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Asian Resonance

Indo-Brazil Trade: Recent Experience and Future Opportunities

India and Brazil are among the fastest growing economies of the world and widely projected as major economies of future. In recent years cooperation among India and Brazil has extended to diverse areas such as infrastructure, agriculture, information technology and pharmaceuticals. Brazil's trade with India has witnessed a ten-fold increase in the last decade and expected to reach US$ 15 billion by 2015. This paper attempts to analyse the evolution of trade intensity of India and Brazil trade, and identifies its tendencies as one of the factor determining cooperation among countries. After the examination of Indo-Brazil trade flow, the study confirms that Indo-Brazil bilateral trade and economic relations can be improved if tariffs and others barriers are considered through Free Trade Area (FTA).

Keywords: BRIC, Trade Intensity, Bilateral Trade, Free Trade Area.
JEL Classification: F13, F14, F47.

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Introduction

Brazil and India are leading players not only globally but also regionally. The two countries are cooperating at multilateral forums such as BRICS which is the forum of emerging powers. It is estimated that BRIC economies will overtake G7 economies by 2027.The four largest emerging economies of BRICs (Goldman Sachs, 2003, 2007), would likely to continue as the centre of significant changes in the world's economic structure and power balance in the global economy. BRIC economies managed to regain themselves quickly from global slowdown as compared to the other matured economies of the world. Their trade with the world has been increasing at a rapid rate. The trade of Brazil is the most geographically spread of all the BRIC countries across all continents. Over 10 years, the Brazilian trade with India grew from US$ 828.2 million in 2001 to US$ 9.28 billion in 2011. Among countries which export to Brazil, India is 9th largest. India ranks as the 18th largest recipient of Brazilian exports. In recent years, relations between Brazil and India have grown considerably and co-operation between the two countries has been extended to diverse areas such as science and technology, infrastructure, pharmaceuticals and space. This paper attempts to identify the trend, potentiality and future prospects of Indo-Brazil bilateral trade during the period of 2000-01 to 2012-13. The main objectives the paper are Firstly, to analyse growth trends in exports, imports and Trade surplus and secondly, to estimate the trade intensity, between India and Brazil and finally to suggest, potential products for future expansion and measures to improve bilateral trade.

Review of Literature

The present section examines the existing literature pertaining to the study area which would be immensely useful to identify the potentiality of bilateral trade cooperation between India and Brazil. Yamazawa (1971) applied the Trade Intensity formula and further analyzed trade between pairs of countries. The work also assessed trade changes and factors affecting them. However, Iapadre (2004), studied the evolution of trade intensity among BRIC within the period of 1995-2009. An empirical analysis examines the intensity of bilateral trade flows not only between BRIC countries but also between BRIC and EU since trade relations with the EU still play a substantial role for each of the BRIC countries. A study by Consultancy Development Centre (2009), in its report, "Export Potential of Consultancy Services In Latin American Countries – Brazil" explained that the bilateral trade between India & Brazil is US$ 3.10 Billion and is growing at a fast pace due to various initiatives at the political level formation of IBSA and the implementation of the Mercosur treaty. The trade balance is in favour of India, currently with Indian Exports outweighing the Indian imports from Brazil by US$ 1.20 Billion (2007). The report further revealed that there are many opportunities for exports of Indian Consultancy Services to Brazil. There are only a handful of good local consultancy organizations. Most of the large consultancy assignments especially in the IT, Financial Services and Corporate Sector are bagged by the U.S consultancy organizations. However, the users of consultancy services feel that they do not get value-for-money in terms of quality of services received. The operationalisations of the Mercosur treaty as well as forums like IBSA, BRIC, are also bound to favour export of Indian Consultancy Services in the short to medium term.

As far as the future of Indo-Brazilian bilateral trade is concerned Pillania (2010), in his study "Indo-Brazilin Trade: Trends, composition and Future" revealed that India and Brazil are among the fastest growing economies of the world. Due to large size of economies and high growth as well as growing political will from both sides, the bilateral trade will grow further and would have significant impact on global trade and economy. In an earlier study, Tareza (2010) studied the evolution of trade intensity among BRIC with the period of 1995 to 2009. The study revealed Sino-Brazil and Sino-Indian trade as a trade with highest intensity progression. Moreover, the empirical analysis examines the intensity of bilateral trade for not only BRIC countries but also between BRIC and EU. The Economic Times (2012), in an article, "Is India versus Brazil replacing India versus China for global investor" stated that the slugfest now is no longer India versus China, its India versus Brazil. For global investors, China is now TINA (there is no alternative). The Asian giant is powering ahead with a 9 per cent plus growth rate and emerging as the only credible nation to challenge the battered but still supreme economic might of the USA. Within the BRIC pack, Russia is considered risky, so that leaves investors with India and Brazil. MNCs allocating capital with an eye on the changing global economic order will put bets on both countries.

