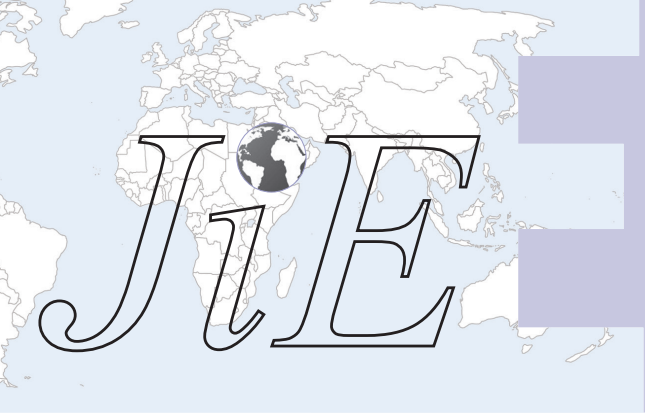

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Journal of International Economics

Aims and Scope

Journal of International Economics is devoted to the publication of professional and academic research in all the areas of international economics. It is published in the months of January and July. The journal broadly covers areas such as cross country growth models, population and migration patterns, international trade, trade policy and relations, trade organizations and bodies, foreign investment flows, balance of payments and exchange rate mechanism, multinational corporations and cross border manufacturing, etc.

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From the Editor's Desk...

India is in headlines for the past few months. The Goods and Service Tax(GST) has become a reality, which is being perceived as a step in the right direction for ease of doing business in India. Although, the intricacies of GST are intensely debated, this has certainly gone down well, with investors both domestic and also international who are optimistic about its benefits. India received a jolt from world bank, when its 'Ease of doing Business', report, which is published by it every year, ranked The report ranked India very poorly. India is ranked 130 among 190 nations that were a part of this report. India could improve its rank only by one notch from 131st rank in the last year. This was a pointer to the fact that India still has to retain the confidence of the international investors and lending institutions. However, the reform measures introduced by the Government has raised the confidence of all those who are intending to make India an investment destination. Another impediment for ease of doing business was the lengthy procedures related to insolvency, wherein, there were many insolvency laws and there was lack of uniformity. This problem has been solved by having a uniform Bankruptcy Code.

There are fears of Indian Rupee becoming stronger. This may not augur well for our exports, which in turn may have an adverse impact on the Balance of Payments. As is well known, India's Balance of Payments position has been comfortable because of low oil prices. It is reported that, the trend may continue for some more years. Some other reports however mention that oil prices can bounce back, in that case, we may again have to face problems on this front. All said done, the present Government at the centre is making earnest efforts towards achieving the goal of ease of doing business.

This journal has always made earnest efforts, to publish articles which dwell at length on various issues, having international ramifications. The present issue has six articles, touching upon issues such as, current account imbalances, trade liberalization, India's trade linkages with BRICS countries. This issue onwards we are also including book reviews.

Dr G Rajesh

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Causes and Consequences of Current Account Imbalances in the United Kingdom and South Korea: An Empirical Analysis

Susmitha Selvaraj

The current account is a very significant macroeconomic variable that can influence the macroeconomic performance of any economy. Movements in the current account can result in current account imbalances like a current account deficit and a current account surplus. The present study examines the recent causes and consequences of current account imbalances in the UK and in South Korea. Linear correlation and regression models are used in exploring current account imbalances. Time series data have been collected for the period 2010-2014 in order to analyse the relationship between the variables. This research has found that the rise in the primary income deficit is one of the major causes of recent current account deficits in the UK, whereas a faster fall in imports than in exports and a decrease in deficit in service accounts are the main reasons for current account surpluses in South Korea. Moreover, the empirical evidence suggests a close linear relationship between foreign exchange reserves and current account imbalances in both countries.

Keywords: *Current Account Deficit, Current Account Surplus, Exchange Rate, Foreign Exchange Reserves*

Introduction

The Balance of Payments (BOP) has got far reaching implications for the macroeconomic performance of any country. It records all monetary transactions that a country makes with the rest of the world. The BOP is mainly divided into three accounts: current, capital and financial accounts.

The current account is one of the major accounts and it consists of three components:

Trade in goods and services: It covers import and export of visible goods like cars and invisible items like financial services.

Net investment income: It records the difference between the income earned by nationals on assets owned abroad and the income earned by foreigners on domestic assets.

Net current transfer: It measures the money flows in and out of a country in the form of grants, aids, repatriation of earnings and government transfers.

Theoretical Framework: An Overview

There are various theories that explain the movements in the Balance of Payments current account. The two major theories that are associated with current account imbalances are:

Marshall-Lerner Condition: This is one of the important international trade theories, which is named after Alfred Marshall and Abba P. Lerner. According to this theory, a fall in the exchange rate will lead to an improvement in the current account, if the sum of price elasticity of demand for exports and imports is greater than one. This is because, when a currency depreciates, the imports will become more expensive and exports will become cheaper. Consequently,imports will fall and exports will increase resulting in a decrease in the current account deficit.

J Curve Effect: According to this theory, in the short term, a devaluation is likely to lead to a deterioration in the current account position before it starts to improve. This is mainly due to the fact that in the short term, price elasticity of demand for exports and imports tends to be inelastic and it takes time for foreign markets and domestic consumers to respond to the price changes caused by depreciation of a currency. However, in the long run the elasticities of demand for exports and imports are higher and exporters and importers will be very sensitive to a fall in exchange rate and reduce imports and increase exports, resulting in an improvement in the current account.

Current account imbalances are quite common among countries and they depend on economic circumstances. As a result, some countries will have a current account surplus and some will have a current account deficit.

United Kingdom

The United Kingdom(UK) has been experiencing a current account deficit since 1984(The Office for National Statistics). The major causes of the current account deficit in the UK are as follows.

Primary Income Deficit

The Primary account measures the flow of earnings on foreign investments and payments made to foreign investors. According to the Office for National Statistics (ONS) income from the UK's foreign direct investments abroad have fallen, while payments to foreign investors in the UK have risen. It is quite important to note that the UK- based energy and mining companies repatriated few profits (Pritchard, 2016). The UK has invested heavily in overseas oil and gas companies and the slide in the price of oil has decreased returns from those investments. (Cadman, 2016).The deterioration in the primary account was driven by UK residents receiving lower income on their overseas Foreign Direct Investment (FDI) and as the UK is considered as a "safe haven" for investments, foreign residents have continued to expand their holdings of

UK assets and shifted the composition of their assets from low-yielding debt to riskier, higher – yielding equity, thereby increasing the rate of return on their holdings in the UK. In short, foreigners are earning more money out of their UK investments than the UK residents are earning out of their overseas assets. As a result, the primary income has moved from a £19 billion surplus in 2011 to a £39 billion deficit in 2014 (Gavin, 2015).

The trends in the primary income balance and the current account balance are clearly reflected in the data.

Table-1: Primary Income Deficit and Current Account Deficit in the UK

Year	2010	2011	2012	2013	2014	2015
X(primary income balance as % of GDP)	1.3	1.3	0.1	-1.0	-1.8	-1.9
Y(Current account balance as % of GDP)	-2.8	-1.7	-3.3	-4.5	-5.1	-5.2

Sources: ONS and OECD

From the table, it can be seen that the primary income deficit in the UK has been continuously rising since 2013.

The relationship between the primary income balance and current account balance is estimated by using a linear correlation model.

The correlation coefficient is calculated by the formula :

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{((n\sum x^2 - (\sum x)^2)(n\sum y^2 - (\sum y)^2)}}$$

Where n is the number of years and the primary income balance is taken as the independent variable(X) and the current account balance is taken as the dependent variable(Y).

$$= \frac{6\times 17.38 + -2\times -22.6}{\sqrt{(6\times 11.24 - 4))\ (6\times 94.92 - 510.76))}}$$

r =59.08/61.06= 0.9676

The result shows a very strong linear correlation between the primary income balance and the current account balance. It implies, as primary income deficit increases, the current account deficit also increases as primary income balance is an important component of current account.

Decline in Exports of Manufactured Goods

Manufacturing's share of UK economic output has been in steady decline for many decades from more than 30% in the early 1970s to 10% in 2014 (ONS, 2015). For

advanced economies like the UK, manufacturing starts to become less important as a share of output once they become prosperous. Business services, retail and finance start to dominate, and workers move out of factories and into offices or service related industries(Yueh, 2015).The reason for the decline in manufacturing is low productivity and high labour costs. According to the ONS, output per hour worked in the UK was 18 percentage points below the average for the remaining six members of the G7 group of industrial nations in 2014. Moreover, Britain had a 30-point productivity shortfall with the US in 2014. The ONS also found that UK productivity was lower than that in the US in every sector of the economy, but was most evident in manufacturing. The labour cost in the UK is also relatively high, which increases the costs of firms and decreases the production. For example, the labour costs in the steel industry in the UK is about $200 per tonne of production, compared with $10 in China (Yalabik, 2016). This means, emerging economies like China can produce goods more cheaply and the developed countries like the UK finds it difficult to compete with lower cost producers.

Table-2: Production, Productivity and Labour Costs in the UK Manufacturing

Year	Unit wage costs in manufacturing (index) 2012=100	Labour Productivity in manufacturing (index) 2012=100	Production in manufacturing (% change)
2010	97.6	100.5	4.5%
2011	96.2	99.5	2.2%
2012	100	100	-1.4%
2013	102.8	100.8	-1.1%
2014	102.8	101.3	2.7%
2015	106.6	103.3	-0.3%

Source: Office for National Statistics

From the table, it can be easily seen that since 2013, the unit wage costs in the UK manufacturing sector has been increasing faster than the labour productivity. This has adversely affected the production of goods in this sector and consequently, the rate of growth of production in manufacturing declined from 4.5% in 2010 to -0.3 % in 2015. This has led to more imports and fewer exports in the UK manufacturing sector, resulting in an increasing trade deficit, which is shown in the table.

Table-3: UK Trade Deficit

Year	Exports (£ billion)	Imports (£ billion)	Trade deficit in goods(£ billion)
2010	203.6	274.5	70.9
2011	224.5	288.8	64.3
2012	225.1	294.1	69
2013	227.5	301.4	73.9
2014	224.3	305.6	81.3

Source: Office for National Statistics

From the table, it is quite evident that the UK trade deficit has been particularly increasing since 2011.

Exchange Rate

The high exchange rate is another cause of the current account deficit in the UK. Movements in the exchange rate can generate substantive shifts in current account balances(Forbes, 2016). The Eurozone accounts for 40% of exports (ONS). However, a strong pound makes UK products more expensive to export(Reuben,2015). According to Rob Dobson, a senior economist at Markit (a well regarded survey of UK manufacturing), a number of British manufactures find the strength of the pound against the Euro is impacting order inflows. The trends in the UK real effective exchange rate index are reflected in the data.

Table-4: Real Effective Exchange Rate Index UK 2010=100

Year	Exchange rate index UK
2010	100
2011	101.5
2012	106.8
2013	105.8
2014	113.8

Source: IMF, International Financial statistics. World Development Indicators

The real effective exchange rate index is a measure of the value of a currency against a weighted average of several foreign currencies divided by a price deflator or index of costs. From the table, it can be seen that the value of the UK pound against the basket of other currencies has shown an increasing trend since 2010, which has adversely affected UK exports and current account balance.

High Consumer Demand

The UK economy relies heavily on consumer spending. Moreover, it has outperformed most other major developed countries since the 2008-09 recession and this has increased the demand for foreign goods and services (Papadopoullos, 2016). As a result, the import of goods has risen and the average annual growth of import of motor cars in the UK between 2012-2015 was 13 percent(Eurostat).

Table-5: Final Consumption Expenditure of Households at Constant Prices UK

Year	Consumption expenditure UK(£million)
2010	954781
2011	953923.95
2012	972687.37
2013	991423.39
2014	1016803.19
2015	1045152.90

Source: OECD Stat

From the table, it is quite evident that the household consumption expenditure in the UK has been increasing throughout since 2010, which has stimulated the demand for imported goods, resulting in current account deficit.

Consequences of Current Account Deficit in the UK

A persistent current account deficit is likely to result in macroeconomic imbalances in any economy. The two major consequences of the current account deficit in the UK are as follows.

Reduction in Foreign Exchange Reserves

This consists of holdings of monetary gold, SDRs, reserves of IMF and holdings of foreign exchange under the control of monetary authorities. The trends in the current account deficit and foreign exchange reserves are shown in the data.

Table-6: Current Account Deficit and Foreign Exchange Reserves in the UK

Year	2010	2011	2012	2013	2014	2015
Current account deficit (£ million) x	-43062	-29088	-61433	-76442	-84998	-100261
Foreign exchange reserves (£million) y	62015.71	71186.25	79205.09	78622.31	81187.73	89501.17

Source: World Development Indicators, IMF, International Financial Statistics

From the table, it can be seen that when current account deficit rises the foreign exchange reserves tend to fall except for the year 2012.

The relationship between current account deficit and foreign exchange reserves is estimated by using a linear correlation model. The correlation coefficient(r) is calculated by the formula:

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{((n\sum x^2 - (\sum x)^2)(n\sum y^2 - (\sum y)^2)}}$$

Where, n is the number of years and x is the current account deficit (independent variable) and y is taken as foreign exchange reserves (dependent variable). The correlation coefficient (r) is estimated as -0.85852, which explains a relatively strong negative correlation between the two variables. It implies when current account deficit increases, foreign exchange reserves decreases as the central bank needs to use its foreign assets to pay for the import of goods and services.

A linear regression model is used to predict the changes in y as a result of a change in x.

S is the standard deviation.

$$Sxy=\sum xy-\sum x\sum y/n$$

$$=-31491310540—395284\times461718.26/6=-1073003759$$

$$Sxx=\sum x^2-(\sum x)^2/n$$

$$=29594768570-156249440700/6= 3553195120$$

$$b=Sxy/Sxx$$

$$= -1073003759/3553195120=-0.302$$

$$\bar{y} = \sum y/n$$

$$= 461718.26/6= 76953.04$$

$$\bar{x} = \sum x/n$$

$$= -395284/6= -65880.67$$

$$a=\bar{y} - b\bar{x}$$

$$=76953.04—0.302\times-65880.67$$

$$= 57058.40$$

$$y=a+bx$$

$$\text{Regression Equation} =57058.40+-0.302x$$

This means, with every one million increase in current account deficit in the UK, foreign exchange reserves decrease by 0.302 million. This is really a cause for concern and it underpins the need for reducing the persistent current account deficit in the UK.

Net International Investment Deterioration in the Position(NIIP)

This is the difference between a country's external financial assets and liabilities and is used to analyse developments and trends in the performance of an economy versus the rest of the world. It shows what the economy owns in relation to what it owes.

Table-7: Current Account Deficit and Net International Investment Position(NIIP) in the UK

Year	2010	2011	2012	2013	2014
Current account deficit as % of GDP(x)	-2.8	-1.7	-3.3	-4.5	-5.1
Net international investment position as % of GDP (y)	-6.0	-4.4	-14.9	-23.8	-28.0

Source: Office for National Statistics and Euro stat

From the table it is quite evident that the NIIP has been increasing since 2012 in response to rising current account deficit.

The relationship between current account deficit as % of GDP and NIIP as % of GDP is estimated by using a linear correlation model. It is calculated by the formula

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{((n\sum x^2 - (\sum x)^2)(n\sum y^2 - (\sum y)^2)}}$$

where n is the number of years and current account deficit as percentage of GDP is taken as x, the independent variable and NIIP is taken as y, the dependent variable.

The correlation coefficient (r) is 0.971. It shows a very strong positive correlation between the two variables. It means, as current account deficit in the UK increases, the NIIP, which is similar to external debt increases as well, as the country has to borrow more to finance the deficit.

A linear regression model has been used to predict the effect of changes in x on y

S is the standard deviation.

$$Sxy = \sum xy - \sum x \sum y/n$$

$$=323.35—17.4\times -77.1/5= 55.04$$

$$Sxx = \sum x^2 - (\sum x)^2/n$$

$$=67.88-(-17.4)^2/5 = 7.33$$

$$b = Sxy/Sxx$$

$$=55.04/7.33= 7.51$$

$$\bar{y} = \sum y/n$$

$$=-77.1/5=-15.42$$

$$\bar{x} = \sum x/n$$

$$=-17.4/5=-3.48$$

$$a=\bar{y} - b\bar{x}$$

$$=-15.42-7.51\times -3.48=10.72$$

Regression Equation $y=a+b\,x$

$$y = 10.72+7.51x$$

This means, with every 1% increase in current account deficit there will be an increase of 7.51% in NIIP. This really helps to highlight the growing external debt in the UK, which has increased to £6055168 million in Q2 2016(The Office for National Statistics).

Moreover, according to the Bank of England, the UK relies on foreign investors to fund the short fall on its Balance of Payments. The liabilities Britain has taken on to finance current account deficits are largely made up of equity and long-term debt. Howard Archer, the chief UK and European economist at IHS Global Insight stated that the widening current account deficit could become an increasing problem if financial markets lose confidence in the UK economy. This would make it harder for the UK to attract the investment flows that it needs to finance the current account deficit. It also means foreign investors may demand higher returns on their lending, which can lead to depreciation of the pound sterling and also a fall in the price of UK assets.

South Korea

South Korea has been one of the fastest growing OECD economies over the past 25 years. Sustained double digit export growth in volume terms helped South Korea to become the 6th largest exporter and 11th largest economy in the world in 2015(OECD Economic Survey of Korea 2016). It is a leading exporter of cars and electronic goods and has been experiencing perpetual current account surplus since 2009.

Causes of Current Account Surplus in South Korea

Firstly, a faster fall in imports than exports has contributed towards the recent current account surplus in South Korea.

Imports fell by 8.6 percent whereas exports slipped only by 2.4 percent in June 2016(The Bank of Korea).

South Korea relies on imports for oil and gas. Low oil prices pushed down the value of imports and drove her to a record current account surplus (Mundy, 2015).Also according to the Bank of Korea, imports have been dropping faster than exports due to weak domestic demand in the economy and now households tend to save more and pay back debt instead of spending on consumer goods.

Secondly, trade in services is another major component of the current account and the narrowing deficit in the service account is another reason for the current account surplus in South Korea. The service sector narrowed its deficit to $1.14 billion in June 2016 from a $ 1.62 billion deficit in May 2016(The Bank of Korea).”The deficit in the service account narrowed on an increased income in construction and other business services,” the Bank of Korea stated in a press release.

Thirdly, in the primary income account, the country posted a surplus of $910 million in May 2016, a sharp turnaround from a revised $4.07 billion deficit in April 2016. This turnaround was largely attributed to a rise in dividends income, which moved from a $4.51 billion deficit in April to a $470 million surplus last month(The Bank of Korea).

Consequences of Current Account Surplus in South Korea

The current account surplus in South Korea has had its noticeable effects on some of the macro variables like foreign exchange reserves, Research and Development (R & D) expenditure and the exchange rate of the country.

Foreign Exchange Reserves

They are reserve assets held by a central bank to finance its liabilities, reduce the effects of economic shocks and influence monetary policy. The trends in the current account surplus and foreign exchange reserves are clearly reflected in the data.

Table-8: Current Account Surplus and Foreign Exchange Reserves in South Korea

Year	2010	2011	2012	2013	2014
Current account surplus (US $bn)	28.850	18.656	50.835	81.148	84.373
Foreign exchange reserves (US $ bn)	292.14	306.93	327.72	345.69	362.83

Sources: World development indicators

IMF, Balance of Payments Statistics year book and data files

The World bank

As it can be noted from the table, South Korea's foreign exchange reserves have been increasing since 2010.

The relationship between the current account surplus and foreign exchange reserves is estimated by using a linear correlation model. It is calculated by the formula:

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{((n\sum x^2 - (\sum x)^2)(n\sum y^2 - (\sum y)^2)}}$$

Where n is the number of years and the current account surplus is taken as x, the independent variable and foreign exchange reserves is taken as y, the dependent variable. The correlation co-efficient is r= 0.93678, which shows a strong positive correlation between the two variables. This implies, as the current account surplus increases, foreign exchange reserves also increase.

A linear regression model is used to predict the changes in y as a result of a change in x.

$$Sxy=\sum xy-\sum x\sum y/n$$
$$=89479.079-263.862\times1635.31/5$$
$$Sxx=\sum x^2-(\sum x)^2/n$$
$$=17468.367-69623.1550/5$$

$$b=Sxy/Sxx$$
$$=3179.845/3543.736$$
$$=0.8973$$
$$\bar{y} = \sum y/n$$
$$=1635.31/5$$
$$=327.062$$
$$\bar{x} = \sum x/n$$
$$=263.862/5$$
$$=52.772$$
$$\bar{y} - b\bar{x}$$
$$=327.062-0.8973(52.772)$$
$$=279.709$$

Regression Equation is y=a+bx

$$=279.709+0.8973x$$

This means with every one billion increase in the current account surplus, the foreign exchange reserves increase by 0.8973 billion in South Korea. It underpins the relevance of the current account surplus in an emerging economy like South Korea.

Gross Domestic Expenditure on Research and Development

Another consequence of the current account surplus in South Korea is reflected in the gross domestic expenditure on R and D in the export sector, which is shown in the table below.

Table-9: Current Account Surplus as percentage of GDP and Gross Domestic Expenditure on R& D

Year	2010	2011	2012	2013	2014
Current account surplus as percentage of GDP	2.9	1.5	4.1	6.2	6
Gross domestic expenditure on Rand D as percentage of GDP	3.47	3.74	4.03	4.15	4.29

Sources: IMF Cross country Macro economic statistics

Research and Development (Rand D) – Gross spending on Rand D – OECD data

From the table, it is quite evident that the gross domestic expenditure on research and development has been increasing since 2010.

The relationship between the current account surplus and the gross domestic expenditure on Rand D is estimated by using a linear correlation model. It is calculated by the formula:

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{((n\sum x^2 - (\sum x)^2)(n\sum y^2 - (\sum y)^2)}}$$

Where n is the number of years and current account surplus is taken as x, the independent variable and the gross domestic expenditure on Rand D is taken as y, the dependent variable. The correlation co-efficient is r= 0.824, which shows a strong positive correlation between the two variables. A positive trade balance helps South Korea to increase their investment in Rand D, which is quite crucial in improving productive capacity and also in meeting future demand for goods and services in the economy.

A linear regression model is used to predict the changes in y as a result of a change in x.

S is the standard deviation.

$$Sxy=\sum xy-\sum x\sum y/n$$

$$= 83.666-20.70\times19.68/5$$

$$=2.19080$$

$$Sxx=\sum x^2-(\sum x)^2/n$$

$$=101.910-428.49/5$$

$$=16.2120$$

$$b=Sxy/Sxx$$

$$=2.19080/16.2120$$

$$=0.135134$$

$$\bar{y} = \sum y/n$$

$$=19.68/5$$

$$=3.93600$$

$$\bar{x} = \sum x/n$$

$$=20.70/5$$

$$=4.1400$$

$$a=\bar{y} - b\bar{x}$$

$$=3.93600-0.135134(4.1400)$$

$$= 3.37655$$

Regression Equation is $y=a+bx$

$$= 3.37655+0.135134x$$

This means with every one percent increase in the current account surplus (as a percentage of GDP) the gross domestic expenditure on Rand D increases by 0.1351% in South Korea. It serves as an incentive for an emerging economy like South Korea as more money will be available for invention and innovation, which will improve dynamic efficiency and competitiveness in the long run.

Exchange Rate

A persistent current account surplus can lead to the appreciation of the currency under a floating exchange rate system and in reality it has put an upward pressure on South Korea's currency the won and it strengthened to unusually high levels against the currencies of key trading partners in Europe, South East Asia and Japan in 2015. This contributed to weak results for manufacturers including Hyundai Motors and LG electronics.(Mundy, 2015). However, South Korea has a floating exchange rate system and therefore, theoretically, the reduction in exports driven by the appreciation of its currency is likely to result in less demand for Won in the foreign exchange market, ceteris paribus. This may lead to the depreciation of the currency, which can help to regain export competitiveness.

Conclusions and Policy Implications

To sum up,the study has found that the major causes of the current account deficit in the UK are primary income deficit, decline in the exports of manufactured products, a high exchange rate and excessive consumer demand. The current account deficit has adversely affected foreign exchange reserves and the Net International Investment Position of the UK economy.

The major causes of the current account surplus in South Korea are a faster fall in imports than exports, narrowing deficit in the service account and a surplus in the primary income account.

The current account surplus has positively influenced the foreign exchange reserves and investment in research and development and resulted in appreciation of the South Korean currency the won.

The UK has been experiencing persistent current account deficit for the last 15 years. In Q2 2016, the UK current account deficit was £28.7billion(ONS). It is vital for the UK to adopt prudent measures in order to mitigate this on-going trade deficit.

A competitive exchange rate may help to reduce the current account deficit as it makes exports cheaper and imports more expensive.

According to a recent study by Roger Bootle and John Mills, Britain has suffered from appreciation of the sterling, especially during 1979-1981 and the late 1990s and early 2000s, and this overvaluation has led to the hollowing out of industry and the steady deterioration in the UK trade figures. However,the UK pound has fallen by nearly a fifth against the dollar since the European Union referendum on 23rd June 2016 and due to this depreciation, manufacturing export volumes grew at their fastest pace.(CBI

Industrial Trends Survey, BBC, 2016).This may boost the manufacturing sector and help to improve its current account deficit.

The UK should also tackle some of the supply side bottlenecks such as the productivity gap, the lack of investment in infrastructure and research and development, the way businesses are financed, inadequate management and poor industrial relations(Elliott, 2016) in order to improve the supply side performance and current account imbalance.

South Korea's current account balance as a percentage of GDP has been positive since 1998 and it recorded a current account surplus of US $5.51 billion in August 2016(The Bank of Korea).However, the recent current account surplus in South Korea is seen as a "recession- type surplus" as it is caused by a faster fall in imports than exports and it is mainly due to poor local and external demand for imports. The lack of capital investment and high household debt have resulted in weak consumption and less demand for imports in South Korea(Jung,2016).

South Korea is an export-driven economy and exports accounted for around 51% of South Korea's GDP in 2014(World Bank indicators, South Korea).

The top export destinations of South Korea are China, United States and Japan(Simoes, 2010) This means the South Korean economy is vulnerable to changes in external demand. A negative external shock, for example, can cause a decrease in demand for its exports. According to the Korea International Trade Association, South Korea's exports to China decreased by 15.7% in 2016 due to the economic slowdown and sluggish demand in China. (Jung Suk-Yee, 2016).

Therefore, a rebalancing from exports to consumption may be an appropriate growth strategy for South Korea as relying on aggregate demand is much more secure than just relying on exports.

To conclude, a current account imbalance is a natural phenomenon and is unavoidable. However, a large and persistent current account deficit and surplus can be a sign of future external problems, which might require prudent adjustment measures and policies. According to the United Nations Conference on Trade and Development (UNCTAD), current account imbalances caused by insufficient domestic demand in surplus countries and a loss of competitiveness in deficit countries require international coordination for a pro-growth rebalancing(UNCTAD, 2012).

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Green Economy: A Panacea for Sustainable Development and Poverty Reduction

Mishra P K

The concept of green economy has recently attracted the attention of academia and policy makers of developing as well as developed nations. This paper tries to examine the importance of green economy as a tool for achieving sustainable development and poverty reduction in developing countries in general. Green economy implies that a substantial part of a country's revenue is earned from the green industry. It is more than mere greening of the economic sectors as it also involves all facets of sustainable development such as improving human welfare. It is therefore concluded that for countries to be economically developed, emphasis must be placed on programmes towards a green economy while keeping its challenges that it put before planners and policy makers.

Keywords: *Green Economy, Poverty Reduction, Sustainable Development*

Introduction

'Green' is the buzz word that in recent years have increasingly been used in association with development and the environmental arenas. Green does not refer to general ideas of conservation and preservation; it was coined to refer to the environment and its deterioration that has led to the rise of a new environmental policy (Stavrakakis, 1997). But in the first decade of the new millennium, the concept of 'Green Economy' has been started to be interpreted as a means for achieving sustainable development and eradicating poverty (UNEP, 2013). Since then it has been considered as an economic development model based on sustainable development and knowledge of ecological economics. At present, the term 'Green Economy' is used to refer to a substitute vision for growth and development; one that can generate growth and improvements in peoples' lives in ways compatible with sustainable development (Voumik and Shah, 2014). A Green Economy is typically understood as an economic system that is compatible with the natural environment, is friendly to environment and ecology, and perhaps is socially just!

The United Nations Environment Programme (UNEP) uses green economy to refer to an economic system that result in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. This model

advocates decoupling of resource use and environmental impacts from economic growth. A green economy produces a low amount of carbon dioxide equivalents, makes efficient use of resources and caters for social inclusion and equity. In a green economy, growth in income and employment has been modeled to be driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services. Thus, green economy constitutes a vital links between economy, society and environment. In this system the transformation of production processes, production and consumption patterns, while contributing to a reduction per unit in reduced waste, pollution, and the use of resources, materials, and energy, waste, and pollution emission, will revitalize and diversify economies, create decent employment opportunities, promote sustainable trade, reduce poverty, and improve equity and income distribution.

In this context, several questions often strike to our minds - How can a form of economic development be achieved that conserves natural resources, causes minimum environmental pollution and contributes to sustainable development and with that to poverty reduction and social equity? How can we make the basic transition to a green economy? In order to address these issues, the rest of the paper is organized as follows: Section 2 discusses the necessities for green economy; Section 3 makes an analysis of the transition to a green economy; Section 4 points out the aspects of green economy which may undermine its practical implementation; and Section 5 concludes.

