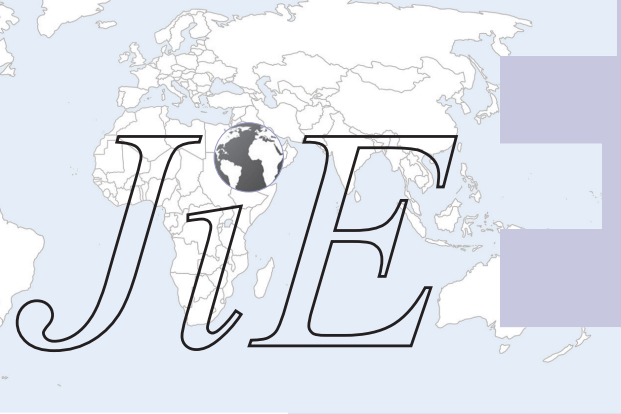

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Contents

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From the Editor's Desk...

At the outset it gives me immense pleasure to release the latest edition of the Journal of International Economics. As this issue goes into print, there are many issues in limelight on the international front. Russia Ukraine war is not showing any signs of ending. As long as the war continues the issues related to supply of gas and oil will be a matter of grave concern. The conference of parties (COP27) being held in Egypt is right now the cynosure of all eyes. The targets to be achieved, the commitments made by the developed world for helping the developing world in terms of finance will be in news. The developing world will certainly express its dismay at the developed nations for the unfulfilled promise of mobilizing $100 billion to developing countries towards green transition. Geopolitical tensions will be a hindrance for multilateral cooperation which is necessary to achieve various goals set by COP to avert an environmental catastrophe. India on its part submitted its long term low emission development strategy, laying out the roadmap of how it would ultimately meet its 'net zero' emission goal of 2070.

The G 20 summit being held in Bali is another important international event in news, wherein key issues of global concern, such as reviving global environment, health and digital transformation will be discussed. For India this is all the more important since it is going to acquire the president ship of the group from next month for a year. India now has the opportunity to get the G20 back on track.

This issue contains four articles focusing on India-Singapore trade, determinants of foreign direct investment, financial integration and risk sharing among developing nations and trade scenario among IBSA member countries. This issue also contains review of the book titled, 'Creating, building and sustaining an institution – A momentous journey of Institute of Public Enterprise', which vividly describes the journey of the Institute of Public Enterprise. We expect the readers of our journal to continue to show enthusiasm to contribute articles and book reviews. We wish our readers a happy new year.

Dr G Rajesh

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Outward Migration, Financial Integration and Risk Sharing in Developing Nations[1]

Mitali Das*

Abstract

In developing nations, outward migrants transfer sizeable remittances back to their home country, in many cases more than 10 percent of GDP and in some cases as high as 25 percent of GDP. These remittances are not only large relative to domestic income, but behave counter-cyclically to the home country's business cycle and are strongly correlated with outward migration. These features make the stock of migrants a novel measure of developing countries' financial integration with the global economy. Utilizing this measure of financial integration, this paper documents that countries with larger stocks of migrants abroad accrue greater consumption risk sharing benefits than others. The results also confirm that typical measures of integration in the literature, such as cross-border financial asset holdings, trade linkages, and financial account openness have no statistical association with risk sharing. This paper argues that in the context of developing nations, where participation in international equity markets is low and household ownership of financial assets is limited – but receipt of remittances is high – the stock of outward migrants is a conceptually and empirically more reliable indicator of financial integration.

Keywords: Consumption Risk Sharing, Financial Integration, Migrants, Remittances

Introduction

A fundamental prediction of open-economy macroeconomics is that financial integration – the financial linkages of a country with the global economy through cross-border financial flows – expands the opportunities for countries to smooth the path of consumption when income is hit with

1 I thank comments and suggestions from John Beirne, Mahir Binici, Sebnem Kalemli-Ozcan, Gurnain Pasricha, Martin Schindler, Ben Hilgenstock and Hailey Ordeal, Gian Maria Milesi-Ferretti for sharing the unpublished 2020 vintage of the External Wealth of Nations database, and Yunhui Lin and Awais Khuhro for outstanding research assistance.

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idiosyncratic shocks (Obstfeld 1994). Countries gain these opportunities because financial integration makes it possible to hold cross-border assets that can be sold, or whose income streams can be drawn on, as well as borrow on global credit markets when countries experience a negative shock to income. This is known in the literature as international consumption risk sharing.[2] Theoretically, by enabling countries to decouple consumption from fluctuations in income, financial integration should increase prospects of sharing consumption risk (Obstfeld 2009).

This insightful premise about the gains from financial integration has been the subject of a rich empirical literature, which has asked whether countries which are more financially integrated in practice share consumption risk more than countries that are less financially integrated. Studying a wide range of countries over different time periods, this literature surprisingly concludes that there is no evidence that the extent of financial integration is empirically linked with consumption risk sharing (see e.g., Corcoran 2009; Fratzscher and Imbs, 2009, Kose et al. 2009; Bai and Zhang 2012; Rangvid et al. 2016). This result is especially puzzling for advanced economies where financial integration across countries is high, and has continued to trend upwards over time, resulting from significant internationalization of their financial asset portfolios since the 1990s (Artis and Hoffman, 2006; Giannone and Reichlin, 2006; Bai and Zhang, 2012; Rangvid, Santa-Clara and Schmeling, 2016).

There is much less research on developing nations, but in the few papers that analyzes this group of countries there is again no evidence that more financial integration is better associated with consumption risk sharing (Obstfeld 2009 presents a review). This result, too, is surprising in light of the steady rise in developing economies' trade and financial integration with the global economy, the significant development of their institutions (which facilitates the cross-border trade of financial assets), more access to instruments that intermediate financial transactions across borders (e.g., digital technology) and greater capital account convertibility.

An interesting aspect of this body of work is that, while unanimous in its conclusion that financial integration has no relation with consumption risk sharing, it has not converged on a uniform empirical measure of financial integration. Some (e.g., Lewis, 1996; Fratzscher and Imbs, 2009) have focused on *de jure* measures of financial account openness, while

2 Consumption smoothing refers to the desire to smooth consumption across time in the face of potentially volatile shocks to income. As discussed in Obstfeld and Rogoff (1996), in a closed economy, this can be achieved by saving and dissaving inter-temporally. In an open economy, this can be achieved using other mechanisms such as borrowing and lending on international credit and capital markets, as well as intra-temporal solutions to sharing consumption risk, i.e., consumption smoothing across states of nature. The latter is referred to as "international consumption risk sharing" or just "consumption risk sharing"; see Obstfeld and Rogoff (1996).

others argue that such measures are poor proxies as they do not capture the true effectiveness of capital controls (Quinn, Schindler and Toyoda, 2011). Several others have considered *de facto* measures of financial integration, but here again the evidence is that such measures have limited association with risk sharing. In particular, the empirical link between financial linkages (measured as cross-border financial asset holdings) and consumption risk sharing is not robust, depends on the time period studied, and is largely present in advanced economies (Corcoran 2008; Kose et al. 2009; Fratzscher and Imbs, 2009). The fact that despite using very different measures of financial integration these papers share the conclusion that financial integration is not associated with consumption risk sharing appears to suggest that the finding is robust.

This paper revisits this question, with a specific focus on financial integration and consumption risk sharing in developing economies. There are two reasons for this focus. First, developing countries, which are the group of countries which are poorer than emerging markets in standard classifications,[3] are more exposed to income shocks than other economies due to their heavily reliance on commodity exports and the undiversified nature of their production structure. This makes the prospects for consumption risk sharing especially relevant for them.

Second, in developing economies, remittances – unrequited transfers from migrants to their home countries – are a significant source of income. In 2019, remittances exceeded 15 percent of GDP in ten developing countries; it was greater than 25 percent of GDP in three of them. More importantly, unlike portfolio equity flows, which are known to be strongly procyclical as first observed by Kaminsky, Reinhart and Vegh (2004), remittances are countercyclical vis-à-vis recipient economies (Chami et al. 2005; Frankel, 2011). Both the magnitude of remittances in these nations and their counter-cyclical properties point immediately to their potential to buffer domestic income shocks and improve consumption risk sharing. By accounting for remittances in measured income, this paper is more accurately able to capture the resources available to households to counter domestic income shocks and thereby provide fresh perspective on risk sharing in developing countries.

This paper contributes to the literature by proposing a novel measure of financial integration which has not previously been considered, and one that is extremely relevant to developing nations: the stock of outward migrants. Traditional measures of financial integration such as cross-border financial asset holdings and capital account openness (see e.g., Sørensen,

3 This paper uses the IMF classification of countries. The IMF country groups are similar but not identical to those used at the World Bank and the private sector (e.g., MSCI). To conform with the language in development economics, I use the term "developing economies" for the IMF's classification of low-income countries.

Yosha, Wu and Yu, 2007; Corcoran, 2008; Kose et al. 2009; Fratzscher and Imbs, 2009; Bai and Zhang, 2012) are poor proxies of financial integration in developing countries where stock market participation is negligible and household ownership of financial assets is limited (Honohan 2006). I argue that, by contrast, in poor nations, where remittances are sizable relative to domestic income, the stock of outward migrants has three features that make it particularly relevant as a measure of financial integration: the conceptual link between outward migrant stocks and remittances (which, by definition, are migrants' transfers to their home country); the observed empirical link between migrant stocks and remittances (Freund and Spatafora 2008); [4] and the composition of financial flows to developing countries where remittances now exceed FDI, portfolio investment, and official aid flows (as shown in Figure 1 below).

The main findings of this paper are as follows. Using data from 1994 to 2017, a period during which outward migration from developing nations rose considerably, this paper documents that the stock of outward migrants serves as a robust measure of financial integration via the remittances channel: countries with larger stocks of outward migrants accrue greater risk sharing benefits than those with lower outward migration. Confirming results from other studies, no evidence is found that deeper linkages through financial asset trade, goods trade, or financial account openness contribute to improved risk sharing. These results provide strong evidence that in the context of developing economies – characterized by low stock market participation and negligible financial asset holdings – the stock of outward migrants is both conceptually and empirically a more reliable indicator of financial integration. These results are robust, and withstand simultaneous controls for financial openness, financial linkages, and trade linkages. This result is new to the literature.

The remainder of the paper is organized as follows. The next section, surveys the conceptual arguments by which financial integration improves prospects for consumption risk sharing and review the empirical literature that tests the predictions of these models. Following this, the paper describes the data and stylized facts about remittances in developing countries that motivates this work. Results of the empirical analysis are presented next and Conclusions follow.

4 Throughout, the stock of outward migrants is measured in net terms, that is, outward migrants minus inward migrants. For brevity, I refer to this as the stock of outward migrants. This is conceptually the right measure since the IFS also reports remittances in net terms, i.e., inward minus outward remittances.

Financial Integration and Consumption Risk Sharing: Mechanisms

Theory

An important building block of the classical intertemporal open economy models of Kehoe, Backus and Kydland (1995) and Obstfeld and Rogoff (1996) is that a representative agent desires a stable path of consumption in the face of potentially volatile streams of income. In autarky, this is only possible by smoothing consumption inter-temporally: that is, by dissaving during a negative income shock, and saving to absorb a positive income shock.

Financial integration changes these predictions fundamentally. In a financially integrated economy, the representative agent can both save and dissave domestically and furthermore, by participating in global capital and credit markets, they can also trade inter-temporally to smooth idiosyncratic (that is, country-specific) shocks to income. World capital markets enable countries to offset income shocks through cross-ownership of financial assets, and world credit markets facilitate borrowing and lending. As Obstfeld (1995) notes, with the additional assumption of complete asset markets, it also becomes feasible for agents to smooth consumption *intra-temporally* (across states of nature) through international risk sharing arrangements such as by trading contingent claims.

A rich empirical literature has tested the predictions about financial integration and risk sharing by drawing on the central insights of these models. This body of work has focused largely on advanced countries (Stockman and Tesar, 1995, Obstfeld 1995, Sørensen and Yosha 1998, Crucini 1999, Asdrubali and Kim 2004, Moser, Pointner and Scharler 2004, Sørensen, Wu, Yosha and Zhu 2007, Artis and Hoffman 2008, Corcoran 2008, Fratzscher and Imbs 2009, Bai and Zhang 2012, Rangvid et al. 2016). In some cases, this research has also extended to developing nations, even if the analysis is not exclusively focused on them (see e.g., Obstfeld 1995, Lewis 1996, Edison et al. 2002, Pallage and Robe 2003, Corcoran 2008, Kose, Prasad and Terrones 2009, Fratzscher and Imbs 2009, Bai and Zhang 2012).

In spite of sharp predictions from the theory, the literature has found very limited evidence of consumption risk sharing across countries. In studies that analyze periods of arguably greater financial integration such as the 2000s, there is somewhat more evidence of risk sharing, although this is largely found in advanced economies and lower than that predicted by the theoretical models (Giannone and Reichlin 2006, Sørensen et al. 2007;

Kose et al. 2007, Corcoran 2008). Furthermore, some authors contend that these results are not robust to even small changes in the sample period or country composition (e.g., Bai and Zhang 2012). In developing economies, studies have found that consumption risk sharing is generally low or limited. However, this research has only analyzed the period through the early 2000s when these economies were arguably less financially integrated than they have become since.

Several authors have considered whether country characteristics can help reconcile the lack of evidence for consumption risk sharing. For example, Cole and Obstfeld (1991) highlight the potential for exchange rate flexibility to improve consumption risk sharing via changes in the terms of trade, but find that flexible relative prices are not much correlated with consumption risk sharing. Artis and Hoffman (2008) suggest that consumption should respond more to permanent than temporary income shocks and, decomposing income shocks into transitory and permanent components, find evidence of greater consumption risk sharing than in other studies. Other authors have suggested important roles for trade and financial linkages, but find that the gains are absent or small and evident only in advanced economies (Sørensen et al., 2007; Corcoran, 2008; Kose et al., 2007; Rangvid et al., 2016), although the evidence here is once again mixed (e.g., Bai and Zhang, 2012).

Empirical Tests of Consumption Risk Sharing

Drawing on these models, a rich empirical literature has tested the theoretical predictions about financial integration on consumption risk sharing. Building on Obstfeld (1995), Sørensen and Yosha (1998) and Kose et al. (2009), the approach begins with estimating the empirical relation between idiosyncratic consumption growth and idiosyncratic income growth with a regression of the form:

$$\Delta\tilde{c}_{it} = \alpha_t + \beta\,\Delta\tilde{y}_{it} + \varepsilon_{it}, \qquad \Delta\tilde{c}_{it} \equiv (\Delta log c_{it} - \Delta log C_t),\ \Delta\tilde{y}_{it} \equiv (\Delta \log y_{it} - \Delta log Y_t) \qquad ...(1)$$

where $\Delta log\, c_{it}$ ($\Delta log\, y_{it}$) represents the growth rate of real per capita consumption (income) in country i and period t; $\Delta log C_{it}$ ($\Delta log Y_{it}$) the growth rates of real per capita world consumption (world income); and ε represents an error. Income is measured as the sum of GDP and remittances. Because shocks to world consumption and income growth are common across countries, risks associated with their fluctuations cannot be shared. Consequently, by subtracting the world values from country-level consumption and income, $\Delta\tilde{c}_{it}$ and $\Delta\tilde{y}_{it}$ represent idiosyncratic fluctuations in consumption and income.

Theoretically, β is a measure of how much idiosyncratic consumption risk is *uninsured*. If consumption risk is completely shared across countries,

the magnitude of β in (1) will be zero; if consumption risk is not shared at all, β will be one. More generally, the approach in the empirical literature has been to treat the estimate of $(1 - \beta)$ as an empirical approximation for international consumption risk sharing (Rangvid et al., 2016).

To test whether greater financial integration is associated with better risk sharing, equation (1) is modified as follows:

$$\Delta\tilde{c}_{it} = \alpha_t + \beta\Delta\tilde{y}_{it} + \delta(FI_{it} \times \Delta\tilde{y}_{it}) + \varepsilon_{it}, \quad \ldots(2)$$

where *FI* is a measure of financial integration. Thus, when the coefficient on the interaction term, δ, is negative, it implies that for a given shock to idiosyncratic income, the impact on idiosyncratic consumption growth *declines*. That is, a greater amount of risk sharing is achieved.

Using this approach, several authors have considered whether the extent to which a country is "financially integrated" affects the extent to which consumption risk is shared (see e.g., Sørensen et al., 2007; Corcoran, 2008; Kose et al., 2009; Bai and Zhang 2012, Rangvid et al., 2016). Measures of integration used in these papers include cross-border asset holdings, goods trade,[5] and capital account openness. While these measures are conceptually appealing, they have had nearly no success in explaining differences in risk sharing. Existing results indicate that the gains are absent or small and, if present, they are evident only in advanced economies (Sørensen et al., 2007; Corcoran, 2008; Kose et al., 2007; Rangvid et al., 2016), although the evidence here is once again mixed (e.g., Bai and Zhang, 2012).

Data and Stylized Facts

Data

Data for this study are drawn from the Penn World Tables (PWT) Version 9.1 and International Financial Statistics (IFS). Real consumption and real GDP, both reported at purchasing power parity (PPP) in 2011 international dollars, are drawn from the PWT. The measure of income is the sum of GDP and remittances, and as remittances are not included in the PWT, Remittances as well as price deflators and PPP exchange rates are drawn from the IFS. This analysis focuses on 50 developing countries as per the IMF classification. The sample runs from 1994-2017, leading to a nearly balanced sample over 24 years. The sample coverage is in Appendix Table-A1 and a list of data sources is presented in Appendix Table-A2.

To examine the link between financial integration and risk sharing, I consider all previous measures of integration used in the literature as well as the measure new to this paper. These include cross-border stocks of assets and liabilities from the 2019 vintage of the External Wealth of

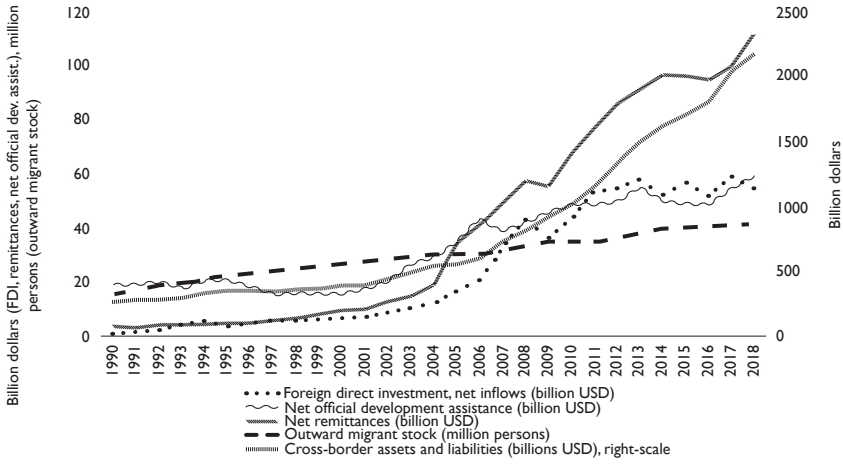
5 Trade linkages can be a proxy for financial integration because trade in goods and services leads to deeper linkages between banks, including due to the provision of letters of credit and cross-border syndicated loans, as discussed in Caballero, Candelaria and Hale (2016).

Nations, trade (the sum of exports and imports of goods and services) from IFS, and financial account openness using the 2020 update of the Chinn and Ito (2008) index. For stock of outward migrants, the United Nations Population Divisions (UNPD) is used in conjunction with annual migration flows data from the International Migration Institute (IMI). These data are previously used in other contexts (e.g., Lucas 2016).

Recent Evolution of Remittances and Migration

Remittances have grown strongly since the early 1990s. Their rise is frequently attributed to "The Great Doubling", which characterized the 1990s entry of workers from China, India, and the former Soviet Union into the global economy, effectively doubling the labor available in the world (Freeman 2007).

Figure-1: Outward Migrant Stocks, Financial Inflows and Cross-Border Financial Holdings



Sources: International Migration Institute, International Financial Statistics, United Nations Population Division

Developing countries were also a part of this phenomenon, although it was only a bit later, in the 2000s, that they entered the global economy in earnest, with inward remittances to their countries rising in tandem.

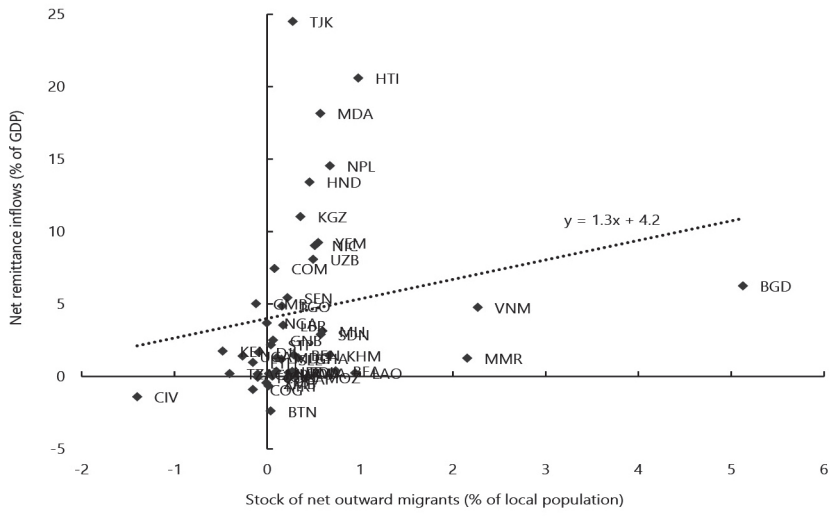
Annual net remittances to developing countries were 117 billion U.S. dollars in 2019 or about 5.4 percent of their combined 2019 GDP. This put remittances at about double the level of official development assistance and more than double net FDI inflows received in that year (Figure-1). [6] Since remittances are transfers sent by migrants to their home countries, it is

6 2019 is the latest year of data currently available for our sample of countries, excluding data since the start of the COVID-19 pandemic. Remittances are estimated to have fallen to a twenty-year low during the pandemic (World Bank 2020). I exclude those data due to the sui generis nature of the event.

unsurprising that the magnitude of remittance inflows has risen in parallel with outward migration (the dashed line in Figure-1). Importantly, note that there is a systematic positive cross-country relation between the stock of outward and remittances. Both of these empirical observations present informal evidence that the stock of outward migrants abroad can serve as a proxy of financial linkages through the remittance channel (Figure-2).

Summary statistics of the variables used in the analysis are presented in Table-1.

Figure-2: Outward Migrant Stocks and Remittances



Notes. Each point in the figure gives the time-average (2004-2017) for the 50 developing countries in the sample. The horizontal axis shows outward minus inward migrant stocks in percent of the sending economy's population and the vertical axis shows inward minus outward remittances in percent of GDP of the receiving economy.
Sources. Penn World Tables 9.1, IFS, Remittance Prices Worldwide database, UN Population Database.

A first observation is the high variation of idiosyncratic consumption growth. This is consistent with the widely held observation that households in developing nations have limited access to financial instruments by which to diversify income risk, which results in high consumption volatility (Levchenko, 2005). Note however, despite high volatility of consumption growth rates, volatility of income growth rates is even larger, pointing to the existence of some smoothing mechanism.

Developing nations have, in general, weak cross-border financial linkages through asset and liability holdings. The mean holdings is only around 100 percent of GDP, falling far shorter of emerging markets and advanced economies (whose average is greater than 500 percent of GDP as per the estimates in the 2020 External Wealth of Nations database).

Moreover, with a standard deviation of 58 percent of GDP, it is clear that there are many nations where cross-border financial linkages are truly weak. However, the stock of net outward migrants is large at 3 percent, whereas this number ranges between 0 and 1 percent in the vast majority of advanced nations. Notice that the minimum is -3%, which is due to some developing nations, such as Côte d'Ivoire, which in some years has hosted more inward migrant labor from neighboring nations than it has sent outward migrants.

Empirical Evidence

Combining the approaches pioneered in Sorensen et al. (2007), Fratzscher and Imbs (2009) and Kose et al. (2009), this section presents a direct test of the models of Obstfeld (1994) and Kehoe et al (1995) which predict that greater financial integration should be associated with greater sharing of consumption risk. The innovation is in using the stock of outward migrants as a proxy for financial integration. The paper compares the performance of this variable with traditional measures of financial integration in the literature. The underlying regression model that is estimated are several variations of equation (2):

$$\Delta\tilde{c}_{it} = \alpha_t + \beta\,\Delta\tilde{y}_{it} + \delta_j(FI^j_{it} \times \Delta\tilde{y}_{it}) + \varepsilon_{it} \qquad \ldots(3)$$

$$\Delta\tilde{c}_{it} \equiv \left(\Delta log\, c_{it} - \Delta log\, C_{it}\right), \quad \Delta\tilde{y}_{it} \equiv (\Delta \log y_{it} - \Delta log Y_t)$$

(j = Migrants, Fin. Linkages, Fin. Openness, Trade Linkages)

where FI^j denotes the j^{th} indicator of financial integration (described below), and world consumption, C_{it}, and world income, Y_t^j, are GDP-weighted averages with time-varying GDP as weights.[7] The errors ε_{it} are assumed to be heteroskedastic with country-specific variances and to follow an AR(1) process.

Following Sørensen and Yosha (1998), I estimate the panel model in (3) using Generalized Least Squares (GLS) and report robust standard errors that are also clustered at the country level. All regressions include country and year fixed effects. Note that year fixed effects absorb all common global shocks, for example preference shocks, whose impact on consumption cannot be shared. As discussed earlier, the smaller the estimated magnitude of β, the *greater* the evidence for consumption risk sharing.

Benchmark Results

Table-2 reports results from estimating (3) for four measures of financial integration, *FI*: the stock of outward migrants in percent of the sending economy's population (j= Migrants); financial linkages defined as the

7 The weights are nominal GDP (indicator "NGDPD" from the IFS database) of the 189 countries.

sum of external assets and external liabilities in percent of GDP (j= Fin. Linkages); trade linkages defined as the sum of exports and imports of goods and services in percent of GDP (j=Trade Linkages); [8] and financial account openness using Chinn and Ito (2008)'s indices (j= Fin. Openness).

Column (1) reports a benchmark result (with no financial integration measure) as a reference. Adding the stock of outward migrants to the regression (column 2), the coefficient on $\Delta\tilde{y}_{it}$ remains stable at about 0.2 while the coefficient on its interaction with the stock of outward migrants, $\delta_{OUT\ MIGRANTS}$, is negative and significant at the 5 percent error level. This implies that for a given shock to idiosyncratic income growth, countries with greater stocks of outward migrants share *more* consumption risk. The result is consistent with the interpretation that larger outward migration spurs higher inward remittances that strengthen the recipient country's financial linkages, and these deeper linkages help smooth consumption.

By contrast, the remaining estimates of δ_j, representing the coefficient on the interaction of $\tilde{y}_{it}$ with traditional indicators of financial integration, indicate that greater financial integration is not associated with improved consumption risk sharing. The coefficients on financial linkages and financial account openness (columns 3 and 4) are not statistically significant while the coefficient on trade linkages is positive, implying that for a given level of idiosyncratic income growth the expansion of cross-border trade is associated with *lower* consumption risk sharing. These results corroborate the findings of previous research. In the last column, which includes all measures of financial integration in an empirical horserace, the stock of outward migrants is the only measure of financial integration that both retains a negative sign and is statistically significant.

Decomposition of Financial Linkages

To some extent, the weak empirical association between financial asset holdings and consumption risk sharing in developing economies is not surprising. The mechanism by which financial linkages a priori contribute to sharing consumption risk is by enabling households to tap global credit markets, sell cross-border holdings (or draw on their income streams) to smooth consumption. That is, it presupposes that households are the ultimate holders of such assets. However, households in developing countries scarcely hold financial assets and have very low participation in stock markets (Honohan, 2006), suggestive that financial linkages are unlikely to contribute to better outcomes in consumption risk sharing.

An alternate explanation for the absence of an empirical relation between financial linkages and consumption risk sharing is that equation

8 Trade linkages can be a proxy for financial integration because trade in goods and services leads to deeper linkages between banks, including due to the provision of letters of credit and cross-border syndicated loans, as discussed in Caballero, Candelaria, and Hale (2016).

(3) implicitly assumes different financial assets confer economies with the same ability to share consumption risk. This is a potentially strong assumption. Portfolio equity, in theory, should provide greater insurance against domestic income risk compared to debt, because equity liabilities are state-contingent and tend to decline in a downturn while debt payments remain fixed (Das, 2021).[9] Consequently, the extent to which domestic consumption can decouple from domestic resources may depend on the composition of financial asset holdings. To consider this hypothesis, Table-3 reports results from estimating the following modification of (3):

$$\Delta\tilde{c}_{it} = \alpha_t + \beta\Delta\tilde{y}_{it} + \phi_j(FI_{it}^{j} \times \Delta\tilde{y}_{it}) + \varepsilon_{it} \quad \text{...(4)}$$
$$(j = PE, D, FDI, FXR)$$

where FI_{it}^{j} are cross-border holdings of the *j*th asset class that includes portfolio equity (PE), debt (D), FDI and foreign reserves (FXR). [10]

The striking observation is that the coefficients of interest, ϕ_j, which correspond to the interaction of idiosyncratic income growth and asset-specific financial linkages, are statistically insignificant for all asset classes with the exception of portfolio equity which, though small in magnitude, is positive and significant. That is, greater integration with international portfolio equity markets is associated with *lower* consumption risk sharing.

