likewise, Alam & Ahmed (2018) analyzed the India-GCC bilateral trade relation with the help of an augmented gravity model. The result shows that size of the economy, trade openness and some important qualitative variables like common colony and Diaspora play a major role in influencing the level of export. In addition, studies by (Karayi, 2007), (Huot & Kakinaka, 2007), (Maria, 2014), (Sultan & Munir, 2015), (Mussa & Ramakrishna, 2018), (Rasoulnezhad & Jabalameli, 2018), (Karkanis, 2018) are based on examining the factors influencing trade by using gravity models augmented with some additional variables. At present, there are many literatures available in India's bilateral trade determinants with developed and developing countries. But studies based on Indo-African trade and especially with reference to African LDCs are hardly found. Hence, this study aims to examine the determinants of India's bilateral export with African LDCs with the help of an augmented panel gravity model. For the analysis, variables like GDP at Constant Price, Population, Distance, Per Capita GDP differential, Tariff, Bilateral Exchange Rate, Import Openness, Quality of port infrastructure and a dummy variable namely landlockedness have been employed.

Data Sources

With a view to accomplishing the desired objective, this study relies on the secondary sources of data. Accordingly, a Panel data set has been employed for India as the reporter country and 25 LDCs of Africa as the partner countries for a time period of 10 years from 2008 to 2017. The Gross Export and Gross Import are collected from the UN Comtrade statistics based on the HS selection criteria of 2002. Similarly, Tariff data are taken from Trade Analysis And Information System (TRAINS) and WTO database. In case of some missing trade data, mirror image method has been used to replace reporter country's export as partner country's import and vice versa. Variables like Real GDP, Population, Trade Openness, Quality of Port Infrastructure and Bilateral Exchange Rate are taken from WDI dataset and data on distance between regions are taken from CEPII database and finally list of landlocked countries is collected from worldatlas.com.

Methodology

For the empirical analysis, this study uses an Augmented Panel Gravity Model for India's Export flows towards 25 partner countries of African LDCs. The list of specific countries has been given in Appendix-1. The gravity model in Economics was initially used by (Linder, 1961), (Tinbergen, 1962) and (Linneman, 1966) following Newton's law of Gravity (Newton, 1687). The traditional Gravity Model

in international trade is used to predict the bilateral trade flows between countries depending upon their economic size and distance between the two regions.

The gravity equation derived can be,

$$\text{Trade}_{ij} = \alpha * \text{GDP}_i * \text{GDP}_j / \text{Distance}_{ij} \quad \dots\dots(1)$$

It states that Bilateral trade between two countries is positively determined by the economy's size like GDP and population and inversely determined by the geographical distance where α is the constant. But this model can be further augmented by taking some other factors that are crucial to determine trade and the equation can be transformed to linear logarithmic form for the purpose of econometric analysis. By referring to some studies by (Rahman, 2008), (Maria, 2014), (Kumar & Ahmed, 2015), (Alam & Ahmed, 2017), (Karkanis, 2018) and (Rasoulnezhad & Jabalameli, 2018), this study employs the following form of gravity model:

$$\ln(\text{EX}_{ijt}) = B_0 + B_1 \ln \text{GDP}_{it} + B_2 \ln \text{GDP}_{jt} + B_3 \ln \text{POP}_{it} + B_4 \ln \text{POP}_{jt} + B_5 \ln \text{DIST}_{ijt} + e_{ijt} \quad \dots\dots(2)$$

The Augmented Model

$$\ln(\text{EX}_{ijt}) = B_0 + B_1 \ln \text{GDP}_{it} + B_2 \ln \text{GDP}_{jt} + B_3 \ln \text{POP}_{it} + B_4 \ln \text{POP}_{jt} + B_5 \ln \text{DIST}_{ijt} + B_6 \ln \text{TAR}_{jit} + B_7 \ln \text{INFR}_{it} + B_8 \ln \text{BExR}_{ijt} + B_9 \ln \text{IO}_{jt} + B_{10} \ln \text{GDP}_{pcD}_{ij} + B_{11} \text{LL}_j + e_{ijt} \quad \dots\dots(3)$$

where, i stands for exporting country i.e- India, j represents the partner countries i.e African LDCs and t is the time period. EX_{ijt} denotes real exports flow from country i to j at time period t where gross export has been taken as the indicator. GDP_{it} and GDP_{jt} represent the real Gross Domestic Product of country i and j at time t . POP_{it} and POP_{jt} are the Population of country i and country j . DIST_{ij} is the geographical distance between the two countries. TAR_{jit} represents the applied effective rate of tariff imposed by the country j on the import of commodities from country i to j . INFR_{it} is the quality of port infrastructure of country i measured in a 1-7 scale where, scores range from 1 (port infrastructure considered extremely underdeveloped) to 7 (port infrastructure considered efficient by international standards). BExR_{ijt} represents country i 's bilateral real exchange rate with country j , where PPP price conversion factor to market exchange rate has been taken as a measure of real exchange rate. IO_{jt} is the import openness of country j that measures imports of goods and services as a percentage of GDP at t . GDP_{pcD}_{ij} stands for the GDP per capita differentials between i and j as a measure of relative factor endowment. LL_j is the dummy variable taken for the j countries being landlocked which is unity if the country is landlocked and zero otherwise. e_{ijt} is the error term, B_0 is the constant.