Research Methodology

For an overview of Indo- Brazilian bilateral trade a detailed analysis of export and import among the two countries has been carried out by using the data collected from the International Trade Statistics Yearbooks (International Monetary Fund). The study covers the macro level trends in export and import among India and Brazil, and the analysis of factors behind the growth of bilateral trade between the two countries. To analyse the future trade potentiality of Indo-Brazil trade a regression analyses with linear and polynomial trend equation is used. The relative importance of these two countries in their respective exports and imports are estimated by the 'Trade Intensity Index . The trade intensity index (TII) is used to determine whether the value of trade between two countries is greater or smaller than would be expected on the basis of their importance in world trade. It is defined as the share of one country's exports going to a partner divided by the share of world exports going to the partner. To calculate the trade intensity of export and import trade Intensity Index is divided in to Export Intensity Index (XII) and Import Intensity Index (III/MII) for looking the pattern of exports and Imports. Following Kojima (1964) and Drysdale (1969), the index of trade intensity is restated as

(i) Export Intensity Index(XII_{ij})

$$XII_{ij} = \frac{\frac{X_{ij}}{X_i}}{\left(\frac{M_j}{M_W - M_i}\right)} \qquad (1)$$

Where:

i refers to India and j refers to Brazil, XII_{ij} is India's export intensity with Brazil, X_{ij} is exports of India to Brazil, X_i is total export of India and M_j is total import of Brazil, M_W = total world import, M_i = total import of India. The range of trade intensity values lies between 0 and ∞, higher value indicating greater importance of selected partner country and 1 interpreted as normal. If the value of index is more (less) than one it shows that bilateral export flow is larger (smaller) than expected, given the partner country's importance in world exports.

(ii) Import Intensity Index(MII_{ij})

$$MII_{ij} = \frac{\frac{M_{ij}}{M_i}}{\left(\frac{X_j}{X_W - X_i}\right)} \qquad (2)$$

Where

i refers to country India and j refers to country Brazil, MII_{ij} is India import intensity with Brazil, M_{ij} is India's import from Brazil, M_i is total import of India, X_j is total export of Brazil, X_W = total world export, X_i = total export of India. If the value of index is more (less) than one it shows that bilateral import flow is larger (smaller) than expected, given the partner country's importance in world imports.

Results and Discussion

The bilateral trade between India and Brazil has grown steadily since the rise of BRIC (Jim O' Neill). Table 1 provides information about trends in Indo-Brazil trade along with the world trade in recent years. It gives the growth rate of India, Brazil and World trade. The size of Indo-Brazil trade amounted to $ 10874 million in 2013 which was $857 in 2001. The bilateral trade between these two countries declined slightly in 2002 and 2003. But after this the magnitude of Indo- Brazil trade has improved regularly. From the table, it is clear that share of Indo-Brazil trade in India's total trade as well as in world trade is on increase.

Table 1: Indo-Brazil and World Trade

Year	Indo-Brazil Trade (US$M)	India's Total Trade in World Trade (%)	Brazil's Total Trade in World Trade (%)	India's Trade Growth (%)	Brazil's Trade Growth (%)	World Trade in (US$M)	World Trade Growth Rate (%)
2001	857	0.82	0.75	-	-	12530600	-
2002	729	0.67	0.68	4.42	-6.33	13075600	4.3
2003	640	0.47	0.52	23.56	13.51	15247300	16.6
2004	1211	0.69	0.75	29.61	31.46	18587300	21.9
2005	1856	0.78	0.97	35.88	19.74	21119600	13.6
2006	2330	0.78	1.01	24.83	19.83	24315100	15.1
2007	3210	0.83	1.16	30.81	20.56	28180600	15.9
2008	3665	0.80	0.99	18.10	33.62	32527300	15.4
2009	4767	1.13	1.72	-7.91	-25.45	25044000	-23.0
2010	6848	1.24	1.79	30.52	38.65	30222600	20.6
2011	7573	1.66	1.81	34.85	26.87	36020181	19.18
2012	10041	1.7	1.59	12.91	19.62	36684342	1.84
2013	10874	-	1.23	8.26	21.34	38865162	5.94