Necessities for Green Economy

In recent years, a concern for green economy has been growing, particularly in developing countries on account of the bourgeoning population with rising poverty and increasing risk of food insecurity and environmental degradation (Olomola and Adesugba, 2014). In most of the developing countries, the transition to a green economy is critical in improving the populace well-being, reducing poverty level, effective utilization and preservation of resources for both present and future generations, and creating employment opportunities for the teeming millions.

Greenhouse gas emissions and natural resource consumption are still on the increase worldwide. The attendant climate change causes enormous losses and costs, especially in developing countries, which lack adequate resources to prepare and implement appropriate strategies for coping with the impacts. The majority of the population, including women and poor, underprivileged and vulnerable people in particular, live from agro-forestry, livestock breeding and fishery. The degradation of the natural sources of livelihood, which in itself incurs huge macroeconomic costs, places an especially heavy burden on these people. On-going social and economic inequalities affect women in particular, who account for about two-thirds of the poor population worldwide.

Environmentally sustainable and socially equitable growth decoupled from resource depletion and environmental pollution, the conservation of ecosystem services, the

sustainable management of natural resources, equal access, property and use rights and the equitable distribution of income are therefore particularly important. They lay the foundation for securing long-term production, food security and income generation. They enhance resilience against the impacts of climate variability and other natural disasters.

The United Nations has called for a re-conceptualization of economic recovery through a Global Green New Deal, the key objectives of which include revival of the economy, job creation, and sustainability of ecosystems and achievement of millennium development goals (UNEP, 2009).

Green Economy is Central to Poverty Reduction

A key feature of green economy is that it seeks to provide diverse opportunities for economic development and poverty alleviation without liquidating or eroding a country's natural assets. This is particularly necessary in developing countries where eco-system goods and services are a large component of the livelihoods of many rural communities, and these eco-systems and their services provide a safety net against natural disasters and economic shocks. Also, greening agriculture in developing countries with emphasis on small-holders can reduce poverty while investing in the natural capital on which the poor depend. Greening small farm sector through promotion and dissemination of sustainable practices could be the most effective for food security, reduce rural poverty, increase carbon sequestration and access growing international markets for green products. It has been demonstrated empirically that even small increases in farm yields contribute directly to reducing poverty based on data from Africa and Asia (Irz, *et.al*, 2001). Promoting eco-tourism and organic farming, also offers scope for finding growth niches in developing economies. Demand-led advisory services, and imparting relevant information (e.g. on innovations) to producers and effective coordination and networking with education, science and research may facilitate the progression to a green economy. Vocational training, here, plays a significant role. Establishing sustainable resource management or the application of modern green technologies in curricula will create new opportunities for employment, income and environmental sustainability.

Green Economy Creates Job and Enhances Social Well-being

Employment creation continues to be a major challenge for sustainable development in developing countries. Even with the high rates of economic growth, employment creation has been observed to be limited, especially among the youth and women. This reveals a weak correlation between economic growth and employment creation in these economies. A closer look at employment in developing nations indicate that natural resource-based sectors such as agriculture, the mineral sector, forestry and fisheries continue to remain the largest job providers. A green economy should maintain and enhance the natural capital that will constitute an important source of jobs, income and livelihoods for the vast majority of the people.

Rising agricultural income can expand the market not only for light consumer goods, but also for manufactured agricultural implements, machineries and inputs (Eboh, 2011). Policies targeting Micro, Small and Medium size Enterprises (MSMEs) hold particular promise, as they account for a large share of employment and employment growth in many countries. In green investment scenarios, agriculture, buildings, forestry and transport sectors would see job growth in the short, medium and long term. According to UNEP (2011) it was estimated that over the next decade, global employment in agriculture could increase by 4%.

Green Economy for Ensuring Food Security

Food security is one of the most pressing needs of the people of the developing world. A large chunk of the population is malnourished, especially in rural areas. Soil productivity is decreasing due to environmental degradation, which is caused by poor soil and water management, inappropriate fertilizer use, decline in the use and length of fallow periods, overgrazing and logging, and population pressures that push farmers to less favorable lands. In addition, an important share of the harvest is lost due to pests, diseases and poor handling and storage. All these are being exacerbated by the effects of climate change. Capacity-building, education and knowledge transfer are essential for improving food security and enhancing sustainability. The green economy has the potential to render positive returns on sustainable agriculture, provided that not only the short-term revenues of agriculture, but also the social and environmental costs which will lead to decreasing revenues in the long run, are taken into account. Farmers can adopt sustainable farming methods, which will counter environmental degradation and increase production and, hence, food security in the long run.

Green Economy for Ecological Sustainability

The policy makers in developing nations attach utmost importance to the sustainable use of natural resources by promoting local land use plans, integrated water management or organic farming as to the dissemination of renewable energies and raising energy efficiency. Investments in renewable energies are becoming increasingly attractive due to the rising costs of fossil fuels and the need to reduce greenhouse gas emissions that cause climate change. Where clean renewable energy sources also replace firewood and kerosene for cooking and lighting and so reduce smoke and soot pollution in houses, this improves health of women and children in particular. Promoting alternative, renewable energies does not just afford opportunities; it also poses risks: For example, planting agricultural fuels can result in the loss of property and use rights and worsen food insecurity.

There is abundant evidence that the global economy still has untapped opportunities in the agricultural sector to produce wealth using less quantity material and energy resources. Greening the manufacturing sector implies extending the useful life of manufactured goods by means of greater emphasis on redesign, remanufacturing and recycling which constitute the core of closed-loop manufacturing. Redesigning production systems would involve the redesigning of products to extend their useful

life by making them easy to repair, recondition, remanufacture and recycle, thereby providing the basis for closed cycle manufacturing. Remanufacturing operation processes, which are based on reprocessing of used products and parts through take-back systems, save about 10.7 million barrels of oil each year (Steinhilper, 1998). Recycling supports the use of by-products of the production process while also providing alternatives for substitution of inputs in manufacturing. Recycling of materials such as aluminum, for instance, requires only 5% of the energy for primary production. An important and under exploited, near-term opportunity is recycling high temperature waste heat from processes such as coke ovens, blast furnaces, electric furnaces and cement kilns, especially for electric power generation using combined heat and power. At a broader level, the development of eco-industrial parks provides a basis for the effective implementation of closed-loop manufacturing at a higher level. All the industries under the manufacturing sector have significant potential for energy efficiency improvements although in varying degree and with varying investment requirements. There are indications that green investments in energy efficiency could reduce industrial energy consumption and make it cheaper.

Green Economy for Social Equity

Taking consistent account of social equity is essential for all women and men to benefit alike from the advantages of a green economy. This holds for existing property, use and control rights over natural resources (such as land and water), equal access to social and economic services and inputs – above all access to new technologies - and the equitable distribution of revenue. This also calls for developing the capacities of actors and institutions at all levels – national as well as local, and empowering women and other underprivileged vulnerable sections of the population to pave the way for inclusive participation in planning and decision-making processes. Compliance with legal social and labour standards is also necessary to ensure social equity and inclusion.

Therefore, green economy can a panacea to sustainable development, reduced environmental risks and ecological scarcities, social equity, poverty reduction and better livelihood.

Transition to a Green Economy

Green economy refers to the holistic view that a new global economy is required in order to counteract the negative impacts of over exploitation of natural resources, poverty and inequality, the financial crisis, climate change and other global changes that are threatening human existence on planet earth (UNEP, 2009, 2011). Green economy is a system of economic activities related to the production, distribution and consumption of goods and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks and ecological scarcities.

The G20 countries, which contribute most to greenhouse gases through their production and consumption patterns, have committed themselves to green stimulus packages.

Key areas of investment include: green buildings that are energy efficient; new renewable technologies such as solar, wind and geothermal; sustainable transport, such as bus and rail transit systems; and ecological and agricultural sustainability (UNEP 2009).

The developing countries must ensure the existence of specific enabling conditions for the transition to a green economy. These enabling conditions are imperative for achieving sustainable development and poverty reduction in a green economy. They are as follows:

Regulatory Framework

A well designed regulatory framework can define rights and create incentives that drive green economic activity as well as remove barriers to green investments. The regulatory framework can regulate the most harmful forms of unsustainable behavior, either by creating minimum standards or prohibiting certain activities entirely. Moreover, an adequate regulatory framework reduces regulatory and business risks, and increases the confidence of investors and markets. It is often better for businesses to work with clear and effectively enforced standards, and not have to deal with uncertainty or face unfair competition from non-compliance.

Subsidy Grants

Subsidies that have public good characteristics or positive externalities can be a powerful enabler for a transition to a green economy. Green subsidies such as price support measures, tax incentives, direct grants and loan support, may be used for a number of reasons such as (i) to act quickly in order to avoid locking in unsustainable assets and systems, or of losing valuable natural capital that people depend on for their livelihoods; (ii) to ensure the realization of green infrastructure and technologies, especially those with substantial non-financial benefits or financial benefits that are difficult for private actors to capture; and (iii) to foster green infant industries, as part of a strategy to build comparative advantage and drive long term employment and growth.

Government Policy and Planning

The capacity to seize green economic opportunities and implement supporting policies varies from one country to another. A shift towards a green economy could require the strengthening of government capacity to analyze challenges, identify opportunities, prioritize interventions, mobilize resources, implement policies and evaluate progress. To sustain the momentum of a green economy transformation, governments need to be able to measure the progress being achieved. This would require the capacity to develop indicators, collect data, analyze and interpret result for guiding policy development. Training and skill enhancement programs are needed to prepare the workforce for a green economy transition. A shift to a green economy by definition entails some degree of economic restructuring and measures may be required to ensure a just transition for affected workers. Greater transparency and inclusive participation of all stakeholders in planning and decision making may facilitate the move towards a green economy.

Taxes and Market-based Instruments

Taxes and market-based instruments can be an efficient means of stimulating investment. Significant price distortion exists that can discourage green investment or contribute to the failure to scale up such investments. In a number of economic sectors, such as transportation, negative externalities such as pollution, health impacts or loss of productivity, are typically not reflected in costs, thereby reducing the incentive to shift to more sustainable goods and services. A solution to this problem is to incorporate the cost of the externality in the price of a good or service via a corrective tax, charge or levy or in some cases by using other market based instruments such as trade able permit schemes. Taxes often provide clear incentives to reduce emissions, use natural resources more efficiently and stimulate innovation. Environmentally related taxes can be broadly broken down into two categories; 'polluter pays' focused on charging producers or consumers at the point that they are responsible for the creation of a pollutant, and 'user pays' which focuses on charging for the extraction or use of natural resources.

Exploring Agricultural Opportunities

Creation of agricultural opportunities in urban and rural areas and exploring them in positive manner is a major strategy in improving agricultural productivity and standards. This will create sustainable jobs for poverty reduction.

Role of Private Sector

The private sector can act as a major driver for the green economy because of their investment capabilities. The actual implementation of green economy model can only be achieved through private investments and innovations. However, a strong regulatory framework is necessary to control the private sector activities.

New Technology

New and cost-effective technologies are needed to decouple economic growth from resource use and new business models to achieve environmentally sustainable and socially equitable growth.

Public-Private Partnership

The public-private partnership model may be followed in application of environmental management system, environmental or sustainability certification, and life-cycle and social impact assessment.

Challenges of Green Economy

Generally, developing economies should be concerned with the fact that despite its good intentions as a policy instrument for sustainable development and poverty reduction, the green economy concept may be misused or taken out of context. Its promotion may give rise to unhelpful or negative developments and these must be avoided. Some of the concerns as captured by Khor (2010) include:

One dimensional approach in which the "green economy" is defined or operationalized in a one dimensional manner and promoted in a purely "environmental" manner (without considering fully the development and equity dimensions of sustainable development) and without consideration of the international dimension, especially its negative effects on developing countries. Thus, there is the concern that if the green economy concept gains prominence, while the sustainable development concept recedes, there may be a loss of the use of the holistic sustainable development approach.

'One size fits all' approach in which all countries are treated in the same manner. This would lead to failures either for environment, development or both. The levels and stages of development of countries must be fully considered, and the priorities and conditions of developing countries taken into account. Thus, in considering various principles, policies and targets of green economy, adequate flexibilities and special treatment should be provided for developing countries, such as exemptions, allowance for more lenient obligations and the provision of finance, technology and capacity building.

Environmental standards constitute another area of risk to green economy concept as developing countries are concerned that the adoption of environmental standards for products may mean that if they are unable to meet the standards, they face the prospect of losing their exports. Unless developing countries are provided with resources and technology for upgrading their environmental technology and standards, they will continue to be penalized. Developing countries need to be fully involved in negotiating and setting international environmental standards and be assisted to comply with them so as to make the green economy concept acceptable.

The treatment of subsidies is also another area of concern. Many developing countries are concerned that some developed countries have been providing their companies with major subsidies for the research and development (R&D) of environmentally sound technologies. This puts developing countries at a disadvantage, especially since they lack the financial resources to match the developed countries' subsidies. Given this unfair imbalance in subsidies, the developing countries and their firms would be in an even worse competitive situation if they have to lower their tariffs on environmental products.

UNEP's proposal of the green economy advocates the pricing of ecosystem services in the hope of providing greater environmental protection and eradicating poverty. There are five aspects of the green economy which could undermine its practical implementation as well as its social legitimacy; i) ecosystem services are inherently difficult to price, ii) the consideration of the rebound effect is insufficient, iii) primacy of economics over the environment is ensured, iv) markets offer little protection for the poorest people, and v) existing market mechanisms aimed at safeguarding the environment have not succeeded. The green economy relies upon the discursive power of ecological modernization and our faith in progress to uphold a failing strategy of unfettered economic growth. This discourse limits our capacity to conceive solutions

outside the economic sphere. Achieving sustainable development will require a process of social change that could be facilitated by the acceptance that nature is more than just a form of capital (Wilson, 2013).

Overall, there is a major concern that the green economy may be used as new conditionality on developing countries for aids, loans and debt relief. This may pressurize affected developing countries to take on one dimensional environmental measures rather than sustainable development policies that take economic and social development and equity goals into account. There is also the believe that the green economy concept has the potential to drive sustainable development, but that in order for it to be meaningful and relevant to developing economies that are faced with the challenge of overcoming poverty, the concept must be guided by and enshrined with a number of principles. For example, in Nigeria most of the principles are contained in the agricultural transformation agenda of the present federal government. The programme targets to achieve a food security in Nigeria through the agricultural sector that will increase farmers' income. It aims to generate jobs along the agricultural value chain and transform Nigeria into a leading player in global food markets to grow wealth for millions of farmers (FMARD, 2011).

Conclusion

Although, green economy is relatively a recent development, this model offers opportunities for developing countries to attract investments in environmental assets and renewable energy, which will, in the long run, benefit development, reduce poverty and create employment. Investments, both from public and private sources, can be made in the areas of sustainable agriculture, fisheries and biodiversity management, as well as in technology, education and infrastructure. Efforts should be made to reallocate existing capital flows toward sustainable economic development. If transformed toward sustainability, the mining, energy and manufacturing sectors can be used by these countries as an engine for growth. It is essential that governments put the enabling policies and conditions for a green transformation into place. In developing countries, green economy policy needs to consider poverty reduction and women's empowerment in order to promote rural sustainable development. For this to occur, linking pro-poor policies such as land reform, rural development and social support to the overall green economy policy, addressing women's empowerment and gender equity issues by ensuring that women and men have equal access to resources such as land, technology information, extension services and decision making, providing opportunities for livelihood diversification beyond agriculture, protecting the rights of both men and women in green projects, ensuring access to markets for products from green economy initiatives, ensuring access to skills development of both men and women participants in green projects, and incorporating communities into green economy plans and programmes can go a long way in making this green policy a great success in coming days.

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Trade Liberalization and Export-led Growth in India

Neena Malhotra and **Deepika Kumari**

At present, Indian economy is one of the fast growing economies in the world. New development policies adopted since 1991 have dramatically transformed the Indian economy. Trade and investment initiatives helped the economy to boost its exports. Further, exports have significantly contributed to economic growth in the past few decades. In the post reform period, the volume of trade has grown and exports composition has undergone several changes. As the emphasis was given to export-led growth strategy, export promotion became one of the main objectives of trade policy. The export expansion of Indian exports is primarily based on services however the economy is making attempts to promote manufacturing exports in a big way. The present study examines the relationship between exports and economic growth using multivariate framework for India over the period 1980 to 2014. The study has employed advanced time series techniques to test the short run as well as long run equilibrium relationship among variables. The study also provides an overview of various aspects of trade performance during the study period.

Keywords: *Export-led Growth, Liberalization, Trade Performance, Time Series, India*

Introduction

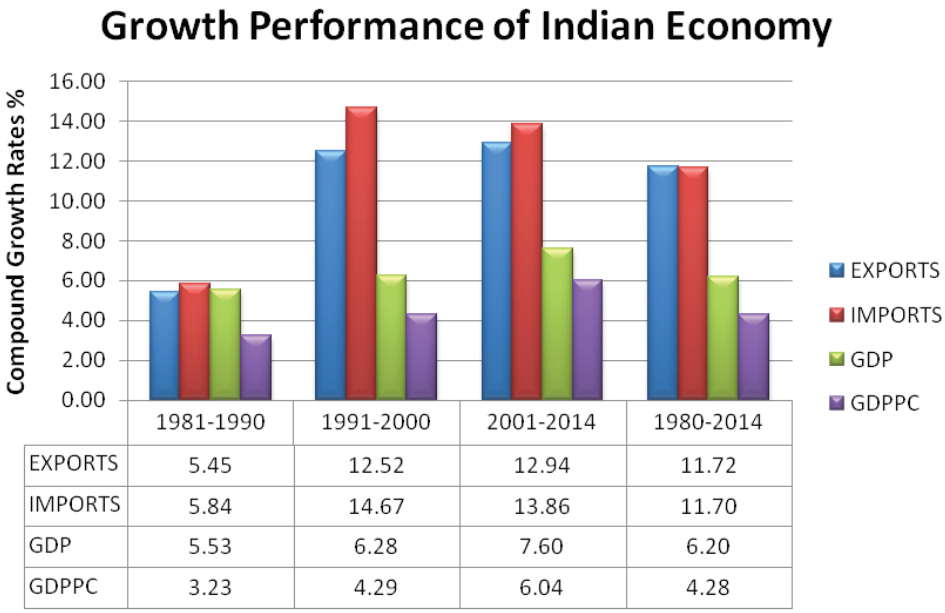
The post world war II period witnessed massive expansion in world trade. After World War II, the General Agreement on Trade and Tariffs (GATT) was established to reduce trade barriers worldwide. As a result of new trading order and with rapid economic growth, the trade volume flourished by orders of magnitude over the world and that was also hold true for developing countries (Ray, 1998 and Thirlwall, 2000). Particularly noteworthy dramatic expansion was observed for East Asian exports. Most of the developing economies including East Asian economies adopted closed macroeconomic policies along with import substitution industrialization till the late 1960s. These policies encouraged self reliance and promoted indigenous efforts but at the same time resulted in rent seeking activities and uncompetitive production process because the dominant role was assigned to state. Hence, trade liberalization and export-led industrialization was advocated to overcome these obstacles. Export-oriented growth strategy followed by East Asian economies resulted in higher exports

and economic growth during the period early seventies to mid nineties. Following East Asian economies, Southeast and later on South Asian economies undertook reform process particularly related to trade and investment and opened their economies after experiencing sluggish growth throughout the seventies and eighties (Sahoo, 2006). Indian economy moved on the path of liberalization in a big way in 1991 when comprehensive economic reforms were introduced under 'New Economic Policy' (Rajan and Sen, 2002; Kaur, 2012). An important thrust of this policy was liberalization of external sector by important trade policy changes including tariff reduction, removal of quantitative restrictions, incentives for export sector, promotion of foreign investment etc (Khan, 2005; Sahni, 2014). Because of these policies there was substantial increase in exports as well as imports and the Indian economy became more and more trade oriented.

Growth Performance of Indian Economy

The compound growth rates of exports, imports, GDP and GDP per capita for Indian economy have been depicted in figure 1. Figure represents the growth performance of variables during different periods at constant prices with the base year 2010. Table indicates India registered very high growth rates of exports, imports, GDP and GDP per capita during the last two decades. The liberalization policies gave boost to growth performance of Indian economy.

Figure-1



	1981-1990	1991-2000	2001-2014	1980-2014
EXPORTS	5.45	12.52	12.94	11.72
IMPORTS	5.84	14.67	13.86	11.70
GDP	5.53	6.28	7.60	6.20
GDPPC	3.23	4.29	6.04	4.28

Source: Calculations based on data from World Development Indicators (WDI), online database.

The purpose of this study is to empirically investigate export-growth relationship for Indian economy using time series data analysis under multivariate framework. The investigation proceeds by undertaking cointegration and causality analysis based on VECM including diagnostic tests and forecasting methods such as impulse response function (IRF) and variance decomposition analysis (VDA).Further, the study examines how far variable selection affects the results. Hence, the study adopts two models taking real GDP per capita as dependent variable in the first model and real GDP in second model. The first section includes introductory part. The next section reports review of literature. Further, methodology and empirical results have been given. Final section presents conclusions and also contains comparison of our results with previous studies.

Review of Literature in Indian Context

The present study considered those studies for literature review which have been conducted in Indian context.

Table-1: A Brief Review of the Related Economic Literature on India

Author	Period of the study	Countries/ Region	Objective of the study	Variables	Methodology	Conclusions
Dhawan and Biswal (1999)	1961-93	India	To examine the validity of export-led growth hypothesis	Real GDP, real export & terms of trade (TOT)	Johansen's procedure & vector auto regressive (VAR) model	Short run causality running from exports to GDP. GDP and terms of trade jointly Granger caused exports in the short run as well as in the long run.
Nataraj, Sahoo and Kamaiah (2001)	1965-66 to 1997-98	India	To investigate export –led growth hypothesis	Export, import, GDP& capital formation	Vector auto regressive (VAR) model & Forecast error variance decomposition (FEVD)	The study showed strong relationship among variables but on the whole did not support export-led growth in case of India.
Vohra (2001)	1973-93	India, Pakistan, Philippines, Malaysia and Thailand	To examine export-growth linkage	real output, labour, capital and exports	Ordinary least square (OLS) estimation	The regression coefficient of exports had positive sign and was statistically significant for all selected countries except for India.

Author	Period of the study	Countries/ Region	Objective of the study	Variables	Methodology	Conclusions
Chandra (2003)	1950-96	India	To investigate the causality between income and export growth	Real export, real income &TOT	Johansen's multivariate cointegration approach	Supported the validity of export-led growth hypothesis
Din (2004)	1960-2002 for India and Sri Lanka, 1965-2002 for Nepal, 1973-2002 for Bangladesh and Pakistan	Bangladesh, India, Pakistan, Nepal and Sri Lanka	To examine export – led growth	real exports, real imports and real GDP	Dickey-Fuller Generalised Least Squares (DF-GLS) and Kwiatkowski, Phillips, Schmidt, and Shin (KPSS) unit root tests, Johansen cointegration test & causality based on VECM & VAR in differences	Bidirectional causality between exports and economic growth for all selected countries except Nepal.
Love and Chandra (2004)	1950-98 for India and 1970-2000 for Pakistan and Sri Lanka	India, Pakistan and Sri Lanka	To test export-led growth hypothesis for selected South Asian countries	Real GDP, real export & terms of trade (TOT)	Augmented Dickey-Fuller (ADF) test, Johansen's cointegration and Granger causality under VECM framework	All the variables were cointegrated in selected countries. BDC-India, ELG-Pakistan, NC-Sri Lanka
Pandey (2006)	1950-51 to 2001-02	India	To investigate the causality relationship between export growth and economic growth	GDP & Exports	Engle-Granger cointegration and error-correction framework	The study supported export-led growth as short run phenomenon
Parida and Sahoo (2007)	1980-2002	India, Pakistan, Bangladesh and Sri Lanka	To analyze export-led growth hypothesis	real GDP, non-export real GDP, real total exports, real total manufacturing exports, gross fixed capital formation, manufacturing imports, real public expenditure on health & education	ADF, LLC (Levin Lin and Chu, 2002), IPS (ImPesaran and Shin, 2003) panel unit root tests, Pedroni's panel cointegration tests, Fully-Modified OLS	The study supported export-led growth hypothesis

Author	Period of the study	Countries/ Region	Objective of the study	Variables	Methodology	Conclusions
Srivastava and Kapoor (2007)	1951-2004	India	To examine the relationship between exports and economic growth	GDP & Exports	Augmented Dickey-Fuller (ADF) test and Granger causality	The results supported growth led export hypothesis.
Dash (2009)	1992-I to 2007-IV	India	To investigate export-led growth hypothesis	Index for industrial production as a proxy for GDP, exports, imports and real exchange rates	Johansen's cointegration and Granger causality tests in a VAR model	The findings provided support for export-led growth hypothesis
Nain and Ahmad (2010)	1996-2009	India	To examine export-led growth hypothesis	Export, import, real effective exchange rate (REER) and GDP	Toda &Yamamoto test and Forecast error variance decomposition under VAR	The results supported growth led export hypothesis.
Pradhan (2010)	1970-71 to 2009-10	India	To verify export-led growth hypothesis	Export, real GDP, world GDP, REER, capital formation	Granger causality &VAR	The study strongly supported the validity of export-led growth (ELG) hypothesis.
Mishra (2011)	1970-2009	India	To investigate relationship between exports and economic growth	Exports & GDP	Augmented Dickey-Fuller (ADF) test for unit root, Johansen cointegration test, VECM&Granger causality test	The study provide evidence for growth driven exports in case of India

Author	Period of the study	Countries/ Region	Objective of the study	Variables	Methodology	Conclusions
Nanda and Panda (2011)	1970-2006	India	To test empirical relationship between exports and economic growth under bivariate & multivariate framework	GDP, GDP without exports, exports, imports, gross capital formation and terms of trade	Dickey-Fuller, ADF & PP test for unit root, Granger causality &Engle-Granger cointegration test, Johansen cointegration test, VECM, impulse response function & variance decomposition analysis	The study supported unidirectional relationship from exports to GDP i.e. ELG hypothesis for India
Ray (2011)	1972-73 to 2010-11	India	To investigate the dynamics of the relationship between export and economic growth	GDP & Exports	Augmented Dickey-Fuller (ADF) and Phillips- Perron (PP) test for unit root, Johansen cointegration test, VECM&Granger causality test	The results showed GDP and exports were mutually causal. Hence, the findings supported bidirectional causality.
Kumari and Malhotra (2014)	1980-2012	India	To explore the relationship between export and economic growth	GDP per capita& Exports	Augmented Dickey-Fuller (ADF) and Phillips- Perron (PP) test for unit root, Johansen cointegration test&Granger causality test	The causality results indicated bidirectional causation among variables and supported ELG hypothesis in short run.
Agrawal (2015)	1960-2012	India	To examine export-led growth hypothesis during pre –post liberalization period	GDP net of exports, REER, exports, imports & gross capital formation	ADF, PP & the Generalised Least Square based Dickey-Fuller (DFGLS) tests for unit root,Johansen cointegration test, Granger causality test& FEVD	The study supported ELG hypothesis particularly in post liberalization period in case of India.

Author	Period of the study	Countries/ Region	Objective of the study	Variables	Methodology	Conclusions
Ghoshal (2015)	1980-2013	India	To test GDP led exports and Export led GDP in general & with implementation of trade agreements	GDP & Exports	Phillips- Perron unit root test, Johansen cointegration test,Granger causality, Regression & ANOVA	No Cointegration. Overall Causality & regression results indicated BDC & negative and significant relationship between exports & GDP. Causality & regression results for pre trade agreement period revealed GDP was caused by exports & negative and insignificant relationship while for post trade agreement period GDP caused exports & negative and insignificant relationship. ANOVA results showed that trade openness changed significantly post trade agreement period.

Note: *BDC refers to bi-directional causality, ELG refers to export led growth, GLE refers to growth led export and NC refers to no causality*

Data

The time series data covers the period from 1980 to 2014. The annual data at the 2010 constant US dollar prices have been obtained from two sources. Data on real GDP, GDP per capita, real exports, real imports, real gross capital formation have been compiled from World Development Indicators while data on total labour force has been collected from UNCTAD. Data on export and import shares have been extracted from Asia Regional Integration Centre, Asian Development Bank (ADB). All the variables are taken in their natural logarithms to avoid the problem of heteroscedasticity (Gujarati 1995). The variables used for analysis are -

LNGDPPC= Log of Gross Domestic Product per capita.

LNGDP- Log of Gross Domestic Product

LNEXP= Log of Exports of Goods & Services.

LNIMP= Log of Imports of Goods & Services.

LNGCF= Log of Gross Capital Formation.

LNTO= Log of Trade Openness.

LNLAB= Log of total labour force.

The prefix 'LN' stands for natural logarithm & 'D' denotes differencing of the time series. To examine export-led growth (ELG) hypothesis following two algebraic equations have been used-

$$LNGDPPC_t = \beta_0 + \beta_1 LNEXP_t + \beta_2 LNIMP_t + \beta_3 LNGCF_t + \beta_4 LNTO_t + \beta_5 LNLAB_t + \varepsilon_t$$

$$LNGDP_t = \beta_0 + \beta_1 LNEXP_t + \beta_2 LNIMP_t + \beta_3 LNGCF_t + \beta_4 LNTO_t + \beta_5 LNLAB_t + \varepsilon_t$$

Methodology

The entire analysis procedure has been divided into four parts as given below -

- To analyse the growth performance of Indian economy the compound growth rates of exports, imports, GDP and GDP per capita have been worked out by an exponential function of the form.

$$\text{Log } Y_t = a + b_t$$

- To analyse the significance and performance of international trade in the Indian economy following ratios have been calculated for.

$$\text{Trade Openness Ratio} = \frac{Exports + Imports}{GDP} \times 100$$

$$\text{Export / Import Propensity Ratio} = \frac{Exports/Imports}{GDP} \times 100$$

$$\text{Marginal Propensity to Export} = \frac{\Delta Exports/\Delta Imports}{\Delta GDP}$$

- To measure the changes in direction of trade, export and import shares have been calculated.