The findings on portfolio equity are in contrast to Sørensen et al. (2007) and Corcoran (2008) who document that greater integration of international portfolio equity markets during 1987-2003 improved consumption risk sharing. The Sørensen et al. sample however comprises only OECD countries while Corcoran's sample is a mix of predominantly large emerging markets with some developing countries. This suggests that the findings may hinge on factors that are characteristic of the much poorer developing countries that is studied in my sample.

There are at least two possible explanations. First, the theoretical benefits of financial integration notwithstanding, portfolio flows may in practice be procyclical to developing countries, resulting in fewer resources to insure against income risk precisely when income is most needed. The second explanation draws on the insights of Levchenko (2005), who considers an environment where risk sharing arrangements are subject to frictions and only some agents have access to international financial markets – both plausible in developing countries. In this setup, greater access to international financial markets raises the volatility of aggregate consumption because agents with access to international financial markets exercise their option to insure abroad and stop participating in risk sharing

9 Such insurance can be further magnified if foreign equity markets move asynchronously to domestic equity markets.

10 This is measured analogous to overall linkages in (3) as the sum of the assets and liabilities in the jth asset class. For example, cross-border debt assets plus cross-border debt liabilities in percent of GDP.

arrangements at home. Reduced domestic risk sharing, in turn, results in higher volatility of consumption at home because income from the agents who are able to insure abroad is no longer available to insure them. In both cases, financial integration conventionally measured through international portfolio equity holdings would deliver the results found in this paper.

Conclusions

Central to the predictions of the classic open-economy models such as Obstfeld (1994) is that financial integration expands the opportunities of countries to smooth the path of consumption in the face of idiosyncratic income shocks. However, a large empirical literature has failed to find evidence that supports this prediction. This body of work has predominantly focused on cross-border financial asset holdings, trade linkages and financial account openness as measures of financial integration.

This paper documents that the stock of outward migrants serves as a robust measure of financial integration in developing nations. Migrants are a major source of remittances, which are sizeable and amount to as much as 25 percent of GDP in some developing nations. Remittances are counter-cyclical, which makes them particularly relevant in buffering negative income shocks. This paper documents that countries with larger stocks of migrants abroad accrue greater consumption risk sharing benefits than others. Importantly, I establish that typical measures of integration in the literature, such as financial linkages, trade linkages, and financial openness have either no statistical association with consumption risk sharing and may even deteriorate risk sharing outcomes. This paper argues that in the context of developing economies, where participation in international equity markets is low and household ownership of financial assets is limited, but receipt of remittances is high, the stock of outward migrants is a conceptually and empirically more reliable indicator of financial integration.

References

Artis, M. and Hoffmann, 2008. Financial globalization, international business cycles and consumption risk sharing. *Scandinavian Journal of Economics*, *110*(3), 447-471.

Asdrubali, P. and Kim, S, 2008. Incomplete Intertemporal Consumption Smoothing and Incomplete Risk Sharing. *Journal of Money, Credit and Banking*, 40(7), 1521-1531.

Bai, Y. and Zhang, J., 2012. Financial Integration and International Risk Sharing. *Journal of International Economics*, *86*(1), 17-32.

Caballero, J., Candelaria, C., and Hale, G., 2013. *Bank Linkages and International Trade*. Federal Reserve Bank of San Francisco Working Paper 13/14.

Chinn, M.D. and Ito, H., 2008. A New Measure of Financial Openness. *Journal of Comparative Policy Analysis*, *10*(3), 309-322.

Cole, H.L. and Obstfeld, M., 1991. Commodity Trade and International Risk Sharing: How Much do Financial Markets Matter?. *Journal of Monetary Economics*, *28*(1), 3-24.

Corcoran, A., 2008. *International Financial Integration and Consumption Risk Sharing*. Institute for International Integration Studies Discussion Paper 08/241.

Crucini, M.J., 1999. On International and National Dimensions of Risk Sharing. *Review of Economics and Statistics*, *81*(1), 73-84.

Das, M., 2021. Probabilistic Assessment of External Sustainability. *Portuguese Economic Journal*, 1-25.

Frankel, J., 2011. Are Bilateral Remittances Countercyclical?. *Open Economies Review*, *22*(1), 1-16.

Fratzscher, M. and Imbs, J., 2009. Risk Sharing, Finance, and Institutions in International Portfolios. *Journal of Financial Economics*, *94*(3), 428-447.

Freeman R, 2007. The Great Doubling: The Challenge of the New Global Labor Market, in *Ending Poverty In America: How to Restore the American Dream*. NY: The New Press ; 2007.

Freund, C. and Spatafora, N., 2008. Remittances, Transaction Costs, and Informality. *Journal of Development Economics*, *86*(2), 356-366.

Giannone, D. and Reichlin, L., 2006. *Trends and Cycles in the Euro Area: How Much Heterogeneity and Should We Worry About It?* ECB Working Paper 06/595.

Honohan, P., 2006. *Household Financial Assets in the Process of Development*. World Bank Policy Research Working Paper 06/3965.

Imbs, J. and Mauro, P., 2007. *Pooling Risk Among Countries*. IMF Working Paper 07/132.

Kaminsky, G.L., Reinhart, C.M. and Végh, C.A., 2004. When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies. *NBER Macroeconomics Annual*, *19*, 11-53.

Kehoe, P.J., Backus, D.K. and Kydland, F.E., 1995. International Business Cycles: Theory vs. Evidence. In *Frontiers of Business Cycle Research*. Princeton University Press.

Kose, M.A., Prasad, E., and Terrones, M, 2009. Does financial globalization promote risk sharing?, *Journal of Development Economics*, 89, 2, 258-270.

Levchenko, A. 2005. Financial Liberalization and Consumption Volatility in Developing Countries. *IMF Economic Review*, 52(2), p.237.

Lewis, K.K., 1996. What Can Explain the Apparent Lack of International Consumption Risk Sharing?. *Journal of Political Economy*, *104*(2), 267-297.

Obstfeld, M., 1994. *Are Industrial-Country Consumption Risks Globally Diversified*? in Capital Mobility: The Impact of Consumption, Investment and Growth, L. Leiderman and A. Razin. New York. Cambridge University Press.

_____ 1995. *International Capital Mobility in the 1990s*, in P. B. Kenen (ed.), *Understanding Interdependence*. Princeton University Press.

_____ 2009. International Finance and Growth in Developing Countries: What Have We Learned?. *IMF Staff Papers*, *56*(1), 63-111.

Obstfeld, M. and Rogoff, K., 1996. *Foundations of International Economics*. MIT Press.

Pallage, S. and Robe, M.A., 2003. On the Welfare Cost of Economic Fluctuations in Developing Countries. *International Economic Review*, *44*(2), 677-698.

Quinn, D., Schindler, M. and Toyoda, A.M., 2011. Assessing Measures of Financial Openness and Integration. *IMF Economic Review*, *59*(3), 488-522.

Rangvid, J., Santa-Clara, P. and Schmeling, M., 2016. Capital Market Integration and Consumption Risk Sharing Over the Long Run. *Journal of International Economics*, *103*, 27-43.

Sørensen, B.E. and Yosha, O., 1998. International Risk Sharing and European Monetary Unification. *Journal of International Economics*, *45*(2), 211-238.

Sørensen, B.E., Wu, Y.T., Yosha, O. and Zhu, Y., 2007. Home Bias and International Risk Sharing: Twin Puzzles Separated at Birth. *Journal of International Money and Finance*, *26*(4), 587-605.

Stockman, A and Tesar, L, 1995. Tastes and Technology in a Two-Country Model of the Business Cycle: Explaining International Comovements. *American Economic Review*, 85, 168-85.

System of National Accounts, 2008 (2008 SNA), United Nations, New York, USA.

United Nations, Department of Economic and Social Affairs, Population Division. 2019. *International Migrant Stock 2019*. United Nations, accessed September 2021.

Table-1: Summary Statistics

	No. of Countries	No. of Observations	Mean	Std. Deviation	Min	Max
Remittances, % of GDP	50	1,174	4.0	7	-4	32
Idiosyncratic per capita consumption growth rate, %	50	1,176	2.0	6	-35	19
Idiosyncratic per capita income growth rate, %	50	1,176	-0.3	9	-59	44
Idiosyncratic per capita income (including remittances) growth rate, %	50	1,174	-0.2	11	-57	74
Cross-border assets plus liabilities, % of GDP	50	1,176	102	58	27	298
Exports plus imports of goods and services, % of GDP	50	1,169	62	33	13	166
Financial account openness (Chinn-Ito index)	50	1,168	33	31	0	100
Stock of (net) outward migrants, % of population	50	1,176	3	5	-3	19

Notes: See Appendix Table-A2 for definitions and sources of all variables. All variables other than the Chinn-Ito index are winsorized symmetrically at 1 percent. Idiosyncratic per capita consumption growth represents the deviation of per capita real consumption growth from per capita world real consumption growth; idiosyncratic per capita income, and idiosyncratic per capita income (including remittances) are analogously defined.

Table-2: Measures of Financial Integration and Consumption Risk Sharing

$$\Delta\tilde{c}_{it} = \alpha + \beta\,\Delta\tilde{y}_{it} + \delta_j(FI_{it}^{j} \times \Delta\tilde{y}_{it}) + \varepsilon_{it}$$

(j= Migrants, Fin. Linkages, Fin. Openness, Trade Linkages)

	(1)	(2)	(3)	(4)	(5)	(6)
Interaction variable		$FI^{MIGRANTS}$	$FI^{FIN.\ LINKAGES}$	$FI^{FIN.\ OPENESS}$	$FI^{TRADE\ LINKAGES}$	All
β	0.19***	0.23***	0.14	0.09	0.08	0.04
	(0.05)	(0.05)	(0.11)	(0.07)	(0.06)	(0.17)
$\delta_{MIGRANTS}$		-0.010**				-0.01**
		(0.004)				(0.004)
$\delta_{FIN.\ LINKAGES}$			0.03			0.012
			(0.09)			(0.08)

	(1)	(2)	(3)	(4)	(5)	(6)
Interaction variable		$FI^{MIGRANTS}$	$FI^{FIN.\ LINKAGES}$	$FI^{FIN.\ OPENESS}$	$FI^{TRADE\ LINKAGES}$	All
$\delta_{FIN.\ OPENNESS}$				0.30 (0.21)		0.30* (0.17)
$\delta_{TRADE\ LINKAGES}$					0.0018** (0.0009)	0.01 (0.0006)
α	-0.08*** (0.02)	-0.07*** (0.02)	-0.08*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.05*** (0.02)
No. observations	1,174	1,174	1,174	1,166	1,167	1,159
No. of countries	50	50	50	50	50	50
Adj. R-squared	0.24	0.22	0.20	0.22	0.20	0.24

Notes: Table-2 presents GLS estimates of equation (2). All regressions include country and year fixed effects. $\Delta\tilde{c}_{it}$ is real per capita consumption growth in deviation from world real per capita consumption growth, $\Delta\tilde{y}$ is real per capita income growth in deviation from world real per capita income growth with income measured as the sum of GDP and remittances. MIGRANTS represents the stock of net outward migrants in percent of the sending economy's population , FIN. LINKAGES denote the sum of foreign assets and liabilities and TRADE LINKAGES the sum of exports and imports, both in percent of GDP; FIN OPENNESS is the de jure Chinn-Ito index. All covariates other than the Chinn-Ito index are symmetrically winsorized at 1 percent. Numbers in parentheses are standard errors, clustered by country. *, **, and *** correspond to 10%, 5%, and 1% significance level, respectively.

Table-3: Asset-Specific Financial Linkages and Consumption Risk Sharing

$$\Delta\tilde{c}_{it} = \alpha + \beta\,\Delta\tilde{y}_{it} + \phi_j(FI^j_{it} \times \Delta\tilde{y}_{it}) + \varepsilon_{it}$$

(j = PE, D, FDI, FXR)

Interaction variable:	(1)	(2) FI^{PE}	(3) FI^{D}	(4) FI^{FDI}	(5) FI^{FXR}	(6) **All**
β	0.19*** (0.05)	0.15*** (0.046)	0.14 (0.11)	0.195*** (0.066)	0.14** (0.06)	.069 (.103)
ϕ_{PE}		0.096** (0.04)				0.113*** (0.03)
ϕ_{D}			0.0004 (0.001)			.0007 (0.001)
ϕ_{FDI}				-0.0005 (0.0016)		-0.002 (.0016)
ϕ_{FXR}					0.005 (0.04)	0.006* (0.003)
α	-0.08*** (0.02)	-0.08*** (0.02)	-0.08*** (0.02)	-0.08*** (0.02)	-0.08*** (0.02)	-0.08*** (0.02)
No. observations	1174	1174	1174	1174	1174	1174
No. of countries	50	50	50	50	50	50
Adj R-squared	0.20	0.22	0.20	0.20	0.20	0.24

Notes: Table-3 presents GLS estimates of equation (3). All regressions include country and year fixed effects. $\Delta\tilde{c}_{it}$ is real per capita consumption growth in deviation from world real per capita consumption growth, $\Delta\tilde{y}$ is real per capita income growth in deviation from world real per capita income growth, with income measured as the sum of GDP and remittances. PE denotes portfolio equity, D denotes debt, FDI is foreign direct investment and FXR denotes foreign exchange reserves. Numbers in parentheses are standard errors, clustered by country. *, **, and *** correspond to 10%, 5%, and 1% significance level, respectively.

Appendix

Table-A1: Country Coverage

Country	Maximum Time Series#	ISCO Code
Bangladesh	1994-2017	BGD
Benin	1994-2017	BEN
Bhutan	1996-2017*	BTN
Burkina Faso	1994-2017	BFA
Burundi	1994-2017	BDI
Cambodia	1994-2017	KHM
Cameroon	1994-2017	CMR
Central African Republic	1994-2017	CAF
Chad	1994-2017	TCD
Comoros	1994-2017	COM
Congo	1994-2017	COG
Côte d'Ivoire	1994-2017	CIV
Democratic Republic of the Congo	1994-2017	COD
Djibouti	1994-2017	DJI
Ethiopia	1994-2017	ETH
Gambia	1997-2017	GMB
Ghana	1994-2017	GHA
Guinea	1994-2017	GIN
Guinea-Bissau	1994-2017	GNB
Haiti	1994-2017	HTI
Honduras	1994-2017	HND
Kenya	1994-2017	KEN
Kyrgyzstan	1994-2017	KGZ
Lao People's Democratic Republic	1994-2017	LAO
Lesotho	1994-2017	LSO
Liberia	2000-2017*	LBR
Madagascar	1994-2017	MDG
Malawi	1994-2017	MWI
Mali	1994-2017	MLI
Mauritania	1994-2017	MRT
Moldova	1995-2017*	MDA
Mozambique	1994-2017	MOZ
Myanmar	1999-2017*	MMR
Nepal	1994-2017	NPL
Nicaragua	1994-2017	NIC
Niger	1994-2017	NER
Nigeria	1995-2017*	NGA
Rwanda	1994-2017	RWA

Country	Maximum Time Series#	ISCO Code
Sao Tome and Principe	1994-2017	STP
Senegal	1994-2017	SEN
Sierra Leone	1994-2017	SLE
Sudan	1994-2017	SDN
Tajikistan	1998-2017*	TJK
Tanzania	1994-2017	TZA
Togo	1994-2017	TGO
Uganda	1994-2017	UGA
Uzbekistan	1994-2017	UZB
Vietnam	1996-2017*	VNM
Yemen	1994-2017	YEM
Zambia	1994-2017	ZMB

Reported years are availability for the idiosyncratic per capita income (inclusive of remittances) growth rate, which is the key independent variable in Tables 2-3. Availability for other series vary (see Table-1 for observations per variable).

* Countries marked with are those with fewer than 24 years of data for idiosyncratic per capita income (inclusive of remittances) growth rate.

Table-A2: Data Sources#

Variable	Source	Notes
Remittances, % of GDP	IFS	Nominal net remittance inflows in % of nominal GDP
Idiosyncratic per capita consumption growth rate, % of GDP	PWT 9.1	Annual growth rate of real per capita consumption in 2011 international dollars
Idiosyncratic per capita income growth rate, %	PWT 9.1	Annual growth rate of real per capita GDP in 2011 international dollars
Idiosyncratic per capita income (including remittances) growth rate, %	PWT 9.1, IFS	Annual growth rate of real per capita income (including remittances) in 2011 international dollars
Cross-border assets plus liabilities (% of GDP)	EWN	Both Assets and liabilities include equity, debt, FDI; assets additionally include foreign reserves; expressed in % of GDP
Trade: Exports plus imports of goods and services (% of GDP)	IFS	Goods and services trade in U.S. dollars, expressed in % of GDP
Financial account openness (Chinn-Ito index)	Author's website	Ranges from 0 (fully closed) to 1 (fully open)
Stock of outward migrants, % of population	UNPD, IMI	Net outward stock of migrants at five year intervals combined with annual net migration flows, in percent of sending economy's population

Acronyms used are: IFS: International Financial Statistics; PWT: Penn World Tables; EWN: External Wealth of Nations; UNPD: United Nations Population Division; IMI: International Migration Institute.

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Assessment of Trade Scenario Among IBSA Member Countries and Way Forward

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Abstract

India-Brazil-South Africa Trilateral Cooperation Forum (IBSA), have initiated to promote south-south cooperation for enhancing economic cooperation and trade across different sector. The main focus for formation of trilateral agreement among three member countries are to develop foster trade and cooperation through liberalization of trade, tariff related issues and markets access for goods and service trade. There is enough scope of potentialities across different sectors among member countries, but also their exports and imports are not sufficient similar to affirm that they are essentially rivals in market access. Three major countries are planning to enter into preferential trade agreements for linking three economic powerhouses of Asia, Latin America and Africa to boost up major South-South FTA. But it's still unclear whether IBSA would liberalize trade between the three national markets or those of SACU (for South Africa), Mercosur (for Brazil) and India. The study wants to present the policy initiatives taken for inclusive growth followed by analysis of evaluation of competitive advantage in product level to strengthen trilateral cooperation and depict a road map which suggests the way forward. Moreover, the study also highlights possible potentiality in increasing trade among IBSA members for developing cooperation in multilateral level that helps to generate propose multilateral agreement in future.

Keywords: ESI, RCA, RCDA, SSM, TCI

Introduction

IBSA was conceived in 2003 by powerful group by different industrialized countries to promote South-South cooperation. The three regional countries predict themselves as a key player of developing world and they felt that closer ties between themselves would be able to improve economic co-

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operation and improve international trade among these regions. The three IBSA countries drew together common objectives and presented emerging nations with socio-political goals. All three countries have rapidly growing economy, while at the same time large proportions of their populations are struggling to lift themselves out of poverty and IBSA leaders have tried to transform their political and economic objective into a basis for greater economic co-operation and improve regional cooperation across different dimensions namely Agriculture, Culture, Education, Defense, Energy, Technology Transfer, Health service and Trade etc.

The first IBSA Dialogue Forum, held in New Delhi on 2004 to address different social development indicators namely, infrastructure, health care, sustainable economic development, and poverty alleviation etc. The second IBSA Forum, held in Cape Town on 2005, reaffirmed the issues presented in the first dialogue and focused on potential influence of different economics on the global political and economic scenario and the major thrust area of IBSA initiatives is to strengthen South-South economic cooperation. Brazil considers as largest economy in Latin America, with significant presence in global trade and India considers as fourth largest economy in PPP (purchasing power parity) terms and second most popular country with potential economic and trade growth. According to different reports of UNTACD[1] South Africa is considering as powerful, largest share in African trade with the world. Three developing continents are attempting to strengthen trade, investment, transfer of technology and economic cooperation among themselves by forming trilateral agreements among themselves.

The major objectives of IBSA agreement are to promote south-south cooperation, to intensify and enhance coordination, cooperation to enhance in international relation, trade and investment potentialities and development of new markets, transfer of technology, skill enhancement, social development, poverty alleviation and new job creation etc.

Major Objectives

- To enhance south-south cooperation within economic context among IBSA member countries.
- To promote the combination of strengthening of three countries for generating positive synergies.
- To promote trade and investment opportunities and development of new markets opportunities across different countries and sectors.
- To enhance IBSA cooperation among different areas namely technology transfer, social development, poverty alleviation and development of new job opportunities through exchange of skilled resources etc.

1 United Nations Conference on Trade and Development, https://unctad.org/about visited on 15/10/2022

- To promote different sectors namely transport, agriculture, energy, ICT etc. to facilitate trade both in goods and services.
- To support major development indicators in science, technology and innovation field among major economics for scientific and technological development through transfer of knowledge and increasing of technological capacity building programme.
- To identify different service-related trade support for increasing trilateral cooperation and integration through economic reform.

In this regard networking activities should also be extended as far as possible to young researchers and future project leaders, so that the IBSA initiative as a whole will not begin and end with the current crop of experienced principal investigators.

Literature Review

The IBSA trade agreement mainly concentrated on why three major economies joined together to boost economic cooperation, trade, and integration (Paulo Jorge, 2017). Different literatures depicted how India and Brazil benefited from each other and identified untapped potential areas for further economic cooperation. Some literature also pointed out how both India and South Africa increased their total trade in different sectors through the liberalization of tariff and non-tariff barriers (Arkhangelskay et al., 2010). IBSA countries join together to share common political objectives and want to achieve socio-political goals through different levels of negotiation over different years (E.S Reddy, 2005). These economies are rapidly growing with a large population base and want to lift themselves out of poverty through liberalization of the service sector (Akoojee etal., 2011). Other literature depicts how Brazil's foreign trade is currently concentrated in the United States and the European Union, which absorb nearly half of the South American county exports. Argentina and China are the second and third leading importers of Brazilian products, respectively (Shei etal, 2014). The major objectives of IBSA are to promote trade and develop south-south cooperation for the fulfilment of demands among major countries for enhancing international relations. Three major countries are pushing for an expanded UN Security Council, in which they would also hold permanent seats to enjoy political and economic diplomacy (T N Srinivasan, 2006).

Research Gap

Above studies are highlighted the detail representation on how major countries are benefited through IBSA agreement and how they are going to strengthen different area of cooperation through economic integration. But the above literatures can't concentrate on whether trade among three countries are in potential level or not i.e., total trade in present circumstances

are at per with potential level or not across different product categories in Harmised System.

Objectives

- The scope of our research is to determine the actual trade among member countries of IBSA.
- To explore possible potentialities among different product basket along with their tariff structure among members of IBSA.
- Moreover, researcher also finds out future possibilities of cooperation among three countries which clearly indicates most promising sector and products to explore further.

Research Methodology

This study is based on secondary research and the research methodologies used in this research are based on:

- Desk research: analysis of information collected from credible sources like, government publications; multilateral global institutions, International non-governmental organizations (NGOs) of repute, books; journals and reliable internet-based sources.
- Data analysis: Trade and investment data have been analysed applying globally accepted statistical methods-both descriptive and inferential techniques have been applied.

The data have been collected mainly from the following sources: TRAINS[2] , UNCPC[3] , UNCTAD[4] , WITS[5], and WTO[6] , ITC[7] etc. Following econometric formula have been used for evaluating our research work.

RCA[8]: A macroeconomic concept for calculating a relative advantage or disadvantage of a certain product across different HS level among different countries:

$RCA = (E_{ij} / E_{it}) / (E_{nj} / E_{nt})$ where E export, i country index, j commodity index, n set of countries and t set of commodities.

Gravity Model: The gravity model of trade predicts bilateral and multilateral trade flows based on the economic sizes (Gross Domestic Product) and distance among countries. The basic theoretical model for trade between two countries (1 and 2) takes the form of: ln (Bilateral/ Multilateral Trade Flow) = $\alpha+\beta\ln(GDPCountry1)+\beta\ln(GDPCountry2)-\beta\ln(Distance)+\varepsilon$. The model often includes different variables namely income level (GDP per capita), price levels, language relationships, tariffs,

2 Trade Analysis Information System under WITS visited on 14/10/2022
3 United Nations Provisional Central Product Classification visited on 14/10/2022
4 United Nations Conference on Trade and Development visited on 15/10/2022
5 World Integrated Trade Solution visited on 16/10/2022
6 World Trade Organization visited on 10/10/2022
7 International Trade Centre visited on 09/10/2022
8 Revealed Comparative Advantage visited on 10/10/2022

contiguity, and colonial history (whether Country 1 ever colonized Country 2 or vice versa). The model has also been used in international relations to evaluate the impact of treaties and alliances on trade.

Trade Similarity Index: Many countries have a different pattern of export specialization in relation to the rest of the world. It is not clear however to what extent these results reflect a common tendency among countries and to what extent the results are driven by the performance of individual countries. The export similarity (XS) index provides useful information on distinctive export patterns from different country level. It is defined as:

$XS_{j,k}$ = sum [min (X_{ij}, X_{ik}) * 100], where X_{ij} and X_{ik} are industry *i*'s export shares in country *j*'s and country *k*'s exports, which usually include a group of countries or competitors. The index varies between zero and 100, with zero indicating complete dissimilarity and 100 representing identical export composition. This measure is subject to aggregation bias (as the data are more finely disaggregated, the index will tend to fall) and hence embodies certain arbitrariness due to product choice.

Trade Complementary Index: The trade complementary (TC) index can provide useful information on prospects for intra-regional trade in that it shows how well the structures of a country's imports and exports match. It also has the attraction that its values for countries considering the formation of a regional trade agreement can be compared with others that have formed or tried to form similar arrangements. The TC between countries k and j is defined as:

TC_{ij} = 100 – sum ($|m_{ik} – x_{ij}| / 2$), Where x_{ij} is the share of good *i* in global exports of country *j* and m_{ik} is the share of good *i* in all imports of country *k*. The index is zero when no goods are exported by one country or imported by the other and 100 when the export and import shares exactly match.

RCDA[9]: In RCA we calculate relative advantage and disadvantage between different countries on export value. But in RCDA we calculate relative advantage and dis advantage on import part using formula RCDA = (I_{ij} / I_{it}) / (I_{nj} / I_{nt}), where I import, *i* country index, *j* commodity index, n set of countries, t set of commodities

Shift Share Method: No completely satisfactory method has been devised for combining percentage and absolute changes. However, a method has been devised that makes it possible to measure the relative size of the gains or losses of market area compared with regional growth norms. Use of shift method requires the explicit specification of a) the time period for which growth comparison are made b) the geographic unit of analysis and c) the variable that is to be used for measuring growth. Given a growth variable the distinguishing feature of shift method is its ability to measure the relative gain or losses of individual market area compared with total market area.

9 Revealed comparative Disadvantage visited on 15/10/2022

Bilateral RCA: Bilateral RCA between two consecutive countries namely India Brazil and India South Africa over different years starting from 2004 to 2020. Bilateral RCA India and Brazil = ((Export of i^{th} Product from India to world / Sum (Export of i^{th} Product from India to world)) / (Export of i^{th} product from Brazil to world) / sum (Export of i^{th} product from Brazil to world)) i.e., RCA of i^{th} product in India / RCA of i^{th} product in Brazil.

Analysis

The entire analyses are divided into three major sections. First part highlighted basic econometric parameter and actual trade scenario among IBSA member countries. Second part highlighted comparative advantage of three major economies and also identified export and import similarity, trade complementarily index for evaluation of exports similarity among countries. Third part pointed out potential products in HS 4-digit level across member countries for identifying more trade in future time period and simultaneously evaluates tariff structure among them. Last section predicted trade potentiality among member countries of IBSA.

Actual Trade in IBSA countries

India's export to Brazil with respect to world increasing up to year 2012 then it's gradually decreasing over the year. Similarly, India's import from Brazil with respect to world is gradually increasing up to year 2016 and then gradually decreasing (Ref Table-1).

Table-1: India's Export and Import to and from Brazil from 2004-2020

Indo Brazil Trade over 2004 to 2020 in '1000 USD

Year	India's Export to Brazil	India's Import from Brazil	India Export to World	India Import from World	India's export to Brazil w.r.t World	India's Import to Brazil w.r.t World
2004	540342	660330	75013794	98248368	0.72	0.88
2008	3236761	1137404	180179728	311468803	1.80	0.63
2012	6084395	5381127	287037544	476945084	2.12	1.87
2016	2298411	3613830	259505853	346091368	0.89	1.39
2020	3675776	3194331	275389162	366090112	1.33	1.16

Source: author's own calculation from data collected from WITS

Similarly, India's export to South Africa with respect to world increasing up to year 2012 then it's decreasing over time period and tries to maintain stagnancy level. Similarly, India's import from South Africa with respect to world is more or less at stable stage over different time period (Ref Table-2).