After selecting all the indicators, the next step before running the panel gravity model is to decide whether to choose Random Effect Model or Fixed Effect Model. Fixed effect model has the disadvantage of not being able to evaluate time invariant effects (Ahmed & Ismail, 2015). Therefore, if the purpose is to estimate the impact of both time-variant and invariant variables, then random effect model is preferable to the fixed effect model (Park, 2011). In this study, as there are two time-invariant variables like Distance and Landlocked countries, Random Effect Model has been chosen to proceed with the analysis.

Expected Sign of the Coefficient

Gross Domestic Product (GDP): GDP of a country generally represents the size

of an economy in terms of income. So the more is the GDP of a country, the higher is the import capacity and thereby coefficient of GDP_j is expected to be positive. But country having higher GDP may or may not have higher volume of export because the increased income may give rise to higher price level in the domestic market that is supposed to restrict its export flow as it would be difficult for the import partners to import at a higher price.

Population: The expected sign of population coefficient B_3 and B_4 are either positive or negative. But in general larger countries are expected to trade more. As per some studies, population has a tendency to increase trade and the level of specialization by producing gains from specialization.

Distance: In a traditional gravity model, Distance coefficient B_5 is expected to be negative for bilateral trade. It is because; higher the distance between the two regions, more will be the cost of trade and transaction involved that would decrease the amount of trade volume.

Tariff: Tariff is imposed by the partner countries to reduce the import volume. So, being a measure of trade restrictiveness, its coefficient B_6 is expected to be negative on country i 's export.

Quality of Port Infrastructure: Quality of Infrastructure is one of the important trade facilitation measures that affect bilateral trade flows significantly. As the exports and imports between India and Africa take place through ocean transport, the quality of port infrastructure has been taken as a determinant to trade. As per the hypothesis, higher the quality of port infrastructure in the exporting country, more will be the export flows and thereby the expected coefficient B_7 is positive.

Bilateral Exchange Rate: This analysis takes the price level ratio of PPP price conversion factor (GDP) to market exchange rate as a measure of real exchange rate. Purchasing power parity conversion factor is the number of units of a country's currency required to buy the same amount of goods and services in the domestic market as a U.S. dollar would buy in the United States. Further, this study chooses bilateral exchange rate, where the ratio of country i 's exchange rate to country j 's exchange rate is considered as a determinant of export. Unlike the nominal exchange rate, this exchange rate is expressed in terms of an index, where an appreciation is recorded as an increase in exchange rate index. As per the hypothesis, an increase in bilateral exchange rate of country i over j (appreciation) leads to a decline in country i 's export as the country j would find it difficult to import at a higher price. Thus, the expected sign of B_8 is negative.

Import Openness: When the country opens its economy, the volume of trade increases. Therefore, the expected coefficient B_9 of Import to GDP ratio in country j is expected to be positive on country i 's export flow.

Per Capita GDP Differential: The Per Capita GDP differential is calculated as the absolute value of the differences between natural logarithm of per capita GDPs between country i and country j . This is taken as an indicator in order to see whether this study satisfies the Heckscher-Ohlin theorem. According to the H-O theory, the sign of the coefficient of GDP_{PCD} i.e. B_{10} would be positive. On the other hand, based on the Linder hypothesis, the sign would be negative.

Landlocked Countries: The landlocked countries are less feasible to access oceanic transaction and they have to shift the commodities through neighboring

countries having access to port which incurs higher cost. Therefore, the countries which are landlocked are expected to have negative impact on country i 's export and thus the B_{11} is negative.

Empirical Results

The estimated results of India's determinant of Bilateral export has been shown in Table-1. It is found that all the coefficients are found to be significant except distance between regions. In addition, the expected sign of coefficients is mostly as per the hypothesis except for one variable i.e GDP of country i .