To examine the export-led growth hypothesis cointegration and VECM based causality tests have been used. Prior to testing for cointegration, unit root tests have been applied.

Unit Root Test

To get reliable & unbiased results the variables of model must be stationary (free from unit root). The non-stationarity of variables can cause 'spurious regression' problem discussed in Granger and Newbold (1974) & Al-Yousif (1999). Augmented Dickey Fuller (ADF) test and Phillips &Perron (PP) tests have been carried out to determine the order of integration of each time series used in the analysis so as to determine the appropriate technique that can be used to find out relationship among variables.

Cointegration Test

According to Engle and Granger (1987),"A linear combination of two or more non-stationary series may be stationary. If sucha stationary linear combination exists, the non-stationary time series are said to be *cointegrated*. The stationary linear combination is called the *cointegrating equation* and may be interpreted as a long-run equilibrium relationship among the variables."The purpose of the cointegration test is to determine whether a group of non-stationary series is cointegrated or not. The presence of a cointegrating relation forms the basis of the Vector Error Correction (VEC) specification. VAR-based cointegration tests have been implemented here using the methodology developed by Johansen (1991, 1995). In the Johansen framework, VAR of order *p* is considered as:

$$y_t = A_1 y_{t-1} + \ldots\ldots + A_p y_{t-p} + Bx_t + \varepsilon_t \qquad (7)$$

where y_t is a *k*-vector of non-stationary I(1) variables, $x_t$is a *d*-vector of deterministic variables, and ε_t is a vector of innovations. As most of economic time series are found to be non-stationary therefore VAR model is generally estimated in first difference form. Hence, above stated VAR can be rewritten as,

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + Bx_t + \varepsilon_t \qquad (8)$$

$$\Pi = \sum_{i=1}^{p} A_i - I, \qquad \Gamma_i = -\sum_{j=i+1}^{p} A_j \qquad (9)$$

Granger's representation theorem states that if the coefficient matrix Π has reduced rank $r<k$, then there exist $k \times r$ matrices α and β each with rank r such that Π = αβ' and $\beta' y_t$ is I(0). *r*is the number of cointegrating relations (the cointegrating rank) and each column of β is the

cointegrating vector. The elements of α are known as adjustment parameters in the VEC model. Two types of test statistics are reported. The first block reports trace statistics and the second block reports the maximum eigenvalue statistics.

Trace Statistics

The trace statistic reported in the first block tests the null hypothesis of *r* cointegrating relations against the alternative of *k* cointegrating relations, where *k* is the number of endogenous variables, for *r*=0,1,…, *k*-1. The alternative of *k* cointegrating relations corresponds to the case where none of the series has a unit root and a stationary VAR may be specified in terms of the levels of all of the series. The trace statistic for the null hypothesis of *r* cointegrating relations is computed as:

$$LR_{tr}(r|k) = -T \sum_{i=r+1}^{k} \log(1-\lambda_i), \qquad (10)$$

Where λ_i is the i-th largest eigenvalue of the matrix in (9)which is reported in the second column of the output table.

Maximum Eigenvalue Test Statistic

The second block of the output reports the maximum eigenvalue statistic which tests the null hypothesis of *r* cointegrating relations against the alternative of *r*+1 cointegrating relations. This test statistic is computed as:

$$LR_{max}(r|r+1) = -Tlog(1-\lambda_{r+1}) \qquad (11)$$

Lag Length

An important preliminary step in cointegration analysis is the selection of the VAR lag order. The most commonly used five criteria are sequential modified Likelihood Ratio (LR) test statistic, Final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC), Hannan-Quinn information criterion (HQ). The study constructed the VAR system along with dummies to test for lag length criteria.

Vector Error Correction Model

A vector error correction (VEC) model is a restricted VAR designed for use with non-stationary series that are known to be cointegrated. The VEC has cointegration relations built into the specification so that it restricts the long-run behavior of the endogenous variables to converge to their cointegrating relationships while allowing for short-run adjustment dynamics. The cointegration term is known as the *error correction* term since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments.

Vector error correction model estimates the short-run dynamics (or the direction of causality among variables). The objective here is to examine whether or not the export-led growth, growth driven exports or both hold true for Southeast economies. The error correction representation of the models in case of five variables is written as:

Model-I

$$\Delta LNGDPPC_t = \beta_1 + \sum_{k=1}^{m} [\theta_{1k}\Delta LNGDPPC_{t-k} + \gamma_{1k}\Delta LNEXP_{t-k} + \phi_{1k}\Delta LNIMP_{t-k} + \alpha_{1k}\Delta LNGCF_{t-k} + \delta_{1k}\Delta LNLAB_{t-k}] + \lambda_1 EC_{t-1} + \varepsilon_1$$

$$\Delta LNEXP_t = \beta_2 + \sum_{k=1}^{m} [\theta_{2k}\Delta LNGDPPC_{t-k} + \gamma_{2k}\Delta LNEXP_{t-k} + \phi_{2k}\Delta LNIMP_{t-k} + \alpha_{2k}\Delta LNGCF_{t-k} + \delta_{2k}\Delta LNLAB_{t-k}] + \lambda_2 EC_{t-1} + \varepsilon_2$$

Model-II

$$\Delta LNGDP_t = \beta_1 + \sum_{k=1}^{m} [\theta_{1k}\Delta LNGDP_{t-k} + \gamma_{1k}\Delta LNEXP_{t-k} + \phi_{1k}\Delta LNIMP_{t-k} + \alpha_{1k}\Delta LNGCF_{t-k} + \delta_{1k}\Delta LNLAB_{t-k}] + \lambda_1 EC_{t-1} + \varepsilon_1$$

$$\Delta LNEXP_t = \beta_2 + \sum_{k=1}^{m} [\theta_{2k}\Delta LNGDP_{t-k} + \gamma_{2k}\Delta LNEXP_{t-k} + \phi_{2k}\Delta LNIMP_{t-k} + \alpha_{2k}\Delta LNGCF_{t-k} + \delta_{2k}\Delta LNLAB_{t-k}] + \lambda_2 EC_{t-1} + \varepsilon_2$$

Where m is the lag length and EC_{t-1} is error correction term. The coefficient of error correction term reveals whether past value of observed variables affect the current values of the variable under study. The magnitude and statistical significance of error correction term measures the tendencies of each variable towards equilibrium. A significant value of the coefficient indicates the significant role of past equilibrium errors in determining current outcomes.

Impulse Response Function (IRF)

A shock to the *i*-th variable not only directly affects the *i*-th variable but is also transmitted to all of the other endogenous variables through the dynamic (lag) structure of the VAR. An impulse response function traces the effect of a one-time shock to one of the innovations on current and future values of the endogenous variables. For example a certain change in the error term in the GDP equation will change GDP in the current as well as future periods and will also affect the other endogenous variables (Eviews, 2006; Afzal and Hussain, 2010).

Variance Decomposition Analysis (VDA)

While impulse response functions trace the effects of a shock to one endogenous variable on to the other variables in the VAR, *variance decomposition* separates the variation in an endogenous variable into the component shocks to the VAR. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR. In other words, it depicts the amount of a change in a variable is due to its own shock and how much due to shocks to other variables. In the short-run, most of the variation is due to own shock. However, as the lagged variables' effect starts kicking in, the percentage of the effect of other shocks increases over time (Eviews, 2006; Evans, 2013).

Diagnostic Tests

The models were tested for normality, heteroskedasticity and serial correlation. The study employed Jarque-Bera Normality test, ARCH Heteroskedasticity test and Breusch-Godfrey serial correlation LM test for diagnostic checking.

Results

Trade indices of Indian economy have been presented in table 2. Trade openness ratio is measured as the ratio of trade (sum of exports and imports) to the total value of output (gross domestic product or GDP). A high ratio is often interpreted as an indicator of a more open economy. The export/import propensity ratio measures the share of exports/imports in GDP, shows the export/import performance of economy. The marginal propensity to export/import is a measure of the extent to which exports/ imports are induced by GDP growth of country. It may be defined as the ratio of the change in total exports/ imports to the change in GDP over a defined period. Table indicated significant changes in trade openness and export/import propensity ratios after liberalization period. While the Marginal Propensity to Export/Import (MPE/MPM) ratios showed large variations over the years.

Table-2: Trade Indices of Indian Economy

YEAR	TO	EPR	IPR	MPE	MPM
1980	13.32	6.72	6.60	-	-
1981	13.14	6.29	6.85	-0.01	0.11
1982	13.29	6.44	6.85	0.11	0.07
1983	13.73	5.95	7.78	-0.01	0.21
1984	12.57	6.15	6.42	0.11	-0.29
1985	12.42	5.47	6.95	-0.07	0.17
1986	13.27	5.51	7.76	0.06	0.25
1987	13.32	5.97	7.34	0.18	-0.03
1988	13.17	5.85	7.31	0.05	0.07
1989	13.24	6.19	7.05	0.12	0.03
1990	13.42	6.51	6.90	0.12	0.04

YEAR	TO	EPR	IPR	MPE	MPM
1991	13.90	7.07	6.83	0.60	0.00
1992	14.88	7.03	7.85	0.06	0.26
1993	16.57	7.64	8.93	0.20	0.32
1994	18.36	8.09	10.27	0.15	0.30
1995	22.11	9.89	12.23	0.34	0.38
1996	20.86	9.77	11.09	0.08	-0.04
1997	21.24	9.17	12.07	-0.06	0.36
1998	23.57	9.84	13.73	0.21	0.41
1999	24.16	10.66	13.50	0.20	0.11
2000	25.73	12.13	13.60	0.50	0.16
2001	25.43	12.07	13.35	0.11	0.08
2002	28.49	14.08	14.41	0.67	0.42
2003	29.52	14.31	15.21	0.17	0.25
2004	34.09	16.86	17.22	0.49	0.43
2005	40.35	19.45	20.90	0.47	0.60
2006	44.66	21.42	23.23	0.43	0.48
2007	44.47	20.90	23.57	0.15	0.28
2008	50.89	23.05	27.84	0.78	1.38
2009	45.37	20.25	25.12	-0.13	-0.07
2010	48.31	21.97	26.34	0.39	0.38
2011	53.71	23.81	29.90	0.52	0.84
2012	54.07	24.07	30.01	0.29	0.32
2013	50.16	24.32	25.84	0.28	-0.37
2014	47.35	23.06	24.29	0.06	0.03

Source: Author's Calculations based on data from World Development Indicators (WDI), online database.

Figure-2

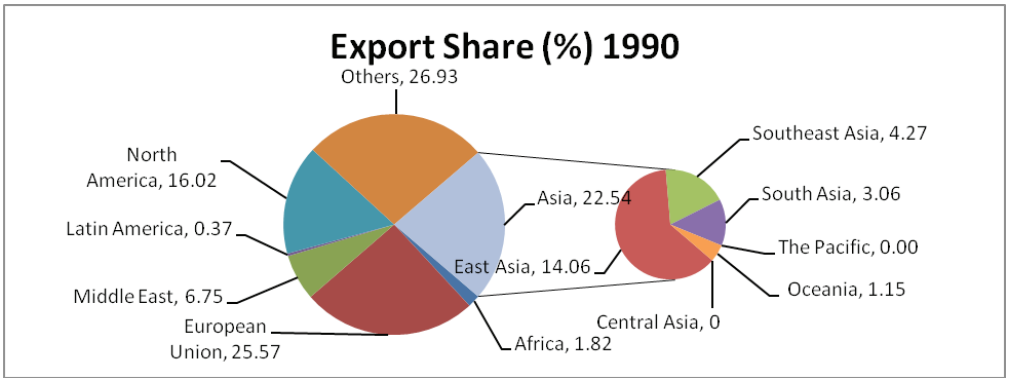


Figure-3

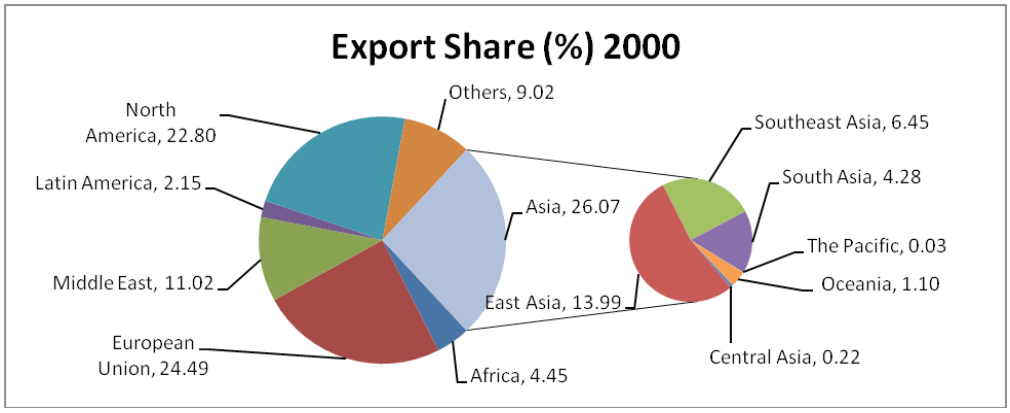


Figure-4

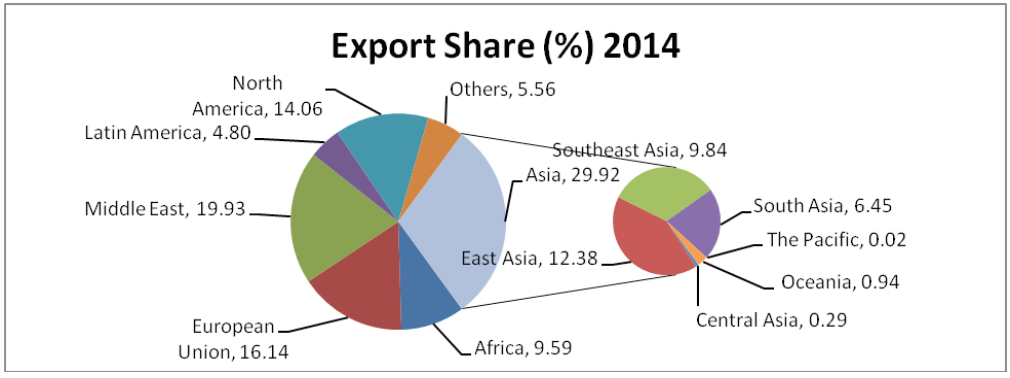


Figure-5

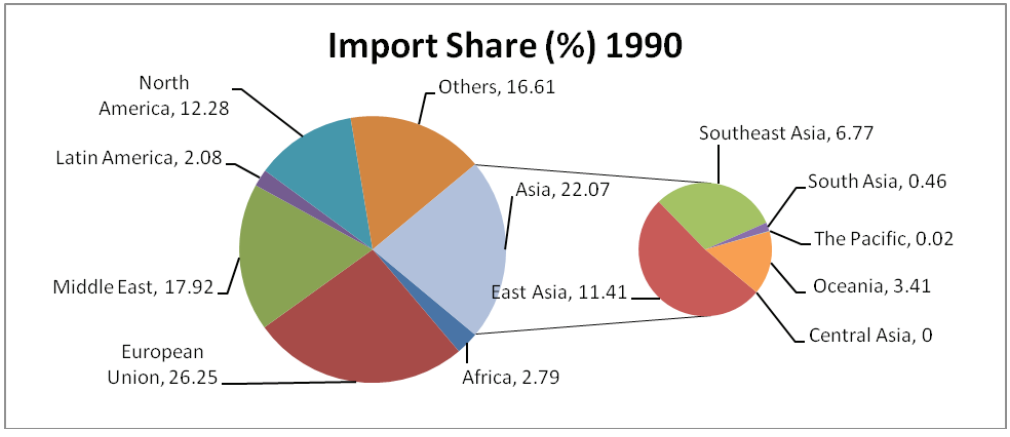


Figure-6

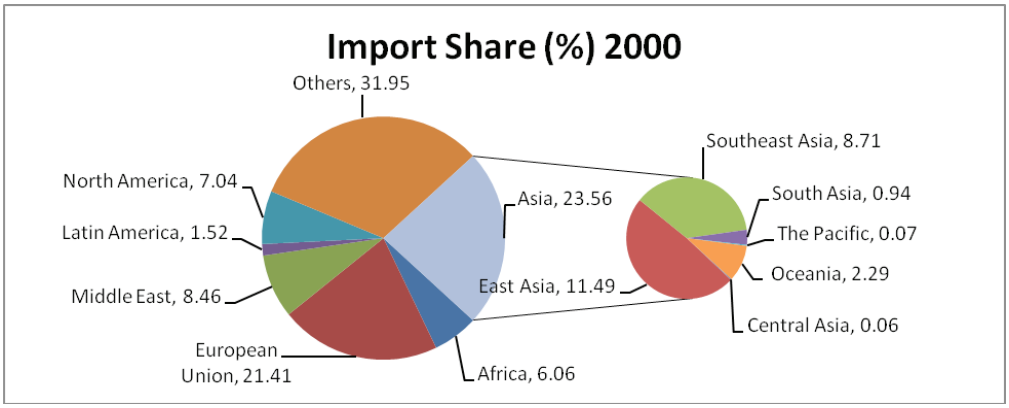
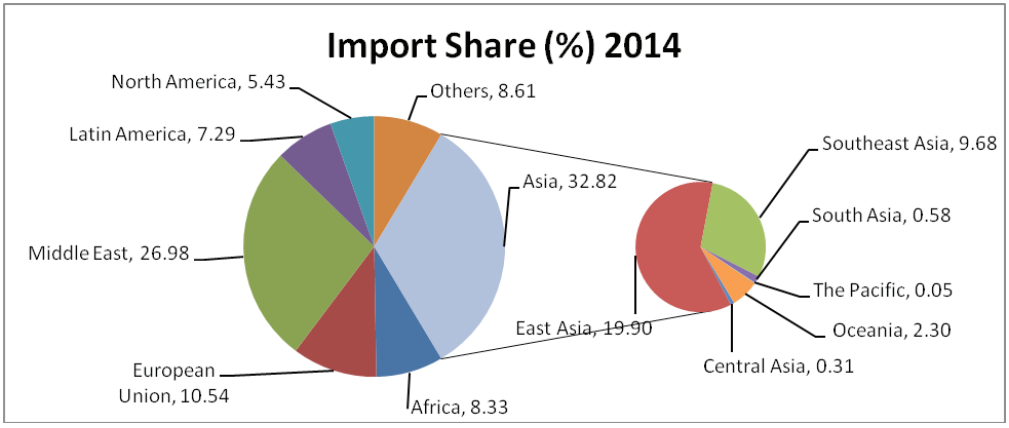


Figure-7



Figures 2, 3, 4, 5, 6 and 7 give information to detect which economies were the most important destination for exports and imports at various point of time. Figures also depict the changes over time in the proportion and direction of trade. Increase in the value of share indicates rising significance of trading partner. Furthermore, these shares show the percentage of goods and services exported and imported to trading partners. The direction of exports and imports has been analyzed at three points of time i.e. 1990, 2000 and 2014. India's share of exports and imports with trade partners like Asia (Including the Pacific and Oceania), Latin America, Africa, European Union, Middle East, North America, and Others have been shown.

In Figure-2, Pie chart indicates that in 1990 India's export share was highest with European Union (25.57 percent) followed by Asia (Including the Pacific and Oceania) (22.54 percent)and North America (16.02 percent). Within Asia, East Asia (14.06 percent) recorded highest share in India's exports. In 2000, Asia (Including the Pacific and Oceania)(26.07 percent) replaced European Union as its highest exporting partner

and registered highest share followed by European Union (24.49 percent) and North America (22.80 percent). Within Asia, East Asia (13.99%) continued to be its highest exporting partner but the share was declined as compare to the year 1990 (see Figure-3). However in 2014, Asia (Including the Pacific and Oceania) (29.92 percent) continued to be highest exporting partner followed by Middle East (19.93 percent) and European Union (16.14 percent) (see figure 4). Within Asia, East Asia (12.38 percent) continued to be its highest exporting partner but the share was declined again as compare to the year 2000. The pie chart indicated that Asia (Including the Pacific and Oceania), European Union, North America and Middle East were important export partners of India.

Results shown in figure 5 indicates that India's import share was highest with European Union (26.25 percent) followed by Asia (Including the Pacific and Oceania) (22.07 percent) and Middle East (17.92 percent). Within Asia, East Asia (11.41 percent) recorded highest share in India's imports. In 2000, other countries constituted highest share (31.95 percent) followed by Asia (Including the Pacific and Oceania) (23.56 percent) and European Union (21.41 percent). Within Asia, East Asia (11.49 percent) continued to be its highest importing partner and the share was increased as compare to the year 1990. During 2014, Asia (Including the Pacific and Oceania) (32.82 percent) emerged as highest importing partner followed by Middle East (26.98 percent) and European Union (10.54 percent). East Asia (19.90 percent) again continued to be its highest importing partner with significant rise as compare to the year 2000. Thus, these pie charts showed that Asia (Including the Pacific and Oceania), European Union, North America and Middle East were important import partners of India.

East Asia continued to be most important export and import destination for India within Asia during the period under analysis.

Table-3: Results of Unit Root Tests for Variables

Variables	ADF (Test Statistics)		PP (Test Statistic)		Order of Integration
	Level	First Difference	Level	First Difference	
LNGDPPC	-0.716 (0.963)	-5.605* (0.000)	-0.341 (0.985)	-9.788* (0.000)	I(1)
LNGDP	-1.042 (0.924)	-5.589* (0.000)	-0.679 (0.966)	-9.474* (0.000)	I(1)
LNEXP	-2.966 (0.156)	-4.987* (0.001)	-3.030 (0.139)	-4.972* (0.001)	I(1)
LNIMP	-2.343 (0.400)	-5.124* (0.001)	-2.155 (0.498)	-5.122* (0.001)	I(1)
LNGCF	-1.891 (0.637)	-7.756* (0.000)	-1.891 (0.637)	-7.728* (0.000)	I(1)
LNLAB	-1.042 (0.923)	-3.299*** (0.083)	-0.456 (0.980)	-3.281*** (0.087)	I(1)

*Note: * and *** indicate significance at the 1% and 10% respectively.*
Values in the parentheses show p-values.

Table-4: Results of VAR Lag Order Selection Criteria

Endogenous variables: LNGDPPC LNEXP LNIMP LNGCF LNLAB (Model-I) Exogenous variables: C Sample: 1980 2014						
Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	137.553	NA	1.33e-10	-8.551	-8.320	-8.476
1	331.775	313.260*	2.47e-15	-19.469	-18.081*	-19.017
2	360.770	37.412	2.19e-15	-19.727	-17.182	-18.897
3	390.099	28.383	2.44e-15	-20.006	-16.305	-18.800
4	441.506	33.165	1.11e-15*	-21.710*	-16.853	-20.126*
Endogenous variables: LNGDP LNEXP LNIMP LNGCF LNLAB (Model-II) Exogenous variables: C Sample: 1980 2014						
Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	131.869	NA	1.92e-10	-8.185	-7.953	-8.109
1	332.777	324.045	2.32e-15	-19.534	-18.146*	-19.081
2	363.836	40.076*	1.80e-15	-19.924	-17.380	-19.095
3	394.698	29.866	1.81e-15	-20.303	-16.602	-19.096
4	445.900	33.033	8.39e-16*	-21.993*	-17.136	-20.410*
* indicates lag order selected by the criterion LR: sequential modified LR test statistic (each test at 5% level) FPE: Final prediction error AIC: Akaike information criterion SC: Schwarz information criterion HQ: Hannan-Quinn information criterion						

Unit Root Results

Stationarity results for all variables have been presented in Table-3. Augmented Dickey-Fuller (ADF) test and Phillip-Perron (PP) test (including constant with trend) for six variables namely LNGDPPC, LNGDP, LNEXP, LNIMP, LNGCF and LNLAB revealed the presence of unit root for all series at levels. After first differencing, all series were found to be stationary i.e. integrated of order one or I(1).

VAR Lag Order Selection Criteria

The next step involves investigation of the long run relationship among variables. Before applying Johansen co-integration procedure appropriate lag length must be set. In Table-4, the results of VAR lag order selection criteria have been presented. Schwarz information criterion was adopted to estimate co-integration and unrestricted VAR. Lutkepohl (1985) pointed out that Schwarz criterion often chooses the right autoregressive order which results in smallest mean squared forecasting error in sample.

Table-5: Results of Johansen Co-integration Test Statistics

Unrestricted Cointegration Rank Test (Trace)					**Unrestricted Cointegration Rank Test (Maximum Eigenvalue)**				
Model-I					Model-I				
Hypothesized No. of CE(s)	Eigen value	Trace Statistics	Critical Value 0.05	Prob.**	Hypoth-esized **No. of CE(s)**	**Eigen value**	**Trace Statistics**	**Critical Value 0.05**	**Prob.****
None *	0.645	93.344	88.803	0.022	None	0.645	34.182	38.331	0.138
At most 1	0.529	59.162	63.876	0.116	At most 1	0.529	24.866	32.118	0.294
At most 2	0.467	34.295	42.915	0.275	At most 2	0.467	20.812	25.823	0.199
At most 3	0.212	13.482	25.872	0.699	At most 3	0.212	7.890	19.387	0.831
At most 4	0.155	5.592	12.517	0.513	At most 4	0.155	5.592	12.517	0.513
Trace test indicates 1 co-integrating eqn(s) at the 0.05 level Max-eigenvalue test indicates no co-integration at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values									
Model- II					**Model-II**				
None *	0.650	101.471	88.803	0.004	None	0.650	34.724	38.331	0.122
At most 1 *	0.595	66.746	63.876	0.028	At most 1	0.595	29.908	32.118	0.090
At most 2	0.463	36.837	42.915	0.177	At most 2	0.463	20.536	25.823	0.213
At most 3	0.287	16.301	25.872	0.468	At most 3	0.287	11.191	19.387	0.493
At most 4	0.143	5.110	12.517	0.580	At most 4	0.143	5.110	12.517	0.580
Trace test indicates 2 co-integrating eqn(s) at the 0.05 level Max-eigenvalue test indicates no co-integration at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values									

Cointegration Results

To analyze long run relationship Johansen cointegration procedure has been employed. Table-5 depicts that both trace test and max eigen test revealed conflicting results. The trace test indicated one cointegrating equation whereas max eigen test exhibited no evidence of cointegration in Model-I while in Model-II, the trace test indicated two cointegrating equations whereas max eigen test didn't exhibit cointegration. Sjo (2008) found trace test better as it appears to be more robust to skewness and excess kurtosis. Cheung and Lai (1993) also recommended trace statistics. Paul (2011) also followed the trace statistics to analyse VECM. Therefore, considering results of trace test evidence of cointegrating equation has been found at 5% level of significance.

Table-6: Cointegration Equation Normalized with Respect to GDPPC

Model-I				
LNGDPPC(-1)	**LNEXP(-1)**	**LNIMP(-1)**	**LNGCF(-1)**	**LNLAB(-1)**
1.000000	-0.165* (0.095)	0.320* (0.107)	0.163 (0.109)	3.633* (0.471)
Model-II				
LNGDP(-1)	**LNEXP(-1)**	**LNIMP(-1)**	**LNGCF(-1)**	**LNLAB(-1)**
1.000000	-0.613* (0.457)	1.388* (0.466)	1.375* (0.478)	12.680* (2.056)

Note: *Values in the parentheses show standard errors.*

The normalized cointegrating equations for GDP per capita and GDP has been given in Table-6. The equation shows that in long run exports affects positively GDP per capita and GDP in India. The impact was also significant. Both imports and labour were found to be negative and significant in GDP per capita and GDP equations. However, gross capital formation hold negative sign but it was found to be insignificant in former and significant in later.

Table-7: Short Run Causality based on VECM

	Model-I		Model-II	
Variables	**D(LNGDPPC)**	**D(LNEXP)**	**D(LNGDP)**	**D(LNEXP)**
ECT	-0.063 (0.452)	-0.463*** (0.093)	-0.005 (0.772)	-0.038 (0.551)
D(LNGDPPC)/ D(LNGDP)	-0.001 (0.099)	1.360*** (0.075)	-0.134 (0.560)	0.913 (0.259)
D(LNEXP)	0.107** (0.033)	-0.050 (0.744)	0.097** (0.053)	-0.028 (0.864)
D(LNIMP)	0.028 (0.533)	0.313** (0.036)	0.020 (0.642)	0.243 (0.122)
D(LNGCF)	0.017 (0.744)	0.391** (0.025)	0.023 (0.658)	0.378** (0.048)
D(LNLAB)	-1.173* (0.012)	1.428 (0.317)	-0.993** (0.040)	1.365 (0.401)

Note: *Values in the parentheses show p-values.*
, ** and * indicate significance at the 1%, 5% and 10% respectively.*

The results of VECM for India have been presented in Table-7. The results demonstrate that coefficient of error correction term (ECT) with GDPPC as dependent variable was not statistically significant at 5% level of significance but its sign was negative. The coefficient of error correction term for exports was found to be negative and statistically significant at 10% level of significance. The coefficient measuring speed of

adjustment was 0.46 percent implying that speed of adjustment of any disequilibrium towards long run equilibrium was about 46 percent. Furthermore, negative and statistically significant error correction term (ECT) granted evidence for long run causality between variables. In the short run, coefficient of first difference of LNEXP lagged one period for GDPPC equation and coefficient of first difference of LNGDPPC lagged one period for exports equation were found to be statistically significant which indicates the presence of short run bidirectional causality (see Model-I). For Model-II, the result exhibited that coefficient of error correction term (ECT) was not significant in any of two cases for GDP and exports. However, the sign was negative (correct) for both equations. In the short run, coefficient of first difference of LNEXP lagged one period for GDPPC equation was found to be positive and statistically significant and coefficient of first difference of LNGDP lagged one period for exports equation was found to be statistically insignificant which indicates the presence of short run unidirectional causality from exports to GDP i.e., export-led growth.