Table-2: India's Export and Import to and from South Africa from 2004 to 2020
Indo South Africa Trade over 2004 to 2020 in '1000 USD

Year	India's Export to SA	India's Import from SA	India Export to World	India Import from World	India's Export to SA w.r.t World	India's Import to SA w.r.t World
2004	889947	1789173	75013794	98248368	1.19	1.82
2008	2473995	5541946	180179728	311468803	1.37	1.78
2012	4972889	8627676	287037544	476945084	1.73	1.81
2016	3242666	5091403	259505853	346091368	1.25	1.47
2020	3498279	6673087	275389162	366090112	1.27	1.82

Source: Author's own calculation from data collected from WITS

GDP Structure and Its Composition Among IBSA Countries

Researcher also observed growth in GDP among three countries over 2006 and 2018 and highlighted contribution of agriculture, industry and service sector across their economy. From the Table-3 it observed that in 2018 service sector contribution in Brazil's economy are higher than industrial & agriculture sector. The same result is absolutely true for South Africa and India also.

Table-3: Growth in GDP and Its Composition

	Brazil		South Africa		India	
Year	**2006**	**2018**	**2006**	**2018**	**2006**	**2018**
GDP	4.39%	2,31%	5%	1.30%	9.10%	8.31%
Agriculture	10.10%	12.63%	2.60%	3.54%	18.60%	22%
Industry	38.60%	42.50%	30.30%	34.60%	28.40%	22%
Service	37.30%	44.87%	67.10%	61.86%	55.60%	56%

Source: World Bank, Development Indicator

Population Growth in IBSA

Table-4 presents the data on annual population growth rates among IBSA members. IBSA represents about 25 per cent of the world's population with about 3.3 billion people residing in three respective countries of IBSA, with India accounting for the major share of 83 per cent. India has seen the fastest increase in population, followed by Brazil and South Africa. As per population growth India ranked first followed by Brazil and South Africa.

Table-4: Population Growth Among IBSA

Country	1990-2005	1990-2010	1990-2015	1990-2020
Brazil	1.8	1.10	2.1	2.6
India	1.7	1.9	2.3	2.7
South-Africa	2.1	2.2	1.9	2.3

Source: World Bank, World Development Indicators, WDI Various Issues.

Trade in IBSA in Terms of Selected Indices

Correlation among RCA values of Brazil over different years

Reduction of trade barriers creates competitive pressures and technology transfer lead to productivity gains and restructuring of an economy toward its comparative advantage. India has undertaken a series of economic reforms towards opening up of the economy in the decade of the nineties. Further, a country's comparative advantage in international trade may be influenced by differential rates of change in accumulation of production factors or due to the increased trade integration of other countries. Brazil's move towards export-oriented development strategy may have altered the picture of comparative advantage for its different products in the world market. The pattern of comparative advantage is also examined over the period 2003-2020. The analysis of comparative advantage has been undertaken using the Balassa in two - four and six-digit level of HS classification. Correlation indicates the strength and direction of a linear relationship between two random variables. Here we find out the corelationship among RCA values in different years in Brazil.

Table-5: Correlation between RCA Values of Brazil over Different Years

Year	2006	2010	2015	2020
2006	-	0.9979	0.9926	0.9964
2010	-	-	0.9931	0.9973
2015	-	-	-	0.9889
2020	-	-	-	-

Source: author's calculation

From the above Table-5 author observed that correlation between RCA values in Brazil in different years are high in HS 4-digit level which revealed that high degree of correlation among RCA values in different years indicates higher export potentiality of Brazil particularly in HS 4-digit level.

Correlation among RCA values of India

Table-6: Correlation among RCA Values of India over Different Years

Year	2006	2010	2015	2020
2006	-	0.9572	0.9486	0.9711
2010	-	-	0.9851	0.9852
2015	-	-	-	0.9718
2020	-	-	-	-

Source: author's calculation

From the Table-6 author observed that correlation between RCA values in India in different years are high in HS 4-digit level which revealed that

high degree of correlation, indicates higher export potentiality of India in different HS 4-digit level.

Correlation among RCA values of South Africa among different years

Table-7: Correlation between RCA Values in Different Years of South Africa

Year	2006	2010	2015	2020
2006	-	0.9953	0.9918	0.9964
2010	-	-	0.9965	0.9953
2015	-	-	-	0.9955
2020	-	-	-	-

Source: Author's calculation

From the Table-7 author pointed out that correlation between RCA values in South Africa in different years are high in HS 4-digit level which similarly indicates higher export potentiality of South Africa in HS 4-digit level.

Rank Correlation Among RCA Values

After evaluating RCA values among all products in HS 4-digit level among all the countries and sort the RCA values in descending order generate rank of the product across country level and find out correlation among all ranks. From the rank correlation table, it is clear that among India and Brazil rank correlation values are very high followed by India and South Africa and Brazil vs South Africa (Ref Table-8).

Table-8: Rank Correlation Among Pair of Country Level in 2020

India vs Brazil	0.126538
India vs South Africa	0.099162
Brazil vs South Africa	0.024481

Source: Author's calculation

Export Similarity Index

The research also calculated export similarity index in 6-digit level through the formula (India's Export value to world in all 6-digit level / Total export value in 6-digit level) and then we calculate South Africa's export share to world in 6-digit level through the formula (South Africa's Export value to world in all 6-digit levels / Total export value in 6-digit levels). Then we take minimum export share among two different export share values in 6-digit level and made a sum of all minimum value. So, Export similarity index= [Summation {Min (India's export share, South Africa's export share)}] we used for calculating different values between India and South Africa in different time span. We also calculate Export similarity index among India and Brazil also.

Table-9: Export Similarity Index in 6-digit Level

Countries	2006	2010	2015	2020
India and South Africa	20.43	20.58	20.01	19.24
India and Brazil	24.49	25.65	26.99	26.94

Source: Author's calculation

From the Table-9 of export similarity index between India and South Africa remain in same range within different time periods. So, India and South Africa export same kind of products over the years. But from the export similarity index value between India and Brazil researcher observed that value is gradually increasing over different time periods.

To analyze this thing more clearly, we take a reference calculation on export similarity index value between Brazil vs USA, India vs USA and South Africa vs USA which is given below (Ref. Table-10).

Table-10: Export Similarity Index in 6-digit Level for Reference Calculation

Countries	2006	2010	2015	2020
Brazil vs USA	29.79	31.41	31.79	33.06
India vs USA	22.69	23.1	25.13	25.74
South Africa vs USA	24.71	27.74	25.99	25.85

Source: author's calculation

Import Similarity Index

We calculate Import similarity index value by first finding out India's import share to the world in 6-digit level through the formula (India's Import value from world in all 6-digit level / Total import value in 6-digit level) and then we calculate South Africa's import share to world in 6-digit level through the formula (South Africa's import value to world in all 6-digit levels / Total import value in 6-digit levels). Then we take minimum import share among two different import share values in 6-digit level and made a sum of all minimum value.

So, import similarity index = [Summation {Min (India's import share, South Africa's import share)}] we used for calculating different values between India and South Africa in different time span. We also calculate import similarity index value between India and Brazil through the formula [Summation {Min (India's import share, Brazil import share)}] in different time period. The following table shows the import similarity index value in 2003, 2004, 2005 and 2006 between India vs South Africa and India vs Brazil.

Table-11: Import Similarity Index in 6-digit level

Countries	2006	2010	2015	2020
India vs South Africa	43.6	45.49	45.42	47.15
India vs Brazil	42	43.95	43.68	45.78

Source: author's calculation

From the Table-11 researcher observed that index value between India and South Africa remain in same up to 2015 but in 2020 index value is increased. So, India and South Africa import same kind of products almost 2015 but from 2020 onwards their import basket differs Moreover, from the import similarity index value between India and Brazil we see that value is gradually increasing in different years. But in 2010 and 2015 the value will remain same within a specific range. This implies that import basket between India and Brazil are remaining same over the entire time period.

To analyze the thing more clearly, we take a reference calculation on import. Similarity imports similarity index value between Brazil vs USA, India vs USA and South Africa vs USA which are used as a reference calculation is given below.

Table-12: Import Similarity Index in 6-digit Level for Reference Calculation

Countries	2006	2010	2015	2020
Brazil vs USA	48.23	50.18	53.48	57.74
India vs USA	34.26	36.32	39.73	42.48
South Africa vs USA	53.61	57.45	61.49	61.93

Source: author's calculation

From the Table-12 it's that import similarity index value between Brazil and USA are increasing within a stipulated rage within different time period and higher index indicate that their import basket varies with different products. But between India and USA import similarity index value is almost same as India and Brazil but lesser value is observed among India and South Africa. This indicates that in Latin American countries import similarity index value is almost same. But unfortunate thing is that between South Africa and USA import similarity index value are very high starting from year 2006 to 2020 which indicates that they can not import same kind of product and their import basket varies significantly.

Trade Complementarity Index

Trade complementarity index can provide useful information on prospect for intra regional trade in that if shows how well the structures of a country's import and exports match. It also has the attraction that its values for countries the information of a regional trade agreement can be compared with others that have formed or tried to form similar arrangement. The TC between countries K and J is defined as $TC_{ij} = 100 - \text{sum}\ (|m_{ik} - x_{ij}| / 2)$

Where *Xij* is the share of good *i* in global export of country *j* and *Mik* is the share of good *i* in all imports of country *k*. The index is zero when no goods are exported by one country OR imported by other and 100 when the export and import shares exactly match.

Table-13: Trade complementarity Index in 6-digit Level

Countries	2006	2010	2015	2020
India vs South Africa	24.91	25.09	27.01	28.61
India vs Brazil	24.85	23.15	25.47	27.31

Source: author's calculation

From Table-13 Trade complementarity Index, we see that index value that between India and South Africa are increasing from the period of 2006 to 2020. So whatever product India export South Africa imports same kind of products in the different years starting from 2004 to 2020. Moreover, from the import similarity index value between India and Brazil we see that index value decreased in year 2006 and after that is gradually increasing in 2015 and 2020. So whatever product India exports Brazil imports the same kind of product. Index values of both the countries are almost in same range and can not differ so much.

To analyze the thing more clearly, we take a reference calculation on import similarity index values between Brazil vs USA, India vs USA and South Africa vs USA which are given below.

Table-14: Trade complementarity Index in 6-digit Level for Reference Calculation

Countries	2006	2010	2015	2020
Brazil vs USA	33.11	33.22	34.57	36.53
India vs USA	27.35	26.82	29.01	29.6
South Africa vs USA	26.6	25.88	25.38	26.57

Source: author's calculation

Researcher highlighted that trade complementarity index between Brazil and USA are increasing within a small stipulated rage in different time period. This value indicates whatever USA and Brazil can import almost same kind of products over different years. But India and USA trade complementarity index value are very much in flaractuating level and after 2015 and it maintained a steady state. This representation indicates whatever India's export and USA's import basket are almost similar or not. But unfortunate thing is that between South Africa and USA trade complementarity index value are very much fluctuating indicate whatever product South Africa export, USA can't import same kind of product among different time periods (Ref Table-14).

Determining of Potential Trade in IBSA

For analyzing trade potentiality among IBSA members, the entire calculation is divided into two methods namely Static and Dynamic. In static method researcher mainly concentrated on RCA, RCDA and Bilateral RCA values. In first phase we take two countries India and South Africa. Table-16 highlighted list of products where India's RCA>1 and South Africa RCDA>1. Similarly, Table-17 examined those products where Indian bilateral RCA>1 and South Africa RCDA>1 and Table-18 focused on those products where India's RCA>1 and Bilateral RCA >1 and South Africa RCDA>1.

Static Method

Table-15: India vs South Africa

Parameters	South Africa RCDA>1
India RCA>1	List1
India Bilateral RCA>1	List2
India RCA>1 and BLRCA>1	List3

From Table-15 researcher identified top ten products like Balloons, True heap, Coconut, Shins and other parts of birds, associated vehicles etc. India has competitive advantage to export to the South African market.

Table-16: India RCA>1 and South Africa RCDA>1

Product Name	Product Code	RCA India	RCDA South Africa
Balloons and dirigibles	8902	109.96	3.29
True hemp	5307	63.72	1.35
Coconut	5310	53.02	1.57
Skins and other parts of birds	6703	51.6	3.82
Parts and accessories of vehicles	8804	43.73	2.32
Bed linen, table linen	6304	28.85	1
Other nuts, fresh or dried	0801	25.7	1.31
Motorcycles	8801	24.11	3.14
Other woven fabrics of cotton.	5305	23.87	1.74

Source: author's calculation

The research also observe the reverse situation i.e., where South Africa RCDA is very high and India's RCA are not. Different products like petroleum coke, Bricks etc includes in above criteria. But for other products like Rice and Natural barium sulphate where India's RCA greater than South Africa's RCDA value indicate potential for export on India's point of view (Ref Table-17).

Table-17: South Africa RCDA is Very High and India's RCA are not So High

Product Name	Product Code	RCA India	RCDA South Africa
Petroleum coke	2802	4.78	23.88
Bricks, blocks, tiles	6903	1.56	9.27

Product Name	Product Code	RCA India	RCDA South Africa
Sulphides of non-metals; commercial	2818	2.97	7.97
Fluorides; fluorosilicates	2832	1.43	5.88
Rice.	1006	12.89	5.43
Manganese oxides.	2826	2.08	5.25
Iron and non-alloy steel	7206	3.27	4.27
Natural barium sulphate	2514	18.29	4.18

Source: author's calculation

The Table-18 indicates India's bilateral RCA value>1 and as well as South Africa's import i.e., RCDA value>1. Researcher identified top ten products like woven fabric, Hydraulic brake, Fabricated asbestos, Man-made filament yarn, Knitted or crocheted fabrics etc. where bilateral RCA values between India and south Africa are high indicating for close economic integration.

Table-18: India bilateral RCA>1 and South Africa RCDA>1

Product Code	Product Name	Bilateral RCA India & South Africa	RCDA South Africa
5307	Woven fabrics of artificial filament	7537.8401	1.3524
3817	Hydraulic brake fluids	2688.8607	3.0647
6703	Fabricated asbestos fibres	2045.05	3.821
5305	Man-made filament yarn	1285.4319	1.7357
5810	Knitted or crocheted fabrics	811.5878	1.0282
801	Dried leguminous vegetables	776.5494	1.3132
5310	Synthetic staple fibres	715.234	1.5662
7012	Dust and powder of natural or synth	472.7011	1.2704
909	Cloves (whole fruit, cloves)	458.2466	2.5557
2304	Oil-cake and other solid residues	413.9697	2.4502
6304	Hat-forms, hat bodies	363.0237	1.0003
6814	Ceramic tableware, kitchenware	312.7792	1.8496

Source: Author's calculation

On the other hand, researcher also considered reverse situation where different products like glass, chromium oxides and hydroxides, maize & chlorides, chloride oxides etc., where South Africa's RCDA are very high. But if both countries are concentrated these products like Chromium oxides and hydroxides, pumice stone; emery; natural corund, Maize (corn) etc. are benefited from trade and welfare generation (Ref Table-19).

Table-19: India Bilateral RCA>1 and South Africa RCDA Very High

Product Code	Product Name	Bilateral RCA India & South Africa	RCDA South Africa
6903	Glass in balls	1.7216	9.2718
2818	Chromium oxides and hydroxides	94.1759	7.9743
1006	Maize (corn)	57.3234	5.4272

Product Code	Product Name	Bilateral RCA India & South Africa	RCDA South Africa
2826	Chlorides, chloride oxides	1.9541	5.2457
7206	Bars and rods, hot-rolled	14.6002	4.2683
2813	Ammonia, anhydrous or in aqueous	3.2423	4.2464
2514	Pumice stone; emery; natural corundom	115.9997	4.1778

Source: Author's calculation

Table-20 identified different products like Natural barium sulphate (barytes), Skins and other parts of birds with, Pickling preparations for metal sure, Rice etc where South Africa's RCDA are higher indicate that India have a competitive advantage to export and South Africa wants to import.

Table-20: India RCA>1, bilateral RCA>1 and South Africa RCDA>1

Product Code	Product Name	RCA India	BLRCA India & South Africa	RCDA South Africa
6903	Bricks, blocks, tiles	1.5575	1.7216	9.2718
2818	Sulphides of non-metals; commercial	2.9693	94.1759	7.9743
1006	Rice.	12.8947	57.3234	5.4272
2826	Manganese oxides.	2.0833	1.9541	5.2457
7206	Iron and non-alloy steel	3.2699	14.6002	4.2683
2514	Natural barium sulphate (barytes)	18.2912	115.9997	4.1778
2838	Sulphites; thiosulphates	1.1463	18.8155	3.8394
6703	Skins and other parts of birds	51.6004	2045.05	3.821
5513	Yarn (other than sewing thread)	1.6703	40.6429	3.5984
8435	Other moving, grading, levelling	1.3917	1.4622	3.3986
3205	Mineral or chemical fertilizers	4.0924	45.5476	3.2758
4013	Other forms	5.2921	19.6577	3.145
9701	Vacuum flasks and other vacuum vessels	3.7056	23.9719	3.1225
3817	Pickling preparations for metal sur	10.16	2688.8607	3.0647

Source: Author's calculation

India vs Brazil

In second phase research concentrated on pair of countries namely India and Brazil. Table-22 identified those products where India's RCA>1 in 2018 and Brazil's RCDA>1. Table-23 observed those products where Indian bilateral RCA>1 and Brazil RCDA>1. Table-24 also observed those products where India's RCA>1 and bilateral RCA between India and Brazil >1 and Brazil RCDA>1.

Table-21: India Vs Brazil

Parameters	Brazil RCDA>1
India RCA>1	List 4
India Bilateral RCA>1	List 5
India RCA>1 and BLRCA>1	List 6

The Table-22 indicated that India's RCA value>1 and Brazil RCDA value>1. Researcher identified different products like Balloons and dirigibles; gliders, True hemp Cannabis sativa, coconut, Skins and other parts of birds with & Vehicles parts etc. where India have competitive advantage to export.

Table-22: India's RCA>1 and Brazil's RCDA>1

Product Code	Product Name	RCA India	RCDA of Brazil
8902	Balloons and dirigibles; gliders	109.9567	4.7081
5307	True hemp (Cannabis sativa L.)	63.7236	1.3679
5310	Coconut	53.0194	1.6214
6703	Skins and other parts of birds	51.6004	5.0929
8804	Parts and accessories of vehicles	43.7281	2.7224
6304	Bed linen, table linen, toilet line	28.8498	
801	Other nuts, fresh or dried	25.6979	1.2502
8801	Motorcycles (including mopeds)	24.1088	4.4666
5305	Other women fabrics of cotton	23.8682	1.925

Source: Author's calculation

Now researcher also considered the reverse situation i.e., where Brazil's RCDA are high in the products like Petroleum coke, petroleum bitumen, Bricks, blocks, tiles, Sulphides of non-metals; commercial, Fluorides; fluorosilicates, Rice etc. and Brazil have competitive advantage in import. But products like Rice, Natural barium sulphate (barytes), Skins and other parts of birds with etc. India has higher RCA indicates competitive advantage to export.

Table-23: India's RCA>1 and Brazil's RCDA are High

Product Code	Product Name	RCA India	RCDA Brazil
2802	Petroleum coke, petroleum bitumen	4.7786	20.1146
6903	Bricks, blocks, tiles	1.5575	13.1694
2818	Sulphides of non-metals; commercial	2.9693	9.2624
2832	Fluorides; fluorosilicates	1.433	7.8489
1006	Rice.	12.8947	7.5326
2826	Manganese oxides	2.0833	7.0329
7206	Iron and non-alloy steel	3.2699	6.9533
2514	Natural barium sulphate (barytes)	18.2912	5.395
2503	Other manufactured tobacco	2.4632	5.3781
7105	Precious stones (other than diamond)	2.0825	5.1522
2838	Sulphites; thiosulphates	1.1463	5.1438
6703	Skins and other parts of birds	51.6004	5.0929

Source: Author's calculation

Table-24 identified that bilateral RCA between India and Brazil are >1 and Brazil's RCDA value >1 indicating that the products like Buckwheat,

millet and canary seed, embroidery in the piece, in strips, Yarn of jute or of other textile, Seeds of anise, badian, fennel, Dithionites and sulphoxylates etc. are more promising in the trade between two countries.

Table-24: India's Bilateral RCA>1 and Brazil's RCDA>1

Product	Product Name	BLRCA India & Brazil	RCDA Brazil
1008	Buckwheat, millet and canary seed;	2395.9557	4.2038
5810	Embroidery in the piece, in strips	1873.144	1.7941
5307	Yarn of jute or of other textile	1573.6884	1.3415
909	Seeds of anise, badian, fennel	1533.9236	5.0929
2831	Dithionites and sulphoxylates.	857.1715	7.0329
2823	Titanium oxides.	340.4164	2.0379
2503	Sulphur of all kinds	320.4044	6.9533
2525	Mica, including splitings	297.5386	1.062
2838	Fulminates, cyanates and thiocyanat	295.9821	1.6084
2813	Sulphides of non-metals commercial	292.7791	6.6353
703	Onions, shallots, garlic, leeks	229.3284	4.7081
7221	Bars and rods, hot-rolled	207.3596	1.0666
2935	Sulphonamides.	202.0966	2.9475
2928	Organic derivatives of hydrazine	201.2013	7.8489

Source: author's calculation

Researcher also considered the reverse situation i.e., the products lists where Brazil's RCDA are higher in different products like vacuum flasks, Yarn (other than sewing thread), Organic derivatives of hydrazine, Esters of other inorganic acids etc., indicate import potentiality. Moreover, the products like Organic derivatives of hydrazine, Esters of other inorganic acids, Dithionites and sulphoxylates, Seeds of anise, badian, fennel, Sulphides of non-metals etc., are benefited for both the countries as per trade is concerned (Ref Table-25).

Table-25: India's Bilateral RCA>1 and Brazil's RCDA Very High

Product	Product Name	Bilateral RCA India & Brazil	RCDA Brazil
7012	Glass inners for vacuum flasks	93.8421	20.1146
5510	Yarn (other than sewing thread)	21.6577	9.2624
2928	Organic derivatives of hydrazine	201.2013	7.8489
2920	Esters of other inorganic acids	24.9559	7.5326
2831	Dithionites and sulphoxylates.	857.1715	7.0329
2503	Sulphur of all kinds	320.4044	6.9533
2813	Sulphides of non-metals	292.7791	6.6353
2833	Sulphates; alums; peroxosulphates	10.4351	5.3781
2708	Pitch and pitch coke	47.9015	5.1438
909	Seeds of anise, badian, fennel	1533.9236	5.0929

Source: author's calculation

From Table-26 it's identified that bilateral RCA between India and Brazil are >1 as well as India's RCA>1 and Brazil RCDA value >1. Researcher identified different products like rice, natural barium sulphate (barites), Skins and other parts of birds, Pickling preparations for metal, Petroleum coke, petroleum bitumen etc Brazil's has higher import advantage and India's bilateral RCA and higher competitive advantage leads to export.

Table-26: India's RCA>1 and Bilateral RCA>1 and Brazil's RCDA>1

Product Code	Product Name	RCA India	BLRCA India & Brazil	RCDA Brazil
2802	Petroleum coke	4.778604	323.837	20.1146
6903	Bricks, blocks, tiles	1.557454	1.4972	13.1694
2832	Fluorides; fluorosilicates	1.433024	6.9693	7.8489
1006	Rice.	12.89465	27.4567	7.5326
2826	Manganese oxides.	2.083253	18.13	7.0329
7206	Iron and non-alloy steel	3.269886	86.0292	6.9533
2514	Natural barium sulphate (barytes)	18.29116	8.3922	5.395
2503	Other manufactured tobacco	2.463176	320.4044	5.3781
7105	Precious stones	2.082541	88.4132	5.1522
2838	Sulphites; thiosulphates.	1.14625	295.9821	5.1438
6703	Skins and other parts of birds	51.60038	1036.783	5.0929
5513	Yarn (other than sewing thread)	1.670313	3.3251	4.9279
2708	Lignite, whether or not agglomerate	1.480139	47.9015	4.8678
3205	Mineral or chemical fertilizers	4.092417	41.9989	4.6051
4013	Other forms	5.29213	3.6002	4.4941
9701	Vacuum flasks and other vacuum	3.705582	46.6101	4.4641
3817	Pickling preparations for metal	10.16003	17.5254	4.3432
7903	Other articles of lead.	1.795731	8594.5296	4.0958

Source: author's calculation

Dynamic Method

In dynamic method, we mainly concentrated on shift-share method. Absolute and relative changes in export growth over time are important parameters to analyse the growth of regional markets. Unfortunately, each individual measurement does not accurately reflect the growth of a region, science each method is subject to certain limitations and biases. No completely satisfactory method has been devised for combining actual and absolute changes. However, a method has been devised that makes it possible to measure the relative size of the gains or losses of market area compared to regional growth norms. Use of shift method requires the explicit specification of a) the time period for which growths are compared b) the geographic unit of analysis and c) the variable that is to be used for measuring growth.

In first phase researcher considered two countries i.e., India and South Africa. List 7 pointed out those products where India's export shift shares to rest of world is grater than zero among different time periods and South Africa import shift share to rest of world >0. List 8 shows us those products where India's export shift share to South Africa is grater than zero and South Africa import shift share from rest of world >0 over 2015 to 2020. List 9 depicted those products where India's export shift share to South Africa is grater than zero & India's export shift share to rest of world is grater than zero and South Africa's import shift share to rest of world >0.

Table-27: India vs South Africa

Parameters	South Africa Import Shift Share from Rest of World>0
India Export shift share to rest of world>0	List 7
India Export shift share to south Africa>0	List 8
India Export shift share to rest of world>0 and India export shift share to south Africa >0	List 9

Source: Author's calculation

Researcher identified that India's export shift shares to rest of world are >0 and South Africa's import shift share from rest of world are >0. Here only a single product like Petroleum oils are identified both India's export shift share and South Africa's import shift share are higher and, in this product, India has competitive advantage to export to south Africa as well as rest of world. List 8 identified India's Export shift share to South Africa>0 as well as South Africa's import Shift share from rest of world>0. Here different products like Petroleum oils and oils obtained, motor vehicles for the transport etc India's export potential are higher as well as South Africa's import shift share are also higher. List 9 indicates that India's export shift shares to rest of world>0 as well as India export shift share to South Africa >0 and South Africa's import Shift share from rest of world>0. Author identified different products like Petroleum oils and oils obtained, Motor vehicles for the transport etc India has a positive shift share values with South Africa and rest of world.

India vs Brazil

It is considered the other two countries India and Brazil for further analytical purposes. List 10 identified those products where India's export shift shares to rest of world is grater than zero over the year 2015 and 2020 and Brazil import shift share to rest of world >0. List 11 highlighted those products where India's export shift share to Brazil is grater than zero over the year 2015 and 2020 and Brazil import shift share from rest of world >0. List 12 identified those products where India's export shift share to Brazil is greater than zero and India's export shift share to rest of world is greater than zero and South Africa import shift share from rest of world >0. Table E: India vs Brazil.

Table-28: Import and Export Shift Share of India and Brazil

Parameters	Brazil Import Shift Share to Rest of World>0
India Export shift share to rest of world>0	List 10
India Export shift share Brazil>0	List 11
India Export shift share to rest of world>0 and India export shift share to Brazil >0	List 12

Source: Author's calculation

List 10 indicated that India's export shift shares to rest of world are >0 and Brazil's import shift share from rest of world are >0. Here only a single product namely Gaskets and similar joints of metal (HS code-8494) India has competitive advantage to export to Brazil as well as rest of world. List 11 indicates that India's Export shift share to Brazil>0 as well as Brazil's import Shift share from rest of world>0. Here different products like Worked vegetable or mineral carving, Gaskets and similar joints of metal etc India's export potential to Brazil are higher as well as Brazil's import shift share value is also higher. List 12 indicates that India's Export shift share to rest of world>0 as well as India's export shift share to Brazil >0 and Brazil's Import Shift share from rest of world>0. Here different products like Electrical insulators of any material, Gaskets and similar joints of metal, auxiliary plant for use with boiler etc. India has a positive shift share values to Brazil and rest of world.

Tariff Consideration

From above analysis researcher identified different products where India has competitive advantage to export as well as Brazil and South Africa have a competitive advantage in import.

Table-29: India Export Shift Share to Rest of World>0 and South Africa Import Shift Share from Rest of World>0

Product Code	Product Name	South Africa Average Tariff to World	South Africa Average Tariff to India
2710	Petroleum oils	1.67	5
7103	Precious stones	0	0
7114	Articles of goldsmiths'	10	10
6205	Men's or boys' shirts.	40	40
8704	Motor vehicles for the transport	11.95	9.95
2818	Artificial corundum	0	0
8702	Motor vehicles for the transport	25	24
7202	Ferro-alloys.	0.17	0
3918	Floor coverings of plastics	10.63	10.63
7012	Glass inners for vacuum flasks	0	0
6111	Babies' garments and clothing	40	40
5001	Silk-worm cocoons suitable for reel	0	0
6213	Handkerchiefs.	30	30
9203	Keyboard pipe organs	0	0

Source: TRANS database, World Bank

It is also identified that south Africa's average tariff to world and south Africa's average tariff to India are almost same level across different products where India Export shift share to rest of world>0 and South Africa Import Shift share from rest of world>0 except only few products like Motor vehicles for the transport, motor vehicles for the transport and Handkerchiefs, Men's and boy's shirt, Babies' garments and clothing accessories where south Africa's tariff to rest of world and India are in higher level (Ref. Table-29).