Table-1: Estimates of Augmented Gravity Model for India's Bilateral Exports

Variable	The Model	
In GDP _{it}	-12.346***	(0.000)
In GDP _{jt}	0.353*	(0.089)
In POP _{it}	69.193***	(0.000)
In POP _{jt}	0.624*	(0.053)
In DIST _{it}	-0.837	(0.445)
In TAR _{jt}	-0.335*	(0.081)
In INFR _{it}	0.715***	(0.000)
In BExR _{ijt}	-0.578**	(0.011)
In IO _{jt}	0.549***	(0.000)
In GDP _{pc-ijt}	0.441***	(0.000)
In LL _j	-1.447***	(0.000)
Constant	-1107.199***	(0.000)
R sq within	0.7501	
Between	0.7879	
Overall	0.7747	
Prob>Chi2	0.0000	
Obs	4632	

Author's Calculation

Notes: Here the dependent variable is logarithm of real bilateral export. p -values in parentheses.

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

Unlike the other studies, the estimated coefficient of GDP _{i} is found to be negative indicating a decline in India's bilateral export. The coefficient is highly significant at one percent level. It shows, an increase in GDP of country i leads to a decline in export to country j by -12.346 percent. It is supposedly because of the fact that, the rise in GDP of country i due to its increase in purchasing power raises the general price level. This rise in price level in country i , further declines the import demand of country j and thereby causes a decrease in i 's bilateral export. On the contrary, the coefficient of GDP _{j} is positive and significant at 10 percent level.

The population coefficient is found to be positively significant and the sign is as per the expectation. The coefficient for country i 's population is found to be extremely significant at one percent level where a percent increase of population gives rise to increase in export by 69.193 percent; whereas, a percent increase of country j 's population, increases export by 0.624 percent.

Importantly, unlike the traditional theory, the distance variable is not found to be significant in this study. This result may suggest that with the worldwide developments in the shipment sector that reduced both the cost and the needed time of shipping, the distance no longer remains a barrier to trade. (Alawin, 2009).

The coefficient of import openness is positively significant at one percent level and the coefficient level is 0.549. It means a percent increase in country *j*'s import to GDP ratio increases bilateral export of country *i* by 0.549 percent.

Likewise, coefficient of Quality of Port infrastructure is found to be positively significant at one percent level and exactly as per the hypothesis. Here, a percentage increase in quality of port infrastructure facilitates export by 0.715 percent. It is important to note that, quality of Infrastructure is one of the crucial trade facilitation measures and improvement in quality of port infrastructure through Government expenditures can accelerate the pace of bilateral trade to a great extent.

The coefficient of Per Capita GDP differentials is again positive at one percent level where a percentage increase in GDP_{pc} leads to 0.441 percent increase in export. It satisfies the H-O theory and states that difference in factor endowment between countries invites bilateral trade. In other words, more dissimilar are the countries in terms of their relative factor endowment, more will be the intensity to have trade.

The sign of Tariff coefficient is found to be as expected and negatively significant at 10 percent level. Here, a percentage increase in tariff rate imposed by country *j* decreases the volume of country *i*'s export by -0.335 percent.

The coefficient of bilateral exchange rate is found to be negative and significant at five percent level. It shows that a percentage increase in country *i*'s bilateral exchange rate drops its export by -0.578 percent.

The coefficient of landlocked countries taken through dummy variables is found to be negative and significant at one percent level. The coefficient of landlocked countries is -1.447. This implies that by holding constant for other factors, the lack of ocean ports reduces trade by about -1.447 percent.

Summary and Conclusion

This study examines the determination of India's bilateral export with African LDCs with the help of an Augmented Panel Gravity Model for a time period of ten years from 2008 to 2017. The estimated results show that factors like population size of both the countries, import openness of the partner countries, the Per Capita GDP differentials and quality of port infrastructure determine India's bilateral export flows positively. Whereas, factors like India's GDP, Tariff rate imposed by African LDCs on its import of products from India, bilateral exchange rate and landlockedness of African LDCs determine India's bilateral export negatively. In addition, this study finds that unlike the traditional gravity model, distance is not found to be significant to determine the level of bilateral trade supporting the modern views of death of distance due to Globalization. Lastly, this study finds that, along with economic factors, the quality of port infrastructure as a trade facilitation measure acts as a crucial factor to drive the volume of trade. Therefore,

this analysis suggests that in order to facilitate India's bilateral export volume, the government should take care of the quality of port infrastructure through infrastructural finance.

