

TRADE CREATION EFFECTS ON GLOBAL VALUE CHAINS: A CASE STUDY OF BRICS

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Abstract

Over the last twenty years, international trade and production have increasingly been structured around what is commonly known as Global Value Chains (GVCs). The trade volume of BRICS significantly centers on Global Value Chains (GVCs) or Global Supply Chains. In this regard, the institutional frameworks of BRICS concerning FDI inflows and foreign exchange reserves have positively influenced trade creation among BRICS nations, thereby affecting the Global Value Chains. This paper aims to examine the directional trade flows of BRICS and its intra-trade volume in relation to global value chains. Firstly, the institutional changes within BRICS (FDI inflow and foreign exchange reserves) can enhance merchandise trade among BRICS countries. Secondly, there is an increase in merchandise trade outflows from BRICS, and finally, an increase in service trade outflows from BRICS. The first and third findings can be interpreted as trade creations resulting from the rise in foreign exchange reserves and FDI inflows in BRICS nations, along with rules of origin acting as an implicit trade barrier for imports from the rest of the world. Understanding the Global Value Chains is crucial for comprehending the third finding regarding the increase in trade flows from BRICS. The primary factor driving the rise in outflows is the necessity of the complementarities of value chains for the importation of intermediates by BRICS members.

Keywords

Global Value Chains, Trade Creation, Trade Diversion, and BRICS.

Resumo

Nos últimos vinte anos, a produção e o comércio internacional têm-se estruturado cada vez mais em torno do que é comumente conhecido como Cadeias de Valor Globais (CVG). O volume de comércio dos BRICS centra-se significativamente nas Cadeias de Valor Globais (CVG) ou nas Cadeias de Abastecimento Globais. Neste contexto, os quadros institucionais dos BRICS relativos aos fluxos de IDE e às reservas cambiais influenciaram positivamente a criação de comércio entre as nações dos BRICS, afetando assim as Cadeias de Valor Globais. Este artigo tem como objetivo examinar os fluxos comerciais direcionais dos BRICS e o seu



volume de comércio intra-BRICS em relação às cadeias de valor globais. Em primeiro lugar, as mudanças institucionais no seio dos BRICS (fluxos de IDE e reservas cambiais) podem potenciar o comércio de mercadorias entre os países dos BRICS. Em segundo lugar, verifica-se um aumento nas saídas de comércio de mercadorias dos BRICS e, finalmente, um aumento nas saídas de comércio de serviços dos BRICS. A primeira e a terceira conclusões podem ser interpretadas como criações de comércio resultantes do aumento das reservas cambiais e dos fluxos de IDE nos países do BRICS, juntamente com as regras de origem que atuam como uma barreira comercial implícita para as importações do resto do mundo. Compreender as Cadeias de Valor Globais é crucial para entender a terceira conclusão relativa ao aumento dos fluxos comerciais dos BRICS. O principal fator que impulsiona o aumento das saídas é a necessidade de complementaridades das cadeias de valor para a importação de produtos intermédios pelos membros dos BRICS.

Palavras-chave

Cadeias de Valor Globais, Criação de Comércio, Desvio de Comércio e BRICS.

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Introduction

The evolving architecture of the global economy has been profoundly shaped by the rise of regional economic cooperation and the fragmentation of production across borders. Over the past three decades, the expansion of Global Value Chains (GVCs) has transformed international trade from the exchange of finished goods to the exchange of intermediate inputs, services, and knowledge. In this context, trade creation the process through which economic integration leads to the replacement of higher-cost domestic production with lower-cost imports from partner economies has become a central mechanism linking regional cooperation with global production networks. The emergence of the BRICS grouping, comprising Brazil, Russia, India, China, and South Africa, has added a new dimension to this transformation by reshaping trade flows, investment patterns, and production linkages among major emerging economies.