Source: ***Compiled from Direction of Trade Statistics Yearbook, IMF & Export Import Data Bank, Ministry of commerce, Government of India.***

The percentage share of India's exports to Brazil in India's total exports improved continuously during 2001-2012, except for 2002-03. Growth rate of India's export to Brazil and that of India's total export have shown a negative trend in 2009 as the world economies were hit by global recession which also impacted the growth rate of world trade. After the world economic recession since these economies recovered at a much faster rate than the developed countries and again India's exports to Brazil showed a positive growth rate. This shows increasing trade relation and importance of Brazilian market for trade. The Table 3 provides trends and growth rate of India's imports from Brazil. It also measures the percentage share of India's imports from Brazil as compared to India's total imports.

Table 3: India's Import from Brazil

Year	India's Import from Brazil as Total Import of India (%)	Growth Rate of India's import from Brazil (%)	Growth Rate of India's Total Import (%)
2001	0.53	-	-
2002	0.53	0.32	-0.40
2003	0.42	-0.32	25.73
2004	0.65	107.01	34.79
2005	0.62	33.54	40.11
2006	0.55	11.41	26.29
2007	0.41	-0.83	33.03
2008	0.40	17.21	19.76
2009	1.17	167.53	-8.46
2010	0.97	5.62	27.58
2011	0.87	20.36	32.33
2012	0.98	12.98	0.29

Source: Author's calculation based on data compiled from IMF and export-import data bank.

Despite rapid growth, the share of Brazil in India's imports is less than 1 per cent. It indicates that as an import partner the importance of Brazil for India is very small.

India-Brazil Bilateral Trade Intensity

The relative importance of two countries in their respective exports and imports is also demonstrated by the trade intensity index. Trade intensity index measures whether the value of trade between two countries is greater, or smaller than should be expected, based on their relative importance in world trade. The value of index less than unity has been interpreted as indicating a bilateral export flow that is smaller than expected, given the partner country's importance in world export. The relative importance of India and Brazil is estimated by the Export Intensity Index and Import Intensity Indices as shown in Figure 1.

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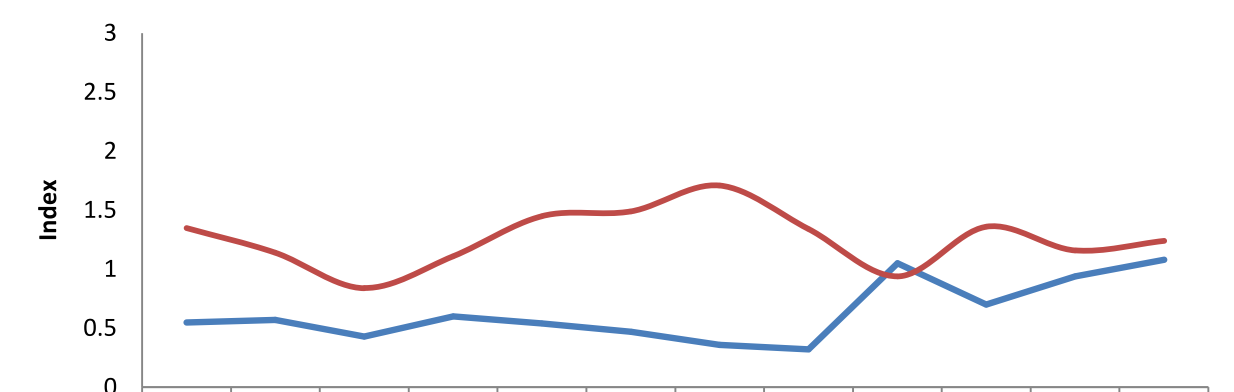
Figure 1:
Trade Intensity Index between India and Brazil



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
III	0.55	0.57	0.43	0.6	0.54	0.47	0.36	0.32	1.05	0.7	0.94	1.08
EII	1.35	1.14	0.84	1.11	1.45	1.49	1.71	1.34	0.94	1.36	1.16	1.24