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Appendix

List of 25 African LDCs

Angola	Burundi	Benin	Burkina Faso	Central African Republic
Chad	Ethiopia	Guinea	Gambia	Equatorial Guinea
Liberia	Lesotho	Madagascar	Mali	Mozambique
Mauritania	Malawi	Niger	Rwanda	Senegal
Sierra Leone	Togo	Tanzania	Ugand	Zambia



Impact of FDI on Hotel and Tourism Sector in the Indian Economy

M Tamizharasan*

Abstract

Foreign Direct Investment is necessary to make all tourism-related activities and contribute to sustainable development in the Indian economy. India is interested in increasing the FDI Inflows to earn more foreign exchange earnings. This study investigates the impact of Foreign Direct Investment on the Hotel and Tourism sector in the Indian economy. The main objectives of the study are to analyze growth and trend of Domestic Tourist visits, Foreign Tourist Visits, Foreign Exchange Earnings and the relationship between Domestic Tourist visits, Foreign Tourist Visits, Foreign Exchange Earnings, Foreign Direct Investment and GDP during the period from 1991 to 2016. Growth, share and trend of FDI in the hotel and tourism sector of total FDI inflows in India during the period from 2001 to 2016. The data are collected from India Tourism Statistics 2017. This study analyses the index numbers, annual growth rate, averages, percentages, compound growth rate, simple linear regression, semi-log linear regression and correlation has been used.

Keywords: DTV, FTV, FEE, FDI in Hotel & Tourism Sector and Economic Growth

Introduction

Tourism is a major source of income for many countries and its temporary movement of people to applicable domestic and foreign tourist visits. The Hotel and Tourism sector has been an important instrument for economic growth and it's an important source on foreign exchange earnings in India. Foreign Direct Investment is necessary to make all tourism-related activities and contribute to sustainable development in the Indian economy. India is interested in increasing the FDI Inflows to earn more foreign exchange earnings. This study investigates the impact of Foreign Direct Investment on the Hotel and Tourism sector in the Indian economy. The objective of the study is to analyze growth and trend of Domestic Tourist visits, Foreign Tourist Visits, Foreign Exchange Earnings and Foreign Direct Investment and the relationship between Domestic Tourist visits, Foreign Tourist Visits, Foreign Exchange Earnings, Foreign Direct Investment and GDP during the period from 1991 to 2016. Foreign Direct Investment and the share of FDI in the hotel and tourism sector of total FDI inflows in India during the period from 2001 to 2016. The data are collected from India Tourism Statistics 2017. This study analyses the index numbers, annual growth rate, averages,

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percentages, compound growth rate, simple linear regression, semi-log linear regression and correlation has been used.

Foreign Direct Investment in Tourism Sector in India

100 percent FDI is allowed under the automatic route in tourism and hospitality, subject to applicable regulations and laws. 100 per cent FDI allowed in tourism construction projects, including the development of hotels, resorts, recreational facilities and regional level infrastructure. The government launched e-tourist visa scheme on November 2014 for 43 national countries and it's renamed to e-Visa scheme with three sub-categories that is e-Tourist Visa, e-Business Visa and e-Medical Visa. The e-tourist visa scheme has attracted a large number of tourist from countries like the U.S, Germany, and U.K among others. Medical Visa issued highlighting the continued growth in 2016. The list of permissible activities under e-Tourist visa was expanded to include "Attending a Short Term Yoga Program" and "Short Duration Medical Treatment under Indian Systems of Medicine." The Indian tourism sector reached the 40th place in 2010 from the 42nd position in the previous years 2008 and 2009 and its one of the topmost tourism sector in the world and highest growth in the past 10 years.

Review of the Literature

In the field impact of FDI on the hotel and tourism sector in the Indian economy, only limited studies are available. Some works available in this category are: Akhilesh Sharma, Amar Johri and Ajay Chauhan (2012), Boora, S.S. and Sandeep Dhankar (2017), Dayananda, K.C. and Leelavathi, D.S. (2016), Lateef Ahmad Mir (2014), Madhusmita Mishra and Prabina Kumar Padhi, Martin Falk, Nitya Sharma and Anil Kalotra (2016), Parul Deshwal (2015), Pouria Jahanbakhshian (2014), Reeti Gupta (2015), Ramphul Ohlan (2017), Ratho, B.S. (2017) and Srinivas Subba Rao, P. (2011) and so on. Specific study on the impact of FDI on the hotel and tourism sector in India is not available much in the literature.

Methodology

The present study is based on secondary data required are: Domestic Tourist Visits, Foreign Tourist Visits, Foreign Exchange Earnings, FDI in hotel and tourism sector, total FDI and Gross Domestic Product in Indian economy and variables are measured in Millions of US Dollars. The study period from 1991 to 2016 and this period divided into two sub-periods namely, 1991 to 2000 and 2001 to 2016. The data are collected from India Tourism Statistics, SIA various issues, Department of Industrial Policy and Promotion and Handbook of Statistics on the Indian Economy 2016. This study analyses the data, index numbers, annual growth rate, averages, percentages, simple linear regression, semi-log linear regression model and correlation have been used.