Since the early 2000s, BRICS countries have experienced rapid economic growth, increased industrial capacity, and expanded participation in international trade. Their growing share of global GDP, manufacturing output, and foreign direct investment has strengthened their position within global production systems. However, beyond their individual economic performance, the collective integration of BRICS economies has created new opportunities for trade creation within the bloc. By reducing trade barriers, promoting investment cooperation, and strengthening institutional coordination, BRICS has facilitated the expansion of intra-bloc trade in intermediate goods, technology, and services. These developments have significant implications for GVC participation, as increased intra-regional trade can enhance specialization, reduce production costs, and foster deeper integration into global production networks. The relationship between trade creation and GVC participation is particularly important for emerging economies. Trade creation within BRICS can stimulate industrial upgrading, encourage technology diffusion, and improve competitiveness in global markets. At the same time, it may alter



the geographical distribution of value addition by shifting production stages among member countries. Understanding how BRICS-driven trade creation influences GVC integration is therefore crucial for evaluating the broader role of South–South cooperation in the global economy.

The rise of Global Value Chains (GVCs) is a dominating feature of the recent evolution in the structure of international trade. In the OECD, the import content of exports increased by 63% between 1995 and 2011, reaching a value of 24.3% on average¹. This internationalisation of production through global value chains calls for a reevaluation of the effects of regional trade agreements (RTA) on trade flows. In reality, about 70% of international trade today involves global value chains (GVCs), as services, raw materials, parts, and components cross borders often numerous times. Once incorporated into final products they are shipped to consumers all over the world². The Exports from one country to another often involve complex interactions among a variety of domestic and foreign suppliers. Even more than before, trade is determined by strategic decisions of firms to outsource, invest, and carry out activities wherever the necessary skills and materials are available at competitive cost and quality (OECD)³.

Data Base and Methods

This study adopts a quantitative and empirical research design to examine the trade creation effects of BRICS and their implications for Global Value Chain (GVC) integration. The analysis relies on secondary macroeconomic and trade datasets compiled from internationally recognized databases, including ITC, World Bank, International Monetary Fund, UN Comtrade, OECD, and UNCTAD. These sources provide consistent and comparable cross-country indicators required for longitudinal and panel analysis. The study covers the five BRICS economies; Brazil, Russia, India, China, and South Africa over the period 2000–2024, capturing the phase of rapid economic expansion and deepening economic cooperation among member states.

To evaluate trade creation and GVC participation, the study uses a panel dataset consisting of trade, macroeconomic, and institutional indicators. The key dependent variable is intra-BRICS trade intensity, measured through bilateral merchandise trade flows among BRICS members. Complementary indicators of GVC participation are derived from FDI inflows among the BRICS. These variables capture the degree to which BRICS economies participate in fragmented global production networks.

The independent variables include FDI inflows, and intra-BRICS trade growth. Institutional indicators such as trade policy interventions on the are incorporated as control variables to account for structural factors affecting trade and production integration among the BRICS. The empirical strategy combines descriptive statistics, and trade trend analysis. Initially, descriptive analysis is conducted to identify patterns in intra-BRICS trade growth, and FDI patterns of the flow among the BRICS. This is

¹ For some countries such as Luxembourg or Belgium, imports make up more than a third of their exports. See data <https://data.oecd.org/trade/import-content-of-exports.html>

² OECD Information, <https://www.oecd.org/trade/topics/global-value-chains-and-trade/>

³ OECD Information, <https://www.oecd.org/trade/topics/global-value-chains-and-trade/>



followed by correlation analysis to explore the relationships between trade integration, FDI flow, and GVC participation indicators.

To estimate trade creation effects, the study employs a simple regression model intends to analyse the directional trade flows of BRICS and its intra-trade volume towards the global value chains, along with support of foreign currency reserves and FDI Inflows as independent variables. This framework explains bilateral trade flows as a function of economic size, geographic and economic distance, and institutional factors. The model is extended to include BRICS integration variables to capture intra-regional trade effects. Through this mixed-method quantitative approach, the study provides a rigorous empirical basis for assessing how trade creation within BRICS influences participation in Global Value Chains.