Table-30: India Export Shift Share to South Africa>0 and South Africa Import Shift Share from Rest of World>0

Product Code	Product Name	South Africa Average Tariff to World	South Africa Average Tariff to India
2710	Petroleum oils	1.67	5
8704	Motor vehicles for the transport	11.95	9.95
2101	Extracts, essences and concentrates	17.5	17.5
7311	Containers for compressed	7.5	7.5
3918	Floor coverings of plastics	10.63	10.63
7117	Imitation jewelry.	20	20
6111	Babies' garments and clothing	40	40
8215	Spoons, forks, ladles, skimmers	30	30
7202	Ferro-alloys	0.17	0
8004	Tin plates, sheets and strip	0	0

Source: TRANS database, World Bank

It is also analyzed south Africa's average tariff to world and south Africa's average tariff to India are almost in same across different products where India Export shift share to South Africa>0 and South Africa Import Shift share from rest of world>0. There are certain products where above comment are not perfectly holds like Motor vehicles for the transport, extracts, essences and concentrates, floor coverings of plastics, Imitation jewelry, garments and clothing access & Spoons, forks, ladles, skimmers etc. South Africa's average tariff to India and to world are in higher level (Ref. Table-30).

Table-31: India Export Shift Share to Rest of World>0 and Brazil Import Shift Share to Rest of World>0

Product Code	Product Name	Average Tariff of Brazil from Rest of World	Average Tariff of Brazil to India
8484	Gaskets and similar joints of metal	5.99	10
8546	Electrical insulators of any material	16	16
8405	Producer gas or water gas generator	0	0
8404	Auxiliary plant for use with boiler	14	5.92
8209	Plates, sticks, tips	10.33	8.32
5511	Yarn (other than sewing thread)	7.8	7.87

Source: TRANS database, World Bank

It is also analyzed Brazil's average tariff to world and Brazil's average tariff to India are different across different products where India Export shift share to rest of world>0 and Brazil Import Shift share from rest of world>0. There are certain products like Electrical insulators of any material, Plates, sticks, tips where Brazil's average tariff to India and rest of world are higher but in Auxiliary plant for use with boiler Brazil impose lower tariff from India and it is one of the promising item for Indian export. Moreover, in products like Gaskets and similar joints of metal Brazil impose higher tariff to India than that of rest of world.

Table-32: India Export Shift Share to Brazil>0 and Brazil Import Shift Share to Rest of World>0

Product Code	Product Name	Brazil Average Tariff to World	Brazil Average Tariff to India
9602	Worked vegetable or mineral carving	2.23	2
8484	Gaskets and similar joints of metal	5.99	10
8546	Electrical insulators	16	16
8405	Producer gas or water gas generator		
7207	Semi-finished products of iron	12.27	16
5503	Synthetic staple fibres, not carded	16	16
8404	Auxiliary plant for use with boiler	14	5.92
7312	Stranded wire, ropes, cables	14	14
9022	Apparatus based on the use of X-ray	5.07	6.53
8209	Plates, sticks, tips	10.33	8.32
2833	Sulphates; alums; peroxosulphates	8.22	8.22
501	Human hair, unworked, whether or not	18	6
7408	Copper wire.	8	18

Source: TRANS database, World Bank

Researcher observed that average tariff structure of Brazil we see that Brazil's average tariff to world and Brazil's average tariff to India are different across all products where India Export shift share to Brazil>0 and Brazil Import Shift share from rest of world>0 we see that there are certain products like Electrical insulators of any material, Semi-finished products of iron, Synthetic staple fibers, not carded, Stranded wire, ropes, cables, plait etc. where Brazil average tariff to India and rest of world are higher. But in some products like Gaskets and similar joints of metal, Apparatus based on the use of X-ray and Copper wire. Brazil imposed higher tariff to India than rest of world. Moreover, in certain items like Human hair, unworked, whether (HS code-501), Worked vegetable or mineral carving (HS code-9602), Plates, sticks, tips and the like (HS code-8209) etc Brazil charged higher tariff to world than that of India.

Identification of High performing Sector in IBSA trade

Regional trade agreement (RTA) and Bilateral trade agreement (BLTA) persists among all member countries of world and SEA. In our research, the objective of gravity model analysis is to evaluate comparative evaluation of export among IBSA member countries for the year 2018. Basic assumption for formation of Gravity equation is that the trade between two countries depends on their GDPs values and geographic distance between countries. Basic gravity model follows Newton's law of gravitation which incorporate in international trade i.e., import from country i to country j (I_{ij}) positively relate to GDP of exporting and importing country but inversely relate to geographic distance (D_{ij}) between two countries . So, our basic model I_{ij}= $G * ((Y_i * Y_j)/ D_{ij})$. Where G is constant term, Y_i is GDP of home country, Y_j is GDP of partner country and D_{ij} is distance between two countries. Taking logarithm term, we can rewrite the original equation in $\ln (I_{ij}) = \infty_{ij} + \beta_1 \ln (Y_i) + \beta_2 \ln (Y_j) + \beta_4 \ln (D_{ij})$. Where β's are coefficients of different independent variables. For generalized relationship in gravity model, coefficient values of β_1, β_2 are expected to be positive and β_3 is expected to be negative [42] and [33]. We can also incorporate other variables like population of home and partner country, per capital income of home and partner country etc. in our gravity model for analysis trade effects through formulation of either PTA or RTA. Our gravity model is based on the depending variable Export among IBSA countries and other variables like GDP home, GDP partner, distance, common language, common border, common colony, common culture etc. are consider as independent variables. The regression models' estimators are estimated using Ordinary Least Squares and Fixed effect methods.

Table-33: Estimation of Parameters using LSM and Fixed Effect

Variable	Estimates	std Error	t stat	pr>|t|	Tolerance	Var Inflation
INTERCEPT	-15.0542	0.4041	-37.25	<.0001		0
GDPH	0.8233	0.0112	73.42	<.0001	0.9742	1.0264
GDPP	0.5915	0.0094	62.85	<.0001	0.9776	1.0229
DIST	-1.0634	0.0313	-34.01	<.0001	0.9927	1.0073
CONTIG	0.0442	0.1808	0.24	0.807	0.0311	32.1911
COMLANG_OFF	-0.0052	0.1383	-0.04	0.9699	0.0464	21.5445
COMLANG_ETHNO	0.0878	0.1345	0.65	0.5142	0.0489	20.4516
COLONY	0.2848	0.3036	0.94	0.3481	0.0111	90.1417
COMCOL	0.1062	0.1021	1.04	0.2984	0.0909	11.0026
CURCOL	-0.3461	0.3431	-1.01	0.3131	0.0088	113.9129

Source: author's calculation

Formation of Equation

Based on values from above tables researcher try to form export equation in 2018 and the equation look like Export= {-15.0542+.8233(GDPH)

+.5915(GDPP)-1.0634(DIST)}. So, from the equation researcher observed that depended variable Export will depend on intercept value and value is -15.0542, home country GDP coefficient .8233, partner country GDP coefficient .5915 and coefficient value of distance between two country -1.0634 (Ref Table-33).

Based on gravity equation researcher find out predicted value of export and compare it with actual export value. Here we take ln value for actual export and intercept term, coefficient of home country GDP, coefficient of partner country GDP and distance among consecutive pair of countries for establishing truthiness of Gravity model.

Table-34: Comparison of Actual Export and Predicted Export from Gravity Model

Export From	Export To	Actual Export	Predicted Export
Brazil	India	8.14743	5.890184
Brazil	South Africa	8.61079	6.068019
India	Brazil	8.14863	5.985411
India	South Africa	8.52518	5.706721
South Africa	India	8.00724	5.434341
South Africa	Brazil	7.1662	5.808265

Source: author's calculation

Based on gravity model researcher performed comparative evaluation of predicated export values among IBSA countries and compare it with actual export values. So, from the above table researcher observed that among all member countries in IBSA regions actual export is greater than predicted export value in 2018. Suppose in 2018 actual trade between India and South Africa are 8.52518 but gravity model suggested that predicted export values among these countries are 5.706721. Similarly, among India and Brazil actual trade value in 2018 is 8.14863 but predicted value suggested 5.985411. So, from the above analysis our analytical model suggested that actual export is higher than predicted export. So, gravity model suggested more trade and more economic cooperation between IBSA countries are required for further cooperation and integration. If proper cooperation among different areas namely agriculture, defense, information science, technology transfer etc. are properly nurturer then there is a enough scope of enhancing trade and economic cooperation across different sector among IBSA countries are very much possible.

Conclusion

The research clearly indicates that there is enough scope of potentiality for an intra-IBSA trade and that it still remains underexplored. Researcher also identified different areas where governmental incentives and mutual understanding regarding available opportunities are very much required

for regional integration. The trade flow data revealed that the intra-IBSA trade volume is still belong to marginal level. To promote intra-IBSA trade and cooperation across different dimensions are very much essential for formation of multilateral negotiations. The diplomatic efforts in creating the trading blocs specifically and, the rapprochement with other Southern nations in general, demand a substantial complementation so that the countries can indeed cooperate on multilateral negotiations. An increase in export could, as this research tried to demonstrate, contribute to enhance total trade in such a direction leads to generate economic cooperation.

IBSA has emerged as effective sub regions which further focused on future cooperation among different sub-sectors namely global governance, allied health services, climate change, research and development & IPR, and tourism. A sustainable achievement has been made observed in-terms of its cooperation and further development but this sub region faces a fundamental challenge; how to maintain its relevance in the wake of the emergence of similar groupings such as BRICS. To overcome these challenges policymakers of different countries trying to form MERCOSUR-SACU-India Trilateral PTA and eventually formation of Free Trade Area (FTA) in Ministerial level for maintaining sustainable developments in future.

References

Akoojee, Salim & Mokubung Nkomo. (2011). Widening Equity and Retaining Efficiency: Considerations from the IBSA Southern Coalface. *International Journal of Educational Development*, 31(2), 118-125. https://www.sciencedirect.com/science/article/abs/pii/S0738059310001136

Arkhangelskaya, Alexandra A. (2010). India, Brazil and South Africa Dialogue Forum: A Bridge Between Three Continents. *Nordiska Afrikainstitutet Policy Notes*, 6-14. http://www.diva-portal.org/smash/get/diva2:371853/FULLTEXT01.pdf

Beena Pandey (2016). Sharing of Social Sectors Experiences in IBSA: Assessment of Initiatives and Way Forward. *Research and Information System for Developing Countries*, 1-48, https://www.ris.org.in/sites/default/files/Publication/DP201_Dr_Beena_%20Pandey.pdf

Brauw, Alan de, D.O. Gilligan, John Hoddinott & S. Roy (2015), The Impact of Bolsa Familia on Schooling. *World Development*, 7(4),5-34. https://www.researchgate.net/publication/274097497_The_Impact_of_Bolsa_Familia_on_Schooling/figures?lo=1.

C Jayanthi (2016). IBSA: Connectivity will ensure the way forward. *Financial Express*. https://www.bilaterals.org/?ibsa-connectivity-will-ensure-the

Chadha, R, Pohit, S, Sternd, R and Deardorff, A (1999).Phasing out the multi-fiber Arrangement: Implications for India. *GTAP paper series*,1-26. https://www.gtap.agecon.purdue.edu/resources/download/3505.pdf

Chadha, R., Brown, D., Deardorff, A.V., & Stern, R.M. (2000). Computational Analysis of the Impact on India of the Uruguay Round and the Forthcoming WTO Trade Negotiations. 12(2), 2-37

Confederation for Indian Industry (CII) (2015). IBSA: Platform for Shared Growth. *Multilateral Newsletter*, 3 (2), 1-8. https://www.cii.in/InternationalRegions.aspx?enc=6Zpu9+0MgRzmLc1BDCqTC6Hnaop1iVSIOO5XnW3ESJ70EdhVpVHfcan+AKC6FqKCUuzBTxB5l4p7T8V46lwHOQ

Domingues, Carla Magda Allan S., Antonia Maria da Silva Teixeira & Sandra Maria Deotti Carvalho (2012). National Immunization Program: Vaccination, Compliance and Pharmacovigilance. *Revista do Instituto de Medicina Tropical de São Paulo*, 54(18), 1-6. https://www.scielo.br/j/rimtsp/a/HrWyz94f9Z9BVwBB3RrQfdS/?lang=en&format=pdf

Estevadeordal, A. & K. Suominen (2005). Rules of Origin: A Conceptual and Empirical Assessment in PTAs, Integration, Trade and Hemispheric Issues Division. *Integration and Regional Programs Department Inter-American Development Bank*, 1-66. https://www.wto.org/english/tratop_e/region_e/sem_nov03_e/estevadeordal_paper_e.pdf

E.S Reddy (2005). Cooperation between India and South Africa in the wider interest Indian ocean region. *Academia.edu*, 1-8. https://academic.oup.com/edited-volume/28082/chapter/212142017.

E.S. Reddy (2016). *Indian industry's inclusive footprint in South Africa Doing business doing good. Report of PWC and CII*, 4-18. https://www.cgijoburg.gov.in/pdf/CII-PWC%20White%20Paper%20-%20Indian%20Industrys%20Inclusive%20Footprint%20in%20SA.pdf, 4-18.

Finger, J. M. and Shunknecht, L (1999). Liberalization commitments in financial services trade. *Springer Link*, 8-12. https:// link.springer.com/article/10.1007/BF02659609

Helpman, Elhanan (1998). The Structure of Foreign Trade. *Journal of Economic Perspectives*, 13(2), 121-144. http://www.nber.org/papers/w6752.pdf.

IBSA. (2010). India Brazil South Africa dialog forum fourth summit of heads of state/ Government declaration. *4th Special issue the IBSA Forum*,1-10.://www.ibsa-httpstrilateral.org/images/Final%20Summit%20Declaration%20-%204th%20IBSA%20Summit%202010.pdf

K G Narendranath etal (2011). Brazil India relation: A reciprocal learning processes. *Sage Journal*, 3(1), 1-14. https://doi.org/10.1177/097152310801500109

Kerr, W. (2001). Greener Multilateral Pastures for Canada and Mexico: Dispute Settlement in the North American Free Trade Agreements. *Journal of US trade perspective*, 3(1), 1-28. https://ustr.gov/trade-agreements/free-trade-agreements/united-states-mexico-canada-agreement

Mario Osava (2018). Trinity for Development, Democracy and Sustainability. *Research and Information System for Developed Countries,* 1-21. https://www.ris.org.in/sites/default/files/Publication/IBSA%20Report%20Web.pdf

Muralidharan, K. Paul Niehaus & Sandip Sukhtankar. (2014). Building State Capacity: Evidence from Biometric Smartcard in India. *NBER Working Paper No. 19999*, 7-46. https://www.nber.org/system/files/working_papers/w19999/w19999.pdf

M Rodrigues & Bowersox (2017). Estimation of global and national logistic expenditure. *Journal of Business Logistic*, 23(2), 1-10. DOI:10.1002/j.2158-1592.2005.tb00202.x

Nagesh Kumar (2003). Challenges in India's Latin America Trade in WTO Regime, *UNTACD discussion paper*, 6-34. https://unctad.org/system/files/official-document/iteiia20034_en.pdf

Narayanan, K.S. (2013). Direct Benefit Transfer: Timely and Quick Transfer to Beneficiaries. *PIB*, 8(3), 3-16. https://pib.gov.in/newsite/erelcontent.aspx?relid=92113

Paulo Jorge (2017). Deepening Cooperation in IBSA: Perspectives from Key Sectors. *RIS*, 1-49. https://www.ris.org.in/sites/default/files/Publication/FINAL-IBSA%20Report-web-min_0.pdf

PIB (2013), What can IBSA offer to the Global Community, Ministry of Women and Child Development. *Poverty mitigation*, 2(1), 8-54. pib.nic.in/.

Ray, Nivedita. (2014). India-South Africa Multilateral Engagement: Contextualizing IBSA and BRICS. *ICWA Policy Brief*, 1-5. https://www.icwa.in/showfile.php?lang=1&level=3&ls_id=526&lid=492

Robert C. Feenstra (2000). World Trade Flows, 1980-1997, with Production and Tariff among Brazil and Africa. *WTO working paper*, 9-123. https://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report07_e.pdf

Shei, Amie, Federico Costa, G Mitermayer Reis and Albert I. (2014), The Impact of Brazil's Bolsa Familia Conditional Cash Transfer Program on Children's Health Care and Utilization and Health Outcomes. *BMC International Health and Human Rights*, 1-5. https://bmcinthealthhumrights.biomedcentral.com/articles/10.1186/1472-698X-14-10

T N Srinivasan (2006). Implications in Indo-Mercosur Regional Trade Agreement, *ADB discussion paper*, 1-23. https://aric.adb.org/pdf/ten_years_after/ADBI-Biswa-India-China%20FTA-dp59.free.trade.agreement.pdf

UNDP (2014). *Human Development Report*. Various Issues. New York:

Oxford University Press, 78-145, https://sdgs.un.org/sites/default/files/publications/1789hdr14-report-en-1.pdf

UNICEF. (2010). *South Africa's Child Support Grant*. Social Development Department, Republic of South Africa. UNICEF, DSD and SASSA Report, 15-112. https://www.unicef.org/southafrica/media/1116/file/ZAF-South-Africanchild-support-grant-impact-assessment-2012.pdf

Depart of Indian Export Organization: https://www.fieo.org/view_section.php?lang=0&id=0,30,155

International Trade and Economic Development: www.cuts-citee.org/PDF/IBSA-1-India-Mercosur.pdf

Bilateral Trade: http://www.bilaterals.org/rubrique.php3?id_rubrique=148

Appendices

Table-A1

Product Name	Product Code	RCA India	RCDA South Africa
Petroleum coke	2802	4.78	23.88
Bricks, blocks, tiles	6903	1.56	9.27
Sulphides of non-metals	2818	2.97	7.97
Fluorides; fluorosilicates	2832	1.43	5.88
Rice	1006	12.89	5.43
Manganese oxides	2826	2.08	5.25
Iron and non-alloy steel in	7206	3.27	4.27
Natural barium sulphate (barytes)	2514	18.29	4.18
Other manufactured tobacco	2503	2.46	4.15
Precious stones	7105	2.08	4.11
Sulphites; thiosulphates	2838	1.15	3.84
Skins and other parts of birds	6703	51.60	3.82
Yarn (other than sewing thread)	5513	1.67	3.60
Lignite, whether or not agglomerate	2708	1.48	3.54
Other moving, grading, levelling	8435	1.39	3.40
Balloons and dirigibles; gliders	8902	109.96	3.29
Mineral or chemical fertilizers	3205	4.09	3.28
Other forms (for example, rods)	4013	5.29	3.14
Motorcycles (including mopeds)	8801	24.11	3.14
Vacuum flasks and other vacuum	9701	3.71	3.12
Pickling preparations for metal	3817	10.16	3.06
Containers	7311	1.48	2.92
Other articles of lead	7903	1.80	2.91
Electrical signaling	8535	1.13	2.90
Ginger, saffron, turmeric (curcuma)	909	17.49	2.56
Reclaimed rubber	4010	1.15	2.53
Unwrought aluminum	7603	1.05	2.50
Machines and mechanical	8484	1.70	2.49
Residues of starch manufacture	2304	7.40	2.45
Narrow woven fabrics	5809	2.62	2.44
Carboxylic acids with additional	2925	4.87	2.44
Articles of asbestos-cement	6813	3.04	2.44
Stranded wire, ropes, cables, plait	7312	1.21	2.41
Agricultural, horticultural or fore	8437	1.12	2.40
Wire of stainless steel	7223	9.49	2.37

Product Name	Product Code	RCA India	RCDA South Africa
Rosin and resin acids	3813	1.13	2.37
Sign-plates, name-plates	8405	1.15	2.34
Parts and accessories	8804	43.73	2.32
Pasta, whether or not cooked	1903	3.23	2.29
Photographic plates and film	3801	1.08	2.26
Soya beans	1202	15.73	2.24
Pearls, natural or cultured	7103	10.74	2.22
Wine lees	2401	3.37	2.19
Pitch and pitch coke	2712	1.34	2.19
Vulcanized rubber thread and cord.	4014	3.15	2.18
Refractory cements, mortars	3823	2.07	2.17
Paintings, drawings and pastels	9703	1.61	2.16
Ferrous products obtained by direct	7203	1.02	2.10
Sulphates; alums; peroxosulphates	2839	1.14	2.09
Ambergris, castoreum, civet	510	1.81	2.06
Turntables (record-decks), record-p	8524	1.16	2.06
Unsaturated acyclic	2923	1.58	2.05
Roundabouts, swings	9602	4.44	2.03
Vegetable products	1404	8.72	1.98
Artificial graphite	3808	3.32	1.92
Manioc, arrowroot	713	4.15	1.92
Compounded rubber	4012	1.21	1.87
Fabricated asbestos fibers	6814	3.26	1.85
Household or laundry-type	8455	1.79	1.84
Lac; natural gums, resins	1301	11.34	1.83
Fruit, dried	812	3.45	1.80
Hand-operated mechanical	8215	1.81	1.78
Railway or tramway passenger	8702	2.42	1.77
Petroleum oils and oils obtained	2713	1.43	1.76
Other woven fabrics of cotton.	5305	23.87	1.74
Seeds of anise, badian, fennel	908	8.64	1.72
Artificial filament yarn	5407	2.94	1.69
Maté	902	11.86	1.67
Photographic film in rolls	3802	1.42	1.63
Other articles of glass.	7102	13.28	1.62
Parts of railway or tramway	8704	1.07	1.62
Men's or boys' overcoats, car-coats	6103	1.72	1.60
Articles of cement, of concrete or	6812	4.64	1.58
Coconut, abaca	5310	53.02	1.57
Zinc oxide; zinc peroxide.	2823	2.99	1.56
Diodes, transistors and similar	8546	3.27	1.56
Railway or tramway track	8705	1.75	1.56
Dextrins and other modified	3605	11.36	1.55
Hand-operated spanners	8209	1.05	1.53
Nails, tacks, drawing pins, staples	7417	7.04	1.50
Petroleum resins	3918	1.14	1.48
Beryllium, chromium	8204	4.91	1.44
Cermets and articles	8205	1.49	1.44
Other machine-tools	8468	1.31	1.44

Product Name	Product Code	RCA India	RCDA South Africa
Twine, cordage, ropes and cables	5701	17.73	1.41
Vanilla.	904	16.97	1.41
Sewing needles, knitting needles	7319	2.53	1.40
Woven fabrics	5503	2.67	1.38
Table, kitchen	7323	6.26	1.37
Pharmaceutical goods	3202	3.62	1.37
Spoons, forks, ladles, skimmers, ca	8305	1.60	1.37
True hemp	5307	63.72	1.35
T-shirts, singlets and other vests,	6111	4.98	1.34
Plans and drawings	5001	14.73	1.33
Men's or boys' suits, ensembles	6105	7.07	1.33
Mineral or chemical fertilisers	3204	6.38	1.33
Track suits, ski suits and swimwear	6213	1.86	1.32
Chlorides, chloride oxides	2833	1.27	1.32
Other nuts, fresh or dried, whether	801	25.70	1.31
Manganese and articles thereof	8203	2.90	1.29
Mechano-therapy appliances	9022	1.17	1.29
Electronic integrated circuits	8547	1.65	1.29
Articles of jewellery and parts	7114	17.93	1.27
Carboys, bottles, flasks, jars	7012	16.83	1.27
Printing machinery	8448	1.09	1.26
Copper powders and flakes.	7408	3.14	1.25
Wheat and meslin	910	9.69	1.24
Buttons, press-fasteners, snap-fast	9608	1.89	1.24
Waste, parings and scrap of rubber	4011	1.16	1.24
Parts of footwear (including uppers	6502	3.65	1.24
Plates, sticks, tips and the like f	8214	1.65	1.18
Hydrazine and hydroxylamine and the	2831	4.59	1.18
Titanium and articles thereof, incl	8201	2.49	1.17
Tar distilled from coal, from ligni	2710	3.63	1.16
Soap; organic surface-active product	3501	2.02	1.16
Knotted netting of twine, cordage o	5702	15.59	1.16
Stranded wire, cables, plaited band	7415	1.17	1.16
Other fixed vegetable fats and oils	1516	1.02	1.15
Cotton, carded or combed.	5208	4.18	1.14
Oil-cake and other solid residues,	2306	9.50	1.13
Tube or pipe fittings (for example,	7307	2.12	1.12
Cobalt oxides and hydroxides;	2828	3.58	1.10
Ferro-alloys	7202	1.82	1.10
Aluminum reservoirs, tanks, vats a	7613	1.04	1.09
Hygienic or pharmaceutical articles	4104	1.52	1.08
Clock or watch glasses and similar	7017	1.22	1.08
Watch straps, watch bands	9203	1.46	1.07
Heterocyclic compounds	2939	1.95	1.07
Pile fabrics, including "long pile"	6003	3.47	1.06
Stoppers, caps and lids (including	8404	1.96	1.05
Articles of natural or cultured pea	7117	2.75	1.05

Product Name	Product Code	RCA India	RCDA South Africa
Women's or girls' blouses, shirts	6208	6.04	1.04
Woven fabrics of flax	5402	2.13	1.03
Labels, badges and similar articles	5810	3.32	1.03
Waste (including noils, yarn waste	5509	7.06	1.02
Men's or boys' suits, ensembles	6205	7.04	1.02
Fruit juices (including grape must)	2101	3.01	1.02
Cereal flours other than of wheat	1102	2.33	1.01
Machinery for the manufacture	8454	1.04	1.00
Halogenated, sulphonated, nitrated	2915	1.31	1.00
Woven fabrics of synthetic staple	5515	6.93	1.00
Bed linen, table linen, toilet line	6304	28.85	1.00

Table-A2

Product Code	Product Name	BLRCA India & South Africa 2006	RCDA South Africa
6903	Glass in balls	1.7216	9.2718
2818	Chromium oxides and hydroxides	94.1759	7.9743
1006	Maize (corn)	57.3234	5.4272
2826	Chlorides, chloride oxides	1.9541	5.2457
7206	Bars and rods, hot-rolled	14.6002	4.2683
2813	Ammonia, anhydrous	3.2423	4.2464
2514	Pumice stone; emery; natural	115.9997	4.1778
2838	Silicates; commercial alkali metal	18.8155	3.8394
6703	Fabricated asbestos fibers; mixture	2045.0500	3.8210
5513	Carpets and other textile floor	40.6429	3.5984
8435	Machinery for preparing, tanning	1.4622	3.3986
3205	Prepared pigments, prepared	45.5476	3.2758
4013	Articles of apparel and clothing	19.6577	3.1450
3817	Hydraulic brake fluids	2688.8607	3.0647
7311	Other articles of iron or steel	3.5652	2.9168
8535	Railway or tramway goods vans	2.1707	2.8974
909	Cloves (whole fruit, cloves	458.2466	2.5557
4010	Retreaded or used pneumatic	1.0622	2.5348
8484	Microphones and stands therefor	1.6099	2.4909
2304	Oil-cake and other solid residues,	413.9697	2.4502
5809	Pile fabrics, including "long pile"	10.4673	2.4443
2925	Diazo-, azo- or azoxy-compounds.	48.7842	2.4431
6813	Tableware, kitchenware, other house	1.2195	2.4425
7223	Reservoirs, tanks, vats and similar	140.4340	2.3680
3813	Reaction initiators, reaction accel	1.7820	2.3662
8405	Weighing machinery	7.9160	2.3389
1903	Tapioca and substitutes	25.8088	2.2933
1202	Soya beans, whether or not broken.	6.7594	2.2439
7103	Imitation jewelry	3.3012	2.2246

Product Code	Product Name	BLRCA India & South Africa 2006	RCDA South Africa
2401	Preparations of a kind	3.4649	2.1937
4014	Other articles of vulcanized rubber	25.8595	2.1754
7203	Stainless steel in ingots or other	11.7300	2.0982
2839	Borates; peroxyborates (perborates)	1.2521	2.0924
510	Ivory, tortoise-shell	9.5116	2.0571
8524	Electronic integrated circuits and	11.0564	2.0554
2923	Carboxyimide-function compounds	8.8190	2.0450
9602	Vacuum flasks	180.4873	2.0328
1404	Fats of bovine animals	65.0060	1.9788
3808	Pickling preparations	2.0323	1.9243
713	Vegetables provisionally preserved	36.8196	1.9219
4012	Hygienic or pharmaceutical articles	1.0643	1.8734
6814	Ceramic tableware, kitchenware	312.7792	1.8496
8455	Parts and accessories	2.7918	1.8384
1301	Vegetable saps and extracts; pectic	13.5883	1.8271
812	Other fruit, fresh	29.2084	1.7962
8215	Spark-ignition reciprocating	9.6611	1.7816
8702	Parachutes	5.8231	1.7660
2713	Bitumen and asphalt	3.7446	1.7557
5305	Man-made filament yarn	1285.4319	1.7357
908	Cinnamon and cinnamon-tree flowers	108.6224	1.7244
5407	Woven fabrics of synthetic staple f	16.6218	1.6856
902	Peel of citrus fruit or melons	17.7932	1.6668
3802	Residual lyes from the manufacture	1.6623	1.6304
7102	Articles of natural	1.8071	1.6199
6103	Gloves, mittens and mitts	9.9659	1.6003
5310	Synthetic staple fibers	715.2340	1.5662
8546	Parts and accessories of the motor	8.6166	1.5628
3605	Photographic plates and film in the	2.2851	1.5532
8209	Wire, rods, tubes, plates, electrode	2.0204	1.5276
7417	Aluminium wire	40.1162	1.4974
3918	Other plates, sheets, film, foil an	10.3732	1.4789
8204	Bells, gongs and the like, non-elec	10.9939	1.4413
8205	Flexible tubing of base metal, with	3.9448	1.4372
8468	Electric motors and generators (exc	1.0714	1.4353
5701	Woven fabrics of metal thread and w	167.0131	1.4081
904	Tea, whether or not flavoured	15.6435	1.4056
7319	Copper wire	11.9652	1.3959
5503	Woven fabrics of artificial staple	16.7005	1.3816
7323	Copper tube or pipe fittings	18.1256	1.3741
8305	Other engines and motors	8.8399	1.3691
5307	Woven fabrics of artificial filamen	7537.8401	1.3524
6111	Men's or boys' singlets and other v	62.3314	1.3415
6105	Men's or boys' overcoats, car-coats	26.2058	1.3305