Empirical Results

Growth of Domestic, Foreign Tourist Visits and Foreign Exchange Earnings

Table-1 explains that growth of Domestic, Foreign Tourist Visits and Foreign Exchange Earnings are measured in Millions of US Dollars during the period 1991

to 2016 and the periods divided into two sub-periods 1991 to 2000 and 2001 to 2016.

Domestic tourist visits were 66.67 Millions of US Dollars in 1991 and it increased year by year reached 220.11 Millions of US Dollar in 2000 in the first decade. The highest value of domestic tourist visits was 220.11 Millions of US Dollar in 2000. The highest annual growth rate of 29.89 per cent in 1993 and the average annual growth rate was 25.57 per cent in during this period. In the second decade, Domestic tourist visits were 236.47 Millions of US Dollars in 2001 and it has reached 1613.55 Millions of US Dollar in 2016. The highest value of domestic tourist visits was 1613.55 Millions of US Dollar in 2016. The highest annual growth rate of 20.88 per cent in 2012 and the average annual growth rate was 38.82 per cent in during this period.

Foreign tourist visits were 3.15 Millions of US Dollars in 1991 and it increased year by year reached 5.89 Millions of US Dollar in 2000 in the first decade. The highest value of foreign tourist visits was 5.89 Millions of US Dollar in 2000. The highest annual growth rate of 15.14 per cent in 1995 and the average annual growth rate was 9.66 per cent in during this period. In the second decade, foreign tourist visits were 5.44 Millions of US Dollars in 2001 and it has reached 24.71 Millions of US Dollar in 2016. The highest value of foreign tourist visits was 24.71 Millions of US Dollar in 2016. The highest annual growth rate of 30.04 per cent in 2003 and the average annual growth rate was 23.62 per cent in during this period.

Foreign exchange earning was 1861 Millions of US Dollars in 1991 and it increased year by year reached 3460 Millions of US Dollar in 2000 in the first decade. The highest value of foreign exchange earnings was 3460 Millions of US Dollar in 2000. The highest annual growth rate of 14.99 per cent in 2000 and the average annual growth rate was 9.55 per cent in during this period. In the second decade, foreign exchange earnings were 3198 Millions of US Dollars in 2001 and it has reached 22923 Millions of US Dollar in 2016. The highest value of foreign exchange earnings was 22023 Millions of US Dollar in 2016. The highest annual growth rate of 43.83 per cent in 2003 and the average annual growth rate was 41.12 per cent in during this period.

The results indicate that domestic, foreign tourist visits and foreign exchange earnings have been increased year by year during the period from 1991 to 2016. Domestic tourist visits increased 4.13 times, foreign tourist visits increased 12.75 times and foreign exchange earnings increased 8.12 times in the study period. Foreign tourist visits are highest increased and it reflects foreign exchange earnings also increased in the Indian economy.

Trend Analysis of Domestic, Foreign Tourist Visits and Foreign Exchange Earnings

The results of trend analysis for the domestic, foreign tourist visits and foreign exchange earnings in the Indian economy are given in Table-2. The domestic tourist visits have increased annually by Rs.15.510 Millions of US Dollar from 1991 to 2000 and Rs.89.434 Millions of US Dollars from 2001 to 2016. This value is statistically significant at one per cent level. The value of adjusted R^2 is 0.97 and 0.94 and it implies that domestic tourist visits have registered a linear trend in this period. The semi-log linear regression model was statistically significant at one

per cent level and it has a linear trend in this period. The domestic tourist visits have increased at the compound growth rate of 12.75 and 13.77 per cent per year.

The foreign tourist visits have increased annually by Rs.0.355 Millions of US Dollar from 1991 to 2000 and Rs.1.342 Millions of US Dollars from 2001 to 2016. This value is statistically significant at one per cent level. The value of adjusted R^2 is 0.95 and 0.98 and it implies that foreign tourist visits have registered a linear trend in this period. The semi-log linear regression model was statistically significant at one per cent level and it has a linear trend in this period. The foreign tourist visits have increased at the compound growth rate of 8.44 and 10.96 per cent per year.

The foreign exchange earnings have increased annually by Rs.162.376 Millions of US Dollar from 1991 to 2000 and Rs.1374.251 Millions of US Dollars from 2001 to 2016. This value is statistically significant at one per cent level. The value of adjusted R^2 is 0.95 and 0.98 and it implies that foreign exchange earnings have registered a linear trend in this period. The semi-log linear regression model was statistically significant at one per cent level and it has a linear trend in this period. The foreign exchange earnings have increased at the compound growth rate of 6.50 and 14.34 per cent per year.