Table-8: Results of Diagnostic Tests

	Model-I	Model-II
Jarque-Bera Normality Test	1.270 (0.529)	0.856 (0.651)
ARCH Heteroskedasticity Test	0.003 (0.955)	0.405(0.529)
Breusch-Godfrey LM test	0.094 (0.760)	0.170 (0.683)

Note: *Values in the parentheses show p-values.*

The models were tested for normality, heteroskedasticity and serial correlation (see Table-8). Diagnostic tests were carried out on the data revealed that both models were well specified. Diagnostic tests also indicated that the residuals were normally distributed, homoskedastic and serially uncorrelated in both models. Thus, the diagnostic results for estimated models granted evidence for normality, no serial correlation and heteroscedastictiy.

Impulse Response Function and Variance Decomposition Analysis Results

The results of impulse response function indicated that among all variable one positive shock to GDPPC, exports and imports results hike in GDPPC whereas one positive shock to labour results decline in GDPPC. One positive shock to gross capital formation initially appears negative and turns positive later. In case of exports, one positive shock to GDPPC and its own shock brings positive response for exports while positive shock to labour results in negative response of exports. However, response of exports to imports is positive and dies out. A positive shock to gross capital formation initially appears positive and turns negative later (Model-I). In Model-II, for both exports and GDP, one positive shock to all selected variables results in positive response of exports and GDP except for labour.

Variance decomposition analysis (VDA) indicates the whole variance in GDPPC is explained by its own variance. After ten years, GDPPC (81.90 percent), exports (7.34 percent), imports (7.24 percent), labour (3.79 percent) and gross capital formation (0.25 percent) shocks account for variability in GDPPC. For exports, variance in exports explained by exports (90.06 percent) and GDPPC (9.93) shocks mainly. After ten years, exports (63.07 percent), GDPPC (29.48 percent), labour (5.50 percent), gross capital formation (1.00 percent) and imports (0.92 percent) shocks account for variability in exports (see Model-I). For Model-II, variance decomposition analysis highlighted that whole variance in GDP is described by its own variance. After ten years, GDP (75.20 percent), imports (12.80 percent), exports (8.86 percent), gross capital formation (2.51 percent) and labour (0.60 percent) shocks account for variability in GDP. In case of exports, major variance in exports is explained almost by its own variance (90.87 percent). After ten years, exports (66.10 percent), GDP (29.73 percent), imports (2.70 percent), gross capital formation (1.11 percent) and labour (0.34 percent) account for exports variability.

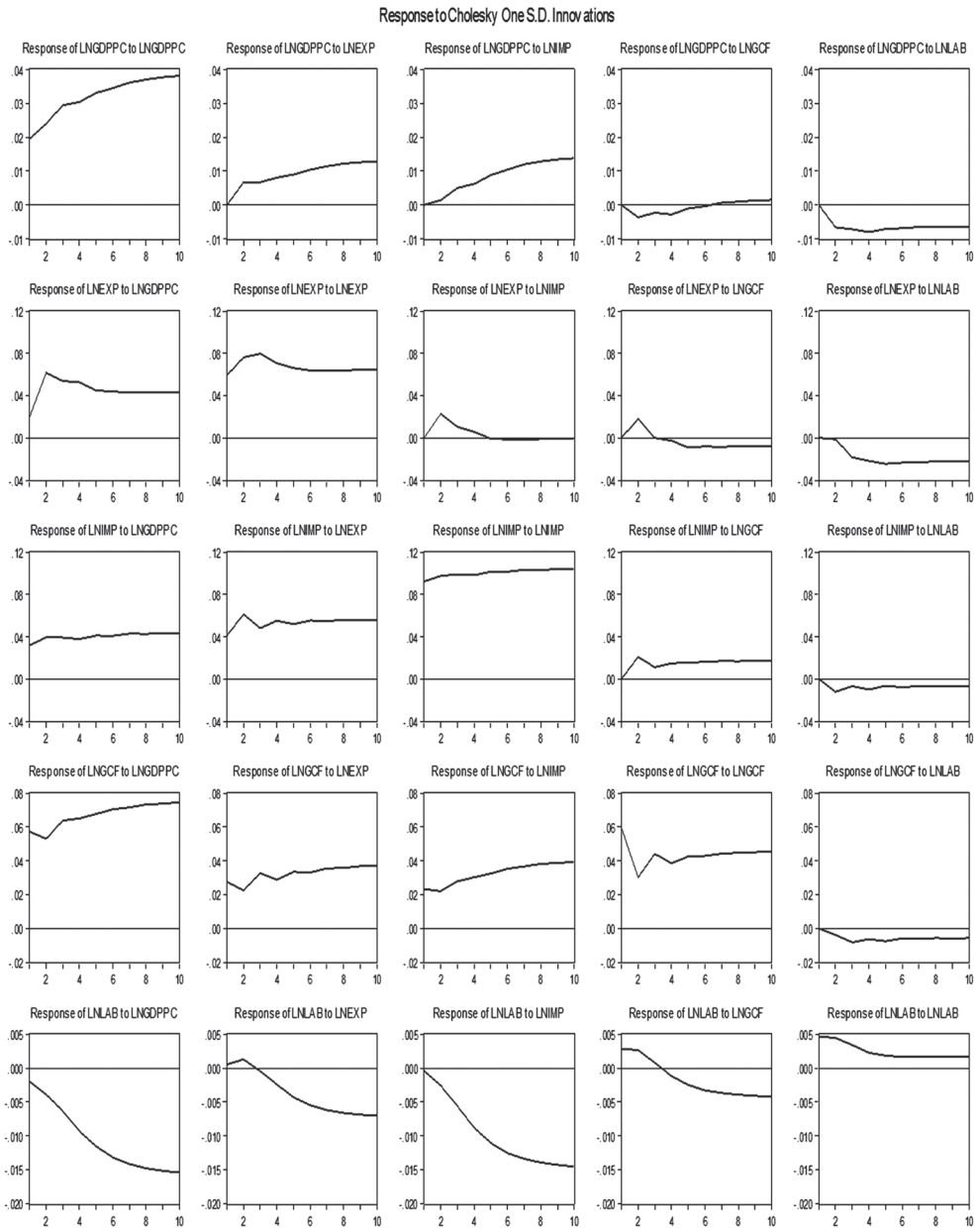
Conclusion

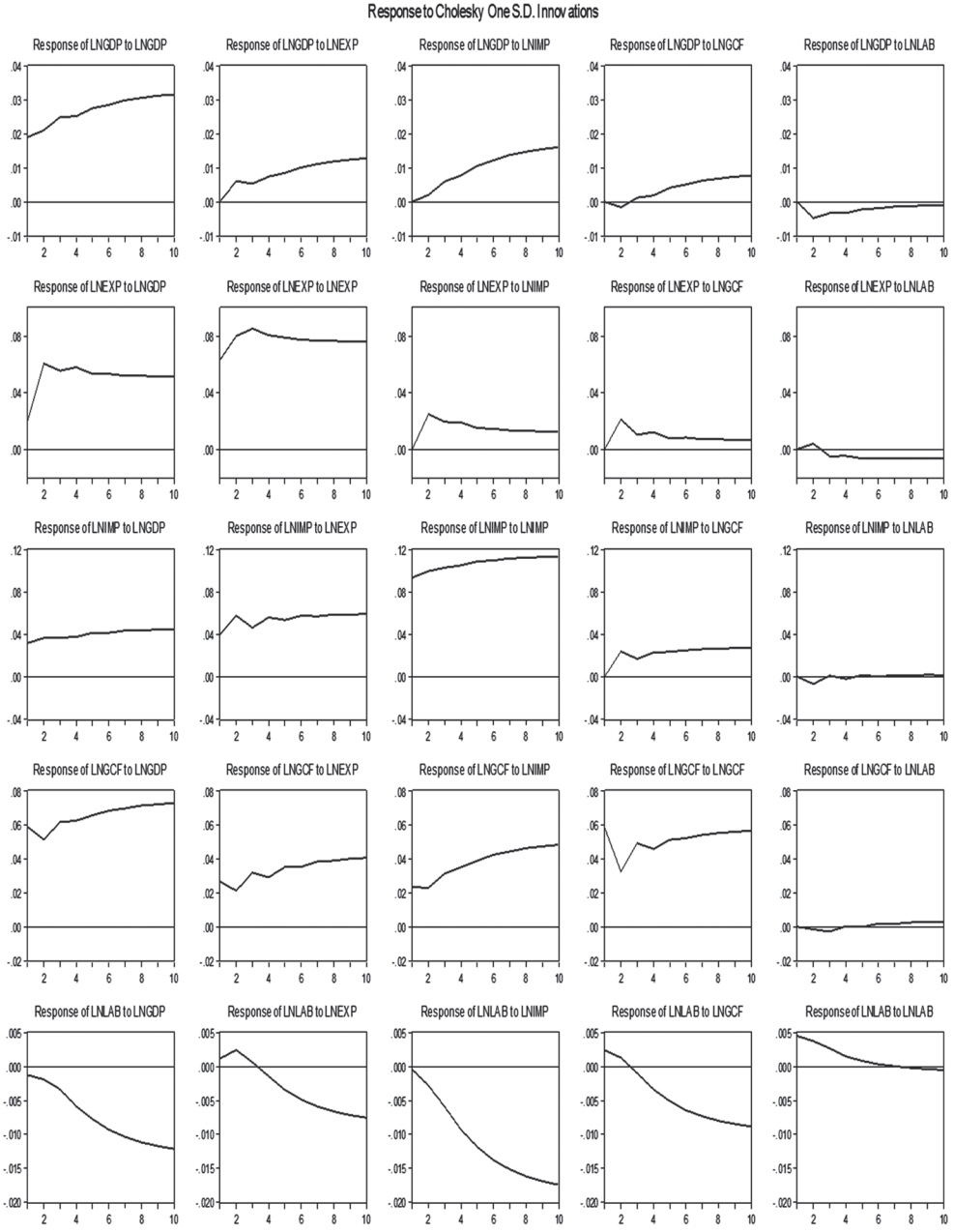
The present study investigates the export-growth relationship for India under multivariate framework using two models. Using time series data at 2010 constant US dollar prices for the period 1980-2014, the study made use of econometric techniques such as Johansen cointegration and causality test based restricted Vector Autoregressive (VAR) framework. For both models, only trace test supported cointegration while bidirectional causality based on vector error correction model was observed in first model and unidirectional causality from exports to GDP in second model. Thus, the study supports export-led growth as short run phenomenon in case of India. However, the second model also failed to get significant error correction term in vector error correction model which depicts structural adjustments towards long run equilibrium in case of any disequilibrium. The results of impulse response function and variance decomposition analysis supports causality results depict that exports has played substantial role in determining the growth of Indian economy.

The findings of present study strongly supports the findings of Din (2004), Love and Chandra (2004), Ray (2011), Kumari and Malhotra (2014) and Ghoshal (2015) for bidirectional causality in case of India. The study contradicts the causality results obtained by Natraj, Sahoo and Kamaiah (2001) and Vohra (2001) while Ghoshal (2015) for cointegration results. Further, the study partially supports the findings of Dhawan and Biswal (1999), Chandra (2003), Pandey (2006), Parida and Sahoo (2007), Srivastava and Kapoor (2007), Nain and Ahmad (2010), Pradhan (2010), Mishra (2011), Nanda and Panda (2011) and Agrawal for unidirectional causality in case of India.

Appendix

Figure-8




Response to Cholesky One S.D. Innovations
Response of LNGDP to LNGDP
Response of LNGDP to LNEXP
Response of LNGDP to LNIMP
Response of LNGDP to LNGCF
Response of LNGDP to LNLAB
Response of LNEXP to LNGDP
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Response of LNGCF to LNLAB
Response of LNLAB to LNGDP
Response of LNLAB to LNEXP
Response of LNLAB to LNIMP
Response of LNLAB to LNGCF
Response of LNLAB to LNLAB

Model-I

Table: Variance Decomposition Analysis

Variance Decomposition of LNGDPPC:					
Period	**LNGDPPC**	**LNEXP**	**LNIMP**	**LNGCF**	**LNLAB**
1	100.00	0.00	0.00	0.00	0.00
2	90.20	4.24	0.18	1.26	4.10
3	88.76	4.37	1.33	0.90	4.62
4	87.09	4.91	2.10	0.83	5.03
5	86.14	5.29	3.24	0.61	4.69
6	85.07	5.81	4.30	0.46	4.33
7	84.09	6.29	5.28	0.37	3.95
8	83.21	6.72	6.08	0.31	3.66
9	82.49	7.06	6.72	0.28	3.43
10	81.90	7.34	7.24	0.25	3.25

Variance Decomposition of LNEXP:					
Period	**LNGDPPC**	**LNEXP**	**LNIMP**	**LNGCF**	**LNLAB**
1	9.93	90.06	0.00	0.00	0.00
2	29.22	64.87	3.60	2.28	0.01
3	29.49	65.12	2.62	1.36	1.38
4	30.49	63.90	2.05	1.03	2.51
5	30.10	63.55	1.68	1.05	3.59
6	29.97	63.26	1.44	1.04	4.26
7	29.75	63.18	1.27	1.05	4.73
8	29.65	63.12	1.13	1.03	5.05
9	29.55	63.09	1.02	1.01	5.30
10	29.48	63.07	0.92	1.00	5.50

Model-II

Table: Variance Decomposition Analysis

Variance Decomposition of LNGDP:					
Period	**LNGDP**	**LNEXP**	**LNIMP**	**LNGCF**	**LNLAB**
1	100.00	0.00	0.00	0.00	0.00
2	92.44	4.15	0.48	0.30	2.62
3	90.88	4.10	2.56	0.26	2.17
4	88.30	5.10	4.30	0.32	1.95
5	85.46	5.82	6.42	0.74	1.53
6	82.70	6.70	8.21	1.14	1.23
7	80.25	7.39	9.76	1.57	1.00
8	78.23	7.99	10.99	1.93	0.83
9	76.56	8.47	12.00	2.25	0.70
10	75.20	8.86	12.80	2.51	0.60

Variance Decomposition of LNEXP:					
Period	**LNGDP**	**LNEXP**	**LNIMP**	**LNGCF**	**LNLAB**
1	9.12	90.87	0.00	0.00	0.00
2	26.23	66.80	3.98	2.87	0.09
3	27.14	66.83	3.77	2.09	0.14
4	28.62	65.62	3.68	1.89	0.16
5	28.94	65.77	3.42	1.63	0.22
6	29.29	65.73	3.23	1.48	0.25
7	29.44	65.85	3.06	1.35	0.28
8	29.57	65.93	2.92	1.26	0.30
9	29.66	66.02	2.80	1.18	0.32
10	29.73	66.10	2.70	1.11	0.34

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India's Trade Linkage with BRCS Economies: Trends, Patterns and Future Potentialities

Nassir Ul Haq Wani and **Jasdeep Kaur Dhami**

Economies all the way throughout the world have shaped themselves into many regional trading blocs like ASEAN, BIMSTEC, SAARC and much more weight is added by the experience of triumphant grouping of BRICS bloc. Looking through the world since 1960's, the inspiration regarding the formation and expansion of regional trading blocs is to contend and challenge the growing world outside. The foremost purpose of trading blocs is to organize easier trade, increase competence, development and competitiveness. Ambitious towards incorporation by the pressure of economic curiosity of the bloc, the BRICS economies formed an economic bloc. The motivation regarding the amalgam of emerging economies has been framed with the objective of intensifying the process of social and economic development. The regular meetings of the BRICS heads prove as evidence which inculcates the deep degree of relationship among the economies. The formation of this bloc represented a way which could enhance their productive capacity and further deepen their economic knot to its ultimate end.

In this regard the paper attempts to explore the trade relations of India against the BRCS economies and investigates the opportunities which can be tapped for the mutual benefit of these economies. The paper does assess India's trends and patterns of trade with BRCS economies in the total and intra-regional trade and levy their importance. At this decisive juncture when countries across the world are exploring new avenues to triumph through regrouping into economic blocks, BRICS countries have to accelerate to remain in stable position. For the very same reason it is impossible to overstress the importance of BRICS union in global economy. In this background the paper makes an endeavor to analyse the performance of BRICS as a trading bloc and future potentiality of trade among its member countries.

Keywords: *BRICS, India, Entropy, RCA and RID*

Introduction

The world is changing from time to time and foremost shifts do occur, thus redefine the prototype of evolution. The global economy gets armored with its new leading actors, new power balance and structural design. These shifts seem to be as a result of logically grounded and consciously applied strategies. In the set of these conditions,

the relations among BRICS have gained a fresh momentum as the economies have felt the quintessence of positive political assistance and the mutual reimbursement of their conjoint potential rather than on the self burning policies. The trade between the countries has shown a phenomenal growth and yet there is a lot of untapped future potential. As economies do depend on trade and is considered as the most important factor for economic development.

The credit goes to Jim O' Neil who in 2001 coined the term BRIC in a paper titled 'Building Better Global Economic BRICs', which looked at the growth prospects of the four largest emerging economies that are culturally and geographically disparate. In 2010 one more economy got added and thus together five major emerging powers located in different parts of the world – Brazil, Russia, India, China, and South Africa, with the first letter in their names making up the acronym BRICS. Because of varied geographic and demographic magnitudes, BRICS economies are sternly impacting global development. BRICS economies are acting as promoters of economic stability in trade and investment and thus mitigating the harsh happenings in the global economy. Recent developments in the world economy have led to a new concept of international relations where emerging market economies create a strong counterbalance to already existing world powers (the US, the EU and Japan) in both economic and political areas. This results from the reallocation of global economic activities and global consumption to emerging and developing countries and hence import/export destination shifts. The transformation of global trade patterns in these economies has been driven by two interrelated processes which include, increasing fragmentation of trade and productive structures across countries as the economic globalization process has gathered pace; and secondly the increasing coordination and consolidation of particular modes of production and marketing structures.

In this regard the paper attempts to explore the trade relations of India against the BRCS economies and investigates the opportunities which can be tapped for the mutual benefit of these economies. The paper does assess India's trends and patterns of trade with BRCS economies in the total and intra-regional trade and levy their importance. The paper further reviews trade volumes and trade structure dynamics in each of the economies including merchandise trade. Trade between BRICS countries is considered in more detail, and the analysis covers trade flows. The paper is organized according to structure plan as: Overview of BRICS economies highlighting the demographic and macroeconomic indicators of the BRICS economies and their comparison with five developed countries, trade symmetry and sustainability, merchandise trade and invisible flows highlighting the direction of trade and Inter- Intra trade of BRICS economies, RCA analysis and finally summarizes key findings.

Objectives and Methodology Employed

The paper will encompass to analyse the trends and patterns of India's trade with the other economies (BRCS), analyse the symmetry and sustainability of BRICS trade, assess and estimate the extent of the intensity of trade relations between India and

the other BRCS members and finally will throw light on the potential commodity groups possessing trade potential between these nations and future potentiality of the intra-regional trade.

The paper relies on secondary data. The data has been collected through wide variety of sources viz., journals on international trade, yearbooks publishing statistical data viz., World Bank, UN, Unescap, IMR, WTO, and Uncomtrade and through different online data sources, web sites, text books, magazines etc. The Models applied for the study are as: Entropy of Bilateral Trade Symmetry, Trade Intensity Index, Revealed Comparative Advantage Index and the Symmetry Criteria (For complete explanation refer to Appendix I)

Overview of BRICS Economies

The BRICS cover forty per cent of the world's populace and account for nearly twenty -five per cent of total global GDP in terms of PPP. Comparing on the basis of GDP in PPP terms, four economies do register in top ten with China, India, Russia, and Brazil in 2nd, 4th, 6th, 8th, and South Africa at 26th place, respectively. Due to huge land share of these economies in world, these economies are blessed with vast resources as well. After Russia and Canada, China has a land area of about 9.6 million sq. km and thus the third-largest country in land size followed by India on seventh number.

Each of the BRICS countries has numerous and diverse characteristics and thus each has a huge prospective to develop. Brazil is well known for its resources such as coffee, soybeans, sugar cane, iron ore, and crude oil, with approximately 60 million hectares of arable land (just 7 per cent of its land area) but with an agricultural area of 31.2 per cent of the total land area. Russia sanctified for its enormous deposits of oil, natural gas, and minerals. India acting as a strong service provider with an increasing manufacturing base, while China as the manufacturing workshop of the world with a highly skilled workforce. South Africa, a medium-sized country is the 26th largest economy in the world with a GDP of US$ 357 billion and total land area of slightly more than 1.2 million sq. km and around 12 per cent arable land area. Considered as the world's largest producer of platinum and chromium and holds the world's largest known reserves of manganese, platinum group metals, chromium, vanadium, and alumina-silicates.

The BRICS region is extraordinary varied in terms of country size, economic and social set up, topography, geography political systems, languages and cultures as well. Two of the five countries under BRICS union viz China and India share land border while other countries don't share common border with one another. BRICS countries when compared with the rest of world provide insightful behavior. The economies are not open enough in terms of international trade, rather are very much inward oriented. If compared with other regional blocks, intra-regional trade flow is very much insignificant. The possible reason is that the major economies such Brazil, China and India are not outward oriented as compared to Russia and South Africa. Regarding the economies, some selected demographic and macroeconomic indicators have

been chosen to carry on the cross country comparison. Following table 1 shows the diagnostic characteristics of the economies. Although the economies are different in demography and pattern of development, but there are some peculiarities which are shared by them. These include a vast working pool of labor, land area, high population, increasing GDP and increasing purchasing power capacity.

Table-1: Demographic and Macroeconomic Indicators of BRICS Economies

Parameter / Country	Year	Brazil	Russia	India	China	South Africa
Population (million)	**2000**	161.7	148.5	1042.6	1244.8	44.9
	2012	198.4	141.44	1270.2	1,361.64	50.6
% Share of 60+ pop to total pop	**2011**	13.5	19.7	7.4***	N.A	6.7
% of Population above 15 years	**2011**	69.1	76.4	69.5	N.A	67.4
Compound Growth Rate of GDP	**2007**	-3.5	-3.7	5.5	10.5	-2.5
in Current Prices (in %)	**2012**	19.3	37.8	19.2	19.7	17.5
Per Capita in Current Prices	**2007**	4844.0	2116.0	371.0	601.0	3684.0
(in US $)	**2012**	8312.9	1100.9	1292.4	3559.7	7653.9

Source: World development Report 2014, International Monetary Fund, World Economic Outlook 2014
*Note: * Russia 2014; ** South Africa 2014; *** India 2011.*

The subject of sustainability is critical. Although the description provided by table 1 gives some statistics on GDP growth rates, per capita incomes and demography for the BRICS countries in the periods 2007-2012. Inspection of Table 1 clearly indicates that the second period (2007-12) was characterized by double – digit growth rates for all the countries along with a two to three times increase in the per capita incomes. As shown in the table, these countries have a fairly young population with only Russia having more than 19 percent of its population above the age of 60.

Now a pertinent question needs an answer. On what conditions and assumptions do we suppose BRICS as the future rulers of the world? The question can be answered only when we do a comparison of BRICS with developed economies. The comparable statistics is depicted in Table 2 as follows.

Table-2: Economic and Demographic Characteristics of Developed Countries

Indicators	Year	France	Germany	Japan	UK	USA
Compound growth rate of	2007	-3.3	-5.5	-2.4	5.1	6.1
GDP in Current prices (in %)	2012	4.3	4.6	3.6	7.8	8.6
Per capita in current	2007	27183.0	30861.0	41969.0	19947.0	27827.0
Prices(in US $)	2012	34234.8	40989.0	43562.9	23452.0	34563.8
Population in (Millions)	2007	57.8	79.8	125.4	58.0	266.5
	2000	59.1	80..3	126.8	58.9	282.3
	2012	63.6	81.8	127.6	63.2	314
Percentage of population above 15 Years	2012	79.2	81.7	76.9	78.9	77.4
% share of 60+ Population to total population	2012	19.7	14.8	27.6	23.8	21.7

Source: World development Report 2012, International Monetary Fund, World Economic Outlook 2012 Database, April 2010; (2) Labour Statistics, ILO.

From Table 2, it is quite clear that developed countries have fairly high growth rates of GDP except Japan but there is no denying the fact that there was a demand from emerging economies side which shifted export destinations to the BRICS bloc. Looking at USA, growth rates of GDP have been high since 2007 but the future growth of demand is likely to be hindered as per capita incomes have grown by less than half over the period from 2007 to 2012. Certain other factors do play their part like unfavorable demographics as the populations of these economies are ageing rapidly with over 20 percent of populace in the age group of 60 and above. It may thus be logical to wrap up that the expansion of BRICS will definitely shape the modern architecture of the world, be it at the micro level or at the macro level. But one thing is to be cleared that at the macro level demographics do not favor future growth but do support in the initial developmental process. Talking on the sidelines of GDP growth rate, BRICS economies have excelled well with the passage of each passing year. Table 3.3 presents the growth rate of GDP since 2002.

Table-3: Growth Rate of GDP

Country/Year	Brazil	Russia	India	China	South Africa
2000	2.7	4.7	4.6	9.1	3.7
2005	6.1	8.5	9.4	13.0	5.8
2010	-0.6	-7.8	5.7	8.7	-1.7
2015	7.5	4.0	10.4	10.3	2.8

Source: World Economic Outlook Report 2015

Table-4: Sectoral Share in GDP (Percentage to GDP)

Country	Sector	1995	2000	2005	2010	2015
Brazil	Agriculture	10.1	5.8	5.6	5.7	6.1
	Industry	29.9	22.0	27.7	29.3	24.5
	Services	60	72.2	66.7	65.0	68.5
Russia	Agriculture	-	7.6	6.7	5.4	4.7
	Industry	-	27.9	31.4	32.9	32.9
	Services	-	64.4	62.0	61.6	62.4
India	Agriculture	30.0	26.8	23.2	18.9	17.1
	Industry	22.3	23.2	20.7	21.0	28.2
	Services	47.7	50.0	56.1	60.0	54.6
China	Agriculture	26.0	19.7	15.2	12.2	11.0
	Industry	35.5	40.6	40.7	42.2	48.0
	Services	38.5	39.7	44.1	45.6	41.4
South Africa	Agriculture	4.6	3.9	3.3	2.7	3.0
	Industry	40.1	34.8	31.8	31.2	31.1
	Services	55.3	61.3	64.9	66.2	65.8

Source: United Nations System of National Accounts.

When comparing the BRICS economies on the basis of sectoral share in GDP, Brazilian

economy relies heavily on service sector as with every passing year the contribution from service sector increases and same trend is visible in other economies as well. Thus there is no denying the fact that service sector plays an engine of inclusive growth. Looking at the share of agricultural sector, only Indian economy has a double digit figure contributing 17 per cent to GDP while as in other economies the share of agricultural sector is diminishing. The intrinsic potency of the BRICS is backed by strong domestic demand based economies of India, China and Brazil. South Africa with its large resource base is also in the line to meet the aspirations of a developed economy. In BRICS economies, China followed by India, are the top growing economies in the current decade. The growth performance of Russia Brazil and South Africa also improved considerably after the financial crises of the 1990's.

In the current economic environment, sustained economic reforms and improved macroeconomic elements contributed to the progressive growth performance of the BRICS. This strong growth performance is attributed to strong macroeconomic fundamentals reflected by high mass consumption, high savings and investment rates. China has the highest saving and investment rates followed by India which have helped in reducing the contribution of net exports to GDP. As a result of this, high investment was financed by domestic savings. All the BRICS markets have great latency for establishing the most stabilizing markets and thus providing a firm foundation for the development and improvement of the economies.

Trade Symmetry and Sustainability of BRICS trade

Trade continues to be the most powerful force for global economic integration. However an important macro issue that pinches the trade structure of economies is the sustainability and symmetry of bilateral trade balances. Trade balance is defined when exports of a country equal to its imports, but in real world it is roughly possible as maximum times there is asymmetrical flow of trade. To gauge this asymmetry in trade a tool has been suggested by Theil, op.cit, called as 'Entropy' denoted by 'H'. As trade becomes more symmetric, the entropy measure of bilateral symmetry increases. Values are calculated for all pairs of countries among BRICS countries over the period 2007- 2012. The results are shown in Table 5 as follows.

Table-5: Trade Symmetry in Bilateral and Intra-BRICS Trade

Entropy (Hij)		
Bilateral Country Group	2007	2014
Brazil-Russia	0.863	*0.97*
Brazil-India	0.921	*1.32*
Brazil-China	0.999	*1.04*
Brazil-South Africa	0.775	*0.97*
Russia-India	0.776	*0.98*
Russia-China	0.963	*1.20*
Russia-South Africa	0.899	*1.09*

India-China	0.861	*1.31*
India-South Africa	0.963	*1.09*
China-South Africa	0.942	*1.32*
	Criterion Function for BRICS	
I_0	0.051	0.281
I_1	0.181	0.391
I_2	0.119	0.431
I_3	0.039	0.385

Source: Author's Calculation.