Product Code	Product Name	BLRCA India & South Africa 2006	RCDA South Africa
3204	Other colouring matter; preparation	51.0753	1.3253
6213	Worn clothing and other worn article	62.7784	1.3247
801	Dried leguminous vegetables	776.5494	1.3132
8203	Fittings for loose-leaf binders	15.6481	1.2913
9022	Watch movements, complete	10.5815	1.2885
8547	Works trucks, self-propelled	4.2820	1.2854
7114	Flat-rolled products of iron	187.2389	1.2748
7012	Dust and powder of natural or synth	472.7011	1.2704
8448	Parts and accessories suitable	19.4534	1.2644
7408	Nickel powders and flakes	5.3405	1.2534
910	Nutmeg, mace and cardamoms	5.2080	1.2447
4011	Inner tubes, of rubber	1.2866	1.2423
6502	Setts, curbstones and flagstones	98.0109	1.2380
8214	Steam turbines	11.8388	1.1811
2831	Sulphites; thiosulphates	237.3723	1.1768
8201	Armoured or reinforced safes	5.5739	1.1701
2710	Petroleum gases	6.7220	1.1642
3501	Gelatin	61.0204	1.1588
5702	Embroidery in the piece	20.4034	1.1563
7415	Aluminium powders	4.7814	1.1550
1516	Animal or vegetable fats	3.5166	1.1457
5208	Yarn of other vegetable	168.2874	1.1381
2306	Oil-cake and other solid	401.7836	1.1305
7307	Radiators for central heating	5.0647	1.1194
2828	Chlorates and perchlorates	1.3158	1.0985
4104	Tanned or crust hides	1.2668	1.0817
7017	Base metals, silver or gold	5.5868	1.0775
9203	Other toys; reduced-size	2.2992	1.0691
2939	Antibiotics	8.0458	1.0691
6003	Jerseys, pullovers, cardigans, wais	102.2568	1.0611
8404	Dish washing machines;	29.0605	1.0534
7117	Other bars and rods of iron	9.3451	1.0453
6208	Other furnishing articles	41.0622	1.0401
5402	Synthetic staple fibers, carded	1.7320	1.0313
5810	Knitted or crocheted fabrics	811.5878	1.0282
5509	Gimped yarn, and strip	44.1808	1.0219
6205	Blankets and travelling rugs	60.1410	1.0210
2101	Extracts, essences and concentrates	22.3117	1.0158
1102	Wheat or meslin flour	1.3784	1.0077
8454	Other office machines	4.8610	1.0028
5515	Carpets	157.4337	1.0007
6304	Hat-forms, hat bodies	363.0237	1.0003

Table-A3

Product Code	Product Name	RCA India	BLRCA India & South Africa	RCDA South Africa
6903	Bricks, blocks, tiles and other cer	1.5575	1.7216	9.2718
2818	Sulphides of non-metals; commercial	2.9693	94.1759	7.9743
1006	Rice	12.8947	57.3234	5.4272
2826	Manganese oxides	2.0833	1.9541	5.2457
7206	Iron and non-alloy steel in ingots	3.2699	14.6002	4.2683
2514	Natural barium sulphate (barytes)	18.2912	115.9997	4.1778
2838	Sulphites; thiosulphates	1.1463	18.8155	3.8394
6703	Skins and other parts of birds with	51.6004	2045.0500	3.8210
5513	Yarn (other than sewing thread) of	1.6703	40.6429	3.5984
8435	Other moving, grading, levelling, s	1.3917	1.4622	3.3986
3205	Mineral or chemical fertilisers, ph	4.0924	45.5476	3.2758
4013	Other forms (for example, rods, tub	5.2921	19.6577	3.1450
9701	Vacuum flasks and other vacuum vess	3.7056	23.9719	3.1225
3817	Pickling preparations for metal sur	10.1600	2688.8607	3.0647
7311	Containers for compressed or liquef	1.4820	3.5652	2.9168
8535	Electrical signalling, safety or tr	1.1293	2.1707	2.8974
909	Ginger, saffron	17.4941	458.2466	2.5557
4010	Reclaimed rubber	1.1474	1.0622	2.5348
8484	Machines and mechanical appliances	1.6960	1.6099	2.4909
2304	Residues of starch manufacture	7.4020	413.9697	2.4502
5809	Narrow woven fabrics	2.6219	10.4673	2.4443
2925	Carboxylic acids	4.8669	48.7842	2.4431
6813	Articles of asbestos-cement	3.0403	1.2195	2.4425
7223	Wire of stainless steel	9.4882	140.4340	2.3680
3813	Rosin and resin acids	1.1264	1.7820	2.3662
8405	Sign-plates, name-plates	1.1502	7.9160	2.3389
1903	Pasta, whether or not cooked	3.2305	25.8088	2.2933
1202	Soya beans, whether	15.7255	6.7594	2.2439
7103	Pearls, natural	10.7372	3.3012	2.2246
2401	Wine lees; argol	3.3743	3.4649	2.1937
4014	Vulcanised rubber thread and cord.	3.1474	25.8595	2.1754
9703	Paintings, drawings and pastel	1.6128	2.5185	2.1595
7203	Ferrous products	1.0227	11.7300	2.0982
2839	Sulphates; alums; peroxosulphates	1.1370	1.2521	2.0924
510	Ambergris, castoreum, civet	1.8068	9.5116	2.0571
8524	Turntables (record-decks)	1.1610	11.0564	2.0554
2923	Unsaturated acyclic monocarboxylic	1.5774	8.8190	2.0450
9602	Roundabouts, swings, shooting	4.4413	180.4873	2.0328
1404	Vegetable products	8.7222	65.0060	1.9788
3808	Artificial graphite; colloidal	3.3193	2.0323	1.9243
713	Manioc, arrowroot	4.1540	36.8196	1.9219
4012	Compounded rubber, unvulcanised	1.2115	1.0643	1.8734

Product Code	Product Name	RCA India	BLRCA India & South Africa	RCDA South Africa
6814	Fabricated asbestos fibres; mixture	3.2556	312.7792	1.8496
8455	Household or laundry-type washing	1.7948	2.7918	1.8384
1301	Lac; natural gums, resins	11.3377	13.5883	1.8271
812	Fruit, dried	3.4520	29.2084	1.7962
8215	Hand-operated mechanical	1.8147	9.6611	1.7816
8702	Railway or tramway passenger	2.4154	5.8231	1.7660
2713	Petroleum oils and oils	1.4256	3.7446	1.7557
5305	Other woven fabrics of cotton.	23.8682	1285.4319	1.7357
908	Seeds of anise, badian, fennel, cor	8.6425	108.6224	1.7244
5407	Artificial filament yarn	2.9408	16.6218	1.6856
902	Maté	11.8592	17.7932	1.6668
3802	Photographic film in rolls	1.4154	1.6623	1.6304
7102	Other articles of glass	13.2840	1.8071	1.6199
6103	Men's or boys' overcoats, car-coats	1.7241	9.9659	1.6003
5310	Coconut, abaca	53.0194	715.2340	1.5662
8546	Diodes, transistors and similar	3.2750	8.6166	1.5628
3605	Dextrins and other modified	11.3604	2.2851	1.5532
8209	Hand-operated spanners and wrenches	1.0459	2.0204	1.5276
7417	Nails, tacks, drawing pins, staples	7.0436	40.1162	1.4974
3918	Petroleum resins, coumarone-indene	1.1371	10.3732	1.4789
8204	Beryllium, chromium, germanium	4.9110	10.9939	1.4413
8205	Cermets and articles thereof	1.4943	3.9448	1.4372
8468	Other machine-tools for working met	1.3112	1.0714	1.4353
5701	Twine, cordage, ropes and cables	17.7263	167.0131	1.4081
904	Vanilla	16.9736	15.6435	1.4056
7319	Sewing needles, knitting needles	2.5294	11.9652	1.3959
5503	Woven fabrics of synthetic filament	2.6726	16.7005	1.3816
7323	Table, kitchen or other household	6.2635	18.1256	1.3741
8305	Spoons, forks, ladles, skimmers,	1.6011	8.8399	1.3691
5307	True hemp (Cannabis sativa L.)	63.7236	7537.8401	1.3524
6111	T-shirts, singlets and other vests	4.9824	62.3314	1.3415
6105	Men's or boys' suits, ensembles	7.0711	26.2058	1.3305
3204	Mineral or chemical fertilisers	6.3771	51.0753	1.3253
6213	Track suits, ski suits and swimwear	1.8618	62.7784	1.3247
801	Other nuts, fresh or dried, whether	25.6979	776.5494	1.3132
8203	Manganese	2.8989	15.6481	1.2913
9022	Mechano-therapy appliances; massage	1.1657	10.5815	1.2885
8547	Electronic integrated circuits and	1.6477	4.2820	1.2854
7114	Articles of jewellery and parts the	17.9277	187.2389	1.2748
7012	Carboys, bottles, flasks, jars, pot	16.8299	472.7011	1.2704
8448	Printing machinery used for printing	1.0904	19.4534	1.2644
7408	Copper powders and flakes.	3.1384	5.3405	1.2534
910	Wheat and meslin	9.6881	5.2080	1.2447

Product Code	Product Name	RCA India	BLRCA India & South Africa	RCDA South Africa
9608	Buttons, press-fasteners, snap-fast	1.8940	10.1541	1.2445
4011	Waste, parings and scrap of rubber	1.1642	1.2866	1.2423
6502	Parts of footwear (including uppers	3.6475	98.0109	1.2380
8214	Plates, sticks, tips	1.6528	11.8388	1.1811
2831	Hydrazine and hydroxylamine	4.5912	237.3723	1.1768
8201	Titanium and articles thereof	2.4923	5.5739	1.1701
2710	Tar distilled from coal	3.6297	6.7220	1.1642
3501	Soap; organic surface-active	2.0249	61.0204	1.1588
5702	Knotted netting of twine	15.5925	20.4034	1.1563
7415	Stranded wire, cables, plaited band	1.1736	4.7814	1.1550
1516	Other fixed vegetable fats and oils	1.0232	3.5166	1.1457
5208	Cotton carded or combed	4.1830	168.2874	1.1381
2306	Oil-cake and other solid residues	9.4972	401.7836	1.1305
7307	Tube or pipe fittings	2.1187	5.0647	1.1194
2828	Cobalt oxides and hydroxydes	3.5766	1.3158	1.0985
4104	Hygienic or pharmaceutical articles	1.5231	1.2668	1.0817
7017	Clock or watch glasses and similar	1.2210	5.5868	1.0775
9203	Watch straps, watch bands and watch	1.4627	2.2992	1.0691
2939	Heterocyclic compounds with oxygen	1.9524	8.0458	1.0691
6003	Pile fabrics, including "long pile"	3.4676	102.2568	1.0611
8404	Stoppers, caps and lids	1.9637	29.0605	1.0534
7117	Articles of natural or cultured pea	2.7468	9.3451	1.0453
6208	Women's or girls' blouses, shirts	6.0401	41.0622	1.0401
5402	Woven fabrics.	2.1287	1.7320	1.0313
5810	Labels, badges and similar articles	3.3243	811.5878	1.0282
5509	Waste (including noils, yarn waste)	7.0643	44.1808	1.0219
6205	Men's or boys' suits, ensembles	7.0406	60.1410	1.0210
2101	Fruit juices (including grape must)	3.0130	22.3117	1.0158
1102	Cereal flours other than of wheat	2.3270	1.3784	1.0077
8454	Machinery for the manufacture	1.0435	4.8610	1.0028
5515	Woven fabrics of synthetic staple	6.9293	157.4337	1.0007
6304	Bed linen, table linen, toilet line	28.8498	363.0237	1.0003

Table-A4

Product Code	Product Name	RCA India	RCDA Brazil
2802	Petroleum coke	4.7786	20.1146
6903	Bricks, blocks, tiles	1.5575	13.1694
2818	Sulphides of non-metals	2.9693	9.2624
2832	Fluorides; fluorosilicates	1.4330	7.8489
1006	Rice	12.8947	7.5326
2826	Manganese oxides	2.0833	7.0329
7206	Iron and non-alloy steel	3.2699	6.9533
2514	Natural barium sulphate (barytes)	18.2912	5.3950

Product Code	Product Name	RCA India	RCDA Brazil
2503	Other manufactured tobacco	2.4632	5.3781
7105	Precious stones	2.0825	5.1522
2838	Sulphites; thiosulphates	1.1463	5.1438
6703	Skins and other parts of birds	51.6004	5.0929
5513	Yarn (other than sewing thread)	1.6703	4.9279
2708	Lignite, whether or not agglomerate	1.4801	4.8678
8435	Other moving, grading, levelling	1.3917	4.7694
8902	Balloons and dirigibles; gliders	109.9567	4.7081
3205	Mineral or chemical fertilizers	4.0924	4.6051
4013	Other forms (for example, rods	5.2921	4.4941
8801	Motorcycles (including mopeds)	24.1088	4.4666
9701	Vacuum flasks	3.7056	4.4641
3817	Pickling preparations	10.1600	4.3432
7311	Containers for compressed	1.4820	4.2038
7903	Other articles of lead	1.7957	4.0958
8535	Electrical signalling, safety	1.1293	3.9692
909	Ginger, saffron, turmeric (curcuma)	17.4941	3.9106
4010	Reclaimed rubber	1.1474	3.5148
7603	Unwrought aluminium	1.0467	3.3584
8484	Machines and mechanical appliances	1.6960	3.2490
2304	Residues of starch manufacture	7.4020	3.2284
5809	Narrow woven fabrics	2.6219	3.1228
2925	Carboxylic acids	4.8669	3.0661
6813	Articles of asbestos-cement	3.0403	3.0311
7312	Stranded wire, ropes, cables	1.2089	2.9475
8437	Agricultural, horticultural or fore	1.1186	2.9063
7223	Wire of stainless steel	9.4882	2.8638
3813	Rosin and resin acids	1.1264	2.8091
8405	Sign-plates, name-plates	1.1502	2.8042
8804	Parts and accessories of vehicles	43.7281	2.7224
1903	Pasta, whether or not cooked	3.2305	2.6469
3801	Photographic plates	1.0766	2.6278
1202	Soya beans, whether or not broken	15.7255	2.4913
7103	Pearls, natural or cultured	10.7372	2.4613
2401	Wine lees; argol	3.3743	2.3858
2712	Pitch and pitch coke	1.3350	2.3838
4014	Vulcanised rubber thread and cord.	3.1474	2.3195
3823	Refractory cements	2.0716	2.3148
9703	Paintings, drawings and pastels	1.6128	2.3022
7203	Ferrous products	1.0227	2.2282
2839	Sulphates; alums	1.1370	2.2148
510	Ambergris, castoreum	1.8068	2.2054
8524	Turntables (record-decks)	1.1610	2.1285
2923	Unsaturated acyclic monocarboxylic	1.5774	2.0779
9602	Roundabouts, swings	4.4413	2.0750
1404	Vegetable products	8.7222	2.0712
3808	Artificial graphite	3.3193	2.0667

Product Code	Product Name	RCA India	RCDA Brazil
713	Manioc, arrowroot, salep	4.1540	2.0491
4012	Compounded rubber, unvulcanised	1.2115	2.0445
6814	Fabricated asbestos fibres	3.2556	2.0428
8455	Household or laundry-type washing	1.7948	2.0379
1301	Lac; natural gums	11.3377	2.0040
812	Fruit, dried	3.4520	1.9974
8215	Hand-operated mechanical appliances	1.8147	1.9901
8702	Railway or tramway passenger coaches	2.4154	1.9303
2713	Petroleum oils	1.4256	1.9301
5305	Other woven fabrics of cotton.	23.8682	1.9250
908	Seeds of anise, badian, fennel	8.6425	1.9143
5407	Artificial filament yarn	2.9408	1.7941
902	Maté.	11.8592	1.7409
3802	Photographic film in rolls	1.4154	1.7316
7102	Other articles of glass.	13.2840	1.7021
8704	Parts of railway or tramway locomotive	1.0704	1.6631
6103	Men's or boys' overcoats, car-coats	1.7241	1.6460
6812	Articles of cement, of concrete	4.6443	1.6246
5310	Coconut, abaca (Manila hemp	53.0194	1.6214
2823	Zinc oxide; zinc peroxide	2.9949	1.6210
8546	Diodes, transistors	3.2750	1.6098
8705	Railway or tramway track fixtures	1.7527	1.6084
8209	Hand-operated spanners and wrenches	1.0459	1.5957
7417	Nails, tacks, drawing pins, staples	7.0436	1.5739
3918	Petroleum resins, coumarone-indene	1.1371	1.5671
8204	Beryllium, chromium, germanium	4.9110	1.5589
8205	Cermets and articles thereof	1.4943	1.5482
8468	Other machine-tools	1.3112	1.5268
5701	Twine, cordage, ropes and cables	17.7263	1.4992
904	Vanilla	16.9736	1.4115
7319	Sewing needles, knitting needles	2.5294	1.4096
5503	Woven fabrics of synthetic filament	2.6726	1.3903
7323	Table, kitchen	6.2635	1.3876
3202	Pharmaceutical goods	3.6250	1.3772
8305	Spoons, forks, ladles	1.6011	1.3752
5307	True hemp	63.7236	1.3679
6111	T-shirts, singlets and other vests	4.9824	1.3502
5001	Plans and drawings	14.7312	1.3437
6105	Men's or boys' suits, ensembles	7.0711	1.3415
3204	Mineral or chemical fertilisers	6.3771	1.3253
6213	Track suits, ski suits and swimwear	1.8618	1.2975
2833	Chlorides, chloride oxides	1.2730	1.2729
801	Other nuts, fresh or dried	25.6979	1.2502
8203	Manganese and articles thereof	2.8989	1.2318
9022	Mechano-therapy appliances; massage	1.1657	1.2143

Product Code	Product Name	RCA India	RCDA Brazil
8547	Electronic integrated circuits	1.6477	1.1934
7114	Articles of jewellery and parts	17.9277	1.1819
7012	Carboys, bottles, flasks, jars, pots	16.8299	1.1790
8448	Printing machinery used for printing	1.0904	1.1747
7408	Copper powders and flakes	3.1384	1.1688
910	Wheat and meslin	9.6881	1.1664
9608	Buttons, press-fasteners, snap-fast	1.8940	1.1649
4011	Waste, parings and scrap of rubber	1.1642	1.1480
6502	Parts of footwear (including uppers	3.6475	1.1401
8214	Plates, sticks, tips	1.6528	1.1255
2831	Hydrazine and hydroxylamine and the	4.5912	1.0779
8201	Titanium and articles	2.4923	1.0745
2710	Tar distilled from coal	3.6297	1.0666
3501	Soap; organic surface-active product	2.0249	1.0636
5702	Knotted netting of twine, cordage o	15.5925	1.0620
7415	Stranded wire, cables, plaited band	1.1736	1.0517
1516	Other fixed vegetable fats and oils	1.0232	1.0437
5208	Cotton, carded or combed	4.1830	1.0415
2306	Oil-cake and other solid residues	9.4972	1.0394
7307	Tube or pipe fittings	2.1187	1.0291
2828	Cobalt oxides and hydroxides	3.5766	1.0147

Table-A5

Product	Product Name	BLRCA India & Brazil	RCDA Brazil
7012	Glass inners	93.8421	20.1146
5510	Yarn	21.6577	9.2624
2928	Organic derivatives of hydrazine	201.2013	7.8489
2920	Esters of other inorganic acids	24.9559	7.5326
2831	Dithionites and sulphoxylates	857.1715	7.0329
2503	Sulphur of all kinds	320.4044	6.9533
2813	Sulphides of non-metals	292.7791	6.6353
2833	Sulphates; alums	10.4351	5.3781
2708	Pitch and pitch coke	47.9015	5.1438
909	Seeds of anise, badian, fennel	1533.9236	5.0929
2925	Carboxyimide-function compounds	25.0508	4.9279
2913	Halogenated, sulphonated, nitrated	167.7009	4.8678
3202	Synthetic organic tanning substance	4.4117	4.7694
703	Onions, shallots, garlic	229.3284	4.7081
7011	Glass envelopes	7.4084	4.6051
5509	Yarn (other than sewing thread)	10.6935	4.4941
3808	Insecticides, rodenticides	2.7738	4.4666
2906	Cyclic alcohols	17.2156	4.4641
2832	Sulphites; thiosulphates	6.9693	4.3432
1008	Buckwheat, millet and canary seed	2395.9557	4.2038
2826	Fluorides; fluorosilicates	18.1300	4.0958
5402	Synthetic filament yarn	7.8179	3.9692
4007	Vulcanised rubber thread and cord.	115.6007	3.9106
3205	Colour lakes; preparations	41.9989	3.5148
5511	Yarn (other than sewing thread)	1.5118	3.3584

Product	Product Name	BLRCA India & Brazil	RCDA Brazil
4106	Tanned or crust hides and skins	41.1497	3.2490
2803	Carbon	3.6020	3.2284
7403	Refined copper and copper alloys	5.0756	3.1228
2608	Zinc ores and concentrates	95.3283	3.0661
8101	Tungsten (wolfram) and articles	14.0750	3.0311
2935	Sulphonamides	202.0966	2.9475
3301	Essential oils (terpeneless or not)	1.7981	2.9063
2912	Aldehydes	15.6412	2.8638
9602	Worked vegetable	26.5780	2.8091
2939	Vegetable alkaloids	3.9076	2.8042
3823	Industrial monocarboxylic fatty acid	4.3456	2.7224
1006	Rice	27.4567	2.6469
2915	Saturated acyclic monocarboxylic acid	1.4317	2.6278
4013	Inner tubes, of rubber	3.6002	2.4613
2941	Antibiotics	20.3729	2.3858
2713	Petroleum coke, petroleum bitumen a	3.8023	2.3838
5504	Artificial staple fibers	2.5332	2.3195
2904	Sulphonated, nitrated	4.1309	2.3148
4105	Tanned or crust skins	3.2904	2.3022
2927	Diazo-, azo- or azoxy-compounds	33.9131	2.2282
6814	Worked mica and articles	1.3609	2.2148
3204	Synthetic organic colouring matter	10.5011	2.2054
8545	Carbon electrodes, carbon brushes	4.1995	2.0779
1301	Lac; natural gums, resins	6.6005	2.0750
8209	Plates, sticks, tips	2.4914	2.0712
3802	Activated carbon; activated natural	4.2585	2.0667
1302	Vegetable saps and extracts	9.0743	2.0491
8404	Auxiliary plant for use with boiler	8.8348	2.0445
4010	Conveyor or transmission belts	1.5127	2.0428
2823	Titanium oxides.	340.4164	2.0379
2921	Amine-function compounds.	5.6295	2.0040
6812	Fabricated asbestos fibres; mixture	3.0477	1.9974
5407	Woven fabrics of synthetic filament	13.8560	1.9303
2903	Halogenated derivatives of hydrocar	1.6541	1.9301
7408	Copper wire	1.9803	1.9250
501	Human hair, unworked	6.3372	1.9143
5810	Embroidery in the piece, in strips	1873.1440	1.7941
3801	Artificial graphite	1.1391	1.7409
6903	Other refractory ceramic goods (for	1.4972	1.7316
8448	Auxiliary machinery	5.7638	1.7021
8454	Converters, ladles	4.9265	1.6631
8547	Insulating fittings for electrical	3.7134	1.6460
7415	Nails, tacks, drawing pins	10.1698	1.6214
5605	Metallised yarn	32.3753	1.6210
2827	Chlorides, chloride oxides	2.6346	1.6098
2838	Fulminates, cyanates	295.9821	1.6084
8484	Gaskets and similar joints of metal	3.5437	1.5997
2817	Zinc oxide; zinc peroxide	4.2213	1.5739
712	Dried vegetables, whole, cut, slice	34.5608	1.5671
9104	Instrument panel clocks and clocks	4.1393	1.5589
4014	Hygienic or pharmaceutical articles	17.3137	1.5482
7614	Stranded wire, cables, plaited band	5.6515	1.5268

Product	Product Name	BLRCA India & Brazil	RCDA Brazil
4003	Reclaimed rubber in primary forms	24.0270	1.4115
5503	Synthetic staple fibres, not carded	13.0212	1.4096
8535	Electrical apparatus for switching	3.5601	1.3903
2508	Other clays	9.1902	1.3876
6502	Hat-shapes, plaited	13.8181	1.3752
7414	Cloth (including endless bands)	32.0290	1.3679
5305	Coconut, abaca	99.6956	1.3502
2710	Petroleum oils	5.3773	1.3437
5307	Yarn of jute	1573.6884	1.3415
1516	Animal or vegetable fats and oils	2.3895	1.3253
2828	Hypochlorites; commercial calcium	11.4367	1.2975
713	Dried leguminous vegetables	35.4296	1.2729
7105	Dust and powder	88.4132	1.2502
407	Birds' eggs, in shell, fresh	1.6411	1.2318
2902	Cyclic hydrocarbons.	3.4029	1.2143
5201	Cotton, not carded or combed.	4.1693	1.1934
9022	Apparatus based on the use of X-ray	23.6012	1.1819
7609	Aluminium tube or pipe fittings	3.8097	1.1790
7417	Cooking or heating apparatus	13.9125	1.1747
8405	Producer gas or water gas generator	8.4193	1.1688
8546	Electrical insulators	1.1150	1.1664
8504	Electrical transformers	2.3941	1.1480
8502	Electric generating sets and rotary	2.0062	1.1401
3812	Prepared rubber accelerators	6.2136	1.0745
7221	Bars and rods, hot-rolled	207.3596	1.0666
2525	Mica, including splitting	297.5386	1.0620
5809	Woven fabrics of metal thread	10.3873	1.0517
7016	Paving blocks, slabs, bricks	32.1261	1.0437
7307	Tube or pipe fittings	4.1156	1.0415
1404	Vegetable products	2.6512	1.0394
7312	Stranded wire, ropes, cables	1.0681	1.0147

Table-A6

Product Code	Product Name	RCA India	BLRCA India & Brazil	RCDA Brazil
2802	Petroleum coke	4.778604	323.8370	20.1146
6903	Bricks, blocks, tiles	1.557454	1.4972	13.1694
2832	Fluorides; fluorosilicates	1.433024	6.9693	7.8489
1006	Rice	12.89465	27.4567	7.5326
2826	Manganese oxides.	2.083253	18.1300	7.0329
7206	Iron and non-alloy steel	3.269886	86.0292	6.9533
2514	Natural barium sulphate	18.29116	8.3922	5.3950
2503	Other manufactured tobacco	2.463176	320.4044	5.3781
7105	Precious stones	2.082541	88.4132	5.1522
2838	Sulphites; thiosulphates.	1.14625	295.9821	5.1438
6703	Skins and other parts of birds	51.60038	1036.7830	5.0929
5513	Yarn	1.670313	3.3251	4.9279
2708	Lignite, whether or not agglomerate	1.480139	47.9015	4.8678
3205	Mineral or chemical fertilizers	4.092417	41.9989	4.6051
4013	Other forms (for example, rods	5.29213	3.6002	4.4941
9701	Vacuum flasks and other vacuum	3.705582	46.6101	4.4641
3817	Pickling preparations for metal	10.16003	17.5254	4.3432