The results explain that domestic, foreign tourist visits and foreign exchange earnings have a linear trend and it has statistically significant and the compound growth rate is increased in the study period.

Growth and Share of FDI in Hotel and Tourism Sector to Total FDI

Table-3 explains that growth and share of foreign direct investment in the hotel and tourism sector to total FDI inflows are measured in the amount in Millions during the period 2001 to 2016. Foreign direct investment in the hotel and tourism sector was 471.54 Amount in Millions in 1991 and it increased year by year reached 61132.33 Amount in Millions in 2016. The highest value of foreign direct investment in the hotel and tourism sector was 73028.78 Amount in Millions in 2015. The highest annual growth rate of 374 per cent in 2002 and the average annual growth rate was 722.90 per cent in during this period.

The share of foreign direct investment in the hotel and tourism sector to total FDI inflows was 11.70 per cent in 2001 and it increased to 110.03 percent in 2016. The highest share is 388.71 per cent in 2012 and the lowest share of 11.70 per cent is recorded in 2001. The average share for this period is 93.38 per cent in FDI inflows in the hotel and tourism sector to total FDI inflows in the Indian economy. The share of FDI in the hotel and tourism sector increasing year by year and it increased 10.63 times in the study periods. This means that the shares of FDI inflows in hotel and tourism sectors are the highest contributor to total FDI inflows in the Indian economy.

Trend Analysis of Foreign Direct Investment in Hotel and Tourism Sector

The results of trend analysis for the foreign direct investment in the hotel and tourism sector in the Indian economy are given in Table-4. The FDI in the hotel and tourism sector has increased annually by Rs.5520.618 amount in Millions from 2001 to 2016. This value is statistically significant at one per cent level. The value of adjusted R^2 is 0.35 and it implies that FDI in the hotel and tourism sector have registered a linear trend in this period. The semi-log linear regression model

was statistically significant at one per cent level and it has a linear trend in this period. The FDI in the hotel and tourism sector has increased at the compound growth rate of 38.54 per cent per year. The results explain that FDI has the highest contribution to the hotel and tourism sector in the Indian economy.

Relationship between Domestic, Foreign Tourist Visits, Foreign Exchange Earnings, GDP and FDI in Hotel and Tourism Sector

Table-5 shows that relationship between Domestic, Foreign Tourist Visits, Foreign Exchange Earnings, GDP and FDI in Hotel and Tourism Sector in the Indian economy. The relationship between Domestic, Foreign Tourist Visits, Foreign Exchange Earnings and GDP has been studied through correlation analysis for the period 1991 to 2000 and FDI in hotel and tourism sector has been studied for the period 2001 to 2016. FDI in hotel and tourism sector data is not available during the period from 1991 to 2000.

During the first period, the correlation coefficient between domestic, foreign tourist visits, foreign exchange and GDP is significant during the period 1991 to 2000. Even though the actual values of the correlation coefficient for these domestic, foreign tourist visits, foreign exchange earnings and GDP at one per cent. They conclude that high relationship between domestic, foreign tourist visits, foreign exchange earnings and GDP in this case.

During the second period, the correlation coefficient between domestic, foreign tourist visits, foreign exchange, GDP and FDI is significant during the period 1991 to 2000. Even though the actual values of the correlation coefficient for these domestic, foreign tourist visits, foreign exchange earnings, GDP at one per cent and FDI at five per cent level. They conclude that high relationship between domestic, foreign tourist visits, foreign exchange earnings, GDP and FDI in this case.

Conclusion

This study investigated the impact of Foreign Direct Investment on Hotel and Tourism sector in terms of Millions of US Dollar during the period from 1991 to 2016. This study shows that the overall growth of the domestic, foreign tourist visits, foreign exchange earnings and FDI in the hotel and tourism sector is increasing. The results find that domestic, foreign tourist visits and foreign exchange earnings have been increased year by year during the period from 1991 to 2016. Domestic tourist visits increased 4.13 times, foreign tourist visits increased 12.75 times and foreign exchange earnings increased 8.12 times in the study period. Foreign tourist visits are highest increased and it reflects foreign exchange earnings also increased in the Indian economy. The trend analysis explains that the FDI has a linear trend but it is statistically significant at one per cent level. The positive linkage between domestic, foreign tourist visits, foreign exchange earnings, GDP and FDI in the hotel and tourism sector in the Indian economy. The share of FDI in the hotel and tourism sector increasing year by year and it increased 10.63 times in the study periods. This means that the share of FDI inflows in hotel and tourism sectors are the highest contributor to total FDI inflows in the Indian economy. The FDI has the highest contribution to the hotel and tourism sector in the Indian economy. The government should provide safety and security, transport capacity, health

and other development infrastructure in the Indian economy. FDI in the hotel and tourism sector will help to improve the infrastructure development in the tourism sector in the Indian economy.