Inspection of Table 5 demarcates the finding that trade is increasingly asymmetric for almost half of the set of bilateral pairs of countries, that is, Russia-India, Brazil-South Africa, India-China and Russia-South Africa. But this conclusion cannot be taken for the BRICS bloc. Now an important observation that needs an answer is to find whether asymmetry has augmented or decreased collectively for BRICS countries? To justify the trade symmetry of BRICS trade, Theil's criterion function measure of asymmetry is employed. The criterion function measure, I, is defined as

$$\mathbf{I=\sum i \sum j\ P_{ij}\ log\ P_{ij}/\ (P_{ij}+P_{ji})/2,\ for\ i\neq j}$$

Pij denotes the share of country I's exports to country J as a ratio of total intra-BRICS exports. It is clear to find the symmetry of trade if Pij= Pji and I =0. Further an increase in the value of I implies increase in asymmetry of trade. The calculation of I for 2007 and 2014 is given by I_0. To measure upto what extent symmetry has changed between our reference years 2007 and 2014, three measures for trade symmetry for 2014 compared to our reference period 2007. First, I_1 is an application of I to the actual trade matrix for 2014 given the information from 2007 trade matrix. Second, supposing that the exports of 2007 are a true conjecture of the probability of exporting in 2014 we evaluate I_2. Finally, the trade matrix for 2014 is re-estimated so that I_2 is calculated from a matrix whose total exports and imports equal the actual exports-imports of each country in 2014 but the likelihood of exporting is taken from the 2007 trade matrix. It is also clear that I is essentially positive if there is trade inequality for any country. However possibility is there to correct the trade matrix for these trade imbalances and finally allows us to calculate I_3.

From Table 5, it can be depicted whether there is symmetry or not based on the comparison of the values during the reference period. Asymmetry in trade is much more visible during 2007 as compared to 2014. This means that the 2007 intra-BRICS trade is more asymmetric with reference to 2014 intra-BRICS trade. Hence asymmetry in trade has been obsessed by trade imbalances and elimination of these imbalances can help in sorting out, thus making trade more symmetric.

Merchandise Trade and Invisible Flows

The trade perspective in BRICS countries is relatively high with other regions such as European Union (EU), USA, UAE and other Asian countries. BRICS countries swap over goods chiefly with countries outside the trading bloc. As the world is changing, increasing multipolarity with the emergence of BRICS will most likely shape the 21 century. The share of BRICS in global trade continued to grow at an astounding pace. In BRICS economies, China followed by India are the fast emerging economies in the current scenario. During the period 1990-2012, Chinese economy grew at an average annual rate of 9.9 per cent much above the world average. Same trend happened in case of Brazilian, Russian and South African economies. When analyzed on the basis of share in world trade, China ranks on top position contributing 9.2 per cent to global trade followed by Russia. India, Brazil and South Africa also contribute to world trade phenomenally if we compare the trade share of 2012 with 1990. In trade openness, Russia tops the list followed by China, South Africa, India and Brazil.

Table-6: Global Integration of BRICS Economies

Country	Share in World Trade		Trade Openness	
	1990	2012	1990	2012
Brazil	0.8	1.2	6.9	11.2
Russia	-	2.3	-	30.3
India	0.5	1.8	6.9	21.7
China	1.6	9.2	17.4	29.5
South Africa	0.6	0.5	24.3	27.9

Source: IMF, UNCTAD, and World Bank

Table-7: BRICS Exports and Imports of Goods and Services (Percent of GDP)

		1990	1995	2000	2005	2010	2015
Brazil	Imports	5.6	8.2	11.0	10.8	10.6	11.8
	Exports	6.9	6.8	10.1	15.1	11.3	11.7
Russia	Imports	-	26.7	23.7	21.7	22.3	22.8
	Exports	-	29.8	44.3	35.2	28.3	31.3
India	Imports	8.5	11.5	13.9	22.1	25.0	27.6
	Exports	6.9	10.2	12.3	18.8	20.1	22.9
China	Imports	13.7	20.2	20.3	30.6	21.7	25.7
	Exports	17.4	23.1	23.3	37.1	26.7	29.8
South Africa	Imports	18.6	22.8	25.3	28.9	38.3	26.3
	Exports	24.3	22.8	27.4	27.4	27.7	28.7
BRICS Share in world (Total)	Imports	3.3	6.1	6.2	10.0	13.3	17.8
	Exports	3.9	6.5	7.5	12.2	15.1	19.6

Source: UNCTAD

The allocation of the BRICS in international trade continued to grow at a quick rate. Their contribution in world exports improved significantly because of diversification in commodities and regions of trade and same is in case of imports. The sharp rise in import demand is due to increased investment and consumption backed by the increasing purchasing capacity of these economies. There is a structural transformation in BRICS as these economies tried to maintain unrelenting trends of rising share of exports. This does reflect the structural changeover and hence in search of exploring opportunities for exports based on the fundamentals of comparative advantage and shored up by productivity gains.

The composition of BRICS exports changed considerably over the past two decades due to structural changes across the sectors. Though the BRICS are still recognized for exports of natural resources, but a new transformation has taken place. These economies moved from being exporters of primary products to exporters of manufactured products. The increase in global trade share because of globalization and liberalization has amplified the strategies and thus the export destinations have undergone dramatic changes. All the BRICS economies are bestowed with significant human capital endowments, the difference in their resource endowments are reflected in their export baskets. A wave of structural progress enunciated across sectors in BRICS economies during the past two decades because of technological advancements. The technological development is responsible for the changes in the destination of BRICS exports. As these economies are moving on a straight track, the import demand from these economies will play a dedicated role in enhancing the global growth process. The diversification of BRICS trade from primary to manufactured products is a punch line of their strong sustenance in the global economic environment.

Direction of Trade

The BRICS countries from the last decade have experienced significant transformations in geopolitical and economic terms. These countries are not basically natural trading partners, but because of some common features, Jim O Neill, the then Chief Economist at Goldman Sachs Company introduced the acronym. The acronym was actually coined to emphasize the outstanding role of important emerging economies (BRICS). Ambitious by their quench for export promotion and intensifying their growth process, they began expanding their exports towards the developed economies, thus moving from basic agricultural exports to intensive manufactured exports. This resulted in the shift of the paradigm of these economies into a healthy economic scenario. The destinations of the BRICS exports and imports vary across the globe. To get a clear picture of the direction of trade, BRICS economies have been classified according to trading partners. Table 8 presents the ranking of trading partners of BRICS according to the export flow and import flow in 2012. The direction of trade represents that how much these economies are integrated with the global economy.

Table-8: Ranking of Trading Partners of BRICS Countries 2015

Country	Trade Flow	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6
Brazil	Exports	EU (22.3)	China (13.2)	U.S (10.3)	Argentina (8.4)	Japan (2.8)	India (1.3)
	Imports	EU (22.9)	U.S (15.8)	China (12.5)	Argentina (8.8)	Japan (4.2)	India (3.3)
Russia	Exports	EU (52.7)	Belarus (5.5)	China (5.5)	Turkey (5.4)	Ukraine (4.6)	South Africa (1.8)
	Imports	EU (45.9)	China (13.4)	U.S (5.4)	Ukraine (5.3)	Japan (4.2)	Brazil (2.6)
India	Exports	EU (20.5)	UAE (14.4)	U.S (10.8)	China (5.9)	Hong Kong (4.0)	Brazil (1.8)
	Imports	EU (14.4)	China (11.5)	UAE (7.4)	U.S (6.0)	Saudi Arabia (5.4)	Rep. Korea (3.7)
China	Exports	EU (19.7)	U.S (18.4)	Hong Kong (13.8)	Japan (8.1)	Rep. Korea (4.5)	Malaysia (2.3)
	Imports	Japan (13.0)	E.U (12.7)	Rep Korea(10.2)	Hong Kong (8.6)	Taiwan (8.5)	India (2.3)
South Africa	Exports	EU (26.5)	China (10.5)	U.S (9.0)	Japan (7.6)	Switzerland (4.2)	India (2.7)
	Imports	E.U (32.2)	China (13.1)	U.S (7.8)	Saudi Arabia (5.0)	Japan (4.9)	India (2.9)

Source: Data compiled from UNCOMTRADE database files 2011

The major portion of BRICS economies import case consists of capital goods thus reflecting the procedure of industrialization. The BRICS imports destinations have changed and also grown demonstrating the increasingly mixed nature of growth. The improved living standards of these economies have driven the import demand to varying destinations ranging from West to East. Table-8 highlights the varied destinations of BRICS countries in case of exports and imports and thus depicts that BRICS main export and import destination is European Union followed by intra and inter-trade among the economies.

Inter and Intra BRICS Trade

In spite of noteworthy increase in the share of exports among intra-BRICS economies, there is capacity for amplified trade among these countries, which justifies the necessity to increase trade. In world economies, India and China are counted as the largest consumers of commodities particularly of oil and other raw materials, while Russia, Brazil, and South Africa are counted among the largest suppliers of metal,

oil, and other natural resources. Therefore, there is an immediate need to recognize supplementary economic linkages among these countries through trade.

Table-9: Intra and Extra-BRICS Exports (US $ Millions), 1995-2015

Economy	Flow	1995	2000	2005	2015	AGR in % (1995-2000)	AGR in % (2000-2007)	AGR in % (2007-2012)
Brazil	Export to world	46504.9	55118.9	160648.9	242178.05	4.3	19.5	10.14
	Export to BRICS	2353.4	2027.9	17205.8	53966.72	-3.7	42.8	42.73
	Share in BRICS	5.1	3.7	10.7	22.28			
Russia	Export to world	78217.3	103092.7	352266.4	527265.91	7.1	22.9	9.93
	Export to BRICS	4026.8*	6433.3	22934.5	44878.96	12.4	23.6	19.13
	Share in BRICS	5.2	6.2	6.5	8.51			
India	Export to world	31698.6	42358.1	145898.1	336611.38	7.5	22.9	26.14
	Export to BRICS	1784.6	2090.6	14445.5	30690.09	4.0	38.0	22.49
	Share in BRICS	5.6	4.9	9.9	9.11			
China	Export to world	148779.5	249202.6	1220059.7	2209007.28	13.8	30.3	16.21
	Export to BRICS	3800.3	6031.3	71424.7	150749.83	12.2	51.0	22.21
	Share in BRICS	2.6	2.4	5.9	6.82			
S. Africa	Export to world	24514.9	26298.0	64026.6	95224.78	1.8	16.0	9.74
	Export to BRICS	805.1	939.2	6189.8	16117.49	3.9	36.9	32.07
	Share in BRICS	3.3	3.6	9.7	16.92			

*Source: UNCTAD stat data base. Note: * 2007 export figure from Russia to South Africa is not available.*

Between 2007 and 2013 the share of intra-BRICS trade to global trade of BRICS countries increased from 6.5 percent to 13.9 percent. Nor was this phenomenon of increased intra-BRICS trade confined to a few of the members. The individual country export shares are shown in Table-9 above. As can be seen from Table-3.9, between 2007 and 2007, share of intra BRICS exports of each of the member countries in its world exports has increased by 2 to 5 times, the sharpest increase being for Brazil and South

Africa. It can also be seen from Table-9 that the growth of each country's exports has been in double digits particularly in the period 2001-2007. Nor is this restricted to exports as a similar picture is seen in Table 10 where import shares and growth rates are given.

Table-10: Intra and Extra-BRICS Imports (US $ Millions), 1995-2015

Economy	Flow	1995	2000	2005	2015	Annual Growth rate in % (1995-2000)	Annual Growth rate in % (2001-2007)	Annual Growth rate in % (2008-2012)
Brazil	Import from world	53734.3	55850.6	120621.0	2396209.04	1.0	13.7	34.63
	Intra-BRICS Imports	1035.5	2291.9	17014.1	47055.14	22.0	39.7	**29.42**
	Share in BRICS	1.9	4.1	14.1	19.63			
Russia	Import from world	46301.0	33880.1	199726.0	314945.09	-7.5	34.4	**9.61**
	Intra-BRICS Imports	1372.0*	2525.0	29541.3	60538.80	15.3	51.7	**17.48**
	Share in BRICS	2.9	7.2	14.8	19.22			
India	Import from world	36592.1	52940.3	218645.0	466045.56	9.7	26.7	**18.86**
	Intra-BRICS Imports	2351.6	4324.9	30746.9	66633.15	16.5	38.7	**19.45**
	Share in BRICS	6.4	8.2	14.1	14.29			
China	Import from world	132084.0	225094.0	956115.0	1949992.31	1.0	13.7	**17.32**
	Intra-BRICS Imports	6108.7	9782.1	59625.9	159325.64	22.0	39.7	**27.86**
	Share in BRICS	4.6	4.4	6.2	8.17			
S. Africa	Import from world	27436.1	26770.7	79872.6	103461.27	-0.6	20.0	**4.92**
	Intra-BRICS Imports	952.0	1620.1	12563.4	23372.81	14.2	40.7	**14.33**
	Share in BRICS	3.5	6.1	15.7	22.59			

Source: UNCTAD stat data base.

*Note: * 2007 export figure from Russia to South Africa is not available.*

Hence, the fashion in intra-BRICS trade seems to have reflected the trends in global trade route. What about the trends in India's trade? India also followed the global

trends with exports destined to developed countries and developing countries. In this perspective one important issue need a relook, i.e what has been the cause and nature of BRICS trade and how sustainable is this? Associated with this is the matter of whether expansion in intra-BRICS trade (Indian trade in particular) is escalating as compared to developed economies. When we analyse the models of trade, the first instance that strikes our mind is the Adam Smith's Absolute Advantage Theory followed by David Ricardo's Comparative Advantage theory. Another theory that comes across our mind is the Hecksher-Ohlin-Samuelson (HOS) model. The famous Hecksher-Ohlin-Samuelson (HOS) model postulates that trade is defined by a country's resources. Thus if a country is labor abundant, then it must specialize in labor intensive exports and if capital abundant then must comply with capital intensive products. Therefore a country's exports concentrate on relatively plentiful resources. Taking into consideration the Ricardian model which stresses the importance of technology in the flow of exports. The theory states that a country exports those products that it can produce technologically at lowest cost compared to other countries. This statement is in accordance with Vernon's product cycle hypothesis (Vernon, 1979). HOS and Ricardian models thus imply trade in dissimilar goods and this type of trade is called as inter-industry trade. The third model of trade formulated by Linder in 1961 justifies the similarity of countries as the basis of trade. Linder explained that countries which are alike in economic configuration have a propensity to trade exactly because of comparable demand patterns. This type of trade is called as intra-industry trade as the goods exchanged or traded are similar. In HOS and Ricardian framework countries do trade in dissimilar homogenous goods while as in Linder's Model the trade occurs in similar goods. In other words, trade involving two countries exchanging cars for computers would be tagged as inter-industry trade, while trade in different types of Iron products would be classified as intra-industry trade. When trade growth takes the HOS or Ricardian framework, countries undergo structural change because exporting sector expands and importing sector contracts. On the other hand intra industry trade in similar commodities engrosses adjustment of labour within the same industry and not any major labour displacement across unconnected industries. The theory outlined above is as tool in justifying the sustainability of intra-BRICS trade. If intra-BRICS trade is mostly constituted of labour intensive goods destined to developed countries, it could be concluded that this trade is not sustainable but is motivated by impermanent demand problems in the developed countries. On the other hand, if this trade is in products where trade is naturally of the intra industry diversity, it is likely to be sustainable.

Trends and Patterns of India's trade with BRCS economies

Before looking at trade statistics, it is meaningful to look at the inter-country pattern of BRICS trade in the period of 2007 to 2013. The complete description of percentage share of intra-BRICS exports and imports is presented in Tables 11 and 3.12. Because of their economic mass and growth rates, these emerging economies are seen as export markets with great latency and promise. Inspection of Table reveals that Brazil, Russia, India and South Africa have a common export market where their exports are

saturated. The common export market is China as Brazil's, Russia's, India's and South Africa's export trade share is 85.28 per cent, 79.38 per cent, 53.49 per cent and 74.81 per cent respectively.

Table-11: Percentage Share of Intra-BRICS Exports to Total Exports, (2007-2013)

	Partner Country					
Exporting Country	Year	Brazil	Russia	India	China	S. Africa
Brazil	2007	0	24.2	13.6	51.1	11.1
	2010	0	21.7	10.7	62.5	10.2
	2013	0	5.80	5.51	85.28	3.40
Russia	2007	2.4	0	10.8	86.8	NA
	2010	6.5	0	13.6	78.5	1.4
	2013	4.42	0	15.55	79.38	0.63
India	2007	4.8	58.4	0	18.6	18.2
	2010	13.2	6.4	0	65.7	14.7
	2013	19.91	7.88	0	53.49	18.71
China	2007	20	43.8	20.1	0	16.1
	2010	16	39.9	33.7	0	10.4
	2013	23.81	32.89	32.12	0	11.16
S. Africa	2007	35.8	6.5	23.5	34.2	0
	2010	8.4	2.4	21.8	67.4	0
	2013	4.07	2.50	18.60	74.81	0

Source: UNCOMTRADE

Inspection of Tables 11 and 12 disclose some attractive trends. One fact is clear regarding the China's dominance. Brazil, India and South Africa have turned to China as their major trade partner. For India and Brazil this has been at the cost of Russia and for South Africa at the expense of Brazil. Only Russia has reduced the share of its exports going to China in favor of India. One more fascinating observation is that India has remained a significant market for Brazil and South Africa while becoming more important for Russia. Thus, China has emerged as the main market for the other countries and India is the second most significant market in the trade flow.

Table-12: Percentage Share of Intra-BRICS Imports, 2007-2013

	Partner Country					
Importing Country	**Year**	**Brazil**	**Russia**	**India**	**China**	**S. Africa**
Brazil	2007	0	17.8	13.3	40.4	28.5
	2007	0	10	12.7	74.2	3.1
	2013	0	5.68	13.51	79.27	1.52
Russia	2007	11.4	0	32.8	55.8	NA
	2007	12.4	0	3.5	83.4	0.7
	2013	5.76	0	5.10	87.83	5.76

	Partner Country					
Importing Country	**Year**	**Brazil**	**Russia**	**India**	**China**	**S. Africa**
India	2007	12.9	40.7	0	36.4	10
	2007	3.1	9.9	0	79.5	7.5
	2013	5.72	5.75	0	77.49	11.03
China	2007	20.2	62.2	6.5	0	11.1
	2007	30.9	33.2	24.7	0	11.2
	2013	34.08	24.89	10.65	0	30.37
S. Africa	2007	25.1	3.5	19.8	51.7	0
	2007	13.2	4.5	14.1	68.2	0
	2013	6.87	1.61	23.00	68.50	0

Source; UNCOMTRADE database

A look at the prototype of imports in Table 12 reveals that China has become the foremost resource of imports for all the countries at the cost of customary trading partners. It is worth mentioning that India and China together account for 75 per cent or more of the imports from and exports to the all other BRICS countries. In summing up, intra-BRICS trade is subjugated by China on both the export and import side. India is the next most leading country. It must thus be distinguished that the enlargement in intra-BRICS trade has also been accompanied by some fall in multilateralism in intra-BRICS trade. Here, the main victim seems to have been Russia which seems to be trading more with other countries rather than BRICS countries.

If we want to see the actual trade picture, then it is valuable to see commodity level alteration in intra BRICS trade. In this connection, the period 2007-2013 has been selected and the data is presented at commodity level using SITC, Rev. 4 level of aggregation.

Table-13: Share of Intra BRICS Exports to World exports (2000-2013) in %

Commodity Group	Commodity Description	2007	2010	2013
0	Food and Live animals	3.7	7.7	15.61
1	Beverages and Tobacco	6	9.1	7.42
2	Crude materials, inedible, except fuels	10.2	30.3	19.28
3	Mineral fuels, lubricants and related materials	1.4	4.4	21.29
4	Animal and veg.oils, fats and waxes	14.2	21.6	6.21
5	Chemicals and related products, n.e.s	9.1	13	10.93
6	Manufactured goods classified chiefly by material	3.3	5.6	26.27
7	Machinery and transport equipment	2.4	5	21.38
8	Miscellaneous manufactured articles	3.4	5.9	34.16
9	Commodities and transactions not classified elsewhere in the SITC	0.1	2.2	5.85

Source: Calculations based on the data from UNCOMTRADE

The Table-13 reflects diagnostic features as with the passage of time the trade is also varying with increasing trend. In year 2013 the commodities which have showed increasing affinity to trade include Food and Live animals (0), Crude materials, inedible, except fuels (2) Mineral fuels, lubricants and related materials, Chemicals and related products, n.e.s (5), Manufactured goods classified chiefly by material (6), Machinery and transport equipment (7) and Miscellaneous manufactured articles(8)

In table 13, data on changes in the share of intra BRICS exports to the world exports of that commodity group. To that extent, the data indicates to what extent the BRICS countries have been switching their trade from the world to other members of the bloc. Inspection of Table 13 indicates that while in all cases the share of intra BRICS trade has increased, the dominating items in intra bloc trade are Crude materials (Section 2), and Animal and Vegetable Oils (Section 4) and Chemical Products (Section 5). In 2007 these two items above constituted about 51 percent of the world trade of the bloc countries in these commodities. However, it is worth noting that all these commodities are largely resource based commodities.

Table 14: Percentage Share of India's Exports/Imports with BRICS

Year	Trade Flow	Brazil	Russia	China	S. Africa
2007	Export Share	0.27	3.28	1.04	0
	Import Share	0.72	2.37	1.95	0
1996	Export Share	0.39	2.43	1.83	0
	Import Share	0.39	1.37	2.23	0
1997	Export Share	4.12	2.73	2.06	0
	Import Share	0.51	1.66	1.96	0
1998	Export Share	0.40	2.13	1.28	0
	Import Share	0.51	1.43	2.89	0
1999	Export Share	0.36	2.58	1.46	0
	Import Share	0.72	1.36	2.87	0
2000	Export Share	0.45	2.02	1.73	0.72
	Import Share	0.36	1.10	2.82	1.22
2001	Export Share	0.52	1.91	2.10	0.74
	Import Share	0.05	1.02	3.01	0.95
2002	Export Share	0.72	1.47	3.05	0.93
	Import Share	0.63	1.07	3.98	0.70
2003	Export Share	0.65	1.17	4.32	0.78
	Import Share	0.45	1.17	4.87	0.54
2004	Export Share	0.71	0.83	5.39	1.17
	Import Share	0.72	1.34	5.39	0.57
2005	Export Share	0.96	0.70	7.15	1.39
	Import Share	0.72	1.57	6.70	0.65
2006	Export Share	1.23	0.69	6.45	1.72
	Import Share	0.68	1.15	7.86	0.55
2007	Export Share	1.30	0.63	6.50	1.45

Year	Trade Flow	Brazil	Russia	China	S. Africa
	Import Share	0.57	1.33	9.48	0.75
2008	Export Share	1.8	0.59	5.55	1.36
	Import Share	0.39	1.50	12.18	1.02
2009	Export Share	1.09	0.54	5.87	1.10
	Import Share	1.19	1.41	10.67	1.24
2010	Export Share	1.66	0.63	7.91	1.65
	Import Share	1.03	1.14	12.59	0.87
2011	Export Share	1.79	0.62	5.55	1.43
	Import Share	0.91	0.97	13.21	0.78
2012	Export Share	2.41	0.74	6.85	1.71
	Import Share	0.89	1.05	13.29	0.79
2013	Export Share	1.81	0.72	4.87	1.72
	Import Share	0.82	0.89	11.07	0.85

Source: Authors calculations based on the data from UNCOMTRADE

When analysing the individual level trade relations of India with other BRCS members, the structure seems quite different and varied in nature. If we take into consideration the Indo–Brazil trade, the trade structure depicts a state of mismatch with India exporting less proportion of their exports to Brazil. However the bilateral trade between the economies has been growing at a steady rate during the last decade. This connotes the idea that Indian goods are making entry in Brazilian market at a rate faster than Brazil. Table 14 presents the analysis for exports to and imports from Brazil as percentage of its total exports and total imports. The table 14 portrays that there was a gradual rise in both the export category as well as imports from 2007-2011. The data with respect to exports present that the share of exports during 2007 were 0.27 per cent of the total value of India's exports, whereas total imports from Brazil provides a good figure with 0.72 per cent, however there was a decline with respect to import share in the succeeding years with 0.39 in 1996 and 0.51 per cent for 1998. This is well described in the zig zag rising and declining share of imports from the Brazil from 1999 (0.725 %) to 2004 (0.72 %) and again an increase in 2009 (1.192%) followed by decrease in the succeeding year equal to 1.10 per cent and in 2011 the trend continued with share depicting a value of 0.91 per cent. In case of exports share, year 1997 dominated with value of 4.12 per cent; however the changing trend continued to flourish. The export share of India to Brazil continued to rise from 2006 (1.236%) to (1.787 %) in 2008. In year 2009 the export share decreased to 1.009 percent but an upswing resulted in 2011 with export share equal to 1.790. The increased growth in the exports and imports is mainly attributed to the amalgam of BRICS economies which in turn boosted the duo economies of India and Brazil. The relative importance of India as China's trade partner and that of China as India's trade partner is depicted in Table 14. It is clear from the Table 14 that India was not a big partner of China during 2007-2000. From the trade statistics it becomes quite obvious that out of the BRICS economies, China has emerged as the leading partner in terms of export and import destination

especially from 2000 onwards. This largely reflects their active international trade activities. Russia provides changing behavior as the trade share is less than 1 per cent thus citing as India's least trading partner. South Africa was missing on economic radar of India until 2000, but afterwards the economies did well in the diversification of trade. Thus all in all China has emerged as a golden ball in the trade flow of India with other economies following the trend at a slow pace.

Trade Intensity Index of India with the BRCS Countries

Apart from measuring the performance of bilateral trade in terms of growth rates, trade intensity index proves as a best measure to see the trajectory of trade over the years. This index helps us in identifying that how intensively the countries are trading with each other. For the sake of deep understanding of the Trade Intensity, it has been divided into two types (a) Export Intensity Index and (b) Import Intensity Index. The values of Export Intensity Index and Import Intensity Index have been calculated for the time period of 17 years from 1995-2012. Thus an implicit statistical indicator of the growing complementarities in trade between India and BRCS countries is provided by the export and import intensities. This index was first used by K. Kojima (Kojima, 1964).It measure the share of one country's trade with other country as a proportion of the latter's share of world. The average amount of this index is equal to one, if index is greater than one, which means there is a higher degree of trade intensity between two given countries. Opposite of that where the result of the computation is closer to zero, which means there is lower trade relations. Trade intensity index concentrates attention on variations in bilateral trade levels that result from differential resistances by abstracting from the effects of the size of the exporting and importing countries.

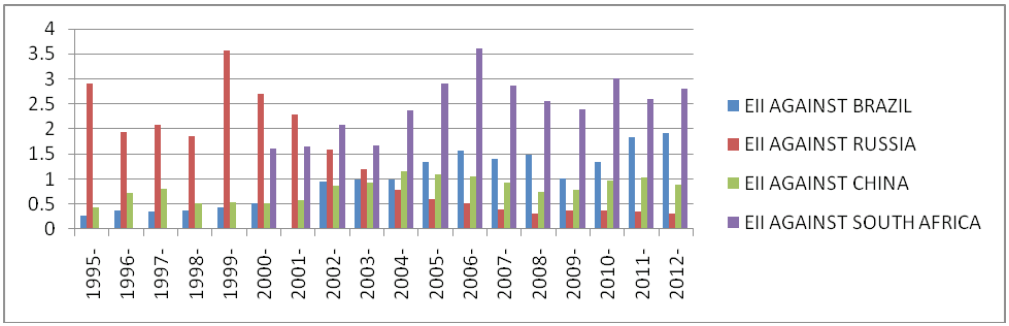
Table-15: Export Intensity of India Against BRCS

YEAR	EII against Brazil	EII against Russia	EII against China	EII against S. Africa
1995	0.266	2.903	0.426	0.000
1996	0.381	1.941	0.729	0.000
1997	0.358	2.087	0.814	0.000
1998	0.366	1.858	0.509	0.000
1999	0.425	3.576	0.534	0.000
2000	0.510	2.703	0.509	1.600
2001	0,578	2.293	0.581	1.640
2002	0.952	1.588	0.874	2.075
2003	0.996	1.196	0.925	1.674
2004	0.996	0.793	1.156	2.365
2005	1.335	0.601	1.098	2.909
2006	1.564	0.515	1.046	3.603
2007	1.404	0.387	0.926	2.858

YEAR	EII against Brazil	EII against Russia	EII against China	EII against S. Africa
2008	1.480	0.310	0.738	2.551
2009	1.005	0.379	0.774	2.397
2010	1.333	0.373	0.966	3.004
2011	1.842	0.346	1.024	2.607
2012	1.913	0.313	0.889	2.813

Source: Authors Calculation Based on Uncomtrade Data Base

Figure-1: Export Intensity of India Against BRCS



Source: Based on the calculations from Table 15.