Product Code	Product Name	RCA India	BLRCA India & Brazil	RCDA Brazil
7903	Other articles of lead.	1.795731	8594.5296	4.0958
8535	Electrical signaling, safety	1.129278	3.5601	3.9692
909	Ginger, saffron, turmeric (curcuma)	17.49411	1533.9236	3.9106
4010	Reclaimed rubber in primary forms	1.147431	1.5127	3.5148
8484	Machines and mechanical appliances	1.696004	3.5437	3.2490
5809	Narrow woven fabrics	2.621894	10.3873	3.1228
2925	Carboxylic acids	4.866872	25.0508	3.0661
7312	Stranded wire, ropes, cables	1.208878	1.0681	2.9475
7223	Wire of stainless steel	9.488234	44.9984	2.8638
3813	Rosin and resin acids	1.12637	30.2406	2.8091
8405	Sign-plates, name-plates	1.150223	8.4193	2.8042
1903	Pasta, whether or not cooked	3.230534	1.4544	2.6469
3801	Photographic plates and film	1.076608	1.1391	2.6278
1202	Soya beans, whether or not broken.	15.72546	7.1191	2.4913
7103	Pearls, natural or cultured	10.73724	2.5521	2.4613
2712	Pitch and pitch coke	1.335038	3.3868	2.3838
4014	Vulcanised rubber thread and cord.	3.147405	17.3137	2.3195
3823	Refractory cements, mortars	2.071566	4.3456	2.3148
9703	Paintings, drawings and pastels	1.612801	20.2850	2.3022
7203	Ferrous products	1.022682	11.2063	2.2282
2839	Sulphates; alums	1.136955	3.9676	2.2148
8524	Turntables (record-decks)	1.160993	16.4668	2.1285
9602	Roundabouts, swings	4.441339	26.5780	2.0750
1404	Vegetable products	8.722234	2.6512	2.0712
3808	Artificial graphite	3.319256	2.7738	2.0667
713	Manioc, arrowroot, salep	4.154006	35.4296	2.0491
6814	Fabricated asbestos fibers; mixture	3.255554	1.3609	2.0428
1301	Lac; natural gums	11.33772	6.6005	2.0040
812	Fruit, dried	3.452041	9.3092	1.9974
8215	Hand-operated mechanical appliances	1.814661	1.8023	1.9901
8702	Railway or tramway passenger	2.415378	1.0755	1.9303
2713	Petroleum oils and oils	1.425562	3.8023	1.9301
5305	Other woven fabrics of cotton.	23.86815	99.6956	1.9250
908	Seeds of anise, badian, fennel	8.642507	1.3793	1.9143
5407	Artificial filament yarn	2.940836	13.8560	1.7941
902	Materials	11.85916	74.5667	1.7409
3802	Photographic film in rolls	1.415411	4.2585	1.7316
7102	Other articles of glass	13.28399	2176.3662	1.7021
6103	Men's or boys' overcoats, car-coats	1.724126	27.9914	1.6460
6812	Articles of cement	4.644324	3.0477	1.6246
5310	Coconut, abaca	53.0194	4526.6562	1.6214
2823	Zinc oxide; zinc peroxide	2.994852	340.4164	1.6210
8546	Diodes, transistors	3.274998	1.1150	1.6098
3605	Dextrins	11.36041	5.6187	1.5997
8209	Hand-operated spanners	1.045852	2.4914	1.5957
7417	Nails, tacks, drawing pins	7.0436	13.9125	1.5739
3918	Petroleum resins	1.137088	25.0740	1.5671
8204	Beryllium, chromium, germanium	4.911013	15.3383	1.5589
8205	Cermets and articles thereof	1.494331	6.5111	1.5482
8468	Other machine-tools	1.31121	5.1261	1.5268
5701	Twine, cordage, ropes and cables	17.72629	130.9175	1.4992

Product Code	Product Name	RCA India	BLRCA India & Brazil	RCDA Brazil
904	Vanilla.	16.97358	2.8589	1.4115
7319	Sewing needles, knitting needles	2.529383	75.7173	1.4096
5503	Woven fabrics of synthetic filament	2.672622	13.0212	1.3903
7323	Table, kitchen or other household	6.263528	28.0779	1.3876
3202	Pharmaceutical goods	3.624976	4.4117	1.3772
8305	Spoons, forks, ladles, skimmers	1.60112	18.4436	1.3752
5307	True hemp	63.7236	1573.6884	1.3679
6111	T-shirts, singlets	4.982391	66.8914	1.3502
5001	Plans and drawings for architecture	14.7312	6.0379	1.3437
6105	Men's or boys' suits, ensembles	7.071077	47.0993	1.3415
3204	Mineral or chemical fertilizers	6.377149	10.5011	1.3253
6213	Track suits, ski suits	1.861819	33.5492	1.2975
2833	Chlorides, chloride oxides	1.272978	10.4351	1.2729
801	Other nuts, fresh or dried	25.69785	2.8210	1.2502
8203	Manganese and articles	2.898925	3.4077	1.2318
9022	Mechano-therapy appliances	1.165683	23.6012	1.2143
8547	Electronic integrated circuits	1.647718	3.7134	1.1934
7114	Articles of jewelry and parts	17.92766	33.2885	1.1819
7012	Carboys, bottles, flasks, jars	16.82988	93.8421	1.1790
8448	Printing machinery	1.09039	5.7638	1.1747
7408	Copper powders and flakes.	3.13842	1.9803	1.1688
910	Wheat and meslin.	9.688128	14.6606	1.1664
9608	Buttons, press-fasteners, snap-fast	1.893982	10.6865	1.1649
6502	Parts of footwear	3.647549	13.8181	1.1401
8214	Plates, sticks, tips	1.652815	2.9495	1.1255
2831	Hydrazine and hydroxylamine	4.591166	857.1715	1.0779
8201	Titanium and articles thereof	2.492282	1.4701	1.0745
2710	Tar distilled from coal	3.629667	5.3773	1.0666
3501	Soap; organic surface-active product	2.02488	4829.2732	1.0636
5702	Knotted netting of twine	15.59245	82.8343	1.0620
7415	Stranded wire, cables	1.173646	10.1698	1.0517
1516	Other fixed vegetable fats and oils	1.023221	2.3895	1.0437
5208	Cotton carded or combed.	4.183048	11.9765	1.0415
2306	Oil-cake and other solid residues	9.497177	1463.2006	1.0394
7307	Tube or pipe fittings	2.118678	4.1156	1.0291
2828	Cobalt oxides and hydroxides	3.576642	11.4367	1.0147

Table-A7

Product Code	Product Name	Indian Export Shift Share to Rest of World	South Africa Import Shift Share to Rest of World
2710	Petroleum oils	15.82976	19.36762
7103	Precious stones	14.06619	0.14291
7114	Articles of goldsmiths'	6.40848	0.01065
6205	Men's or boys' shirts.	0.54075	0.13275
8704	Motor vehicles	0.10740	3.47945
2818	Artificial corundum	0.09625	0.77741
8702	Motor vehicles for the transport	0.05211	0.33173
7202	Ferro-alloys	0.04702	0.30649
3918	Floor coverings of plastics	0.02667	0.05278

Product Code	Product Name	Indian Export Shift Share to Rest of World	South Africa Import Shift Share to Rest of World
7012	Glass inners for vacuum flasks	0.02007	0.00107
6111	Babies' garments and clothing	0.00585	0.13204
5001	Silk-worm cocoons	0.00519	0.00027
6213	Handkerchiefs.	0.00473	0.00325
9203	Keyboard pipe organs; harmoniums	0.00003	0.00001

Table-A8

Product Code	Product Name	India Export Shift share to South Africa	South Africa Import Shift Share to Rest of World
2710	Petroleum oils	63.1315	19.3676
8704	Motor vehicles for the transport	5.4796	3.4795
2101	Extracts, essences and concentrates	0.3504	0.0697
7311	Containers for compressed	0.3252	0.0574
3918	Floor coverings of plastics	0.1846	0.0528
7117	Imitation jewelry	0.0594	0.1364
6111	Babies' garments and clothing	0.0186	0.1320
8215	Spoons, forks, ladles, skimmers	0.0152	0.0724
7202	Ferro-alloys	0.0055	0.3065
8004	Tin plates, sheets and strip	0.0004	0.0040

Table-A9

Product Code	Product Name	India Export Shift Share to Rest of World	India Export Shift Share to South Africa	South Africa Import Shift Share to Rest of World
2710	Petroleum oils and oils obtained	15.82976	63.13152	19.36762
8704	Motor vehicles for the transport	0.10740	5.47956	3.47945
7202	Ferro-alloys.	0.04702	0.00552	0.30649
6111	Babies' garments and clothing	0.00585	0.01865	0.13204
3918	Floor coverings of plastics	0.02667	0.18458	0.05278

Table-A10

Product Code	Product Name	India Export Shift Share to Rest of World	Brazil Import Shift Share to Rest of World
8484	Gaskets and similar joints of metal	0.1943	1.3345
8546	Electrical insulators	0.3488	0.1949
8405	Producer gas or water gas generator	0.0090	0.1274
8404	Auxiliary plant for use with boiler	0.0920	0.0558
8209	Plates, sticks, tips	0.0642	0.0168
5511	Yarn (other than sewing thread)	0.3995	0.0094

Table-A11

Product Code	Product Name	Brazil Import Shift Share to Rest of World	India Export Shift Share to Brazil
9602	Worked vegetable or mineral	1.0232	0.1160
8484	Gaskets and similar joints of metal	1.3345	0.1563
8546	Electrical insulators of any material	0.1949	0.3079
8405	Producer gas or water gas generator	0.1274	0.0018
7207	Semi-finished products of iron	0.1136	1.8860
5503	Synthetic staple fibres, not carded	0.0600	0.0173
8404	Auxiliary plant for use with boiler	0.0558	0.0070
7312	Stranded wire, ropes, cables, plait	0.0313	0.0194
9022	Apparatus based on X-ray	0.0186	0.0355
8209	Plates, sticks, tips and the like	0.0168	0.0004
2833	Sulphates; alums; peroxosulphates	0.0118	0.0015
501	Human hair, unworked,	0.0024	0.0006
7408	Copper wire.	0.0021	0.0002

Table-A12

Product Code	Product Name	India Export Shift Share to Rest of World	Brazil Import Shift Share to Rest of World	India Export Shift Share to Brazil
8546	Electrical insulators	0.3488	0.1949	0.3079
8484	Gaskets and similar joints of metal	0.1943	1.3345	0.1563
8404	Auxiliary plant for use with boiler	0.0920	0.0558	0.0070
8405	Producer gas or water gas generator	0.0090	0.1274	0.0018
8209	Plates, sticks, tips	0.0642	0.0168	0.0004

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India and Singapore Trade through the Lens of Technological Aspect: An Empirical Analysis

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Abstract

A critical pole of India's relations with Southeast Asia, Singapore is also India's largest trading partner among ASEAN. Both countries intensively trade in the manufacturing sector albeit in different focus areas. Singapore's manufacturing sector is based on its cutting edge technology, while India's is based on its abundant natural and human resources. The present study examines empirically the nuances of trade in manufactures between the two partners during the period 1992-2020. By studying technology-wise export composition, it is found that India mainly exports resource-based manufactures to Singapore, while Singapore mainly exports high and medium technology manufactures to India. Export similarity indices suggest tremendous unexploited complementary areas for export diversification and trade enhancement. Additionally, the entrepôt nature of Singapore provides significant scope of future analysis with respect to bilateral trade.

Keywords: Bilateral Trade, Export Similarity, Intra Industry Trade, Manufactured Goods, Revealed Comparative Advantage

Introduction

Singapore has been crucial for India since colonial time, due to it being the largest British base and a significant port during colonial Southeast Asia. Trade has been the most significant aspect of bilateral relationship between India and Singapore. The two nations stepped up their trade relationship with the signing of the Comprehensive Economic Cooperation Agreement (CECA) in 2005 and strategic-relationship agreement with the objective of economic, bilateral and maritime cooperation. At present, Singapore

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is India's largest trade partner among the ASEAN member countries, accounting for about 38% of India's trade with ASEAN. Singapore is also India's fifth largest export destination globally, comprising of 3.24% of its total exports and thirteenth largest import source, with 2.73% of India's imports coming from Singapore. This evidences the significance of Singapore as a trading partner not only within ASEAN, but also globally. The relations between India and Singapore have traditionally been strong and friendly, with the two nations enjoying extensive cultural and commercial relations (Singh & Rahman, 2010) and the existence of a mutually beneficial trade relationship between the partners is evident (Malhotra & Vadra, 2013). Singapore is increasingly regarded by Indian policymakers as a gateway for expanding into the ASEAN market. The economic relationship, synergized by the politico-strategic and security relationship the partners share has spillover at two levels – bilateral cooperation and ASEAN centric regional initiatives (Shekhar, 2007). Palit (2008) also opined that India's 'Look-East' policy and the Comprehensive Economic Cooperation Agreement (CECA) between India and Singapore has also been instrumental in bolstering bilateral trade.

The paper is structured as follows: After a brief introduction; a general, economic and trade profile of India and Singapore is provided. The next section provides the review of literature, after which, the methodology and data sources are provided. This is followed by reporting the empirical results and analysis and finally, concluding remarks have been given in the last section.

Review of Literature

The role of trade as an engine of economic growth has been evident ever since the study of trade itself started (Riedel, 1984). The research at hand emphasises upon the nuances of structure and technology of bilateral manufactured exports between the partners, it is therefore imperative to understand how different micro and macro level factors impact structure of trade. Haussman, Hwang & Rodrik (2006), Bresser-Pereira (2012) are of the opinion that on the rise of manufactured exports as an important mechanism in a country's economic development process. The trade structure of India has seen a gradual and strategic shift, as examined by Nayak, Aggarwal and Mann (2013), who found a steady, albeit slow shift from low to medium-low technology exports. The dominance of low and medium-low technology manufacturing sector exports however continues to persist. Desai (2013) examined India's changing structure of technology-intensive exports from 1991 to 2010 and found an increase in technological capability of India's exports. Pillania (2008) while studying direction of India's trade found that the largest chunk of exports from India are now from manufactured goods category, while Mukherjee (2009) suggests

that inspite of this, the composition of India's manufactured export has not yet changed that significantly in favour of technology intensive commodities. On the contrary Singaporean economy depicts an entirely different picture; Lan (2001) suggests that leveraging critical state policies, Singapore aggressively transformed its economic and trade structure using high wages to discourage labour-intensive industries, leading to structural change. A similar analysis is made by Yue (2016), found that Singapore, using strategic regional and bilateral FTAs, reinforced its role as a global trading hub, and attracted inward FDI in desired sectors, potentially leading to growth in high-tech manufactures.

The review shows that India-Singapore trade synergies are combined at ASEAN centric level as well as bilaterally. Most of the studies pertaining to India-Singapore trade have studied trade relations in context to ASEAN. The present study differs from previously conducted studies as it exclusively studies India-Singapore trade, with respect to the manufacturing sector, which happens to be the most significant aspect of India-Singapore trade. However, no previously conducted study was found to have studied it. The study which spans over the entire post-liberalization period, from 1992 to 2020 also attempts to examine how the trade relations and composition have changed from the post liberalization period to the present.

The specific objectives of the study are:

- To examine the level of trade integration between India and Singapore and understand the technological composition of bilateral trade
- To understand the India and Singapore's advantageous areas for bilateral trade enhancement.
- To analyse the complementarity in trade and export similarity between the partner countries.

Brief General and Economic Profile of India and Singapore

As observed from Table-1, India and Singapore are starkly different economies. Singapore is considered to be one of the most developed and high income countries in the world, whereas India is a developing country and lies in the lower-middle income category. India is the seventh largest country by area and the second most populous nation in the world, consisting of 17.8% of world's total population, making it one of the largest markets in the world. Singapore on the other hand is a city-state. The composition of merchandise exports of the two countries is also poles apart. High technology exports form only 9% of India's manufacturing exports, while more than half of Singapore's merchandise exports consists of high technology exports. This strikingly high difference in share of technology-intensive exports is directly linked to their different development status (Lall, 1999). Hausmann, Rodrik & Hwang (2006) also

showed that the level of specialization in exporting sophisticated products is correlated with the per capita income of a nation. The fact that Singapore has complete lack of natural resources, whereas India is a resource rich nation could also explain this vast gap in the structure of exports.

Table-1: General Profile of India and Singapore (2020)

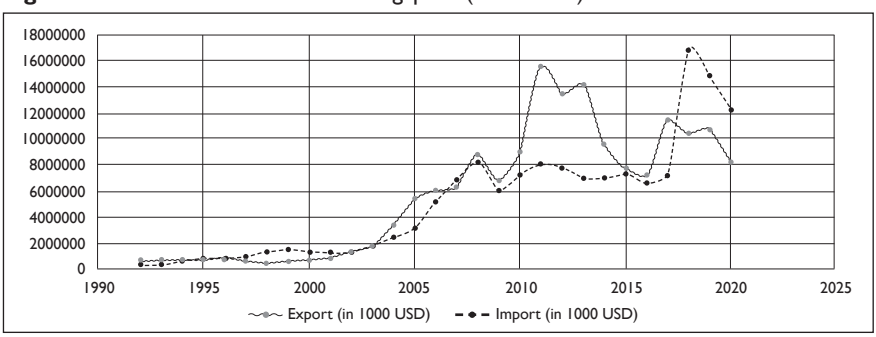
Country	Population (% of world)	GDP Per Capita (US$)	HDI Rank	Trade % of GDP	High Technology Exports* % of Manufactured Exports
India	17.8	2100.8	131	37.8	9
Singapore	0.1	58247.87	11	331	51

Source: Authors' compilation based on
• World Development Indicators, World Bank
• Human Development Report 2019, United Nations Development Programme
* Data presented is that of 2018, due to data non availability for 2019 and 2020

Bilateral Trade between India and Singapore

Figure-1 shows India's bilateral trade with Singapore from 1992 to 2020. Bilateral trade between the two partners has been increasing at an average growth rate of 14.9% since 1992 in percentage terms, and there has been a 27 fold increase in bilateral trade from 1992 to 2018 between the partners in dollar terms. India's imports from Singapore have grown from 0.65 bn. US$ in 1992 to 10.44 bn. US$ in 2018, while India's exports to Singapore have surged from 0.36 bn. US$ in 1992 to 16.86 bn. US$ in 2018. A decline is noted in bilateral trade post 2018 due to the obvious reason of the covid pandemic, which led to a complete halt in trade, and thus a negative growth in trade volume. For most part of the time period since 1992, India has had a trade surplus with Singapore. However, after 2018, a deficit in trade is noted. In 2005, the bilateral Comprehensive Economic Cooperation Agreement (CECA) was signed between the two. The India-Singapore CECA was India's first ever comprehensive free trade agreement with any country. The agreement covered merchandise trade, trade in services and investment. Bilateral trade increased significantly between the two after the CECA was signed.

Figure-1: India's Bilateral Trade with Singapore (1992-2020)



Source: Authors' creation using UN Comtrade database

Methodology and Data Sources

UN Comtrade database pertaining to trade values has been used for calculating the various indices, and has been extracted through World Integrated Trading Solution (WITS). Standard Industrial Trade Classification (SITC), which is maintained by the United Nations (UN) has been used in the study at 3 digit level for a disaggregated analysis. Exports are further studied with respect to their technological intensity based on manufactured exports classification by Lall (2000), a classification widely adopted by United Nations Conference on Trade and Development (UNCTAD) for studying trade structures.

Technological Composition of Manufactured Exports

In order to study the technology intensity of bilateral manufactured exports, Lall (2000) classification, which classifies the traded manufactures commodities into various groups according to their technology status, has been used. Manufactured exports falling in the respective categories of high technology manufactures, medium technology manufactures, low technology manufactures, and resource based manufactures have been studied in the present paper.

Trade Intensity Index (TII)

This index indicates if a reporter country exports more, to a partner country vis-à-vis the world does on average. The index has two components, focused on export and import, *i.e.* the export intensity index (XII) and import intensity index (MII). A TII value >1 suggests a larger than expected trade flow between the partners and vice versa.

They are defined as follows:

$$XIIi = \frac{xij/Xiw}{Mjw/(Mw-Miw)}$$

$$MIIi = \frac{mij/Miw}{Xjw/(Xw-Xiw)}$$

Where, *XIIi* is the country *i*'s export intensity index, *MIIi* is the country *i*'s import intensity index, *xij* the country *i*'s exports to country *j*, *Xiw* the country *i*'s total exports to the world, *Mjw* the country *j*'s total imports from the world, *Mw* the world total imports, *Miw* the country i's total imports from the world, *mij* the country *i*'s imports from country *j*, *Xjw* the country *j*'s total exports to the world and *Xw* the world total exports.

Revealed Comparative Advantage (RCA)

Based on Ricardo's concept of comparative advantage, it measures the relative advantage or disadvantage a country has in a certain product

category based on trade flows. A country *i* is said to have a revealed comparative advantage if the *RCAic* value exceeds unity. On the contrary, if *RCAic* is less than unity, country i has comparative disadvantage.

The most widely adopted RCA index, which has also been used in our analysis is the Balassa RCA index. It is computed as follows:

$$RCAic = \frac{xic/Xiw}{Xcw/Xw}$$

Where *RCAic* is the revealed comparative advantage index of commodity group c for country *i*, and $0 < RCAic < \infty$ *and xic* is the value of exports of commodity group c by country *i*, *Xiw* is the value of total exports by country *i*, *xcw* is the value of world exports of commodity group c, and *Xw* is the value of total world exports.

Grubel-Lloyd Index

In order to measure IIT, the Grubel-Lloyd index (GL-index) is used, proposed by Grubel and Lloyd (1975). The formula is defined as follows:

$$GLi = 1 - \frac{|Xi-Mi|}{Xi+Mi}$$

Where *Xi* is the total export of *i* products and *Mi* is the total import of *i* products and $0 \leq GLi \leq 1$. If the value of *GLi* is equal to 1, it signifies the lowest value of Intra Industry Trade i.e., no intra-industry trade. This situation means that a country has only imported or only exported in a certain industry. If the value of *GLi* is equal to 1, is signifies that a country's imports and exports in a particular industry are equal i.e., perfect Intra Industry Trade.

Therefore, the closer the value of the GL-index is to 0, the lower is the level of intra-industry trade and the closer the value is to 1, the higher is the level of intra-industry trade.

Finger Kreinin Index

Finger and Kreinin (1979) gave a measure of export similarity between two countries or group of countries in the third market.

The FKI is defined as follows:

$$S(ij,k) = \left\{ \sum_{1} min\,(X^1_{ik}/X_{tik}),(X^1_{jk}/X_{tjk}) \right\} \times 100$$

Where $S(ij,k)$ refers to similarity of exports of countries *i* and *j* in market k, X^1_{ik} denotes the share of commodity 1 in country *i*'s export to k and X_{tik} refers to the total exports of country i to k. X^1_{jk} is the share of commodity 1 in country *j*'s export to k and X_{tjk} refers to the total exports of country *j* to *k*. The value of S lies between 0 to 100 $(0 \leq S \leq 100)$.

The closer the value of S is to 100, the similar is the export of country *i* and *j* in market *k*, while a value closer to 0 indicates that export patterns are dissimilar, therefore more potential for bilateral trade.

Empirical Analysis and Discussion

Technological Composition of Manufactured Exports

Table-1 describes Technological Composition of India's exports to Singapore and Singapore's exports to India. For analyzing the transition in composition, data had been collated for 1992-2020. In India's export to Singapore, the share of high technology manufactures has remained low throughout. The share of low technology manufactures has declined over time from 21% in 1992 to only 4% in 2020. Medium technology manufactures have witnessed an increase from 11% in 1992 to 26% in 2020. Resource based manufactures have witnessed the maximum increase in their share, forming the largest category of exported goods to Singapore as of 2020 i.e., 56%.

In the structural composition of Singapore's exports to India (India's imports), it is observed that high technology manufactures were the major imported technological category to India in 1992, constituting 30% of total exports, while in 2020, the share of high-tech manufactures is 34%. The share of medium technology manufactures has remained similar through the time period, constituting 29% of exports in 1992 and 35% in 2020. Low Technology manufactures form a minor part of India's import from Singapore, right from 1992 and continue to be only 3% of total import volume. Resource based manufactures, which formed 20% of imports in 1992, have remained at a similar level, forming 17% of total import as of 2020.

Table-2: Percentage Share of Technological Categories in India-Singapore Bilateral Trade (1992-2020)

Product Group	1992		1997		2002		2007		2012		2017		2020	
	X	M	X	M	X	M	X	M	X	M	X	M	X	M
High technology manufactures	6	30	10	36	6	44	6	27	4	24	5	31	6	34
Medium technology manufactures	11	29	15	23	21	27	12	29	19	32	19	34	26	35
Low technology manufactures	21	7.6	24	6.9	20	8.2	9	3.6	5	3.5	4	3.6	4	3
Resource based manufactures	18	20	17	23	40	12	64	34	69	28	68	27	57	17

Source: Author's calculation based on UN Comtrade database

Trade Intensity Index (TII)

As a thumb rule, an index value >1 indicates significant trading between the partners. From Table-2, the TII values are largely observed to be >1. It is evident that India's export intensity with Singapore has been intense for the time period, except 1997, while import intensity is found to be non-intense in 1992, 1997, 2012 and 2020. This indicates that Singapore for India is more important as an export destination as compared to an import source. Looking at the trade intensities of Singapore with India, it is seen that Singapore's export intensity with India has been on the declining trend since 2007, while it has been intensive up to 2017 and in 2020 it fell to <1. Singapore's import intensity with India has remained intensive throughout, albeit since 2012, it is seen to be declining.

Table-3: Export and Import Intensity Indices between India and Singapore

	1992	1997	2002	2007	2012	2017	2020
Export Intensity							
India to Singapore	1.59	0.9	1.52	1.64	2.25	2.11	1.6
Singapore to India	2.16	2.27	2.34	2.29	1.0	1.14	0.9
Import Intensity							
India from Singapore	0.81	0.98	1.12	1.35	0.64	0.72	1.19
Singapore from India	1.20	1.13	1.19	1.94	1.94	1.24	1.08

Source: Authors' calculation based on UN Comtrade database

Revealed Comparative Advantage (RCA)

RCA index has been calculated for both, India and Singapore at SITC-3 digit data based on the technological categories of manufactures as classified by Lall (2000). India and Singapore's RCA in resource-based manufactures, low technology manufactures, medium technology manufactures and high technology manufactures has been calculated for each commodity encompassed in the respective technology category for time period 1992 to 2020. For ease of analysis, the number of commodities having RCA>1 year-wise have been aggregated into a compendium for both, India and Singapore, as shown in Table-4 and Table-5. Additionally, transition in RCA over time has been examined through Figure-2 and Figure-3.

Analysis for India

Revealed Comparative Advantage results, presented in Table-4, for India indicate that in terms of absolute numbers in 2020, the maximum number of advantageous commodities for India lie in resource base

manufactures, wherein RCA>1 is noted in 28 commodities. India also has significant number of 25 commodities having RCA>1 in low-technology manufactures. Within low technology manufactures, India has an advantage in 16 out of 20 commodities in textile, garment, and footwear category. An RCA>1 in medium technology manufactures is noted in 19 commodities. In high technology manufactures, India has a comparative advantage in 5 commodities out of a total 19 commodities in this category. This indicates that India has a strong foothold in commodities that intensively use natural and human resources.

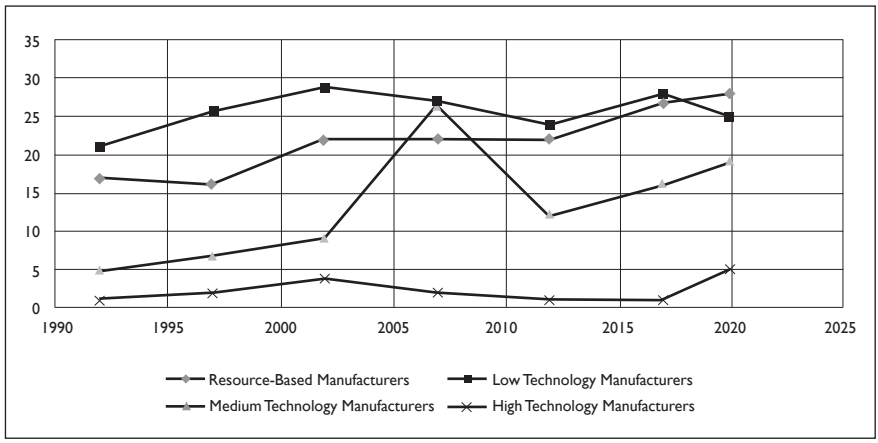
India's transition in RCA depicts that medium technology manufactures category has witnessed the most increase in commodities having RCA>1. India had only 5 advantageous commodities in the medium technology manufactures category in 1992, which has increased to 19 in 2020, wherein medium technology process and automotive have noted an increase. Low technology manufactures has since the beginning of the study period in 1992, been a strong area for India and there has not been a significant change in this area. In resource-based manufactures, there has been an increase from 17 advantageous commodities in 1992 to 28 in 2020. For high technology manufactures, India has not been able to witness much of an increase in advantageous commodities.

Table-4: India's RCA from 1992 to 2020 in Technology Terms

Description	Total Commodities in Category	1992	1997	2002	2007	2012	2017	2020
Resource Based Manufactures (RB)	67	17	16	22	22	22	27	28
RB Agro/Forest Based	36	5	6	9	6	7	12	13
RB Others	31	12	10	13	16	15	15	15
Low Technology Manufactures (LT)	44	21	26	29	27	24	28	25
LT Textile, garment and footwear	20	14	17	17	17	17	17	16
LT Other products	24	7	9	12	10	7	11	9
Medium Technology Manufactures (MT)	69	5	7	9	27	12	16	19
MT Automative	5	2	1	1	1	1	1	1
MT Process	28	3	6	7	7	8	10	11
MT Engineering	36	0	0	1	19	3	5	7
High Technology Manufactures (HT)	19	1	2	4	2	1	1	5
HT Electronic and Electrical	11	0	0	1	1	0	0	3
HT Other	8	1	2	3	1	1	1	2

Source: Authors' own calculations

Figure-2: India's Transition in Revealed Comparative Advantage (RCA)



Source: Authors' own calculations

*Y-axis represents number of commodities

Analysis for Singapore

RCA analysis for Singapore indicates that high technology manufactures has traditionally been a strong area for Singapore, however, in the pandemic year of 2020, the number of commodities having RCA>1 have visibly declined to 4, which is likely to be a short-term phenomenon. Singapore has comparative advantage in 19 medium technology commodities in 2020, of which 10 are from process category, and 9 are from engineering category. It can also be noted that Singapore has advantage in 12 commodities respectively from resource based manufactures category and low technology manufactures category.