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Table-1: Growth of Hotel & Tourism Sector in India

(Millions of US Dollar)

Year	Domestic Tourist Visits	Annual Growth Rate	Foreign Tourist Visits	Annual Growth Rate	Foreign Exchange Earnings	Annual Growth Rate
1991	66.67	-	3.15	-	1861	-
1992	81.46	22.18	3.1	-1.59	2126	14.24
1993	105.81	29.89	3.54	14.19	2124	-0.09
1994	127.12	20.14	4.03	13.84	2272	6.97
1995	136.64	7.49	4.64	15.14	2583	13.69
1996	140.12	2.55	5.03	8.41	2832	9.64
1997	159.88	14.10	5.5	9.34	2889	2.01
1998	168.2	5.20	5.54	0.73	2948	2.04
1999	190.67	13.36	5.83	5.23	3009	2.07
2000	220.11	15.44	5.89	1.03	3460	14.99
Average	139.67	25.57	4.63	9.66	2610.40	9.55
2001	236.47	7.43	5.44	-7.64	3198	-7.57
2002	269.6	14.01	5.16	-5.15	3103	-2.97
2003	309.04	14.63	6.71	30.04	4463	43.83
2004	366.27	18.52	8.36	24.59	6170	38.25
2005	392.04	7.04	9.95	19.02	7493	21.44
2006	462.44	17.96	11.75	18.09	8634	15.23
2007	526.7	13.90	13.27	12.94	10729	24.26
2008	563.03	6.90	14.38	8.36	11832	10.28
2009	668.8	18.79	14.37	-0.07	11136	-5.88
2010	747.7	11.80	17.91	24.63	14193	27.45
2011	864.53	15.63	19.5	8.88	16564	16.71
2012	1045.05	20.88	18.26	-6.36	17737	7.08
2013	1142.53	9.33	19.95	9.26	18445	3.99
2014	1282.8	12.28	22.33	11.93	20236	9.71
2015	1431.97	11.63	23.33	4.48	21071	4.13
2016	1613.55	12.68	24.71	5.92	22923	8.79
Average	745.16	38.82	14.71	23.62	12370.44	41.12

Source: India Tourism Statistics 2017, Ministry of Tourism, Government of India

Table-2: Trend Analysis for Tourism Sector in India

Year	Variables	Model	a	b	SE B	t	R ²	Adjusted R ²	CGR
1991 to 2000	Domestic Tourist Visits	Simple linear	54.363	15.510	0.852	18.211	0.976	0.974	-
		Semi-log linear	4.223	0.120	0.010	11.890	0.946	0.940	12.75
	Foreign Tourist Visits	Simple linear	2.673	0.355	0.026	13.496	0.958	0.953	-
		Semi-log linear	1.060	0.081	0.007	10.982	0.938	0.930	8.44
2001 to 2016	Foreign Exchange Earnings	Simple linear	1717.333	162.376	11.954	13.584	0.958	0.953	-
		Semi-log linear	7.501	0.063	0.005	13.273	0.957	0.951	6.50
	Domestic Tourist Visits	Simple linear	-178882.677	89.434	5.933	15.075	0.942	0.938	-
		Semi-log linear	-252.369	0.129	0.001	90.644	0.998	0.998	13.77
Foreign Tourist Visits	Simple linear	-2679.692	1.342	0.043	30.995	0.986	0.985	-	
	Semi-log linear	-207.284	0.104	0.007	14.548	0.938	0.934	10.96	
Foreign Exchange Earnings	Simple linear	-2747813.641	1374.251	37.431	36.714	0.990	0.989	-	
	Semi-log linear	-259.529	0.134	0.009	14.414	0.937	0.932	14.34	

Table-3: Foreign Direct Investment in Hotel & Tourism Sector in India

(Amount in Millions)

Year	FDI in Hotel & Tourism	Annual Growth Rate	FDI	Share of FDI
2001	471.54	-	4029	11.70
2002	2237.89	374.59	6130	36.51
2003	2594.21	15.92	5035	51.52
2004	1527.23	-41.13	4322	35.34
2005	2799.59	83.31	6051	46.27
2006	8174.86	192.00	8961	91.23
2007	10581.23	29.44	22826	46.36
2008	22729.27	114.81	34834	65.25
2009	28715.75	26.34	41873	68.58
2010	22790.82	-20.63	37745	60.38
2011	41933.66	83.99	34847	120.34
2012	180966.16	331.55	46556	388.71
2013	22320.33	-87.67	34298	65.08
2014	48652.88	117.98	36046	134.97
2015	73028.78	50.10	45148	161.75
2016	61132.33	-16.29	55558	110.03
Average	31245.91	722.90	26516.19	93.38