Literature Review

Estimating the effects of regional trade agreements requires building a counterfactual world. There are two main approaches: using a structural model to simulate the counterfactual as in Caliendo and Parro (2015), or using gravity equations to predict the counterfactual as in Carrere (2006), Magee (2008), Baier and Bergstrand (2007) and Baier and Bergstrand (2015). This paper is closely related to Magee (2008), which estimates the effects of trade agreements using a panel of 133 countries from 1980 to 1998. Also closely related is Carrere (2006), who uses a gravity model to assess trade creation and trade diversion effects. Our contribution comes from the broader coverage of Regional Trade Agreements and countries, our focus on the effect of RTA on inflows to and outflows from the region, and on the account of the role of Global Value Chains. Also related is Baier and Bergstrand (2007) and Baier and Bergstrand (2015) who address the problem of endogeneity related to free trade agreements and trade flows by using panel data and average treatment effects (ATEs). They find positive estimates and conclude that free trade agreements increase members' international trade.

Anderson and Yotov (2016) refer to a gravity model to estimate the effects of trade agreements on terms of trade and global efficiency. They face two main problems: heteroscedasticity in trade flows data and indigeneity due to the two-way causality. To address the first one, they use the Poisson pseudo maximum likelihood (PPML). To address the second one, they introduce two variables, one for trade agreements between countries with low most-favoured-nation tariffs (MFN), the other for trade agreements between countries with high MFN tariffs. They find an increase in the global efficiency of manufacturing trade over the period 1990-2002.

The behaviour of trade flows following a regional trade agreement is also impacted by the depth of the agreement, as analysed in Mattoo et al. (2019). Using a sample of 96 countries for the period 2002-2014, they show that deep agreements lead to more trade creation and less trade diversion than shallow agreements. Additionally, beyond complementarity in trade policy, GVCs also create strong interdependence of GDP fluctuation at business cycle frequency and are associated with network propagation effects of any reform aiming at reducing the cost of cross-country trade.² Moreover, the segmentation of production across countries also has significant implications for the magnitude of estimated trade elasticities (Amiti et al. (2014), de Soyres et al. (2018)).



Finally, Estevadeordal et al. (2008) study the impact of regional trade agreements on trade liberalization towards non-members. Focusing on Latin American countries, they found “complementary effects” in the sense that a preferential tariff reduction leads to a reduction in the external tariff. Freund and Ornelas (2010) provide an insightful review of the literature on regionalism. The empirical findings of this paper, combined with theories of optimal trade policy suggest two opposing forces towards greater global integration: the response of trade flows to an RTA gives members an incentive to reduce trade barriers towards non-members; however, it gives non-members an incentive to increase trade barriers towards the region. The incentive for members to lower trade barriers echoes the literature on multilateralism (Estevadeordal et al. (2008), Bagwell and Staiger (1999)).

Theoretical and Conceptual Framework

The concept that “trade creates geography” is particularly significant when analysed within the framework of BRICS (Brazil, Russia, India, China, and South Africa), as this bloc exemplifies how the expansion of trade relationships can alter both regional and global economic landscapes. Historically, the geography of global trade was primarily influenced by North America and Western Europe. Nevertheless, the swift increase in intra-BRICS trade and their integration into global value chains has facilitated the rise of new economic centers throughout the Global South. The surge in trade among BRICS nations has encouraged the development of major ports, industrial corridors, logistics networks, and financial hubs in cities like Shanghai, Mumbai, São Paulo, and Johannesburg, demonstrating how trade flows actively reshape spatial economic patterns. As trade between BRICS countries has intensified, companies have started to relocate production to areas that offer larger markets, lower labour costs, and improved infrastructure. This shift has resulted in significant accumulation effects, especially in the manufacturing and services sectors, leading to the creation of new “core regions” within emerging economies. For instance, China and India have evolved into key manufacturing and services centers, drawing in investments and establishing solid industrial clusters that link suppliers, producers, and global markets. These trends exemplify how trade has transformed economic geography by moving the focal points of production and consumption towards emerging economies. The BRICS experience also underscores the development of new South–South trade corridors, which diminish reliance on conventional North–South trade routes. Investments in infrastructure, digital connectivity, and financial collaboration such as development banking and currency cooperation, have boosted regional integration and adopted alternative economic order. As these systems expand, new trade routes and production centers continue to arise, reinforcing the notion that geography is shaped by trade. In this regard, BRICS illustrates how the expansion of trade influences geographical progress.