Source: ***Author's calculation based on data compiled from IMF and export-import data bank.***

From the Figure, it is clear that during 2001-2012, range of export intensity index is lying between 0.84 to 1.71, except for year 2003, which implies that India's exports to Brazil were higher than expected, so the importance of Brazilian market in the world exports increased. On the other hand the figure revealed that the range of import intensity index lies between, 0.32 to 1.17; which indicate that India imported a smaller share of its imports from Brazil than its average for the rest of the world. Therefore, as an import partner, Brazil is of very little importance to India. From the figure, it is clear that the gap between India – Brazil export and import trade intensity was highest in 2007, and stands at minimum in 2009, the year of global recession.

Items Diesel oil, coke of coal, lignite or peat, equipments related to wind energy, engineering and electrical equipment, cotton and polyester yarns, naphtha, pigments, medicines , chemicals, Sugars and sugar confectionery, ores, slag and ash, aircraft, spacecraft, and parts thereof, clocks and watches and parts thereof, products of animal origin, not elsewhere specified or included, footwear, gaiters and the like parts of such articles, miscellaneous edible preparations, articles of stone, plaster, cement, asbestos, mica or similar materials, other base metals; cermets; articles thereof, headgear and parts thereof, paper and paperboard; articles of paper pulp, of paper or of paperboard, inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals have shown highest growth rate in Indian exports to brazil in year 2011-12 and 2012-13. While the Brazilian companies have invested in automobiles, IT, mining, energy, biofuels, footwear sectors in India, the Indian companies have invested in such sectors as IT, Pharmaceutical, Energy, agri-business, mining, and engineering and auto sectors.

Future Prospects of Trade between India and Brazil

Economic ties between India and Brazil are emerging as the one of the important bilateral relationship in the world. Looking at the data of exports, imports and total trade from 2001 to 2013, there is great scope of further growth in Indo-Brazil trade. To work out the growth and predict the future prospects of trade both the linear and non linear functions were fitted to the data. The scatter plot of the data reveals that there is an exponential growth of trade in given time. Moreover the coefficient of determination for the linear regression equation was low. This strongly suggests a non linear trend in the time series. The value of coefficient of determination through non linear trend for the total trade was 99 per cent indicating that 99% of variation in India-Brazilian trade during the period of 2001 to 2013 can be explained by the model. This suggests that non-linear model is a better fit compared to linear.