Source: SIA various issues, Department of Industrial Policy and Promotion

Table-4: Trend Analysis for FDI in Hotel & Tourism Sector in India

Year	Variables	Model	a	b	SE B	t	R ²	Adjusted R ²	CGR
2000		Simple linear	-1.105E7	5520.618	1783.766	3.095	0.390	0.349	-
to	FDI	Semi-log linear	-644.690	0.326	0.034	9.479	0.857	0.847	38.54
2016									

Table-5: Relationship between Domestic, Foreign, FEE, GDP and FDI in Hotel & Tourism Sector in India

Periods	Variables	Domestic	Foreign	FEE	GDP	FDI in H & T
1991 to 2000	Domestic	I	0.953**	0.967**	0.975**	-
	Foreign	0.953**	I	0.961**	0.957**	-
	FEE	0.967**	0.961**	I	0.967**	-
	GDP	0.975**	0.957**	0.967**	I	-
2001 to 2016	Domestic	I	0.957**	0.973**	0.957**	0.611*
	Foreign	0.957**	I	0.994**	0.971**	0.575*
	FEE	0.973**	0.994**	I	0.981**	0.630**
	GDP	0.957**	0.971**	0.981**	I	0.733**
	FDI	0.611*	0.575*	0.630**	0.733*	I

** Statistically Significant at one per cent level

* Statistical Significant at five per cent level

Book Review

**Good Economics
for Hard Times***Authors***Abhijit Banerjee**
Eshter Dufo*Reviewer***Saatthvik Pulipaka**
Student
Institute of Public Enterprise,
Hyderabad

It is a book which is to be reviewed as it is written by this year's Nobel Prize winners in Economics, they are Mr. Abhijit Banerjee and Mrs. Esther Dufo. "Good Economics for Hard Times" is the name of book. The book consists of 9 chapters and has 389 pages. This book explains about the economic events which happened, are happening and may also happen in the near future.

Back when tigers used to smoke (phrase used in Korean literature for, economics has taken its origin right from micro level to macro level and still booming. Timeline in the book starts from early 1970's to late 2019's. Different ideas and ideologies are referred of experts from different fields such as Economics, Mathematics, Politics. The book talks about how different segments in the world are interlinked and change in one thing effects the other either in a positive way or will have a counter effect. For example, an economic policy which is successful in one country will be as deadly as leading the whole economy into recession in another.

The writers highlight that the markets, can be adhesive i.e. sticky. Free traders for instance who are one of the free market reformers, only work as well as advocates predict when people can easily commute for better opportunities. But in reality, it's not the same case, the authors referred to the 2013 comparative study of regional labour markets which happened in the U.S. – regions defined by commuting patterns – that were affected by the expansion of Chinese trade between 1991 and 2007. The study showed that decrease in total employment in the regions of United states is due to increase in Chinese competition. The end result would not be the same if workers had simply moved within the same region to an industry that benefited from cheaper imports.

Let's consider the example of tossing a coin, as every Coin has 2 sides Head and Tail. The probability of falling head or tail is 50 – 50. Same in the case of implementing an economic policy or to do economic experiment to analyse the results from it. The output may give either a positive result or negative result.

In the similar way in parallel note with “bad economics,” Mr. Banerjee and Ms. Duflo offer the “good economics” of policies that take such stickiness into consideration. The authors are not trying to get rid of markets. They considered Venezuela as an example of what happens when markets are falsified by price controls and hyperinflation. Events like trade war with china could create a new list of losing American regions. They also admit by removing heavy measures like state ownership and central planning will boost higher economic growth which is previously done by China, India, Vietnam and South Korea.

In some cases, takes some wrong turns. Going for call to increase tax, for instance, the authors recommend engaging “the best minds in the world to work with governments to realign the social programs for effectiveness.” For many developed countries particularly U.S. “the only possible way out involves a much-expanded role for the government.” This is not as simple introducing cell phones to fishermen to check the weather forecast and to escape stickiness.

Lamentably the book does not support development of the society or the people. The original idea of the writers might be to label a “Growing dispersion” as policies play a key role these days. Reference in the book explain that their job is “to offer facts” that they hope “will help mediate these divides . . . and thereby arrive at some reasoned disagreement [with] respect on both sides.”

The authors don't identify by name those doing bad economics, except for an attack on “conservative academic economists, mostly with solid reputations but also part of this older generation.” The authors feel that their opponents suffer from “ignorance and ideology” because they “often feel free to ignore the weight of the evidence.” For their own arguments, the authors appeal to the authority of “recognized leaders in the profession,” also known as “today's best economists.”



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