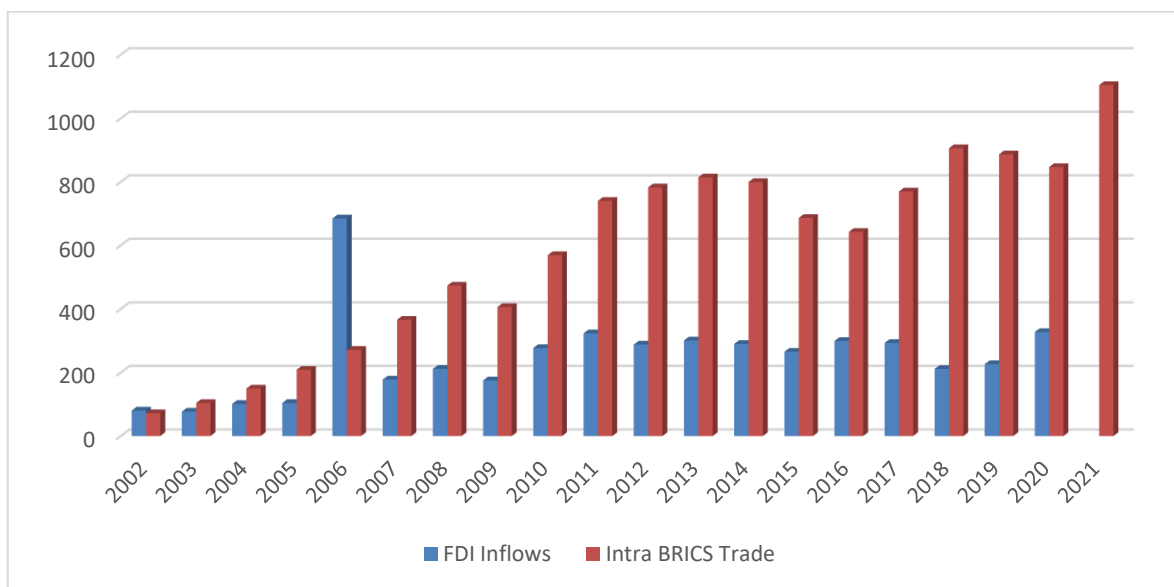
Findings and Analysis

The BRICS FDI inflows significantly influenced on its intra BRICS trade volume. The BRICS formed 2009, the period of post global financial crisis the bellow figure gave the evidence of the BRICS institutional arrangements on FDI inflows leads to increase the intra BRICS



trade volume which exhibits trade creation on global value chains. The detailed analysis is given below.

Figure 1. The BRICS FDI and Intra BRICS Merchandise Trade Volume (Values in Billion USD)



Source: ITC Calculation based on UNCOMTRADE, ITC Statistics, and BRICS Joint Statistical Report 2020.

https://www.trademap.org/Country_SelProduct_TS.aspx?nvpm=1%7c%7c6757%7c%7c%7cTOTAL%7c%7c%7c2%7c1%7c1%7c2%7c2%7c1%7c3%7c1%7c1%7c1

In the above figure 1 illustrates the impact of FDI inflows on the Intra BRICS merchandise trade volume. From 2002, Intra-BRICS merchandise trade volume were 71.73 Billion USD and the volume had increased up to 473.4 Billion USD in the year 2008. This data depicts pre-BRICS era wherein the intra BRICS trade volume had been positively influenced by the FDI inflows devoid of any institutional arrangements. During this period, the BRICS FDI inflow share had substantially increased from 79.99 Billion USD to 211.33 Billion USD. After the formation of the BRICS i.e., post BRICS, the Intra BRICS merchandise trade volume had significantly risen due to an increase in the FDI inflows among the BRICS countries. In the year 2009, Intra BRICS merchandise trade volume stood at 406.05 Billion USD along with FDI inflows at 175.04 Billion USD.