Regarding EII, the intensity of trade of India with other BRCS intensified since the formation of trading block in 2002. On comparing of India against Brazil, the intensity of exports were less in proximity up to 2004, but the trend reversed from 2005 onwards, with EII value equal to 1.333. India experienced highest intensity for exports in 2012 representing a value of 1.193. On comparing with Russia, India presented good trade relations with Russia up to 2003, but 2004 onwards the trade intensity of exports remained miniscule. During 1998-2001, India's EII against China represented the value between 0.788-0.947. This implies that India's export to China is much lower than the expected. The values for of EII present an oscillating pendulum experiencing to and fro moments. This is clear by visualizing a zigzag pattern with trade intensity from 2004 onwards to 2006. But the value reversed back in 2007 to 2010. South Africa proved as a major export destination for India as the value speaks high. Thus among the BRCS countries, South Africa and China represents as a major source for India as export destination.

Table-16: Import Intensity of India Against BRCS

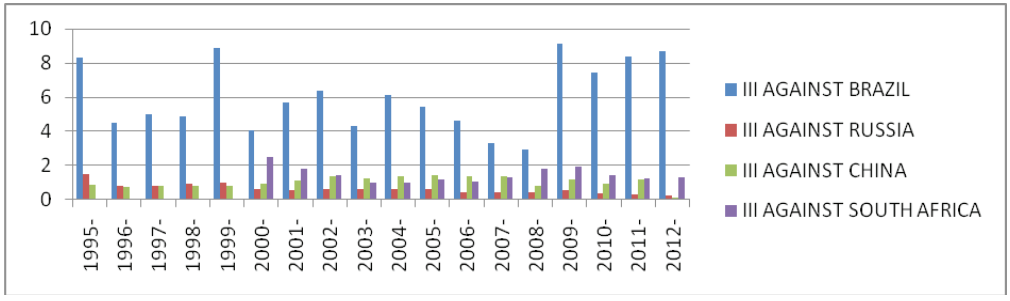
YEAR	III against Brazil	III against Russia	III against China	III against South Africa
1995	8.303	1.501	0.852	0.000
1996	4.524	0.842	0.722	0.000
1997	5.030	0.793	0.782	0.000

YEAR	III against Brazil	III against Russia	III against China	III against South Africa
1998	4.876	0.925	0.788	0.000
1999	8.871	0.999	0.814	0.000
2000	4.059	0.641	0.947	2.491
2001	5.666	0.561	1.128	1.822
2002	6.382	0.612	1.391	1.445
2003	4.338	0.596	1.260	1.029
2004	6.125	0.604	1.383	1.026
2005	5.431	0.606	1.416	1.188
2006	4.632	0.419	1.350	1.044
2007	3.312	0.456	1.384	1.322
2008	2.912	0.465	0.822	1.843
2009	9.095	0.540	1.209	1.924
2010	7.413	0.378	0.926	1.428
2011	8.401	0.293	1.216	1.275
2012	8.671	0.273	0.105	1.313

Source: Authors Calculation based on the data from Uncomtrade.org

Import Intensity Index depicts the pattern of import dependence between the nations. Regarding the analysis, Table 16 presents the import intensity index of India against other BRCS countries (Brazil, Russia, China and South Africa).

Figure-2: Import Intensity of India Against BRCS



Source: Based on the data from Table 16

For India, Brazil exemplifies as a leading source for imports. This is quite visible from the values as depicted in table 16. Moreover, on comparing with China and South Africa the trend is same, nut Russia proves as an exception. Russia does not represent an important source of imports as all the values from 2007-2011 are less than 1. Brazil ranks at top followed by China and lastly South Africa. The import intensity values for Brazil speak so high, as in 2007 the index value is 8.303 and in 2011 the index represented a value of 8.40 followed by 8.671 in year 2012. Comparing India with China, years from 2001-2007, and in 2009 and 2011, the value of India's import intensity index is greater than one; it implies over-representation of China in

the India's imports. The highest import intensity index was registered in the year 2007, which was 1.384. The value of import intensity index in 2012 is 0.105, implies under-representation of China in the India's imports.

Revealed Comparative Advantage of India against BRCS Countries

Revealed comparative advantage (RCA) is the most frequently employed measurement of trade specialization. Since RCA is based on observed trade patterns, thus Revealed Comparative Advantage (RCA) of India against Brazil, Russia, China and South Africa has been calculated from 2007-2011, to assess the potentiality of India's trade in the trading block.

(i) RCA analysis against Brazil

India enjoys comparative advantage in 8 categories as the RCA Index value is greater than one. Thus indicating the potential for India in exportation of these commodities. The 18 commodities which represent as a latent source include Petroleum Products (SITC 33), Coal, coke, briquettes (SITC 32), Sugar, sugar preparation and honey (SITC 6), Coffee, and tea. Cocoa, spices (SITC 7), Crude rubber (SITC 23), Animal, vegetable oil processed (SITC 43), Animal oil, fats (SITC 41), Fixed vegetable oils (SITC 42), Rubber manufactures (SITC 62), Textile yarn fabrics (SITC 65), Machinery other than electrical (SITC 71), Electrical machinery (SITC 72), Professional goods, watches instruments (SITC 86), Chemical elements, compounds (SITC 51), Dyeing, tanning, coloring mate (SITC 53), Medicinal, Pharma products (SITC 54), Plastic material, cellulose (58) and Chemical materials (59).

(ii) RCA analysis against Russia

India enjoys comparative advantage in 5 categories as the RCA Index value is greater than one. In total 9 commodities are there which include Fruit, vegetables (SITC 5), Sugar, sugar preparation and honey (SITC 6), Coffee, and tea. Cocoa, spices (SITC 7) Live animals (SITC 0), Meat, meat preparations (SITC 1), Miscellaneous food preparation (SITC 9), Tobacco, tobacco manufacture (SITC 12), Professional goods, watches instruments (SITC 86) and Plastic material, cellulose (SITC 58).

(iii) RCA Analysis against China

India enjoys comparative advantage in 6 categories as the RCA Index value is greater than one. The 13 commodities include Crude fertilizers, materials (SITC 27), Metalliferous, ores, metal scrap (SITC 28), Coal, coke, briquettes (SITC 32), Crude rubber (SITC 23), Fish, fish preparations (SITC 3), Fish, fish preparations (SITC 21), Animal, vegetable oil processed (SITC 43), Feeding stuff for animals (SITC 8), Textile fabrics (SITC 26), Fixed vegetable oils (SITC 42), Iron and steel (SITC 67), Chemical elements ,compounds (SITC 51) and Plastic material, cellulose (SITC 58).

(iv) RCA Analysis against South Africa

India enjoys comparative advantage in 6 categories as the RCA Index value is greater

than one. Thus the latent commodities include Fruit, vegetables (SITC 5), Sugar, sugar preparation and honey (SITC 6), Coffee, and tea. cocoa, spices (SITC 7), Agricultural products (SITC 11), Dairy products and birds eggs (SITC 2), Fish, fish preparations (SITC 3), Feeding stuff for animals (SITC 8), Miscellaneous food preparation (SITC 9), Tobacco, tobacco manufacture (SITC 12), Manufactures of metals (SITC 69), Machinery other than electrical (SITC 71), Electrical machinery (SITC 72), Medicinal, Pharma products (SITC 54), Essential soils, perfumes (SITC 55), Plastic material, cellulose (SITC 58) and Chemical materials (SITC 59).

Table 17: Average Value of RCA>1 for India against BRCS

S. No	SITC Code	Product	RCA Value of India against Brazil	RCA Value of India against Russia	RCA Value of India against China	RCA Value of India against South Africa
1		Petro				
	33	Petroleum Products	3.507			
2		Raw Materials				
	27	Crude fertilizers, materials			4.39	
	28	Metalliferous, ores, metal scrap			14.15	
	32	Coal, coke, briquettes	20.21		1.51	
	34	Gas, natural and manufactured				
3		Forest product				
	24	Wood, lumber, cork				
4		Tropical Agricultural Products				
	5	Fruit, vegetables		20.47		10.43
	6	Sugar, sugar preparation and honey	14.95	1641.96		2340.90
	7	Coffee, tea. cocoa, spices	2.47	8.77		18.39
	11	Agricultural products				7.60
	23	Crude rubber	1.59		3.75	
5		Animal products				
	0	Live animals		2.73		
	1	Meat, meat preparations		2.70		
	2	Dairy products and birds eggs				7.60

S. No	SITC Code	Product	RCA Value of India against Brazil	RCA Value of India against Russia	RCA Value of India against China	RCA Value of India against South Africa
	3	Fish, fish preparations			1,39	18.48
	21	Hides, skins, fur skins, undressed			1.20	
	43	Animal, vegetable oil processed	1.21		1.11	
6		Cereals				
	4	Cereals, cereals preparations				
	8	Feeding stuff for animals			1.36	6.04
	9	Miscellaneous food preparation		11.91		19.13
	12	Tobacco, tobacco manufacture		9.43		2.36
	26	Textile fabrics			8.11	
	41	Animal oil, fats	2.01			
	42	Fixed vegetable oils	1.06		3.83	
7		Capital intensive manufactures				
	61	Leather dressed furskins				
	62	Rubber manufactures	1.19			
	65	Textile yarn fabrics	1.27			
	67	Iron and steel			1.18	
	69	Manufactures of metals				12.06
8		Machinery				
	71	Machinery other than electrical	1.09			1.12
	72	Electrical machinery	1.01			
	73	Metal work				3,57
	81	Prefabricated buildings, sanitary, plumbing and fitting				
	86	Professional goods, watches instruments	1.09	1.02		
9		Chemical				

S. No	SITC Code	Product	RCA Value of India against Brazil	RCA Value of India against Russia	RCA Value of India against China	RCA Value of India against South Africa
	51	Chemical elements ,compounds	1.77		1.72	
	53	Dyeing, tanning, coloring mate	2.35			
	54	Medicinal, Pharma products	1.88			2.08
	55	Essential soils, perfumes				1.00
	58	Plastic material, cellulose	1.33	1.19	2.53	1.15
	59	Chemical materials	3.24			1.06

Source: Authors calculation based on Uncomtrade.org

One thing comes out clearly that India has a significant importance in the BRICS trading bloc. India when compared with these countries, Brazil signifies in the list, followed by South Africa, China and Russia. India is having comparative advantage against Brazil in 18 commodities, 16 commodities against South Africa, 13 commodities against China and 9 commodities against Russia. The commodities which are having a wide presence i,e having comparative advantage for India against BRCS include Plastic material, cellulose (Presence in all)Sugar, sugar preparation and honey (Presence in Brazil, Russia and South Africa).This well defines the varying nature of export structure of the Countries.

RCA analysis clearly presents the potentiality of trade that is still untapped in this bloc, more diversification is necessary for beneficial trade and one definite measure which has to be adopted by the regional Bloc is that instead of depending on Western world as potential source for markets, the need is to define their internal market. Through this a symbiotic relationship can be maintained and hence results in mutually beneficial trade.

Conclusion

BRICS economies are causing changes in the design of international development structure. From the last 10 years, BRICS have consolidated and even further stretched their strong arrangement in the global economy. During the last decade, the global economy in general economy and emerging economies (BRICS) have evidenced major changes in trade structure. The growing importance of BRICS emerging markets is reflected in their increasing shares of the world's exports. Although BRICS Countries have been working towards enhancing its trade, it certainly needs a structural revival.

The future of BRICS relations will pose a constant challenge to policymakers and analysts alike. Although these countries may be defined generally as emerging, regional powers with global ambitions, this definition does not provide a framework capable of capturing all the nuances of their relationship. A closer look at regional context provides insight into the countries different approaches to international security.

The key challenge faced by the BRICs countries will be to maintain robust and sustainable growth in order to reduce the gap in living standards to the mature market economies. The trends in the growth rate of these economies shows a huge potential focused on their political achievements as well. To boost the trade flow with vigor and vitality, remaining trade barriers like customs rules and procedures, on tariff barriers and rules of origin and other impediments are to be relaxed. If minimization of these constraints is put into force, then there is no denying the fact that BRICS will set a fair stage for a superb jump regarding supremacy in the global trade which finally will increase synergies in the economic cooperation. It is to be remembered in mind that BRICS are actually winners of the globalization process which have impacted the global economy by and large.

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Agriculture Labuor and Social Security Policies in Dhenekal District of Odisha - It's International Ramifications

Vinod Sen and **Raj Kishore Sahoo**

Being a welfare state, the Government of India adopted number of programs to include the underprivileged people into the mainstream of inclusive economic development. It put lots of effort through enactment of legislation or through creation of scheme to provide social security to its labour force. First, it exists within the formal sector but later with the huge demand it partly extended to the informal sector. But the problem, Are all the relevant schemes and legislation justify its existence and reached to its proper destinations? However, the informal labour force characterized with low level of education, poverty, vulnerability, casual and seasonal employment, less skilled, low social-status etc. Agricultural labourer capture a major proportion in informal sector labour force compare to the other informal worker and the socio-economic condition of agricultural labourer nexus with the poverty and vulnerability. The agricultural labourer required lots of attention in every country. The study analyses the impact of social security policies on informal labour regarding agricultural labourer of Dhenkanal district of Odisha. This study is based on primary data which are collected with help of questionnaire scheduled form from Dhenkanal district of Odisha in month of Nov-Dec 2015. The finding of the study shows that the information muddles still a major obstacle for the success of social security programs.

Keywords: *Social Security, Informal Sector, Agricultural Labourer, Poverty*

Introduction

Social security is one of those modern terms, whose concept is somewhat clear, but whose definition is difficult. The difficulty has arisen mainly because of the changing coverage of the subject during the course of the evolution of social security.[1] The term social security has been defined differently by various authorities and thus, there is no commonly accepted definition of the term. According to Beveridge, "The term 'social security' is used to denote the security of an income to take the place of earnings when they are interrupted by unemployment, sickness or accident, to provide for retirement through age, to provide for loss of support by the death of another person, and to meet an exceptional expenditure, such as those connected with birth, death and marriage."[2] In simple words social security is the government program to provide overall economic benefits to the people for the fulfillment of basic needs in the society. It refers to the

developmental program for the people in mean time i.e. in the time of unemployment, maternity, old age, medical cases and untimely death times etc. The root of social security programs in modern country had developed in German Empire under the leadership of the "iron chancellor" Otto von Bismarck. In 1881 welfare programs and in 1889 old-age pension were created. Since then, social security programs spread out to other countries.[3] In India it was created before the independence through The Workmen's Compensation Act, 1923. Though it is not a fully social security programs but it makes a path towards growth of the social security programmes.[4]

Cohen, J Wilber (1953) in his study says that the first major social security program in Southeast Asia came into operation in India on February 24, 1952. The program Employees' State Insurance Act, which was initiated on a limited basis, will cover about 2.5 million factory employees when it comes into operation throughout the major industrial centres by January 1955.[5] In the view of International Labour Organization (2001) Social security is the protection that a society provides to individuals and households to ensure access to health care and to guarantee income security, particularly in cases of old age, unemployment, sickness, invalidity, work injury, maternity or loss of a bread winner.[6] NCEUS, 2006 report says that Social security is an important component of any social development agenda and is as relevant as physical security in the evolving concept of human security. The objective conditions in India are considered favorable to a meaningful societal transition in terms of human security. This could begin with the extension of the concept and coverage of social security through an inclusive agenda that will ensure a modicum of social security to the hitherto excluded sections of the work force.[7]

Social Security in India

In India, it is not a new concept as it like old wine in a new bottle. Before 19th century it was prevailed in non-institutionalized form through joint family systems, religious institutions, community house, caste panchayats and widow homes.[8] In 19th century with the revolution of industrialization some new difficulty arose and the growth of modern factory structure creates a new group of labourer which called as industrial proletariat and with the growth of industries the industrial labourer increases and it forms union among labourer.[9] With the passage of time, union activities coerce the government to enact some law on the security of labourer and as the result the 'Institutionalised Social Security' for the worker rooted in India before the independence through the 'Workmen's Compensation Act 1923' and considered as the first act provided by the British Government for the security of workers to reimburse after any sort of miss incidence.[10] Before independence, through this act the proper social security started in India. Earlier this act, it was very critical to get compensation for any injured worker during his working period. The basic objective of this act is provides compensation in case of injury make happen by accident during the time of employment. It gives one type of security against the adverse hazardous conditions. The act ensures the dependents of the employees that monetary support will be provided to them as compensation after the death of bread winner.[11] After Independence the Government of India enacted

several legislations for the social security of working class through the Employees State Insurance Act 1948, The Employees Provident Funds & Miscellaneous Provision Act, 1952, The Maternity Benefit Act, 1961, The Payment of Gratuity Act, 1972, The Employees' Deposit Linked Insurance Scheme, 1976 and The Employees' Pension Scheme, 1995.[12]

Social Security for Agricultural Labourer in India

Agricultural labourer capture a major proportion in informal sector labour force compare to the other informal worker and the socio-economic condition of agricultural labourer nexus with the poverty and vulnerability. In January 2005, the total number of unorganized sector workers was 395 million and from this total 253 million were agricultural workers i.e., agricultural labourers which constituted 34 percent and the remaining ware farmers.[13] In India more than 92 percent of labour force engaged in the informal sector and it contributes more than 50 percent of GDP to the national economy but still they were a neglected group in the society characterized with poverty and vulnerability.[14] Being a welfare state the Government of India provides some social security measure to improve the basic standard of living of the informal workforce. Some of these legislations and schemes which are applicable to agricultural labourer are discussed below.

Minimum Wages Act, 1948

Minimum Wage Act, 1948 is the first act for unorganised worker which fixed the minimum rate of wages for certain employment to avoid exploitation of labour from low wages with the aim to make certain the minimum subsistence wage for the worker. The act provide different minimum wage rate for the same work in different sectors. It is the first labour legislation for unorganised sector worker and it covers the whole India.[15]

Labour Welfare Funds

The Ministry of Labour & Employment has set up five different welfare funds for the welfare of worker to improve their standard of living and working condition. These following five funds are created to provide medical care, housing, educational and recreational facilities to the labourer. [16]

- The Mica Mines Labour Welfare Fund Act (1946),
- The Limestone and Dolomite Mines Labour Welfare Fund Act (1972),
- The Iron Ore, Manganese Ore and Chrome Ore Mines Labour Welfare Fund Act (1976),
- The Beedi Workers' Welfare Fund Act (1976), and
- The Cine Workers' Welfare Fund Act (1981).

The Unorganized Workers Social Security Act, 2008

After a long time the government has enacted his first social security act for the

unorganised workers in terms of the Unorganized Workers' Social Security Act, 2008. It will offer a social security to a gigantic group of workers in the unorganised worker backing by legislative power. It is result of the report submitted by National Commission for Enterprises in the unorganised Sector (NCEUS) on May 16, 2006. It covers the entire country. In this act the government should offer suitable welfare schemes from time to time to the unorganised worker in the matter links to life and disability cover, health and maternity benefit, old age protection and any other benefits determined by central government.[17] This act include 10 schemes on social security which has mentioned in schedule-1. These are the Rashtriya Swasthya Bima Yojana, Aam Admi Bima Yojana, National Old Age Pension Scheme, Janashree Bima Yojana, National Family Benefit Scheme, Janani Suraksha Yojana, Pension to Master Craft Persons, Handloom Weavers Comprehensive Welfare Scheme, Handloom Craft Artisans' Comprehensive Welfare Scheme and National Scheme for Welfare of Fishermen and Training and Extension. With the concerned ministries all these programmes are included already, so the act does not offer any additional schemes/benefits to the workers.[18]

Schemes for the Building and Other Construction Workers

The Government of India provides two separate legislative act for the welfare of construction worker are as followings.

a) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.

b) The Building and Other Construction Workers' Welfare Cess, Act, 1996

The preamble of this act state that, "*An Act to regulate the employment and conditions of service of building and other construction workers and to provide for their safety, health and welfare measure and for other matter connected therewith or incidental thereto".*[19]

It covers the whole country and applicable to every establishment which employ 10 or more worker. Under the Cess Act the government levied 1 to 2 percent cess charge on every construction work. This fund has been utilising for the development of construction workers.

Schemes for Migrant Workers and the Interstate Migrant Workmen

The government has enacted the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979 to protect the right, employment condition and to safeguard the interest of migrant worker. It covers the whole India and applicable to every establishment which employ five or more Inter-State migrant workmen and to every contractor who employ five or more inter-state workers. [20]

National Social Assistance Program (NSAP)

The NSAP has launched in August 15, 1985 to provide social security to the most

vulnerable group of people that is the people comes under below poverty line. It offers financial support to the disable person, widow person and elderly person.[21]

At present this programme is a combination of five sub-schemes. These are as -

1 Indira Gandhi National Old Age Pension Scheme (IGNOAPS) - This is a Govt. of India funded Scheme where the beneficiaries receive a pension ® Rs. 300/- per month under the Scheme, out of which the state government bears Rs. 100/- per month per beneficiary . Persons above 80 years of age will receive Rs.500/- PM.
2 Indira Gandhi National Widow Pension Scheme (IGNWPS) - BPL widows aged 40-59 years are entitled to a monthly pension of Rs. 300.
3 Indira Gandhi National Disability Pension Scheme (IGNDPS) - BPL persons aged 18-59 years with severe and multiple disabilities are entitled to a monthly pension of Rs. 300/-.
4 National Family Benefit Scheme (NFBS) - In the event of death of the primary bread earner of families living below the poverty line, the bereaved families are assisted with a financial assistance of Rs. 20,000/-.
5 Annapurna scheme - Under the scheme, 10 kg of food grains per month are provided free of cost to those senior citizens who, though eligible, have remained uncovered under NOAPS.

All these schemes administered by the Ministry of Rural Development and the cost of these schemes shared between central government and state government. Annapurna scheme provide food security to the eligible senior citizen, those are not covered under IGNOAPS. In this scheme 10 k.g. free rice provided to the person in every month.[22]

Rashtriya Swasthya Bima Yojana

This scheme launched in 2008 by the Government of India to provide health insurance to the unorganised sector workers who come under below poverty line. This scheme administered by state government with the help of central government. The cost of the scheme should be divided between central and state government on the basis of 75:25 respectively. Under this scheme the central government issued a smart card for the beneficiaries and the beneficiaries pay a Rs 30 per annum as a registration/ renewal fee. The benefits should be provided to the unorganised worker and his family member (unit of five). The benefits under these scheme[23]:

- Total sum insured would be Rs. 30,000/- per family per annum on a family floater basis.
- Cashless attendance to all covered ailments
- Hospitalization expenses, taking care of most common illnesses with as few exclusions as possible
- All pre-existing diseases to be covered
- Transportation costs (actual with maximum limit of Rs. 100 per visit) within an overall limit of Rs.1000.

Aam Admi Bima Yojana (AABY)

"Aam Admi Bima Yojana (AABY) is a Government of India Social Security Scheme administered through Life Insurance Corporation of India (LIC) that provides Death and Disability cover to persons between the age group of 18 yrs to 59 yrs, under 48 identified vocational / occupational groups /rural landless households. It is a group insurance scheme implemented through a Nodal Agency such as a Central Ministry/ Department; State Government /Union Territory or other institutionalized arrangements/ registered NGO. The AABY provides insurance cover for a sum of Rs. 30,000/- on natural death, Rs. 75,000/- on death due to accident, Rs. 37,500/- for partial permanent disability (loss of one eye or one limb) due to accident and Rs. 75,000/- for total permanent disability (loss of two eyes or two limbs or loss of one eye and one limb) due to accident. The Scheme also provides an add-on-benefit, wherein Scholarship of Rs. 100 per month per child is paid on half-yearly basis to a maximum of two children per member, studying in 9th to 12th Standard."[24]

MGNREGA

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA, 2005) is a multipurpose scheme aims for providing social defence, livelihood protection and democratic primacy for the rural household by providing 100 days guaranteed employment in a financial year to every household whose adult members volunteer to do unskilled manual wage work. The scheme monitored by both the state government and central government with 75-25 funding basis. [25]

Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)

The PMJJBY is a social insurance scheme offer life insurance coverage of the policy holder for death for one year due to any reason. The scheme administered process ties ups with the life insurance companies and banks. The scheme is applicable to the saving bank account holder between the ages 18-50. A benefits of two lakhs will be provided to the subscriber after death due to any reason with a premium of Rs 330 per year per person.[26]

Pradhan Mantri Suraksha Bima Yojana (PMSBY)

The PMSBY is an accidental insurance scheme for saving bank account holder between the age from 18 to 70. It offers insurance cover with a Rs 12 premium per person per year to the policy holder of Rs. 2 lakh for in case of death or full disability and Rs. 1 lakh for partial disability. [27]

Atal Pension Yojana

The Government of India launched the Atal Pension Yojana in the 2014-15 budget years for the unorganised sector worker. It provides old age guaranteed income security to the unorganised worker. It encourages the worker to save for their retirement period. The scheme is administered by the Pension Fund Regulatory and Development Authority (PFRDA) through NPS architecture.[28] It offers insurance and pension to the

defined person according to their contribution and period. It basically targeted all unorganised workers who belong from 18 to 40 age groups. Under these schemes the subscriber would get pension Rs 1000 to Rs 5000 according his contribution after his retirement age of 60.[29]

Madhu Babu Pension Yojana

In 2008 the Odisha Government revised two old pension scheme and introduced the scheme Madhu Babu Pension Yojana. This scheme provide social security to the elder person above 60 year age, widow, leprosy patient, AIDS patient, handicapped persons and the person whose annual income is less than 24000 prescribed by the Tahsildar. The scheme should be applicable throughout the Odisha state only.[30]

Literature Review

There are many studies in India and abroad on agricultural labourer and social security scheme. This review of literature aims to show the need for the study of social security scheme for agricultural labourer.

Patel, S.J. (1950) in his study gives a detail discussion formation, expansion, causes and characteristics of agricultural labour in India and Pakistan. Patel's monograph is based on a careful study of vast statistical material and economic literature. The merit of Patel's study is that the author's propositions and conclusions are supported by abundant factual and statistical material. Patel has given an extremely interesting account of the disintegration of the Indian agrarian society during the nineteenth century.

Som, Ranjan Kumar (1960) in his studies explores the characteristics of Indian agricultural labourer as revealed by National Sample Survey. These includes the intensity of employment, reasons for underemployment, average days of works, index of inertia and household size of agricultural labourer , average days of works, index of inertia and household size of agricultural labourer. It divided the agricultural labourer into two types i.e., earner and helper. Earners are those one whose works are self-supporting and helper are those who assist the earner without earning independently.

Canagarajah, S. and Sethuram, S.V. (2001) in his studies identifies challenges and opportunities of the social protection and informal sector in developing countries. It explores the sources of insecurity and vulnerability of informal worker in developing countries. It is argued that attempts to extend orthodox social protection measures to those in the informal sector in developing countries are unlikely to succeed in providing effective protection, and a more comprehensive approach is required because much of the income insecurity for them is derived from their informality. The second part of this paper explains the challenges facing for a comprehensive approach to social protection in the informal sector. It explains the problems in the informal sector which hinder the social protection for informal worker.

Unni, Jeemol and Rani, Uma. (2002) in his studies identified a number of private-

market and NGO initiatives in the direction of social protection. It gives an argument that the causes of insecurity are both random shocks and structural features focuses on the need to address both the economic and basic security issues. This paper presents a broad definition of social protection to include both basic and economic security. A conceptual framework is put forward in which to analyse the causes of insecurities of informal workers, to identify the core needs of social protection, and to develop instruments and visualize the institutional mechanisms that can address those needs.

Jha, Praveen. (2007) in his studies explores the impact of macroeconomic policy on agriculture and agricultural labourers and gives some indicators which are related to the well-being of agricultural labour such as employment, wages, consumption, indebtedness etc. This paper fall shorts to explain the root causes of agriculture crises. Factors like input prices, profit in agriculture compare to other sector and losses in agriculture due to lack of insurance are greatly affected the crisis but the author ignores these factors.

Gupta, A.S. (2007) in his report includes all the aspect of unorganised sector which gives a quantitative scenario of unorganised sector in Indian economy. It gives more focus about the socio economic condition of unorganised sector. About the agricultural labour it gives only the quantitative scenario of agricultural labour in India.

Desinghkar, Priya (2009) in his study examines the labour laws to informal sector and agricultural sector with the help of empirical examples of garment industry, sugarcane industry, construction work and domestic work. The contemporary condition of labour inspections, the reasons of loophole of law and suggestion for improving labour condition in India are the main theme of this paper. The paper traces the arguments for and against regulation of labour markets and examines the difficulties in conducting inspections in the informal sector.

Mohapatra, K.K (2012) in study tries to shows the degree of vulnerability of the women workers in informal sector in India. Towards fulfilling the objective, a small study has been conducted in the State of Odisha, to find out the realities. Vulnerability through migration and structural changes are the main focus of the article and ignores all other factor such poverty and large family.

Chopra, S. and Pudussery, J. (2015) in his studies evaluate the social security programmes in India. It takes five programmes that are the National Rural Employment Guarantee Act (NREGA), the PDS, the Mid-Day Meal (MDM) scheme, the Integrated Child Development Services (ICDS) and Social Security pensions. It gives more priority to the National Social Assistance Programmes and makes an evaluation about pensions and the family, mode of payment, awareness, collection costs, irregular payments, malpractices, rations and pensions.

Objective of the Study

After liberalisation, the Indian economy and the informal economy in India grows on

the same direction. The growth of informal economy enhances the importance of social security for informal worker. The study looks for to analyses the social security schemes for informal sector in India and the impact of social security scheme on agricultural labourer with a special reference to Odisha agricultural labour.