Transition in RCA for Singapore draws pertinent trends. Singapore has only 2 advantageous commodities from low technology manufactures in 2017, which increased to 12 in 2020. Low technology manufactures had never been significant for Singapore. Additionally, high technology manufactures, which Singapore has been leading in exports was found to decrease in the number of advantageous commodities from 9 in 2017 to only 4 in 2020. For low and medium technology commodities, there has been a certain increase in the number of advantageous commodities.

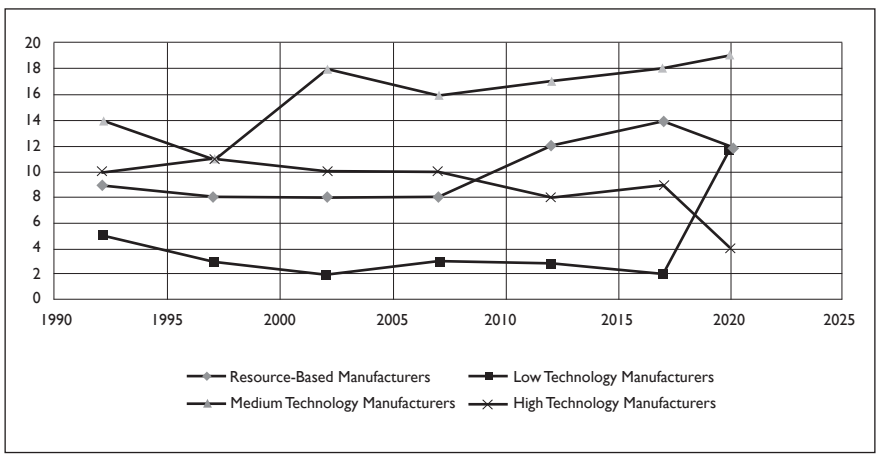
Table-5: Compendium on Singapore's RCA in Technology Terms

Description	Total Commodities in Category	1992	1997	2002	2007	2012	2017	2020
Resource Based Manufactures (RB)	67	9	8	8	8	12	14	12
RB Agro/Forest Based	36	5	4	0	1	5	6	5

Description	Total Commodities in Category	1992	1997	2002	2007	2012	2017	2020
RB Others	31	4	4	8	7	7	8	7
Low Technology Manufactures (LT)	44	5	3	2	3	3	2	12
LT Textile, garment and footwear	20	3	0	0	0	0	0	9
LT Other products	24	2	3	2	3	3	2	3
Medium Technology Manufactures (MT)	69	14	11	18	16	17	18	19
MT Automative	5	1	0	0	0	1	0	0
MT Process	28	3	4	9	8	9	10	10
MT Engineering	36	10	7	9	8	8	8	9
High Technology Manufactures (HT)	19	10	11	10	10	8	9	4
HT Electronic and Electrical	11	9	9	8	8	6	7	2
HT Other	8	1	2	2	2	2	2	2

Source: Authors' own calculations

Figure-3: Singapore's Transition in Revealed Comparative Advantage (RCA)



Source: Authors' own calculations

*Y-axis represents number of commodities

Intra-Industry Trade: GL-Index

A significant measure of bilateral trade, the Intra Industry Trade (IIT) exists when the traded goods are of the same sector. IIT indices have been calculated for the four major tech-categories, as well as for the major manufactured goods traded bilaterally, and collated from the years 1992 to 2020 to understand the change IIT has undergone. In 2020, highest IIT of 0.95 is witnessed in the low technology manufactures, followed by

medium technology manufactures (0.68) and resource based manufactures (0.64). Lowest IIT is observed in the high technology manufactures category (0.24). It can be said that as the technology intensity category is increasing, intra industry trade is seen to be decreasing, signifying more bilateral trade in lower-tech categories. While observing the IIT indices based on major manufactured goods in 2020, highest IIT value is observed in Textiles, with near to perfect intra-industry trade level at 0.85, indicating that textiles form a highly bilaterally traded category of goods between the partners, while the lowest bilaterally traded category is chemicals (0.28).

Comparing 2020 index values to 1992 indicated that bilateral trade within Low-tech commodities has witnessed the highest increase, with IIT value doubling. In Medium technology, the bilateral trade has decreased significantly compared to 1992. In major manufactures category, the IIT index has decreased in manufactures, chemicals and machinery and transport equipment. For textiles and other manufactures, IIT values have increased, reflecting upon the rise in bilateral trade in these commodities.

Table-6: India Intra Industry Trade Indices with Singapore

Description	1992	1997	2002	2007	2012	2017	2020
IIT based on Technology Categories							
Resource Based Manufactures	0.76	0.71	0.45	0.77	0.47	0.42	0.64
Low Technology manufactures	0.47	0.69	0.89	0.92	0.84	0.73	0.95
Medium Technology Manufactures	0.94	0.76	0.74	0.57	0.88	0.83	0.68
High Technology manufactures	0.51	0.33	0.24	0.30	0.47	0.42	0.24
IIT based on Major Manufactured Categories							
Manufactures	0.89	0.79	0.78	0.57	0.91	0.80	0.53
Chemicals	0.96	0.73	0.63	0.53	0.73	0.41	0.28
Textiles	0.38	0.22	0.15	0.23	0.35	0.46	0.85
Machinery and Transport Equipment	0.62	0.42	0.32	0.43	0.91	0.95	0.55
Other Manufactures (SITC 6+8-68)	0.46	0.64	0.68	0.92	0.85	0.98	0.61

Source: Authors' calculation based on UN Comtrade database

Export Similarity between India and Singapore: Finger Kreinin Index

The export similarity between India and Singapore in various categories of manufactures goods has been presented in Table-7, while the transition has been graphically depicted in Figure-4. The index is critical in determining how much the exports of two partners to the world overlap, which is a measure of export potential, since a lower export similarity indicates that the two countries are producing and exporting different commodities, and hence

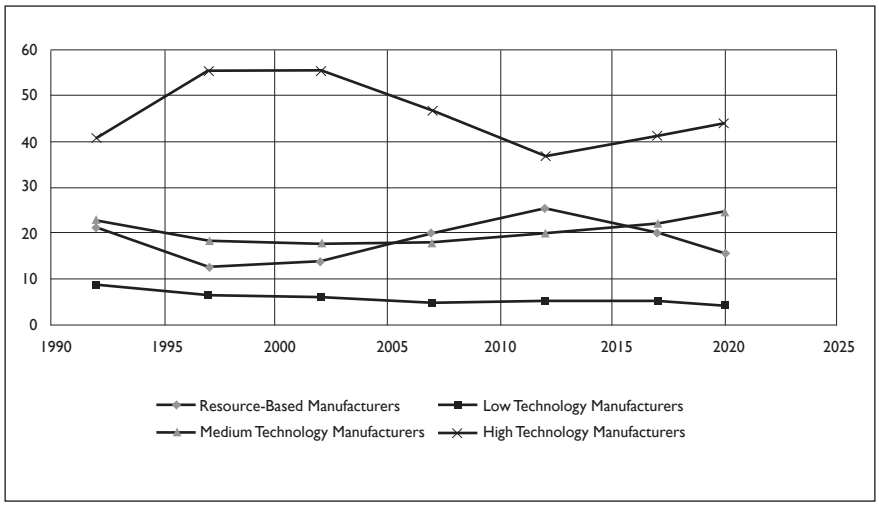
higher the potential for trade bilaterally. Here, it is noted that the highest export similarity value of 44.22 exists in high technology manufactures, and this category is noted to have highest similarity values since 1992. It can also be inferred that significant potential for bilateral trade still exists as the index value has not even touched 50. In low technology manufactures, only 4.47 FK Index value is noted, indicating tremendous areas for trade enhancement. In resource and medium technology manufactures, the index values are 15.40 and 24.69 respectively. This points toward the huge potential areas for trade enhancement in these categories of manufactures.

Table-7: Finger-Kreinin Analysis: India-Singapore

Technology Category of Manufactures	1992	1997	2002	2007	2012	2017	2020
Resource Based Manufactures	21.10	12.82	13.92	19.79	25.51	20.35	15.40
Low Technology Manufactures	8.78	6.41	6.16	4.92	5.10	5.44	4.47
Medium Technology Manufactures	22.66	18.19	17.73	17.97	20.13	22.09	24.69
High Technology Manufactures	40.56	55.51	55.57	46.78	36.77	41.42	44.22

Source: Authors' calculation based on UN Comtrade database

Figure-4: Graphical Depiction of Export Similarity Index Values



Source: Authors' collation

Conclusion

The analysis reveals that India's exports to Singapore are dominated by the resource-based manufactures, while high-technology manufactures and

medium technology manufactures are the major category of Singapore's exports to India. In this respect, it is crucial for India to diversify its exports to Singapore, as it has been found through RCA analysis that India has a larger number of commodities in medium and low technology manufactures as well, which are not being exported as per potential. India can diversify its exports to Singapore into a number of areas, which it has been unable to. The export and import intensity indices, which reflect upon the level of trade integration and significance of trade partners vis-à-vis the world suggest an intense trading relationship exists between India and Singapore. Calculation of the respective technology-wise comparative advantages of commodities reveal that export structure of bilateral trade matches with where the respective comparative advantage of both the countries lies i.e. resource based and low technology manufactures for India and high technology and medium technology engineering manufactures for Singapore. Trade in manufactures is found to be largely complementary between the partners. Both the countries can mutually cooperate to harness the contrasting export structure and comparative advantages of the two. The Grubel-Lloyd Index, which measures trade in a certain similar class/ category of commodity exhibits a high intra-industry trade (IIT) in low-technology manufactures, among the major technology categories and among the major manufactured categories, a high IIT is observed in textiles. This divulges an evident scope for increasing the bilateral intra industry trade in high, medium and resource-based manufactures. Export similarity index values suggest tremendous complementarity and potential of trade enhancement across all categories of manufactures. Constructive and relevant policy measures are crucial to harness the potential areas identified in enhancing India's position as a trading nation, bilaterally with Singapore.

It is also pertinent to note that Singapore is a port nation and happens to be the world's second busiest container port. It is strategically located at the tip of Malaya Peninsula, lying between the Indian and the Pacific Ocean. Thus, every cargo ship going from India to Japan, East Asia and Southeast Asia halts at Singapore, making it a significant pole of India's East Coast interaction, and a global destination for transit trade connecting long-distance and regional trades. Additionally, this also implies that Singapore accounts for entrepôt trade, wherein re-exports are routed through Singapore, implying that not every export from India to Singapore is meant for Singapore's domestic consumption, and not every import from Singapore has the underlying primary exporter as Singapore. This also provides critical scope for further research on India and Singapore bilateral trade relations.

References

Balassa, B. (1965). Trade Liberalization and Revealed Comparative Advantage. *The Manchester School of Economic and Social Studies*, *33* (2), 99-123.

Bresser-Pereira, L. (2012). Structuralist Macroeconomics and the new Developmentalism. *Brazil Journal of Political Economy*, *32* (3), 347-366.

Finger, J.M. & Kreinin, M.E. (1979). A measure of Export Similarity and Its Possible Uses. *The Economic Journal*, *89*, 905-912.

Hausmann, R., Hwang, J. & Rodrik, D. (2007). What you export matters. *Journal of Economic Growth*, *12*, 1-25.

Lall, S. (2000). The Technological Structure and Performance of Developing Country Manufactured Exports 1985-98. *Oxford Development Studies*, *28* (3), 337-369.

Lan, C.W. (2001). *Singapore's Export Promotion Strategy and Economic Growth (1965-84)*. UCL UK Working Paper No. 116, accessed at https://www.ucl.ac.uk/bartlett/development/sites/bartlett/files/migrated-files/wp116_0.pdf

Nayak, S., Aggarwal, V., & Mann, P. (2013). *India's Manufacturing Exports Dynamics: An Analysis of Technology Intensity Transition*. Centre for WTO Studies, Working paper number CWS/WP/200/6

Pillania, R.K. (2008). An Exploratory Study of Indian Foreign Trade. *Journal of Applied Economic Sciences*, *3*(5), 281-292.

Singh, S., & Rahman, S. (2010). India-Singapore Relations: Constructing a "New" Bilateral Relationship. *Contemporary Southeast Asia*, *32* (1), 70-97.

Shekhar, V. (2007). *India-Singapore Relations: An Overview*. IPCS Special Report No. 41, New Delhi.

Malhotra, G. & Vadra, R. (2013). India-Singapore Trade- A Paradigm Shift. *Paradigm*, *17* (1), 54-66.

Mukherjee, S. (2009). *Technology Intensity of Indian Merchandise Exports*. MPRA Paper No. 35694.

Palit, A. (2008). *India-Singapore Trade Relations*. Institute of South Asian Studies Working Paper No. 46.

Riedel, J. (1984). Trade as the Engine of Growth in Developing Countries Revisited. *The Economic Journal, 94* (373), 56-73.

Yue, C.S. (2016), Globalization and Regionalization: Singapore's Trade and FDI. In Lim, L.Y.C. (Eds), *Singapore's Economic Development: Retrospection and Reflections*, World Scientific (pp. 169-194).

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Macroeconomic Determinants of Foreign Direct Investment Inflows into India

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Abstract

The last three decades in the global economy have been marked by increased trade and capital flows especially amongst the Emerging Market Economies (EMEs). This study attempted to study the trends and policies that impact FDI inflows into India along with its macro determinants in order to test if capital flows explained the 'Indian growth story.' The 1991 Open Door Policy of the Government prompted us to consider the sample period from 1990-91 to 2019-20 using Annual Time-series data and variables like GDP, Foreign Exchange Reserves (FER), Long Term Debt (DEBT), Domestic Inflation Rate (INF), Domestic Interest Rates (ROI), Nominal Exchange Rate (NER), Total annual turnovers in National Stock Exchange Fifty (NIFTY) and Current Account Deficit (CAD) to explain the FDI inflows. Among all the chosen explanatory variables, the stock market turnover had the most significant impact on the FDI inflows as reflected by the NIFTY. The GDP, FER and ROI also played an important role in bringing foreign capital into the country whereas DEBT, INF, NER and CAD acted as deterrents. Another inference could be made from the study was that Inflation and Exchange rates had a long-term impact on the FDI inflows. Results from the Granger causality tests indicate a uni-directional causality from GDP to the FDI inflows which proves that economic prosperity attracts foreign participation in the 'Growth story.' The key policy implications from our study are that the Government must bring in more foreign investment into the services sector like it was in the past. Also, there exists a tremendous potential in the retail space as the sectoral cap for foreign participation remains small even in the present context.

Keywords: Econometric Modelling, Foreign Direct Investment, Macroeconomic Fundamentals

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Introduction

Foreign Direct Investments are playing an important role as well as changing the behaviour of nations across the world. FDIs comes under capital flows. Since globalization, every country in the world was trying their best in giving tough competition to the rest of the world. Thus the role of capital flows and trade flows across the countries have been tremendously changing day by day and the countries were able to contribute something to the world GDP. Literature reveals the importance of capital flows (Direct Investments) especially in developing countries where emphasis was more and more to get benefitted from the new technology which foreign firms will bring to the domestic or host country. This it will help the host country to raise its output by implementing the new technology in the production process.

It is always expected that foreign technology must be superior to the domestic technology and if not, then the foreign firms are not able to give any incentives to the domestic country. So, the benefits which host country derives from the new technology that belongs to the foreign firms is said to be spillover effects. The effects may be positive or negative. The positive effects can be improving the factor productivity of domestic labour, knowledge transfer, rise in export activities etc. The negative spillovers can be crowding out of domestic firms due to incompetence with usage of advanced technology by foreign firms, loss in market share etc.

However, in India, one can see that, it has been attracting more of FDI flows as compared to the other countries such as Brazil, Singapore, China, Russia etc. Even foreign exchange reserves are also increasing every year. So, need to understand the relation between the Forex and FDI inflows which is positive as per literature.

By allowing the foreign investors into the host country, there is an intensive to raise economic output and which in turn could raise the growth of its economy. But, to attract FDIs, the government of India should take more liberalized policies that which attracts and creates platform to foreign firms to get more profits and benefits. Thus, the stance of policies which government takes will make some incentive to gain more growth level of output in the economy. However, quite easily India will allow the foreign firms who have motive of producing the export-oriented goods. Therefore, it will contribute some positive value to Balance of Payments.

Objectives of the Study

- To analyze the trends and policies relating to FDI inflows into India.
- To identify the key Macroeconomic Determinants of FDI inflows into India.
- To check the Causality between FDI inflows and India's Market Size (GDP).

Analysis of FDI Inflows Into India

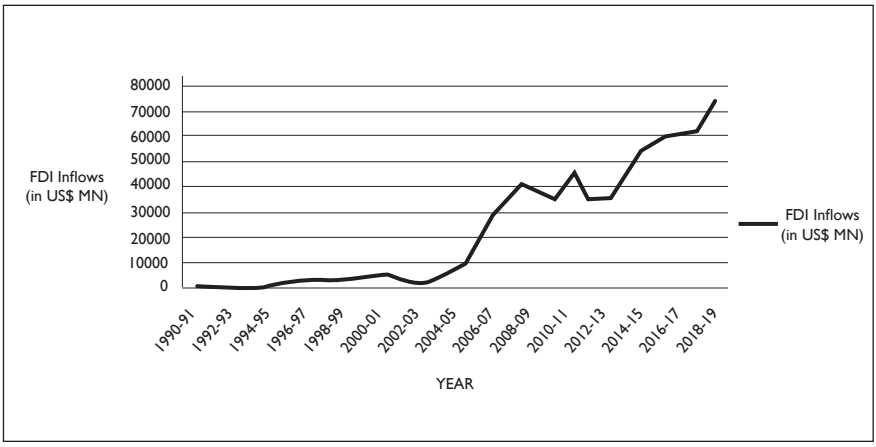
India has been changing tremendously in terms of attracting capital flows from other nations. It has created a wonderful platform to attract capital flows compared to other developing countries such as Brazil, Russia, Africa, Mexico etc. However, India has its own history to attract capital flows especially Foreign Direct Investments (FDIs) since 1991, the year which the Indian country has opened up or became an open economy.

During the year 2019-20, India had about 43.013 bn $ of FDI flows of which Singapore had highest investments with $14.67 bn. However, as per sector wise inflows, service sector shares highest inflows of which $7.49 bn. However, on an average, every year there is an increase in FDI inflows by 1.55%.

FDI Inflows

From the history, it is observed that the growth of FDI inflows into India actually started from 1990-91 where the Indian Government has taken many policies regarding international trade and capital flows and thus it has showed a path to the economic growth through FDIs. In the following diagram one can see that FDI is shown. The results are quite obvious that because of outdoor policy, the FDIs are started rising from 1990-91 onwards. From Figure-1 it is clear that from 2004-05, it has been increased drastically because of the policies which India has taken major policies as government announced revised version of its previous policies to give more freedom to invest into India.

Figure-1: FDI Inflows into India



Source: RBI Handbook of Statistics on Indian Economy (2020)

In 2004-05, Indian government has allowed 100% foreign equity under automatic route in townships, buildings, housing infrastructure and construction development projects. And also, during this point of time,

government has newly introduced Special Economic Zones which entailed a lot of construction and township development. They have raised various sectorial caps and this led to a boost in FDI inflows. But, global financial crisis which has happened in the year 2008, created a fall in inflows. However, if we compare with various developing nations, India was having a rapid economic growth in all three sectors as well as foreign investors were showing their interest to come and setup their companies in India.

Economic Growth and Development

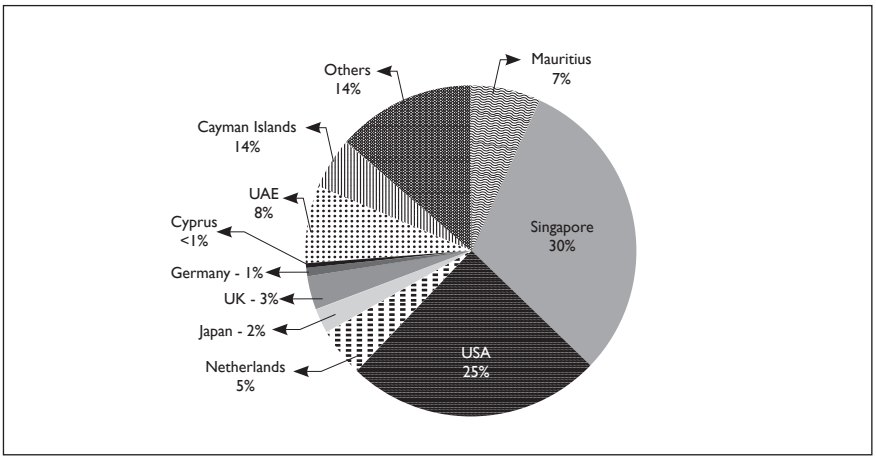
The capital inflows will have positive impact on economic growth or development. It allows increasing productivity, strengthening infrastructure, creating employment opportunities to the Indian residents and development in human resources life skills. More of capital inflows create more of foreign exchanges which imply economic growth. As a result, Indian economy provides a more favourable economic environment for the FDI inflows.

When does one allow foreign investments inflow? The answer to this question lies in advantages that FDIs give to the host or Indian Economy. Thus, it helps in balancing international payments by providing more of foreign currency in the economy which allows generating adequate resources and that which helps to stabilize the BOP. The other benefits which foreign inflow of capital gives to the host economy are flow of new technology, proper management and new skills, employment opportunities and encourage exports from host country. Apart from these advantages FDI helps in creating a highly competitive environment in the country which leads to higher efficiency and superior goods and services.

FDI inflows have contributed roughly $50 bn to the Indian Economy. In that, higher inflows are into service sector with $7.39 bn followed by computer software and hardware production with $7.2 bn. Even Telecom sector has a share of $4.12 bn FDI inflows. Thus, by observing these numbers, one may understand the amount of contribution to the Indian economy that comes from the inflows. Hence, one can conclude that FDI flows will definitely have a positive impact on any host country's economy. The following diagrams will show the major sources of FDIs which are coming from foreign countries.

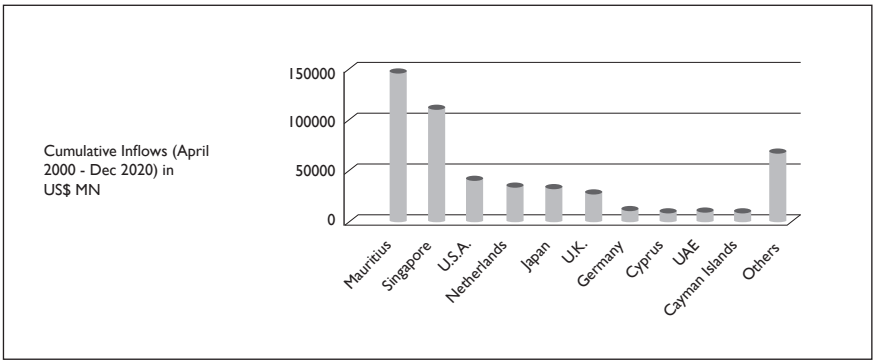
The following Figure-2 shows the FDIs which are coming from the countries like Singapore, U.S.A, Mauritius, Cayman Islands, Netherlands, U.K., France, Germany and Cyprus. These countries are in the top ten in the year 2020-21, in terms of highest inflows to India as compared to other countries in the world. Singapore has been leading in investing in India from past four financial years and its FDI contributions as per 2020-21 was US$ 15717 bn. U.S.A. contributed around US$ 12828 mn. However, the total FDI inflows during the financial 2020-21 of cumulative of three quarters is US$ 51470 mn.

Figure-2: Share of Top Investing Countries FDI Equity Inflows into India - 2020-21, April-December (US$ MN)



Source: Department for Promotion of Industry and Internal Trade

Figure-3: Share of Top Investing Countries FDI Equity Inflows into India - Cumulative Inflows, April 2000 - December 2020 (US$ MN)



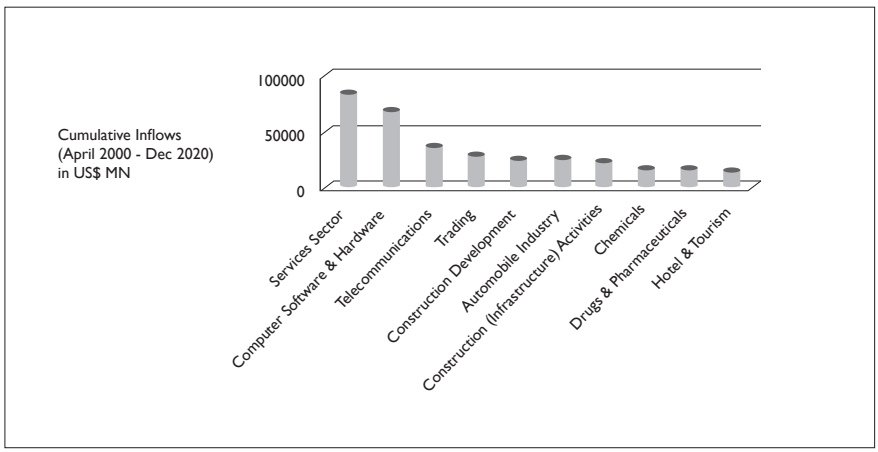
Source: Department for Promotion of Industry and Internal Trade

The cumulative inflows of capital for the period April, 2000 to December 2020, from top investing countries, is around US$ 447668 mn. The Mauritius is standing top in investing in India with US$ 146186 mn and followed by Singapore, US$ 113386 mn. The countries are choosing their investing spot or venue because of incentives like lesser corporate taxes, very impressive mobile and internet penetration and technology uptakes are making this to happen.

The following two figures will show the FDI inflows into various sectors of Indian economy. The sectors such as Service Industry, Computer Software & Hardware, Telecommunications, Trading, Construction

Development, Automobile Industry, Infrastructure related Construction Activities, Chemicals, Drugs & Pharmaceuticals and Hotel & Tourism. Among these sectors, Service sector has highest cumulative FDI inflows from the year April, 2000 to December 2020 which is around US$ 85860 mn. Even Computer & Hardware sector has impressive flows over the cumulative period and its value is around US$ 69296 mn.

Figure-4: Cumulative Inflows of FDI as Sector wise (April 2000 – December 2020) in US$ MN

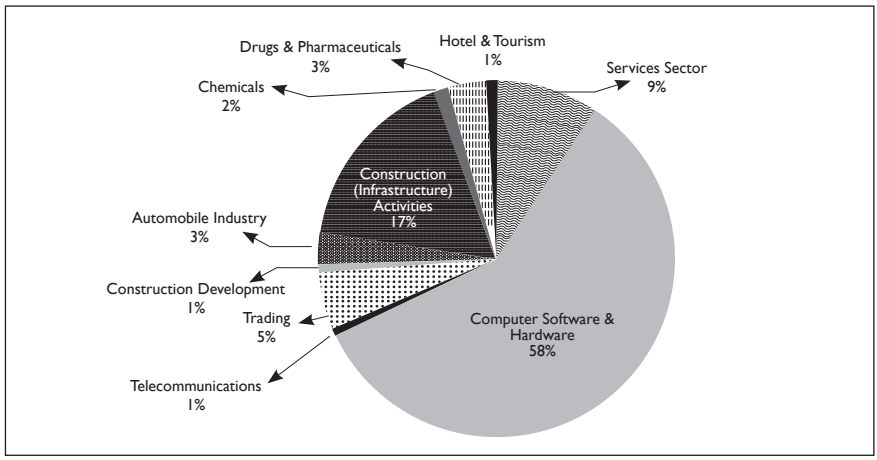


Source: Department for Promotion of Industry and Internal Trade

On the other hand, if we observe in Figure-5, Computer Software and Hardware has major inflows during the financial year 2020-21 (April-December), of US$ 24385 mn. This is because; as we know the period 2020 is a pandemic period where all countries in the world have stopped their economic or business activities. Thereby it showed an adverse effect on economy. So, the government as well as companies head has encouraged employees to work from home rather they were going to the offices. Therefore, the demand for electronic goods such as computes, laptops etc., so, the foreign companies have drawn their money in India into this sector. The infrastructure related construction activities have 17% share in attracting FDI inflows in 2020. This period has led to drop their economic growth in all countries' and India has kept its competitive spirit in attracting inflows from the foreign countries.

However, service sector has attracted only US$ 3857 mn, which indicates the decline in the service sector inflows as compared to previous period. We need to focus more on Telecommunication sector, where its inflows are just US$ 357 mn.

Figure-5: Sectors Attracting Highest FDI Equity Inflows - 2020-21, April-December (US$ mn)



Source: Department for Promotion of Industry and Internal Trade

Review of Literature

The long run relationship between growth and FDI inflows was analysed by Sarbapriya Roy by using Johansen Co integration Test. Thus, she found the result as existence of long run relationship between them and the relation is positive. She also did Granger Causality Test for the variables for the data period from 1990-91 to 2010-11. She got unidirectional relation as economic growth leads to higher inflows. However, she suggests some policies that India has to implement in future growth of FDI inflows which is creation of stable macroeconomic framework such as interest rates fluctuations, inflation rate etc., improving infrastructure, human resources and development of local entrepreneurship.