Figure 2: Linear and Non Linear Trend Line for Indo-Brazil Total Trade

Figure 2(a): *Linear Trend*

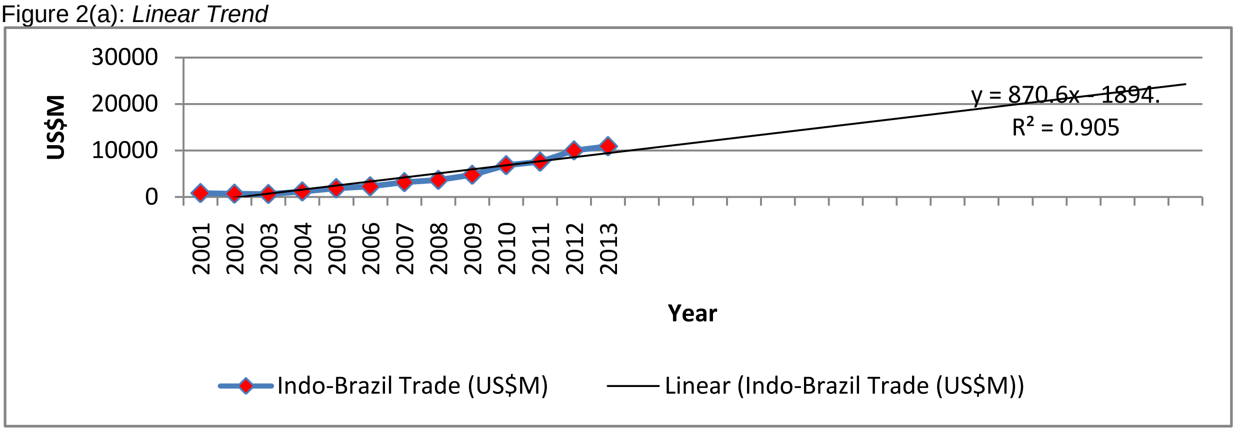
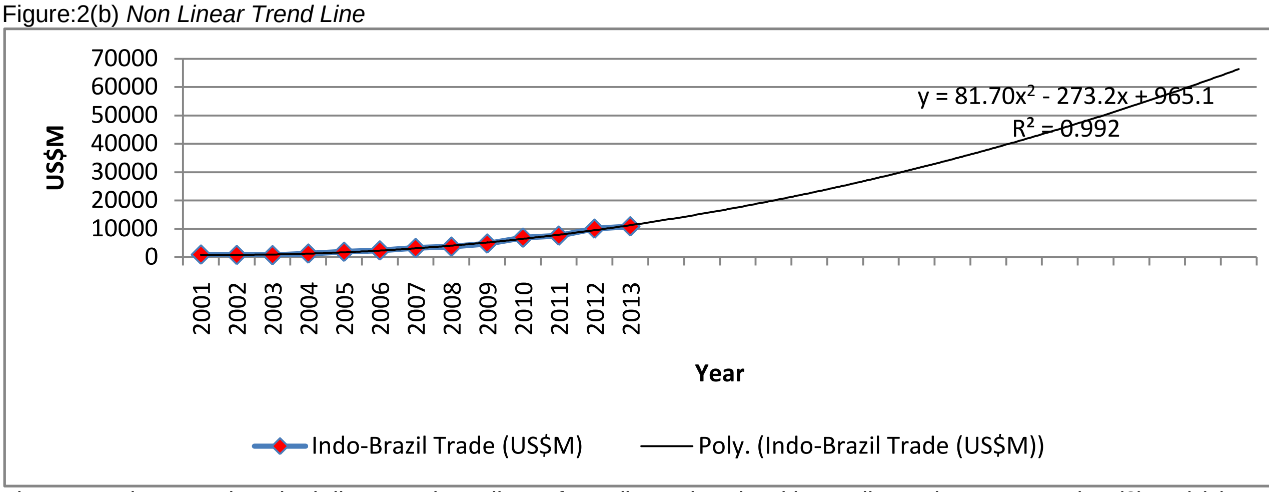


Figure:2(b) *Non Linear Trend Line*



The regression equations both linear and non linear for India total trade with Brazil are given as equation (3) and (4).

$$Y_{\text{total trade(Linear)}} = 887.X-1894 \qquad (3)$$

$$Y_{\text{total trade(Non Linear)}} = 81.70X^2 -273.2X+965.1 \qquad (4)$$

The regression analysis reveals that the total trade between the two countries will increase in quadratic proportions and in the years to come, more and more trade is expected between the two countries. The economies of both Brazil and India are set to grow strongly over the next decades, and areas like agriculture based industries, energy including ethanol, chemical products, aviation, engineering products IT, banking and urban infrastructure, biotechnology and pharmaceuticals, auto parts and vehicles and two wheelers are the areas of mutual interest which provides more scope for collaboration. Brazil's importance for India with regard to agricultural productivity is of vital significance and Brazil can be benefitted from India's strength in technology. Energy-poor India would be an important customer of Brazil's recently explored iron ores and oil resources offer opportunity for collaboration.

Conclusion

The bilateral trade between India and Brazil has grown steadily since 2001 except for the years 2002 and 2003. After the world economic recession since these economies recovered at a much faster rate than the developed countries and again India's exports to Brazil showed a positive growth rate. This shows the increasing trade and importance of Brazilian market . During 2001-2012, export intensity index is more than one, except for year 2003, which implies that India's exports to Brazil were higher than expected, pointing towards increased importance of Brazilian market in the world exports . But as far as import intensity index is concerned its value is less than one which implies that India imported a smaller share of its imports from Brazil than its average for the rest of the World. As an import partner, Brazil is of very little importance to India. Bilateral trade is currently below potential, despite strong growth in the recent years. Notwithstanding the difference in size and the distance between India and Brazil, these economies are essentially complementary. Bilateral trade and economic relations can be improved, if tariffs and other barriers are considered through FTA. It is expected that a comprehensive FTA would increase joint real GDP, welfare and bilateral merchandise exports. Since the mature economies of the world is still facing risk and the supremacy of Brazil and India are emerging as growth poles of the global economy, government authorities should increase their efforts to capture the potential complementarities created by greater integration with the BRICs.

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