Data Sources and Methodology

The relevant data and information for the purpose of the study was collected both through primary and secondary sources. The primary data has been collected by administering structured questionnaires and the respondents have been selected on the basis of purposive and random sampling method. The secondary data has been collected from the available literature in the relevant field, including National Commission for Enterprises in the unorganised Sector, Government of India, NSSO data from various rounds, National Accounts Statistics, published by CSO, State Economic survey and the Internet, among other sources. The study was conducted in the Dhenkanal district of Odisha which is an average district in every aspect.

About the Dhenkanal

Dhenkanal district one of the centrally located districts in Odisha. It is neither so much backward nor much developed in every respect. Agriculture is the major sources of income in this district. The main strength of this district has the communication facility. In terms of area, it takes 15th position among 30 districts. The total population of the district was 11, 92,811 among which 51.35 percent was males and 48.65 percent was female. The number of agricultural labourer in the district was 1, 63,636 and it takes 37.57 percent from the total workforce (Census 2011).

About the Sample Size and Respondents

The sample size of the study was 100 due to the limitation of time period and availability of funds. It includes only head of the agricultural labourer household. The unit of analysis was agricultural labourer only.

Table-1: Category and Gender of the Head of the Household

Category	Gender		Total
	Male	Female	
ST	18	2	20
SC	17	5	22
OBC	37	0	37
GEN	21	0	21
Total	93	7	100

Source: Primary field survey 2015

Table 1 shows the category and gender of the respondents with the help of cross tabulations. It is revealed from the table that only seven percent household has female dominated and 93 percent households have been male dominated. In Other Backward

Class and General Family fully depend on male person of the family for economic as well as social decisions.

Impact of Social Security Schemes on Agricultural Labourer

Social security takes unique position in a country like India where a large proportion of people struggle with poverty and for livelihood depend upon agriculture. The Government of India initiated number of programs to include the underprivileged people into the mainstream of inclusive economic development. After Independence the Government of India (GOI) put lots of effort to provide social security to its labour force. First, it exists within the formal sector but later it extended to the informal sector also. With the passage of time when new government was elected they brought several new schemes. That may not be all are totally new but just like the 'old wine in a new bottle'. The Government of India provides many social security schemes to its citizens. But the question arose, Are all schemes properly reach to its destinations? Are all the beneficiaries get the actual benefits or not? Have there any impact on its beneficiaries? To find the answer of the above questions the study has done a field survey on 15 social security schemes which applicable to the agricultural labourers. The result of the field study is presented in the following section of the study.

Awareness of Social Security Schemes (SSS)

Awareness plays a paramount role in order to success social security schemes in different community launched by the government. It also changes the attitude of the people towards the different schemes. Without awareness, it is quite difficult to get benefits provided through different schemes.

Table-2: Awareness of Social Security Schemes among ALH

Schemes	Awareness in Percentage			
	Don't Know	Partially Know	Fully Know	Manually know
Atal Pension Yojana (APY)	75	15	10	25
PMSBI	87	6	7	13
PMJJBY	76	19	15	34
RSBY	18	14	68	82
NOAPS	17	18	65	83
Indira Awas Yojana	1	8	91	99
BGJY	1	5	94	99
Janani Surakshya Yojana	9	6	85	91
MGNREGS	1	8	91	99
Annapuna	40	7	53	60
NFBS	100	0	0	0
AABY	100	0	0	0

Schemes	Awareness in Percentage			
	Don't Know	Partially Know	Fully Know	Manually know
Scholaship	100	0	0	0
Janashree Bima Yojan (JBY)	100	0	0	0
Madhu Babu Pension Yojana	31	12	57	69

Source: Primary field survey 2015

Therefore, after launching any schemes the next priority should be spreading awareness as much as possible to those dedicate people. After eighties the Government of India provides many social security schemes to various section of the society. The study take into considerations only informal sector social security schemes which applicable to the agricultural labourer. It has divided the level of awareness into fully known, partially know and don't know.

Table 2 presents the awareness level of social security schemes among agricultural labourer households. The study has being taken 15 schemes which were Atal Pension Yojana (APY), Pradhan Mantri Swasthya Bima Yojana (PMSBY), Pradhan Mantri Jivan Jyoti Bima Yojana (PMJJBY), Rastriya Swasthya Bima Yojana (RSBY), National Old Age Pension Schemes (NOAPS), Indira Awas Yojana (IAY), Biju Gramya Jyoti Yojana (BGJY), Janani Surakshya Yojana (JSY), Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGS), Annapurna Scheme, National Family Benefits Scheme (NFBS), Aam Admi Bima Yojana (AABY), Scholarship Under AABY, Janashree Bima Yojana (JBY), and Madhu Babu Pension Yojana (MBPY). The Social Security Schemes like APY, PMSBY and PMJJBY was launched in May 2015 for the informal sector labour force.

It is seen from the above table that the agricultural labourer households had no idea about some schemes like NFBS, AABY and JBY and the schemes like APY, PMSBY and PMJJBY awareness level had only less than 25 percent. However, some schemes like IAY, BGJY, JSY and MGNREGS had more than 90 percent awareness among agricultural labourer households. The schemes such as Annapuna, MBPY, RSBY and NOAPS had average level of awareness among households.

Sources of Information of SSS for ALH

Information plays an important role in the society to change the attitude and behavior of the masses. Now days there are lot of medium to access information about something. However the study divided the various sources into four categories that are electronics media, printed media, panchayat office and friends/relatives. Table 3 shows the sources of information to know about social security schemes for agricultural labourer households. From the table it reveals that panchayat office is the main source of information followed by friends/relatives and electronics media. The data shows that the use of printed media is very low among agricultural labourer for obtaining information about schemes.

Social Security Schemes Registration Among ALH

Table 4 shows the registration of social security schemes among agricultural labourer households. As per the study in APY, PMJJBY, JSY and in Annapurna schemes no one had registered. If we look at the newly launched schemes like APY, PMSBY, and PMJJBY only 2 households had registered in PMSBY and 3 to 5 percent people plan to registered in this schemes.

Table-3: Information Sources for ALH

Schemes	Sources of Information			
	Friends / Relatives	Panchayat Office	Printed Media	Electronics Media
Atal Pension Yojana (APY)	3	2	0	20
PMSBY	1	1	0	11
PMJJBY	0	0	2	21
RSBY	5	73	3	3
NOAPS	38	36	1	7
Indira Awas Yojana	38	58	0	3
BGJY	9	88	1	1
Janani Surakshya Yojana	18	65	1	7
MGNREGS	6	89	0	4
Annapuna	11	48	0	1
Madhu Babu Pension Yojana	23	44	0	2

Source: Primary field survey 2015

The number of respondents registered in RSBY, MGNREGS, BGJY and IAY were 66, 65, 51 and 25 respectively. Whereas only 8 respondents had benefited through RSBY, 46 in BGJY, 34 in MGNREGS and 23 through Indira Awas Yojana. Majority of the respondents having awareness has planned to register in pension schemes like MBPS and NOAPS. It is found from the table that Biju Gramya Jyoti Yojana (BGJY) is the only scheme in which highest number of agricultural households (46) benefited through this.

Table-4: Social Security Schemes Registration among ALH

Schemes	Registration of SSS in %		
	Registered	Plan to Register	Benefited
Atal Pension Yojana (APY)	0	4	0
PMSBI	2	5	0
PMJJBY	0	3	0
RSBY	66	2	8
NOAPS	3	45	3
Indira Awas Yojana	25	6	23
BGJY	51	34	46

Schemes	Registration of SSS in %		
	Registered	Plan to Register	Benefited
Janani Surakshya Yojana	-	-	-
MGNREGS	65	1	34
Annapurna	0	5	0
Madhu Babu Pension Yojana	1	50	1

Source: Primary field survey 2015

Degree of Satisfaction Level of SSS Among ALH

Measuring satisfaction from something is a critical process due to its relativity and subjectivity. The study measured the level of satisfaction through the scale of low, medium and high. From table 5 it revealed that in most of the schemes the number of registered respondents is very low due to its low level of awareness.

Table-5: Level of Satisfaction of agricultural labourer with SSS

Schemes	Level of Satisfaction						
	Satisfaction			Dissatisfaction Reason			
	Low	Med	High	a	b	c	d
Atal Pension Yojana (APY)	1	1	-	-	-	1	
PMSBI	2	-	-	-	-	2	
RSBY	46	6	2	9		3	
NOAPS	-	3	3	1	-	-	-
Indira Awas Yojana	6	11	4	3	-	8	-
BGJY	2	9	29	1	-	2	-
Janani Surakshya Yojana	-	-	45				
MGNREGS	-	25	17	19		6	
Madhu Babu Pension Yojana	2		44				

Source: Primary field survey 2015

(Whereas a-administrative problem, b-Information problem, c-low benefits, d-Others problems)

So in this study only few number of respondent express their views on the satisfaction level and comments on dissatisfaction level. Table 5 shows the level of satisfaction of agricultural labourer and dissatisfaction reason of social security schemes. It is seen from the table that the satisfaction level of the respondents of some schemes likes JSY, MBPY and BGJY is high compare its low satisfied people. In RSBY, out of 66 registered respondents 46 respondents express their low level of satisfaction and the main reason of dissatisfaction of the scheme was the administrative difficulties with the schemes. Where as in the newly launched schemes like APY and PMSBY, respondents remark their low level of satisfaction and criticized these for low benefits in

future. Indira Awas Yojana is the only schemes where the level of satisfaction scattered among the respondents and the only reason of dissatisfaction was low benefits.

Conclusion and Suggestion

In the above discussion, an attempt has been made to shows the impact of social security schemes among agricultural householdin terms of awareness which the starting point of every success and without this material or intellectual change never came in dreams of anyone. The Government of India initiated number of programs to protect the poor people from vulnerability and poverty butit benefited people iff the intended beneficiaries aware about it. It is very embracing result from the study that some schemes (NFBS, AABY, JBY) had zero awareness among agricultural labourer which means the schemes only in pen and paper. The study also included newly launched schemes like APY, PBSBY and PMJJBY, which had also very low level of awareness and the source of awareness was the electronics media but for an agricultural labourer connect with this is a difficult task due to their busy schedule and socio economic condition. It is revealed from the study that Panchayat office has a great role for the awareness and success of social security schemes and founds that the awareness of social security among agricultural labourer was highest of that schemes which went through Panchayat office. A high percent of Agricultural labourer depends on Panchayat office for their source of information about social security schemes.

The study explained the impact related to unorganized social security schemes with the reference to agricultural labourer and on the support of findings and conclusions; the following recommendation emerged from the present study.

- In India informal sector is so large and it comprises variety of worker and all the workers are not same in terms of economically, socially and intellectually. So social security schemes should be made only for a specific group not for all in a single.
- In Indian democracy Panchayat is the root level government body and through this every village of India interconnected. So social security schemes benefits should be reached to the root level peopleif it goes through the root level government.

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Impact of Macroeconomic Factors on Automobile Demand in India

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The Indian automobile industry is growing remarkably after 1991 following India's growing openness, income of the people, the arrival of new and existing models, easy availability of finance at relatively low rate of interest, and price discounts offered by the dealers and manufacturers. Although the automobile demand depends on number factors, but this study attempts to explore the interactions between India's automobile sales and the hike in fuel prices, lending rate, and GDP per capita in the automobile industry in India. Hence, this study has applied the cointegration and the vector error correction models to analyse the possible causal relations between the variables mentioned above. The results find the evidence of a positive and long-run relationship between automobile sales and GDP per-capita and the remaining variables have the inverse relationship with automobile demand. As we can clearly see, the higher GDP leads to higher volume of automobile sales. However, interest rate, and fuel price have a negative relationship with both passenger and commercial vehicles sales. Each of these factors plays a key role in determining the level of auto demand. The passenger and commercial vehicles demand model estimation through unit root test found that they have long-term, positive equilibrium relationship with the GDP per-capita. The error correction term is negative and statistically significant. This study may suggest that if the Government may help by mandating higher fuel efficiencies for vehicles and provide facilities for improving credit availability and reducing dependence on foreign oil that may trigger the demand for sales in Indian automobile industry.

Keywords: *Indian Automobile Sales, GDP Percapita, Interest Rate, Fuel Price, Time Series Models*

Introduction

Automobile industry in India is one of the core industries that has expanded rapidly over the reform periods and typically accounts for a large and increasing share of industrial production, output, exports, and employment and also has made its significant position in the world market. The Automotive sector is also seen as a multiplier of industrial

growth. Automotive sector in India is one of the core industries of Indian economy, whose prospect is reflective of the economic resilience of the country. The economic contribution of this sector is immense, with significant linkages to the manufacturing and services sectors (Ministry of Heavy Industries and Public Enterprises , 2006). For most of its existence the automobile industry has been a model of industrial and social discipline and control. Many developing countries regard the automobile industry as an economically strategic sector "in the context of its contribution to national production, employment and technology, reinforced through magnitude of upstream and downstream activities (Audet and Vangrasstek, 1997).

In 1991, Indian government deregularise the economy and began instituting a series of measures to shift the controlled and regulated economy to market oriented economy. Moreover, the liberalization steps, such as, relaxation of the foreign exchange and equity regulations, reduction of tariffs on imports, and refining the banking policies initiated by the Government of India, have played an equally important role in bringing the Indian Automobile Industry to great heights. Automobile Industry in India is growing fast and seems to have a clear correlation with liberalisation related to policies those influenced both domestic demand pattern as well trade. Following India's growing openness, the arrival of new and existing models, easy availability of finance at relatively low rate of interest and price discounts offered by the dealers and manufacturers, all have stirred the demand for vehicles and a strong growth of the Indian automobile industry. The growth of automobile demand has also been augmented by the government's tax policies that largely favoured automobile sector in India. Economic reform and subsequent increases in income have been associated with changing patterns of spending on goods and services and emergence of consumerism in India. This extraordinary growth that the Indian automobile industry has witnessed is a result of a major factor namely, the improvement in the living standard of the middle class and an increase in their disposable incomes. The convergence of government policies, economic growth, and people's purchasing power have all contributed to the phenomenal demand of Indian auto industry. Auto financing started emerging as an important driver for demand.

After having recorded a strong volume growth over the last two decades, the automobile industry in India was slowdown during 2008-09 due to global economic crisis leading to moderation in growth contributed by firming up of commodity prices, rising fuel costs and interest rates. This slowdown of the automobile industry for two consecutive years has raised concerns on the long term demand prospects. Post June 2010, the cost of ownership has risen sharply on account of deregulation of petrol prices. The demand for vehicles was impacted due to macroeconomic factors such as uncertainty over income growth, increasing petrol prices, high interest rates and lower disposable income caused by high inflation. These factors are having a catastrophic impact on the bottom line of the Indian automotive industry and are resulting in withdrawal, scaling down or deferment of capital investment which would hurt the objectives of the Automotive Mission Plan in the long run.

This study is being carried out to identify the macroeconomic factors that influencing the automobile demand in India. This paper presents an analysis of these factors in India and considers their implication for future motor vehicle growth rate in the country. Therefore, the objective of this study has been selected to analyse the impact of the macroeconomic factors that influence automobile industry in both short run and long run in India. In order to examine the impact of these factors on automobile demand, this study has carried out to analyse these factors in determining the demand for automobiles and as considers their implication for future motor vehicle growth rate in the country and the automotive industry emerging as important industry in economic growth.

The present paper consists of five sections. The first section deals with introduction. The second section shows the demand for automobiles in terms of trends in growth of production and sales in the Indian Automobile Industry that reflect the future potential of industry. The third section provides the review of literature dealing with the factors determining the recent demand for automobile market. Fourth section describes the data sources and methodology that we estimate it. Fifth section presents the results. Major findings and policy implications are provided in the final section of the paper.

Indian Automobile Industry – A Brief Overview

In recent years India has been growing as a market potential for automobiles due to rise in demand.[1] India is currently the world's second largest market for 2-wheelers (IBEF, 2008) and is considered to be one of the fastest growing passenger car markets (GOI, 2006a)[2]. In the year 2007, India ranked 8th in the production of commercial vehicles and 9th in the production of passenger cars worldwide, moving up from a rank of 13th and 15th respectively in the year 2000 (OICA, 2008a).[3] According to a report from UNIDO, 'in international year book of industrial statistics 2008', India holds 12th position amongst top 15 automakers in the world. India is at the 4th position amongst the automakers of developing countries. India is also home to the world's largest 2-wheeler manufacturer and the 11th largest commercial vehicle manufacturer (Hero Honda, 2008 and OICA, 2008b).[4] India is expected to overtake China as the world's fastest growing car market in terms of the number of units sold, because of its large market. The segmentation wise production and sales trend of the automobile is shown in table 1. We study the trend of automobile industry in terms of production and sales.

1 The automotive industry of India is categorized into passenger vehicles (PVs), commercial vehicles (CVs), two wheelers, and three wheelers, with two wheelers dominating the market. PVs are classified into passenger cars and multi utility vehicles. Commercial vehicles are classified into light commercial vehicles and heavy commercial vehicles.

2 GOI (2006a): "Automotive Mission Plan 2006-2016", Department of Heavy Industry, Ministry of Heavy Industries and Public Enterprises, Government of India, New Delhi. IBEF (2008): "Automotive market & opportunities", India Brand Equity Foundation, New Delhi. The India Brand Equity Foundation (IBEF) is a Public Private Partnership between the Ministry of Commerce and Industry, Government of India and the Confederation of Indian Industry.

3 Ranking in terms of the number of units produced. UNIDO-United Nations Industrial Development Organisation.

4 Hero Honda (2008): "Corporate profile", Hero Honda Motors Ltd., New Delhi and OICA (2008b): "World ranking of manufacturers – Year 2007", International Organisation of Motor Vehicle Manufacturers, Paris,

Table-1: Trend in Production Volumes of Automobiles ('000' Numbers)

Year	HCVs	LCVs	CVs	CARs	MUVs	PVs	2W	3W	Total
1990-91	87	58	145	182	37	219	1821	89	2274
1991-92	89	54	143	166	32	198	1606	77	2024
1992-93	75	53	128	164	39	203	1503	66	1900
1993-94	66	76	142	208	50	258	1765	92	2256
1994-95	102	93	195	264	50	314	2195	129	2834
1995-96	130	88	218	348	106	454	2656	176	3466
1996-97	156	85	241	411	135	546	2979	222	3984
1997-98	96	65	161	401	135	536	3073	235	4004
1998-99	81	55	136	391	113	504	3375	209	4223
1999-00	112	63	175	577	124	701	3778	206	4858
2000-01	88	64	152	505	126	631	3758	203	4758
2001-02	97	66	163	564	124	688	4324	213	5369
2002-03	121	83	204	609	115	724	5076	277	6280
2003-04	166	109	275	843	146	989	5623	356	7244
2004-05	215	139	354	1028	182	1210	6530	374	8468
2005-06	219	172	391	1113	196	1,309	7601	435	9735
2006-07	294	226	520	1238	223	1461	8436	556	10973
2007-08	291	254	549	1417	245	1662	8009	501	10716
2008-09	288	129	417	1571	267	1,839	8419	501	11175
2009-10	251	316	567	1927	220	2357	10512	619	13845
2010-11	-	-	761	-	-	2983	13349	799	17892
2011-12	-	-	929	-	-	3146	15453	879	20382
2012-13	-	-	832	-	-	3231	15744	840	20647
2013-14	-	-	699	-	-	3087	16883	830	21500
2014-15	-	-	698	-	-	3221	18489	949	23358
2015-16	-	-	782	-	-	3413	18829	933	23960

Source: Society of Indian Automobile Manufacturers and Motor Transport Statistics of India, Ministry of Road Transport and Highways, Govt. of India, 2010.

CVs: Commercial Vehicles include Medium and Heavy and Light Commercial Vehicles

PVS: Passenger Vehicles includes Passenger Cars and Multi Utility Vehicles

2W&3W: Two and Three Wheelers include Scooters, motorcycles, mopeds and three wheelers

Table 1 shows the production trends in the Indian automobile industry from 1990-91 onwards. The automotive industry in India has been witnessing an impressive growth since the country's economic liberalisation. In contrast to the 2256 thousand units produced in 1993-94, the production of vehicles in the country crossed a historic land mark of 10973 thousand units in the year 2006-07 and 11 million units in 2008-09. The production of Indian automobile industry size is 11175 thousand units in 2008-2009. The production of passenger vehicle and commercial vehicle segment's size are 1839 and 417 thousand units in 2008-2009. The production of two and three wheeler vehicles segments size are 8419 and 501 thousand units during the same

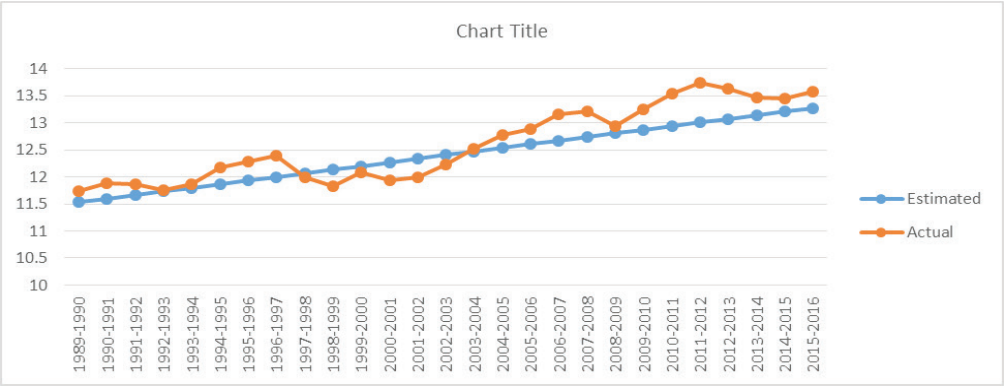
period. Although the sector was hit by economic slowdown, overall production (passenger vehicles, commercial vehicles, two and three wheelers) increased from 10719 thousand vehicles in 2007-2008 to 11175 thousand vehicles in 2008-2009. Passenger vehicles increase marginally from 1662 thousand units to 1839 thousand while two wheelers increased from 8009 thousand to 8419 thousand (SIAM, 2009). The Indian automotive industry has recorded a strong volume growth over the last one year. The production of passenger vehicle and commercial vehicle segment's size are 2147 and 567 thousands units in 2009-2010. The production of two and three wheeler vehicles segments size are 10512 and 619 million units during the same period. Rising demand owing to the strong growth of Indian economy in post liberalisation and the changing landscape in the global automotive industry have fuelled such growth. India is being recognized as potential emerging auto market. While the total motor vehicles production decreased from 2,274 thousand in 1990-1991 to 1900 thousand in 1992-1993, the passenger vehicles sector alone registered a decrease from a mere 219 thousand to 203 thousand during the same period. The commercial vehicles [consisting of HCV and LCV] production also decreased from 145 thousand in 1990-1991 to 128 thousand in 1992-1993. However, within the commercial vehicle segment, it is the LCV sector whose production has decreased during the same period. But the HCV sector also registered a decrease, but relatively less than both the LCV and Car sector. The total motor vehicles production increased from 2257 thousand in 1993-1994 to 4857 thousand in 1999-2000, the Passenger Vehicles sector alone registered an increase from a mere 258 thousand to 698 thousand during the same period. The commercial vehicles production also increased from 142 thousand in 1993-1994 to 241 thousand in 1996-1997. However, within the commercial vehicles segment, it is the LCV sector whose production increased from 1992-1993 to 1994-1995 and declined between1995-1996 to 1998-1999. The HCV also increased from 1993-1994 to 1996-1997. But the total vehicles production increased from 4757 thousand in 2000-2001 to 11088 thousand in 2006-2007, the Passenger Vehicles sector alone started an increase from 644 thousand to 1545 thousand during the same period. The commercial vehicles production also increased during the same period. The periods from 2000-2001 to 2007-2008 are an important period for rapid increase in the automobile vehicles production than previous period. But the production of automobiles is declined in 2008-2009. It is recovered in 2009-2010. Over the last few years there has been an increasing trend in the production of vehicles, both in value and quantity terms. The only lean patch in production was during the year 2000-01, and recently in 2007-08, during which the growth in absolute numbers declined marginally. Again commercial and passenger vehicles production have seen a significant rise in the last couple of years, thus implying demand growth in these segments. Keeping in pace with the growing demand for automobiles, the production has increased over the years.

In spite of the inherent cyclical nature, the long term growth prospects for the industry remain closely linked to the development of road infrastructure, growth in gross domestic product (GDP) and industrial production. The industry had many ups and

downs in its long journey, but the last decade was quite remarkable for the Indian passenger car industry because during this period it made a progress in all fronts. The last time when it experienced a contraction in sales was 2001-02, which is more than a decade ago. Post-2008 economic crisis, when most of the world economies experienced drastic falls in their sales, the Indian market remained upbeat with positive growth in production and sales. In India also, the industry is currently facing sluggish demand, mainly caused by economic slowdown and rising fuel prices. This reflects versatility of the Indian industry which has undergone major restructuring since economic liberalization was initiated in the country in early 1990s. Demand for automobiles including cars generally increases in a growing economy. But, if growth halts for any reason, sales declines almost automatically and instantaneously.

The industry follows the path by which these two goes and good performance of GDP and IIP results in higher demand for CVs. The past few years have witnessed a rapid change in all the segments of the Indian passenger vehicle industry. Although growth of these segments has shown similar trend, volume growth in the M/HCV segment has been more volatile. The expected continuance of economic growth and investments in infrastructure will help the commercial vehicle sector's growth going forward. Similarly, the increasing per head disposable income, lowering age of first-time car users, shorter replacement cycles and lower car penetration, it is expected that the Indian automobile industry would continue to grow at a healthy growth rate in the long run. With allies in a strong economy, rising demand and financial backing, Indian auto industry is standing at the threshold of success. Graphs 1 and 2 which show the logarithmic value of output and the percentage growth rate that clearly indicates the fluctuating growth trends of the commercial and passenger vehicle industry.

Figure-1: Average Growth Rate of Commercial Vehicles Output (Log values)

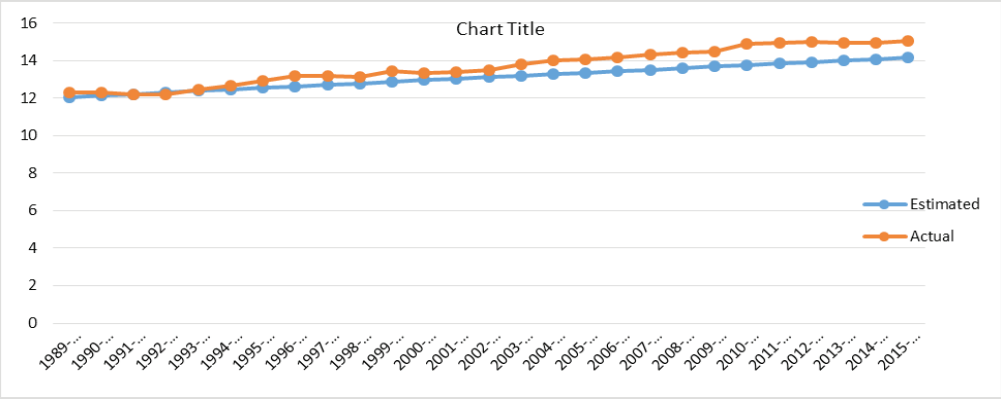


Fitted equation: log Y = 11.56 + 0.081*t

Where Y = Output, t = time, and * implies statistical significance at 1%, 5% and 10%

The Commercial Vehicles (CVs) industry (consists M/HCVs and LCVs).

Figure-2: Average Growth Rate of Passenger Vehicle (PV) Output (Log values)



Fitted equation: LN Y = 11.46 + 0.081*t

Where Y = Output, t = time, and * implies statistical significance

CVs: Commercial Vehicles include Medium and Heavy and Light Commercial Vehicles

PVS: Passenger Vehicles includes Passenger Cars and Multi Utility Vehicles.

Factors of Automobile Demand: Theoretical Basis and Hypothesis

In the Indian context, a number of studies have been done on the impact of industrial policy regimes on the growth of firms in Indian automobile industry. However, a few studies have been conducted to examine the relationship between automobile demand and various macroeconomic variables and the findings are generally mixed. Firstly, let us have some overview on the relationship between two. The most important structural features of the industry are buyer demand, the nature of the product, number of rival sellers and their relative size (concentration), barriers to new competition, and extent of the economies of scale. Income and price are the major variables determining the demand for automobiles. An examination of the factors that have contributed to rapid growth rate of motor vehicles in India is very important to understand the likely future course that the growth might take. This paper reviews the studies dealing with the automobile policy and demand for automobiles products and the macroeconomic factors that influence it.

According to Carlson (1978) developed a multiequation to explain automobile demand in the United States using quarterly data from the first quarter of 1965 to the second quarter of 1975. The results indicated that, on the one hand, the level of disposable income is the most important determinant of automobile demand and, on the other hand,

gasoline shortages and high gasoline prices cause a redistribution of the demand. The literature has used quarterly data from 1967 to 1978 to forecast automobile demand over the five years following the investigation, and to analyze the demands for different sizes of autos. The results of their estimations of future demand showed that disposable income was given the greatest weight among all the factors used in their model, and that price was a significant factor when given the greatest weight among all the factors used in their model, and that price was a significant factor when automobile sales were depressed (Carlson & Umble, 1980). However, the literature created a simple linear demand function with data on automobile characteristics for the years 1969-86 to estimate US automobile demand. They calculated price and income elasticity using least-squares estimates, and found that income has an important effect on the demand for cars (Arguea, Hsiao, and Taylor, 1994). Abu-Eisheh and Mannering (2002) used variables including Gross Domestic Product (GDP), changes in employment, fuel prices and exchange rate, and so on to forecast automobile demand. They found that much of the growth in automobile ownership is driven by GDP. Berry et al. (1995), estimate cost and demand parameters for all models marketed in the U.S. for over a twenty-year period. As expected, the study reports that income is the prime determinant influencing automobile demand. Therefore, it is important to explore and understand the development of the auto market in India, which explains the factors influencing the auto demand during post liberalisation.