India has been performing well in domestic country as well as at global level with its extensive industrial policies. The service sector in India is contributing almost 54% to the GDP. Over the past years, share of FDIs in Service sector has been tremendously increasing. To understand the factors that are leading to raise FDIs in this sector, Yogita Varshney has explored and attempted to find appropriate determinants in this sector. She applied OLS technique for her analysis and covered the period from 1996 to 2016. She took six macro-economic explanatory variables such as inflation, manufacturing FDI, exchange rate, external debt, openness and growth of GDP. The results displayed that manufacturing FDI, GDP growth and openness are playing a significant role in attracting the FDIs in Service sector where others are not. She suggests the policies such as the country should put more effort to increase the inflows in manufacturing sector

and the policies should be very transparent as that will help the foreign investors to gain more confidence on performance of our economy.

The growth rate of FDI will not impacted by growth rate of GDP as proven by Sharil Sharma by using Correlation Test and OLS method. He has taken time series data for two variables from the year 2001 to 2019. The reason for the result being ineffective because rate of India's growth depends on several other factors such as interest rate, inflation, domestic investment and so on. However, FDI will bring some incentives to host country (India) like creating employment opportunity, transferring new information and technology and these further help in domestic production process to an extent.

Does economic growth really matter for FDI inflows? This question is understood in both the directions. A foreign investor, looks for higher returns from the investment. So, he chooses the host country which gives higher returns. But, how that foreign investor knows that particular country which offers more returns? Therefore, economic growth is necessary condition to see the performance level and profit level that the firm or company could gain by investing in that particular country. On the other hand, we have host country where the main motive will be long-run sustainability with maximum feasible output. So, the benefit which host country derives was some new technology from the foreign investors. This new technology can be adapted by the domestic firms and improve their productivity level.

The employment opportunities for the host country people will arise only if the labourer or employee have skills and capable of doing the assigned work to him. So, Magnus Blomstorm and Steven Globerman have emphasized on the pre-requisite skills that the employee or employer should have in order to acquire the new knowledge that comes from foreign firms. So, the people will have better opportunities to get jobs in the foreign firms and that leads to spillover effects in the economy when the same employee works in domestic firm. Hence, allowing MNCs into the domestic country implies a kind of importing new technology which was innovated by foreign firms by investing in Research and Development that indeed will lead to high competitiveness amongst the foreign and domestic firms. The authors also highlighted the importance of liberalization of government policies such as licensing the vertical linkages in production and distribution of value chains.

Will spillover effect happen through Total Factor Productivity (TFP)? To answer this question, Azusa Fujimori and Takohiro Sato (2015) have proved that TFP happens through backward linkages of FDIs in the long-run. They have taken independent variables as Gross value Added, capital

stock and labour as inputs in the production function that is assumed as Cobb-Douglas form. They did the analysis of spillover effects in Indian manufacturing industries after the country has liberalized the capital inflows. They did this analysis for the sample period of 10 years (1995-2004). Hence, their analysis showed that in long-run there will be spillover effect on labours' productivity rather in short-run it is not shown much impact on it.

To prove the relationship between the FDI and Human Capital formation, Baranwal Gunja (2016) has analysed this relation and taken as evidence from Indian manufacturing sector. He used dynamic anal data method and static and dynamic generalized method of moments in his analysis for the sample period from 2001 to 2015. His choice of variables is market size, national highway length, distance from main market area, caste and religion fractionalization and availability of non-agricultural land. He took data from Prowess database, CMIE. He found Market size to be most significant variable which is important in bridging the gap between the Human capital and FDI inflows. He finds the positive side effects from FDI inflows like increasing wage inequality and average wages.

The role of foreign technology as spillover effect on total factor productivity of domestic country has been emphasized and analysed by Bishwanath Goldar. But, a slight change which we find in his paper that the greater TFP will be attained from the FDIs made by developed nations as compared to FDIs from developing countries. And also, the forward vertical spillover effects will be more as compared to forward horizontal spillover. He used the Levinsohn Petrin methodology considering the periods from 2001 to 2015 as to estimate the spillover effect on domestic total factor productivity and this methodology can capture the unobservable intermediate inputs in the production process. For example, when real wages are increased, then firms will have some incentive to use as intermediate input due to absence of perfect knowledge about prices to the labourers and hence can manage the price of good to get market share.

Knowing the determinants of FDI inflows in India will help to take a better policy decision. Thus, Shiba Shankar Pattayat has proved in his analysis that FDI inflows are the most significant variables compared to other independent variables such as Exchange rate and Trade openness. He used ADF test to check stationary of the variables and used Johanson Cointegration Methodology to test the long-run relationship between the variables. Thus, the results showed for the concerned period (1980-2010) there exists a long-run relationship between economic growth and FDI.

The determinants of FDI depend on the various conditions of economies. To find and estimate the actual determinants Reenu Kumari and Anil Kumar Sharma have proved the following variables which are very important in order to attract the foreign direct investments by developing

countries. The determinants are trade openness, market size, human capital yield & interest rate showing as key determinants by using Hausman test and the sample size is 20 developing countries by using unbalanced panel data from 1990 to 2012. They suggested some policies like markets in the economy should develop and regulations should liberalize as they would make the economy investors friendly. Nation's human capital should rise so that they can easily grasp the new technology. Even stabilizing the inflation and interest rates should be focused by any developing country.

India has taken many policies to establish a strong relationship with rest of the world. In the year 2014, India has taken a major policy which is "Make in India" that exhibited the recent growth in FDIs. Neha Gupta has tried to study the determinants of inflows from the effectiveness of the Indian policy taken during 2014. So, she did an OLS model for her analysis for the sample period of 1994-2014. She found that there exists the long – run positive relationship between FDI and economic growth. And also, she found the variables like trade openness and exchange rate would impact more on attraction of inflows into India.

Foreign Direction Investment is a part of Capital flows where the capital flows from one country to other. But, to see the foreign investment effect in India, Ashish Chhetri and Raghavender Raju (2018) has done the econometric model based on India's foreign investments inflows. Their main objectives are to identify the best possible determinants of foreign investment in Indian economy scenario and they analysed the Granger Causality between India's economic growth and foreign investment to check the direction of flow. They also focused on how the nature and the composition of foreign capital exists in India and they also tried to explore the inter dynamics between foreign investment and macroeconomic fundamentals of Indian economy. They used Quarterly series starting from $1996Q_1$ to $2017Q_2$ and used the OLS and VAR techniques for their analysis. Their choice of Variables are GDP, BSE Sensex, Exchange Rate, Interest Rate, CAD and Inflation. They found the results as there is a unidirectional relationship between Growth and Foreign Investments and in the key determinants; they found the GDP as most significant variable that helps in attracting foreign investments to India. By the help of VAR methodology, they conclude that the variables are dynamically interrelated.

The reasons for FDI direction towards the BRICS and MINT economies have been analysed by Simplice Asongu. His study is based on these economies where he analysed his objective by classifying into three groups, BRICS, MINT and combination of both the group of economies. He employed panel data analysis to examine the determinants that drives FDIs into this group of economies. He used pooled time-series and cross-sectional analysis for the sample period which starts from 2001 to 2011 as to estimate his model. The variables which he has used in his model were

market size, availability of natural resources, institutional quality, trade openness and infrastructure availability. Amongst these variables he got market size, trade openness and infrastructure availability as important or key determinants of inflows and whereas other variables are not very significant in attracting inflows into the MINT and BRICS economies. He suggested that the country should invest in development of human capital resources as to ensure that the capability to absorb the new technology which foreign companies brings into the economy.

On determinants of FDI as concerned about the global financial crisis which happened in 2008 have been estimated by Saina Baby and Aarati Mehta Sharma. The chosen explanatory variables are Market size, Inflation, Real Effective Exchange Rate, Forex Reserves, Real interest Rate and External Debt. The findings are that there is an increase in India's GDP (purchasing power parity) after the open-door policy is taken by the government and there is a slight decrease in inflows of capital during GFC period. But immediately after one period the FDI flows have started rising again. So, the Multivariate OLS regression method is used to estimate under the samples of 22 observations. Thus, we can say that the country should be strong enough to meet the external shocks and should be doing well enough on its fundamentals.

Data and Econometric Model

The data for selected variables has been taken from RBI Database for the sample period of annual series starting from 1990-91 to 2019-20. The variable like nominal exchange rate is chosen only for our analysis and no other variable like NEER or REER is chosen (which represents the exchange rate value) since there is availability of data of Nominal Exchange Rate for concern period of time in RBI Database, otherwise REER or NEER is better variable to capture variations in FDI inflows. The following table will show the variables and its notation used in our analysis.

Table-1: Variables and its Notations

Variables	Notations Used in the Study
Foreign Direct Investment*	FDI
Market Size	GDP
Foreign Exchange Reserves	FER
Inflation	INF
Nominal Exchange Rate	NER
Long Term Debt	DEBT
Current Account Deficit	CAD
NSE Fifty	NIFTY
Interest Rate	ROI

*It is a Response Variable in our analysis

OLS Methodology

OLS method is simple linear model which consists of the explanatory variables which are linearly distributed and explains all the variations in the response variable to a particular period of time. The OLS method can be classified into two ways; Simple Linear Regression Model and Multiple Linear Regression Model. The Simple Linear Regression Model consists of one independent variable which would explain all the variations in the dependent variable. On other hand, we have Multiple Linear Regression Model which is having more than two explanatory variables to explain the movements in response variable. However, in our analysis, we are dealing with Multiple Linear Regression Model, so we will understand little deeper in this model. This model works by minimizing the sum of squares of differences between the dependent variable and all the independent variables. Hence, the smaller the difference, the better will be estimated model and attains good results.

Granger Causality Test

This test is a statistical concept which is based on predicting the values of dependent variable by using the independent variable. The test is found by Granger in the year 1969, where we can understand the cause and effect of the variables. So, if we have two variables Y (t) and X (t), and X (t) Granger Cause Y (t), then we can say that X (t) can predict the future values with its available information. Here we are assuming that Y (t) contains less information since it is response variable in this case. This model is tested under the context of linear regression.

If the past values of X (t) helps in predicting the future values of Y (t), then we have the following conditions:

i. Cause happen prior to effect, i.e., $Y_t = f(X_{t-1})$.

ii. Cause has unique information about the future values of its effect, i.e., $Y_t = a_0 + a_1 Yt_{-1} + a_2 X_{t-1} + \varepsilon_t$, where, $a_2 X_{t-1}$ is an Extra Effect.

Empirical Analysis and Findings

For all the chosen variables used in the analysis, the stationarity test was conducted. Results based on non-stationary data could be not be theoretic and also could be biased, not giving the true picture. So, to make appropriate conclusions and to avoid any spurious relationships between the dependent variable and the independent variables, stationary test to all the variables in the model must be performed. Stationary results were drawn with the help of Augmented Dickey Fuller (ADF) Test with lag length based on BSIC. The unit root test results are shown in the following table.

Table-2: ADF Unit Root Test

Variables	Critical Values*	P-value**	Inference
FDI	-4.183352	0.0137	Stationary at Levels
GDP	-4.381002	0.0088	Stationary at Levels
CAD	-6.202305	0.0001	Stationary at Levels
FER	-5.712152	0.0004	Stationary at Levels
INF	-6.742288	0.0000	Stationary at First Difference
DEBT	-3.650067	0.0448	Stationary at First Difference
NER	-4.880501	0.0027	Stationary at Levels
NIFTY	-4.994176	0.0021	Stationary at Levels
ROI	-5.869317	0.0003	Stationary at Levels

Source: Author's Calculations

*Calculated value of ADF test Statistic at 5% level of Significance

**Mackinnon (1996) One-sided P - values

In the above table, one can observe that, all the variables are stationary at Levels and inferred as I(0) but Inflation and NIFTY are stationary at first difference and inferred as I(1).

Estimated Relationship

OLS estimator is best model to find the various significant determinants of FDI inflows. We have taken the explanatory variables as Current Account Deficit (CAD), GDP (as proxy for economic growth or market size), Foreign Exchange Reserves, Inflation, Exchange Rate, Long-Term Debt, total turnovers in NSE stock market (NIFTY) and Interest Rates. The estimated results based on annual series starting from 1990-90 to 2019-20. The results can be understood from the following equation:

$$FDI = -68.53 - 0.12 * CAD + 1.024 * FER(-1) + 9.018 * GDP(-1)$$
$$(-2.73) \quad (-1.77) \quad (3.93) \quad (2.66)$$

$$+ 1.25 * D(INF(-1)) - 2.915 * D(DEBT(-1)) + 1.775 * NER(-1)$$
$$(0.69) \quad (-4.25)^* \quad (2.11)$$

$$+ 12.175 * NIFTY(-1) + 1.32 * ROI + 75.79 * Dummy(2004\text{-}05, 2008\text{-}09)$$
$$(4.89) \quad (2.49)$$

$R^2 = 0.87 \quad R^{\wedge 2} = 0.80 \quad$ F-Statistic = 12.67 D-W Statistic = 2.00079

In the above equation we can notice that each independent variable is related either in positive or negative way to the dependent variable. The relationship can be obtained from the correlation test and thus it gives a positive or negative sign to the beta coefficients. We have the signs which are matching with theoretical model but the two independents variables were not in line with theoretical model in signs. The two variables are

Nominal Exchange Rate and Inflation Rate. This could happen only if the variables are not fluctuating more or we can say that the variance between current observation and its previous value is very minimal. So, the foreign investors in such situations, will take the risk to invest into the host country to an extent. Of course, theoretical model says that the relationship between FDI and Exchange rate and also Inflation has negative effect which is based on long-term perspective.

One-year lags have been taken for the variables like FDI, GDP, Inflation, FER, DEBT and NIFTY, since our analysis is based on annual series. Optimal lags as one year was selected based on Lag length Criteria. So, to determine the optimal lag length, AIC and SBIC criteria was used. If too many lags are used, the results won't be appropriate and will be facing the problem of degrees of freedom.

Beta Coefficients are the coefficients which are very important and plays a very crucial role in explaining the amount of variations in dependent variable. The Beta values are associated with particular variables as we can see in the above equation. One can observe that one unit change in GDP causes the 9.018 units of change in the dependent variable. On the other hand, with the help of correlation coefficient, a positive relationship was obtained between the GDP and FDI which means the one unit change in GDP will be positively affecting the 9.018 units of change in FDI. On the other hand, the variations in FDI with respect to CAD, can be understood as one unit change in CAD will be negatively affecting the FDI with only 0.122 units of change. Similarly, with all other variables, interpretation part remains unchanged. But if the concern only stick to the Beta coefficient, we don't know which variable is affecting FDI more as comparing with other independent variables. So, to solve this problem we have the t-statistics which will give the most significant variable that which explains the most changes or variations in the dependent variable.

The analysis reveals, NIFTY as the most important significant variable to explain or predict the changes or variations in FDI inflows having t-statistics as 4.89. In the bracket values which are mentioned below the variables in the regression equation, It is found that all are at significant level which is more than two in value. But here too there is a problem with inflation where its t-value is 0.69 which shows it's significant in explaining the variations in FDI. We can say inflation is not very important variable in determining the FDI inflows with respect to Indian economy. Long-term Debt stands second in explaining the variations in the FDI inflows. Its t value is -4.25 which is negatively impacting on the FDI. The third important variable which helps in attracting more FDI inflows is Foreign Exchange Reserves. If we observe in recent days, India's reserves have increased tremendously. This is because of allowing more of capital flows

by India. GDP stands as significant variable with t value 2.66 in explaining the variations in FDI inflows. Actually, amongst all developing nations, India could attract more FDI inflows by its rapid economic growth. We can see the relationship between GDP and FDI inflows in more detailed way in the section of finding Causality relationship between them.

To know if the model is good fit, need to look at R-Squared and F- Statistic. For this model, the R^2 value is 0.87 which indicates that 87% of variations in FDI inflows into India can be explained by the chosen explanatory variables. Hence, the model is better in explaining the variations of FDI with eight selected independent variables. The error term captures the remaining 13% of variations. So, to add new variables into the model, we need to see the adjusted R^2 whether its value is increasing or decreasing. The adjusted R^2 is 0.80 which implies, 80% of actual variations are explained by the chosen eight independent variables. So, to improve the model, need to add few more variables into the model. The impact of these new additional variables will be reflected on adjusted R^2.

Another way to find whether the model is good or not is by F-Statistic. F-Statistic test is the test of goodness of fit. In the model, 12.67 is F-Statistic value which is good enough to say that the model is good fit. Finally, need to see whether error term has autocorrelation. To find this, one needs to look at the value of Durbin-Watson test statistic. In this model, the D-W statistics is 2.0007 which indicates high absence of autocorrelation in the error term. Two dummy variables for the periods 2004-05 and 2008-09 are introduced. The reasons for the dummy variables for these two periods were, in 2004-05, Indian government allowed 100% foreign equity under automatic route in townships, buildings, housing infrastructure and construction development projects. And also, during that point of time, government has newly introduced Special Economic Zones which entailed a lot of construction and township development. They have raised various sectorial caps and this led to a boost in FDI inflows. In 2008, the entire world experienced the financial crisis due to provision of house loans to the inefficient customers by U.S. financial institutions. So, to nullify these effects, these two dummies were added in the model.

Finally, to conclude from the model, the variables selected in the model were able to explain 87% variations in the Response variable FDI. NIFTY is the most significant variable in this model. But, we have to remember that with respect to India, Inflation is not so very important variable to explain the inflows into the country.

Granger Causality Test

Granger Causality Test between India's GDP and FDI inflows was done to find the cause and effect between them. This was estimated this at 1% level of significance and both variables are stationary at first difference.

Following are the results of Granger Causality between GDP and FDI inflows for the concerned data period from 1990-91 to 2019-20.

Table-3: Results of Granger Causality between GDP and FDI inflows

Null Hypothesis	Obs.	F-Statistic	Prob.
D(GDP) does not Granger Cause D(FDI)	27	5.20964	0.0316
D(FDI) does not Granger Cause D(GDP)	27	0.16162	0.6912

Source: Authors' Calculations

Many earlier studies have revealed the fact that there is a causality relation between the GDP and FDI inflows. So, results reveal that there is a unidirectional relationship between GDP and FDI inflows, from GDP to FDI which means the economic growth will attract more of FDI inflows in India. Since the assumed Null Hypothesis is that GDP doesn't Granger cause FDI and probability value is 0.0316 and F-Statistic is 5.20. Thus, rejecting the null hypothesis implying that GDP is attracting the FDI inflows. Even in regression analysis the most significant variable in attracting FDI inflows turned to be GDP itself.

On the other hand, FDI does not Granger Cause GDP because India's GDP is dependent on so many factors like performance of domestic firms, infrastructural availability, investment or capital for industrial growth, population, interest rate, inflation etc. So, FDI will impact GDP but very small portion. However, FDIs will give more incentives to host countries like employment opportunities, new technology implementation in domestic production process, accumulation of foreign exchange reserves, reducing the BOP deficit problems etc. During pandemic period, India is still holding its position in top ten countries in terms of foreign investments.

Conclusions and Policy Implications

In 21st century, India has created a good fame in the eyes of all nations as fast-growing economy amongst the developing nations. India has taken the policy in the year 2014, which is "Make in India", where the main motive of this policy is to encourage the foreign participation and to increase the productivity by allowing new foreign technology into various domestic firms. Even sectorial caps were raised in many sectors like Insurance, Pharmaceuticals, and Defense Manufacturing and recently, the NRIs are allowed to buy 100% stakes in Air India.

This study has examined the core determinants of FDI inflows into Indian economy with the sample period of 30 observations. Our study consists of following independent variables of CAD, FER, GDP, Inflation, Debt, Exchange Rate, NIFTY and domestic Interest Rate. Amongst these

variables, FER, GDP, NIFTY and domestic interest rate will positively impact the inflow of FDI and whereas other variables are having a negative relationship with it. The model predicted that the signs were correct for all variables except for inflation and exchange rate and the signs were not matching with theory. So, it is found that, during short-run, exchange rate and inflation have no impact on FDI inflows. The most important factor of FDI inflows in India as NSE Fifty with 4.89 as t-statistics value. The next objective was to find Granger Causality relationship between GDP and FDI inflows. The results have shown that there is unidirectional relationship from GDP to FDI inflows implying that due to India's economic growth, the foreign countries were showing their interest in investing into India.

Some of the policy implications from the study are service sector has higher inflows as per cumulative inflows for the period from April 2000 to December 2020. But, during 2020 period alone, service sector position has declined in attracting the inflows. So, India needs to focus more on service sector as in India, this sector alone contributes around 54% of the GDP. It consists of Banking, Insurance, Tourism, Retail Business etc. Current Account Deficit (CAD) is the major issue which has been existed in India over a period of time. We know that, CAD is mainly due to existence of inflation in the economy. Therefore, the scenario is like the imports are greater than exports. So, if the country is able to attract foreign investors by increasing the interest rates, then there will be decrease in inflation and the chances of increase in CAD will become less or the role of FDI in India will be able to finance the CAD in sustainable manner. Hence, the study concludes that FDI really matters for developing countries such as India and it should be allowed up to a certain limit. Foreign Investments are the source for the accumulation of Foreign Exchange Reserves and there is a scope to develop domestic firms by using sophisticated foreign technologies in their production processes.

References

Alfaro, L. (2017). Gains from foreign direct investment: Macro and micro approach. In R. B. India, *History of Foreign Direct Investments in India* (pp. S2-S15).

Baby, S., & Sharma, A. M. (2017). Determinants of Foreign Direct Investment Inflows in India. *International Journal of Applied Business and Economic Research 15(2)*, 139-148.

Baranwal, G. (2019). Links between foreign direct investment and human capital formation: Evidence from the manufacturing sector in India. *The Journal of International Trade & Economic Development, 28(2)*, 37-160.

Blomström, M. K. (2001). The determinants of host country spillovers from foreign direct investment: a review and synthesis of the literature.

In: Pain, N. (eds). *Inward Investment Technological Change and Growth*, 34-65.

Chhetri, A., & Raju, R. G. (2018). An econometric analysis of foreign investment flows into India. *Indian Journal of Economics and Development, Vol 6(6)*.

Fujimori, A., & Sato, T. (2015). Productivity and technology diffusion in India: The spillover effects from foreign direct investment. *Journal of Policy Modeling, Volume 37, Issue 4, July-August*, 630-651.

Kalita, D., & Raju, R. G. (2017). An Analysis of Foreign Direct Investment into Indian Telecommunication Sector. *South Asian Journal of Management Research, Vol. 9(2)*, 734-750.

Kumari, R., & Sharma, A. K. (2017). Determinants of foreign direct investment in developing countries: a panel data analysis. *International Journal of Emerging Markets Vol. 12 Issue: 4*, 658-682.

Manchanda, P. (2016). A study on impact of 'Make in India' initiative on FDI inflows in India. *International Journal of Business Management and Scientific Research vol: 17 International Journal of Business Management and Scientific Research vol: 17 ISSN: 2394 – 6636*, 28-34.

Pattayat, S. S. (2016). Examining the determinants of FDI inflows in India". *Theoretical and Applied Economics, Vol. XXIII No. 2(607)*, 226-238.

Raju, R. G., & Borkar, R. D. (2012). An Econometric Analysis of Foreign Institutional Investments into India during Post Reform Period. *Econometric Applications for Managers (Ed. Volume), Allied Publishers Pvt. Ltd.*, 112-131.

Raju, R. G., & Rateesh, K. (2015). Econometric Modelling of Foreign Investment Inflows Into India. *Foreign Direct Investment in India: Issues and Challenges (Ed Volume), Manjeera Publishing House*, 50-58.

Raju, R. G., & Sai, A. (2015). Determinants of Foreign Direct Investment Inflows into India: An Econometric Analysis. *Foreign Direct Investment in India: Issues and Challenges (Ed Volume), Manjeera Publishing House*, 68-76.

Raju, R. G., & Sai, A. S. (2012). Analysis of Indian Investments Abroad. *GITAM Journal of Management Vol.10(2)*, 199-212.

Roy, S. (2012). *Impact of Foreign Direct Investment on Economic Growth in India: A Co integration Analysis.* Retrieved from Scinapse: https://www.scinapse.io/papers/62914600

Sandhu, N., & Gupta, N. (2016). Determinants of inward foreign direct investment (1994-2014): The case of India. *SCMS Journal of Indian Management, 13(4),* 83-94.

Sharil Sharma, Kaur, M., Sharma, P., & Sukhmani Sandhu. (2020). A study of Relationship and Impact of Foreign Direct Investment on

Economic Growth Rate of India. *International Journal of Economics and Financial Issues*, 327-330.

Uddin, M., Chowdhury, A., Zafar, S., Shafique, S., & Liu, J. (2019). Institutional determinants of inward FDI: Evidence from Pakistan. *International Business Review, 28(2)*, 344-358.

Varshney, Y. (2018). Determinants of FDI in service sector of India: An Empirical Analysis. *International Journal of Social Science and Economic Research, Vol 3 Issue 5*, 1963-1975.

Vijay Kumar, N., Sridharan, P., & Rao, K. C. (2010). Determinants of FDI in BRICS countries: A panel analysis. *International Journal of Business Science & Applied Management. Vol 5, Issue 3*, 1-13.

Yuko Kinoshita. (2000). R&D and Technology Spillover via FDI: Innovation and Absorptive Capacity. *CERGE-EI Working Papers wp163, The Center for Economic Research and Graduate Education - Economics Institute, Prague.*

BOOK REVIEW

Creating, Building and Sustaining an Institution – A Momentous Journey of Institute of Public Enterprise

By Prof R K Mishra and Dr Geeta Potaraju

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Professor
Department of Commerce and Former Dean, School of Professional Studies, Sikkim University
(A Central University established by an Act of Parliament of India 2007)
Gangtok

Memories and works is the edifice for an institution and hence it stands true for Institute of Public Enterprise in short IPE. The signature of IPE is the path it had walked and touched the life of hundreds of educators, managerial personnel, administrators and researchers. This book is a work to render a graphology evidence of the momentous journey of the institute. A seed rowed by Mr. S.S. Khera, Dr. D.S. Reddy and Prof. Few of them left ever lasting mark on the institute whose name require special mention and they are Prof. V.V. Ramanadham, Mr. T.L. Sankar, Justice Jaganmohan Reddy (both as Chairman and Director). Dr. K. Balaram Moorthy and Prof. R.K. Mishra.

The institute traces its beginning with the public enterprises (sometimes referred to as Public Sector Undertaking-through there is a difference in the nomenclature) which dominate the economic development and academic discussion space in India in early 1960's. Public enterprises took a centre stage in public policy and a need for a strong institutional base was felt to bridge the gap of academic and policy research with the operations of the public enterprises. The advent of IPE came at this juncture with the support of Osmania University - which was gaining popularity in academic circles. IPE was held as a cult propagator for research on public enterprises which was academically acceptable.

This book spans over seven chapters which charts the path of building of IPE. The first chapter deals with the making of an institution. The second chapter deals with the contribution of the institution in social sciences and management research. The focus of the third chapter is on the contribution of the institute in Management Development Programs, The fourth chapter deals with the work of the consulting arm, the fifth chapter takes us through

the journey of the institute in nurturing management education, the sixth chapter shows how the institute could grow firmly over a period of time and the concluding chapter highlights the shared vision of the institute.

The book charts out the contribution of IPE in PhD research, case writing and consulting over a period of years. It gives an insight into the excellent input it has been able to create for the academic world by providing data base on State Level Public Enterprises (SLPEs), producing mimeograph and working papers on public policies and working papers and address the sectarian issues which include the capital market and provide publication platform through its journals ranging from public enterprises management to governance issues and public policy.

IPE's role in consulting for corporate and governance has remained highly focused. A Long journey that took IPE from a small amount consulting in 1973 managed into billion rupees by the years to come. Funded by International Funding agencies, Planning Commission, the Government of various states such as U.P, M.P, Odisha and West Bengal, the projects which had been commissioned under its aegis had received high acclaim in policy making world.

Funds from Public Enterprises and other intergovernmental agencies such as DFID, Asian Development Bank, World Bank resulted in creating meaningful dialogue to the society in areas of health, family welfare and safety net quarries for the society.

IPE remained focused on conferences, symposiums and seminars to create platform for discussion on issues pertaining to management of public enterprises, issues of governance and other matters of policy interest.

The institute stepped into management education primarily for training the public enterprises work force. However, over a period of time due to several forces of environment, it graduated to a full- fledged management institute offering PGDPM (equivalent to MBA) and several allied courses. The institute earned a good name for itself in this front too. In the year 2014 it established it second campus at Shamirpet to strengthen its focus on management education. In true spirit the institute is striving for the triple crown of accreditation from AACSB, AMBA and EQUIS.

The Book more or less charts the path of the IPEs phenomenal journey. However, somewhere down the line if it could have listed down the names of the faculty who had contributed to the journey it could have documented the history more wholesome way. The book will be a good collection for those who want to understand the academic environment of India especially research institutes during the early 1950 have and study the environment of social research during the period.

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