Moreover, the literature presented a simulation and scenario analysis of the Chinese market for passenger vehicles to explore variations in key parameters, including income and population growth rates, elasticity of income ranges, fuel economy, and vehicle saturation. They concluded that the rapid expansion of sales of Chinese passenger vehicles is driven by steady per capita income growth (Kobos, Erickson, and Drennen, 2003). Fouquet (2012) estimated the trends of income and price elasticities and offer the future growth insights in transport use in the United Kingdom. The results show that income elasticities of passenger transport demand was very large in the mid-nineteenth century. As expected, all these studies reported that income is the prime determinant influencing automobile demand. Furthermore, price and income elasticity can be calculated to analyze relevant factors.

Some studies analyze the vehicle demand in India. In India, state also directly involve in the development of public transport system (The Energy Resource Institute, TERI, 2009). The country with its rapidly growing middle class (450 million in 2007, NCAER report), market oriented stable economy, availability of trained manpower at competitive cost, fairly well developed credit and financing facilities and local availability of almost all the raw materials at a competitive cost has offered itself as one of the favourite destination for investment to the auto makers. India has been predominantly rural in character throughout the ages, but now many urban centers have flourished from time to time. In a rapidly growing economy with country's improved highway infrastructure and business, growth of small and heavy commercial vehicles segment outperforming in the growth (Burange and Yamini, 2010). According to Ernst & Young report automotive

ecosystem is changing fast and talked about helping their clients in terms of quality. Government policy can have a significant impact on the size, composition and growth rate of a nation's motor vehicle fleet. In India, state and national governments directly or indirectly control the supply, demand, the distribution of automobiles, fuel price and fuel supply, the development of road and other component of infrastructure needed to motor vehicles.

Mukherjee and Sastry (1996) also discusses that penetration of passenger cars in rural and semi- urban areas is extremely low and could provide fresh markets. They opinion that new entrants will have to deal with uncertainty of demand, different and evolving customer needs, a relatively poor supplier base, a market crowded with competition and industry wide capacity shortages. They see the prospect of India emerging as a significant manufacturing base for exports. They conclude that in the highly price sensitive market, reduction of prices because of lower duties and taxes and progressive indigenization, and rising middle class incomes are likely to further increase industry growth rates. Vikas Sehgal, Matthew Ericksen, Sunil Sachan (2009) provides an analysis of growth prospects in the Indian automotive industry. The main factors behind such growth are the increasing affluence of the average consumer, overall GDP growth, the arrival of ultra-low-cost cars, and the increasing maturity of Indian original equipment manufacturers (OEMs). However, India's path to mass motorization will be very different from that of developed countries; it must first develop the new technologies, business models, and government policies that will pave the way to increased automobile penetration. Other challenges – for example, the current global economic crisis and high commodity prices – may slow down the country in the short term, but they will not be able to stop it.

CRISIL (2013) discusses about the long term prospects of the automobile industry in India. They take a closer look at the key factors affecting demand over the last few years and find that some of these trends are reversing and the demand for automobiles will revive in the near future. Income and the cost of ownership-two key factors affecting demand for passenger vehicles (PVs), were both negatively impacted during the last two years. These factors typically act counter cyclically, resulting in relatively stable growth for the industry. Post June 2010, the cost of ownership has risen sharply on account of deregulation of petrol prices. Puja (2015) studies the relationship between various factors and demand of cars made by different automobile companies. The various factors that affect sales/demand includes income level of consumers, price of commodity, crude oil price, excise duty, bank interest rate, new launches etc. Although there are number of factors that can affect demand of car units but price is the most influential factor among them.

Industrialization and economic development in developing countries can have a strong impact on number and growth rate of motor vehicles. Economic growth and development affects the motorization rate in many ways. First, due to rise in national income, personal income rises, demand for consumer goods tends to increase. The availability of more income gives individuals and households the economic opportunity

to purchase more luxurious item like automobiles. As more and more persons buy motor vehicles, the motorization rate will increase (Richet and Ruet, 2008). In India, state and national governments directly or indirectly control the supply, demand, the distribution of automobiles, fuel price and fuel supply, the development of road and other component of infrastructure needed to motor vehicles. In India, state also directly involve in the development of public transport system (The Energy Resource Institute, TERI, 2009).

Muhammad et al. (2012) showed that GDP has positive relationship with car sales. They tested 4 independent variables GDP, inflation (CPI), UR and loan rate on automobile sales in ASEAN countries. From their result, it is revealed that the 4 variables influence the car sales in long run however insignificant during short term. The result is supported by Nawi, et al. (2013) in their study of determine the passenger car sales. In their study, they also investigate the relationship of GDP and the passenger car sales. From their result, it also showed that GDP has positive relationship with the passenger car sales. The higher GDP indicate that higher volume of passenger car sales. Nawi, et al. (2013) also examined the relationship between inflation rate and passenger car sales. The findings were supported by the theories of the analysis. Inflation rate has a negative relationship with passenger car sales. Muhammad et al. (2013) in their study found that inflation rate does not have significant long term equilibrium relationship between sales of passenger vehicles. Bank lending may affect the car sales through various liquidity effects. The study of Nawi et al., (2013) examined the relationship of ITR and passenger car sales. From their finding, it showed that there is negative relationship between ITR and passenger car sales. Presumably, the quantity demanded by a specific size of automobile should be a function of its price, of measures of the level of national economic activity, and of the prices of complements and substitutes. In addition, relative styling or technological changes can be expected to affect demand.5 For the purpose of analysis, it is convenient to group the independent variables into five broad categories: price (Pi), the prices of substitutes (Ps), the prices of complements (Pc), measures of the economic environment (E), and other factors (F). Since, this study wants to examine the factors that are most likely to influence the Indian automobile demand, the demand function that is quantity demanded taken as a function of a number of different factors (McGuigan, Moyer, and Harris, 2005). That is, the study attempts to express the demand for the i^{th} size automobile in the following functional form:

$$D_i = f(P_i, P_s, P_c, E, F) \tag{3.1}$$

There are several factors that led to extraordinary performance of the Indian automobile industry in the last decade. It would be perhaps difficult to capture all of them and even more difficult to isolate the contribution of each one in the overall growth process. However, in the following paragraphs an attempt has been made to identify the major ones.

5 James Wetzel and George Hoffer (1982), "Consumer Demand for Automobiles: A Disaggregated Market Approach", The Journal of Consumer Research, Vol. 9, No. 2, pp. 195-199.

Data Sources and Methodology of Analysis

The data pertaining to the dependent variable consists of automobile sales in India. Whereas, the independent variables include Gross Domestic Product (GDP), Interest rate, wholesale price indices of automobiles and all commodities and wholesale price indices of fuel, power, light and lubricants. The sample time series are collected for 27 years from the year 1990 until 2016. The data was obtained from various sources. The data on automobile production and sales have been taken by the two automotive associations, namely Society of Indian Automobile Manufacturers (SIAM) and Automotive Component Manufacturers Association (ACMA).6 The wholesale price indices of automobiles and all commodities are collected from Ministry of Statistics and Programme Implementation. The wholesale price indices of Fuel, power, light and lubricants and machinery and equipment other than transport equipment are collected from Ministry of Commerce and Industry, Government of India. As the study tries to examine the factors that are most likely to influence the automobile demand, it attempts to express the demand function mentioned in equation 1 that is quantity demanded taken as a function of a number of different factors (Mcuigan, Moyer, and Harris, 2005).

In order to ascertain whether India's automobile demand are linked to the macro-level variables or not. Since time-series macroeconomic variables are used, the augmented Dickey-Fuller (ADF) and Philip-Perron tests were used to test for stationarity of variables and ind sales and they have unit roots, i.e., are integrated as one (1) variable. Unit root test confirms the variables are stationary when they are first-differenced, that is, all variables used in this time series are I (1). Since all variables in this time series are I (1), there is a possibility of an equilibrium relationship between them. The cointegration test of Johansen (1988) and Johansen-Juselius (1990) was applied to investigate the presence of a long-run equilibrium relationship among the variables in study. There are two tests, the Trace statistic, which is more reliable and the max eigenvalue statistic. Both rejects the null of no cointegration at the 5% level. Both the trace statistics as well as the maximum-eigenvalue statistics indicate the presence of a unique cointegrating vector at 5% level. There exists a relationship between two non stationary I (1) series, Y and X, such that the residuals of the regression are stationary, then the variables in question are said to be cointegrated. The long run (equilibrium) relationship between the variables is estimated by the following equation:

$$Y_t = \beta_0 + \beta_1 X_t + u_t$$

Our test rejects the null of no cointegration, meaning that the variables are cointegrated, the residuals from the equilibrium regression can be used to estimate the error correction model. With cointegrated series we can construct a error correction model to better understand the causal relationship between the two variables.

After performing the Johansen Cointegration Test, the Error-correction Model (ECM)

6 For example, while the cars and four wheeled drives are meant for personal use, light, medium and heavy commercial vehicles are all meant for commercial purposes.

was estimated and the optimal lag length was obtained. If all variables in this time series are *I* (1) the variables have the error correction form:

$$\Delta y_t = \alpha_0 + \alpha_1 \Delta x_t + \lambda(\varepsilon_{t-1}) + u_t$$

ε_{t-1} is the disequilibrium error and λ is the short-run adjustment parameter or the speed of adjustment coefficients. This model is known as an error correction model and $\lambda(\varepsilon_{t-1})$ is known as error correction term. This study has applied the ECM to analyse the coexistence of the long run correlation between two. Even if the co-integration has been detected between the series that support the evidence of the existence of a long-run relationship, ECM is still applied in order to evaluate the short run properties of the co-integrated series. The main hypothesis of this study is developed to examine the relationship between automobile sales and GDP per-capita, fuel price and interest rate. GDP per-capita is expected to have a positive relationship with automobile sales and fuel price and interest rate have negative relationship with sales.

Results and Discussion

The econometric findings are discussed in this section, starting with the results of the Unit Root test, followed by the discussions of the results of Johansen's Cointegration Test. Thereafter, the Error Correction model results are shown in the Table-2, which is given below:

Table 2: Vector Error Correction Model for Passenger and Commercial Vehicles Sales Growth: Dependent Variable – Sales Growth

Passenger Vehicles Sector (PVs)		Commercial Vehicles Sector (CVs)	
Variables	**Coefficients**	**Variables**	
gdppc (Long run)	14.293 (10.06)*	gdppc (Long run)	51.67 (14.27)*
D(Sales(-1)	-0.357 (2.62)*	Δ Sales(-1)	-0.728 (4.13)*
D(dgdppc (-1)	**3.048 (2.31)**	Δ dgdppc (-1)	6.404 (2.76)*
D(fuel)	-1,092 (1.73)***	D(fuel)	-1.495 (2.27)*
Lending (-1)	-0.645 (2.28)**	Lending (-1)	1.77 (4.67)*
ECM	-0.34 (10.51)*	ECM	-0.14 (12.77)*
R^2	0.97	R^2	0.98
Adj. R^2	0.96	Adj. R^2	0.97

Notes: *Figures in the parenthesis indicates the t-values which represent significant levels. *: Significant at 1 %, **: Significant at 5 % and ***: significant at 10 %. Lag length 1 is selected using log likelihood ratio (LR) test. D indicates the first difference level respectively.*

Passenger Vehicles Sector (PVs): Trace test and Max-eigenvalue test indicate 2 cointegrating eqn(s) at the 0.05 level.

Commercial Vehicles sector (CVs): Trace test and Max-eigenvalue test indicate 1 cointegrating eqn(s) at the 0.05 level.

The error correction results found that GDP have a long term equilibrium and positive relationship with commercial and passenger vehicles sales whereas the remaining

independent variables have the inverse relationship with them in the short run which was found by the previous studies. As we can clearly see, the higher GDP or income leads to higher volume of commercial and passenger vehicles sales. Higher prices of automobiles, fuel price, and lending rate have a negative relationship with automobile sales and lead to lower volume of automobile sales. However, for interest rate, a 1% increase will decline the passenger car sales by -0.645 or 1 unit. But the coefficient of lending rate in the commercial vehicles sector is positive and statistically significant. The credit conditions are perhaps improved that might have the largest impact on auto demand since 2011, potentially resulting in higher demand predicted by recovery growth to date than during recession period. We also expect sales to be noticeably impacted by whether consumers are more motivated to increase We believe that improving credit conditions will have the largest impact on auto sales in 2011, potentially resulting in higher sales than predicted by recovery growth to date. Similar results go for the fuel price index, which has a negative relationship with passenger and commercial vehicles sales and parallel with theoretical and most of the previous studies. Overall we find that both CVs and PVs sales growth depends on growth of gdppc and fuel price, lending rate and also the equilibrium error term. The coefficient of gdppc is highly significant.

The error correction terms in the estimated equations are highly significant and have correct sign. The negative coefficient of error correction term is consistent with the equilibrium adjustment theory. According to this theory, the value of error will be much lower leading to an adjustment for long-term equilibrium. It can be stated that the speed of adjustment to the long-term equilibrium is 34 % if there are situations that influence the total number of passenger vehicles that deviate from equilibrium in each period. The error correction term is negative and statistically significant with a coefficient of 0.14, suggesting about 14 percent of errors are corrected in each period to maintain the equilibrium relationship between CVs sales growth and per capita GDP.

Implications and Conclusions

This study has attempted to study the demand trends of automobile industry in terms of production and sales since 1990. It has been observed that the India's automobile industry is well-positioned for growth, servicing domestic demand. This shows that there has been an increasing trend in the production of vehicles, both in value and quantity terms. The only lean patch in production was during the year 2000-01, and in 2007-08, during which the growth in absolute numbers declined marginally. The study analyses the several macroeconomic factors that have been chosen to measure their influence on the automobile demand during 1990-2016. This study has used the cointegration test of Johansen (1988) and Johansen-Juselius (1990) to investigate the long-run equilibrium relationship among the variables in study. Since there embodying the co-integration among the variables that suggesting a long run relationship, ECM model is applied. The ECM is a mechanism that enables an examination of the short-term equilibrium adjustment process. Therefore, the error equilibrium adjustment term is the linkage between short-term and long-term adjustment mechanism. The error

correction results showed that the GDP have a long term equilibrium and positive relationship with both commercial and passenger vehicles sales whereas the remaining independent variables have the inverse relationship with them in the short run. Results from ECM found that variables chosen are significant in explaining the automobile sales and in line with theory and most of the studies conducted before. The results suggested that GDP has positive impact on automobile demand as income of the people increases in recent days. The higher GDP or income leads to higher demand for both commercial and passenger vehicles sales. In summary, as income changes, Indian demand for automobiles also changes. The relationship between income and automobile demand is positive. These results are consistent with the previous studies (e.g. , Carlson, 1978; Carlson & Umble, 1980; Depelsmacker, 1990; Arguea et al., 1994; Abu-Eisheh & Mannering, 2002; Kobos et al., 2003), by demonstrating that income is a very important factor in Indian automobile demand.

Higher fuel price, and lending rate have a negative relationship with automobile demand and lead to lower volume of automobile sales. Income increase has positive impact on sales while fuel price causes automobile demand to decrease. The demand also decreases due to the negative impact of petroleum prices and interest rates. Automobile production has been increasing due to the high growth of Indian economy. However, the negative link between petroleum price and automobile production as higher petroleum prices cause fuel prices to rise, which, in turn, leads to automobile demand and production decline. Looking at the India's automobile demand, the results find that the price of fuel along with lending rate are also another important factor in both PVs as well as in CVs in India. The various factors that affect sales/demand includes income level of consumers, price of commodity, crude oil price, excise duty, bank interest rate, new launches etc. Although there are number of factors that can affect demand of automobiles but GDPP is the most influential factor among them.

All these factors can have indirect impact on automobile production since it is dependent on consumption. Consequently, the government in India must pay careful attention to avoid problems like automobile overproduction, air pollution, fuel shortages, traffic congestion, noise pollution and insufficient parking space. The explosion in commercial and passenger vehicles due to economic development in recent years suggests that economic demand for motor vehicles existed in country and as infrastructure and institutional framework improved and government liberalized the policy, passenger vehicle particularly personal vehicles – have exhibited tremendous growth and the sale of these vehicles is increasing very fastly. In the long run, a slowing industrial production can be more ominous than the short-run problem of non-availability of credit. The commercial vehicle industry has a high degree of correlation with the GDP and IIP (Index of Industrial production) of the country. Another concern is that although the slowdown of Indian economy affected automobile sector but afterwards, when the economic scenario improved and banks have started lending, that led the automobile sector to grow well. However, in the long term, growth in infrastructure and reduction in inflation which can lead to interest rate down would be the key trigger

for the automobile industry. This can become possible if the Government may help by mandating higher fuel efficiencies for vehicles and provide facilities for improving credit availability and reducing dependence on foreign oil. Rapid motorization in India also has important implications for energy security and climate change.

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BOOK REVIEW

Economic Development and the Role of Women: An Interdisciplinary Approach

Author: Ruth Taplin

Re-published by Routledge as part of the Routledge Revival series 2017.

Originally published by Avebury / Gower 1989. ISBN:978-1-138-23079-8

Reviewer: Surender Singh

This book provides an in-depth analysis of women in their long fight with centuries-old taboos and traditions which successfully enabled their transformation not only as active actors for social change but also makes a claim for their fundamental and deserving right to economic resources. Women in different societies have been taken for granted not just as helpless victims, but as those who are perpetually subordinated to men and their dominant economic order. The book employs both macro and micro approaches for demonstrating that women act as agents of social and economic development by focusing on multi-level linkages within the context of an original Combination Modes theory. The book by citing the case studies of Malaysian, Chinese Commune and Israeli Kibbutz women have shown that women all over the world have made significant contributions to household, family, community, nation state and the world economic order in triggering social changes leading to economic development. The contribution of women in economic development usually includes a number of invisible and unpaid services (women's work) and mostly falls within the informal sector, that traditionally has been ignored by the development indicators, i.e., GNP/ GDP. Women, since time immemorial, have been considered as a peripheral part of the organisational structure of society except within the confines of the household and family which are underemphasized and underrated especially in patriarchal societies.

This book shows how women act as vehicles in the process of social change which is also gradually and steadily allowing them not only to emerge from the seemingly non-ending cycle of deprivation and undervalued contribution to the development process but also has established them as *active agents* in economic development. They have emerged by resisting suppression and using societal institutions for sourcing their power, status and authority in obtaining world economic resources and empowerment. The author visualises women as a vehicle for social and economic

change in the developmental process contrary to the mainstream literature which highlights only men's contribution. Women have been considered as a peripheral part of the organisational structure of society except at the level of the household and family and this role has been systemically undervalued around the world even in new models of social-economic organisation such as the Chinese commune which today is now defunct.

The book comprises three parts and is based on the author's rigorous research work carried out thirty years ago. The first part of the book is devoted to the explanation and justification of an extensive review of literature related to the role of women in economic development. The major achievement of the book is in its successful introduction of an alternative Combination Modes theory after reviewing and criticising four schools of thought, i.e., Historical-Materialistic School, World in Development School, World Dependency School and the Cultural Anthropological School The Combination Modes theory is appropriately devised to understand and interpret the nature of social and economic change in historical development within the context of economic development through the dynamic of dialectical change. The central idea of the Combination Modes theory is that the organisations of work (related to wealth, labour etc.), the organisations of kinship (related to children, reproductive activities etc.) and the organisations of ethnicity (religion, language, identity etc.) all combine at certain points to dialectically move forward to improve the position of women within the world economic order.

The second part of the book cites case studies of women in Malaysia, Israel and China who have been instrumental in initiating socio-economic change. Such socio-economic change transformed the role of women within the household, family, state, nation state and world economy and supports them in gaining economic power, status and economic resources. The case studies further narrate how women in these economies have initiated changes at a number of levels, i.e., from 'Top-down' level of economic order and the other from 'Bottom-up' level of family/household. This part further presents a lively discussion of how Malay women have used the top-down approach for triggering socio-economic changes and obtaining resources within the organisation of work and their consequent effects on the organisation of kinship and organisation of ethnicity. Their efforts have been supported by inflow of Foreign Direct Investment by Multinational Corporations in their economies in the sixties and seventies. The Kibbutz and Chinese women, on the other hand, follow the Bottom-up approach and use social institutions to source power and status in society by fighting and resisting male dominance and authority.

The third and the final part of the book summarises the whole entire discussion and further elucidates Combination Modes theory for the historic explanation of social changes causing economic development using women as a vehicle of analysis. Credit is due to the author for successfully linking various modes like work, kinship, ethnicity etc., to the development of women. The women in these countries have achieved their fundamental and deserving rights despite numerous difficulties in cross-cultural

analysis of social organisations owing to differences in the structure of work, kinship and ethnicity.

The book has a wider appeal to the reader as the language used is humble and eloquent. The mature and learned author has been able to minimise the technicalities without sacrificing clarity and precision.

I found the book very impressive in appearance and rich in contents for both readers as well as researchers. The presentations of various chapters in the book have been effectively supplemented with extraordinary reference material hardly available in literature besides highly instructive cross-references in the text for the stakeholders.

The reviewer found this book is of great use value for professionals, academicians, policy makers, institutions engaged in social change, women's empowerment and economic development etc. Undoubtedly, the book deserves to be placed in the libraries of professional and academic institutions across the world, especially in third world countries.

Last but not the least, the worthy author deserves the credit of refining her high-quality research work precisely on the perennial topic of Economic Development and the Role of Women with systematic, balanced and well-documented commentary.

The publication of the book is like a beacon for millions of women who are striving for achieving their fundamental rights and status all over the world. As a reviewer, I am confident that this book would be able to meet its desired objectives enlightening the lives of millions of deprived and downtrodden women in the world. The path of social changes and development narrated in the book is still impressive despite the fact it misses some women's movement for struggle and success across the world as the book is based on studies conducted thirty years ago.

About the Reviewer

Surender Singh is Professor of Economics, B.P.S. Women University, Khanpur Kalan, Sonipat, Haryana and can be reached at: surendermor71@gmail.com

Training Calendar

List of Programmes for the Year 2017-18

S No	Title of Programme	Dates	Coordinator (s)
August 2017			
1	Turnaround Strategies	Aug 7-8, 2017	Mr KRS Sastry
2	Workshop on "MoU: DPE Parameters of Performance Evaluation & Monitoring and Global Perspective"	Aug 18-19, 2017	Prof RK Mishra & Ms J Kiranmai
3	Project Management	Aug 22-24, 2017	Mr S Satish Kumar
4	Business Analytics for Effective Decision Making: Basics and Advances	Aug 29-31, 2017	Dr Shaheen & Dr KV Anantha Kumar
September 2017			
1	Risk Management	Sept 4-5, 2017	Mr KRS Sastry
2	Supplier Development Training / Strategic Sourcing	Sept 11-13, 2017	Mr S Satish Kumar & Mr CV Sunil Kumar
3	International Conference on "Ease of Doing Business (EoDB) in Asia : Policies and Perspectives"	Sept 14-15, 2017	Dr P Geeta, Dr Usha Nori & Dr PS Janaki Krishna
4	Reservation Policy For SCs, STs & OBCs in CG, CPSEs, SLPEs And Banks	Sept 18, 2017	Prof RK Mishra & Ms J Kiranmai
5	e-Procurement	Sept 19-20, 2017	Mr AS Kalyana Kumar
6	Project Appraisal, Financing and Management	Sept 21-22, 2017	Dr SS Murthy
7	Social Media Marketing and Web Analytics	Sept 25-27, 2017	Dr Anup Kumar
October 2017			
1	Public Finance	Oct 2-7, 2017	Dr Ch Lakshmi Kumari & Urban Action School
2	Tenders & Contract Management	Oct 3-4, 2017	Mr KRS Sastry
3	Ethical Hacking & Cyber Security	Oct 4-6, 2017	Mr A Rakesh Phanindra
4	Corporate Finance – Insights for Investors, Policy Makers and Finance Professionals	Oct 11-13, 2017	Dr A Pawan Kumar
5	Managing Corporate Social Responsibility For High Impact	Oct 16-17, 2017	Dr Shulagna Sarkar & Dr Deepti Chandra
6	Finance For Non-Finance Executives	Oct 25-27, 2017	Mr KV Ramesh
7	Board Development Programme	Oct 25-27, 2017	Mr KRS Sastry
8	Certificate Course: Advanced Leadership Programme	Oct 30-4 Nov, 2017	Mr KRS Sastry & Mr S Satish Kumar

S No	Title of Programme	Dates	Coordinator (s)
November 2017			
1	Managing Change in Organizations	Nov 1-3, 2017	Dr Anupama Sharma
2	Urbanization and Environment	Nov 5-25, 2017	Dr Ch Lakshmi Kumari & Urban Action School
3	Valuation Using Financial Models	Nov 8-10, 2017	Mr M Chandra Shekar
4	Workshop for Liaison Officers of SCs, STs and OBCs in CPSEs, SLPEs and Banks	Nov 10, 2017	Prof RK Mishra & Ms J Kiranmai
5	Enhancing Effectiveness At Workplace	Nov 15-17, 2017	Dr A Sridhar Raj
6	Understanding Foreign Currencies and Global Finance	Nov 21-22, 2017	Dr G Rajesh & Dr M Karthik
7	Essentials of Business Analytics for Effective Decision Making	Nov 28-30, 2017	Dr KV Anantha Kumar and Dr Shaheen
8	Logistics Management and Analytics	Nov 29-30, 2017	Mr CV Sunil Kumar
December 2017			
1	Applied Financial Management	Dec 4-9, 2017	Mr KRS Sastry
2	Leadership and Change Management	Dec 7-8, 2017	Mr V Anji Raju
3	e-Marketing For Competitive Advantage	Dec 13-15, 2017	Mr P Mahesh
4	Strategic Financial Management	Dec 14-15, 2017	Dr SS Murthy
5	Workshop on Corporate Governance for Senior Executives of CPSEs	Dec 17, 2017	Prof RK Mishra & Ms J Kiranmai
6	National Conference on Diversity in Management-Development of Women Executives	Dec 27-28, 2017	Mr KRS Sastry & Dr Narendranath K Menon
January 2018			
1	International Conference on Decision Making Excellence in Management Research	Jan 8-9, 2018	Mr CV Sunil Kumar
2	Cloud Computing For Business Professionals across The Globe	Jan 9-11, 2018	Mr A Rakesh Phanindra
3	Board Development Programme	Jan 22-24, 2018	Mr KRS Sastry
4	Development Planning and Policy Design Using System Dynamics	Jan 29-31, 2018	Dr Anup Kumar
February 2018			
1	National Conference on Cyber Security	Feb 8-9, 2018	Mr AS Kalyana Kumar
2	Conference on "Data Analytics, Operations Research and Internet of Things"	Feb 15-16, 2018	Dr Shaheen & Dr KV Anantha Kumar
3	Conclave of Vigilance Officers	Feb 20-21, 2018	Mr KRS Sastry
4	Working Towards Organizational Excellence	Feb 22-23, 2018	Dr S Vivek

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- To explore ways of aligning CSR to the business agenda for sustainability.
- To create awareness of the latest thinking on CSR and governance issues as a driver of change, innovation and sustainable profit.

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- Social Auditing Integrating CSR with Business Policy
- Cascading the CSR strategy
- Creating impact and ensuring sustainability of community based programmes
- Partnership – Engaging Stakeholders
- Ethical issues in CSR
- Leading Sustainability Change
- Benchmarking CSR practices
- Turning CSR into Corporate Social Innovation (CSI)
- Case Studies on Best practices in CSR (Private and Public sector)
- Making CSR mandatory
- CSR: Sectoral perspective
- Empowering the next generation: Engaging youth in CSR
- Entrepreneurship opportunities within CSR Participation
- Best practices in CSR

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- NGOs
- Consultants
- Academicians, Research Scholars and Management students,
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All submissions must be in MS Word form in around 3500 - 7000 words, text typed in Times New Roman in 12 font size with heading in 14 font size. It should be printed on A4 size white paper. Each paper should include Title page that should contain title of the paper, name(s), affiliation(s), complete mailing address, telephone and fax number, and e-mail ID. All papers should use Harvard style of referencing only.

Please visit website for detailed guidelines for authors. Only those papers that adhere to the author's guidelines will be considered f*or review.* **All papers are to be submitted by electronic mail to: *gcsrcongress@ipeindia.org***

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Important Dates

15th November, 2017 : Last date for submission of full papers
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Guidelines for Authors

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

Manuscript Guidelines

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.

The desired order of content is: Title, Author(s) / Affiliation(s), Acknowledgements (if any), Abstract (200 words), Main Text, References, Appendices.

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.

The authors should submit a brief statement of their professional career, i.e., qualifications, appointments held, research interests, published works, etc.

The authors should send a declaration stating that the paper has neither been published nor is under consideration for publication elsewhere.

Correspondence and proof for correction will be sent to the first-named author unless otherwise indicated. The authors will receive page proof for checking, but it is hoped to correct only typesetting errors. Proofs should be returned within a week.

All manuscripts have to be sent in triplicate to the Managing Editor, Journal of International Economics, Institute of Public Enterprise, OU Campus, Hyderabad - 500007, AP, India.

If the article has too many language errors, it will be sent back to the author(s). So kindly set the article for language mistakes.

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