The period of 2010- 2018, the intra BRICS merchandise trade volume increased from 569.25 to 905.69 Billion USD. Similarly, the imports also increased from 358.54 to 552.42 Billion USD. The institutional arrangements on FDI inflows have influenced by increasing of Intra BRICS trade volume, which makes massive volume of trade creation in this group. The FDI inflows during this period constantly maintained at same pace with 211.19 Billion USD. The bilateral trade negotiations, the BRICS New Development bank financial assistances on transport sectors (9.56 Billion USD), Urban development projects (3.69 Billion USD), ICT projects (300 Million USD), and Multiple areas projects (2.15 Billion USD) are major factors positively influenced on Intra BRICS trade volume.

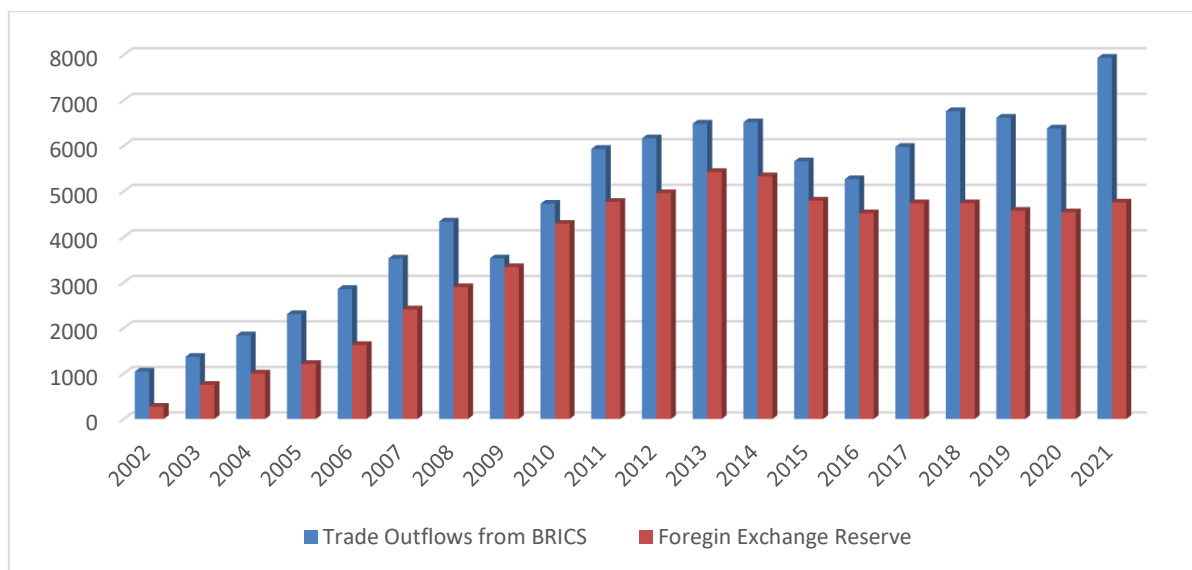


In the period of COVID-19 pandemic, the BRICS intra trade volume have played significant role on their economic recoveries. The BRICS emergency programme loan for economic recovery (6 Billion USD), and Emergency assistance programme in combating COVID-19 (6 Billion USD). The above economic recovery assistance by New Development Bank platform necessitated 2 Billion USD on each BRICS member states. Under this platform total distributed 12 Billion USD financial assistances on combating on COVID-19 situation. The COVID pandemic period of 2019 -21 data shows that intra BRICS exports increased from 354.49 to 451.26 Billion USD. The intra BRICS trade volume increased from 886.45 to 1104 Billion USD. The intra BRICS trade volume increased this situation because of the BRICS emergency loan, and economic assistance programme under the new development bank institutional arrangement. The BRICS FDI inflows increased from 226.14 to 327.31 Billion USD in 2019-20 period. In this pandemic uncertainties, the BRICS institutional involvement on the basis of New development bank projects, Emergency loan, and FDI inflows have greatly influenced the intra trade volume and economic recoveries. The increase in the FDI inflows leads to creation of intra BRICS trade volume on global value chains.

The BRICS Foreign Exchange Reserve and Trade Creation on GVCs

The BRICS group have contributed to the largest level of foreign exchange reserve which consist of 4.75 Trillion USD in 2021. The BRICS foreign exchange reserve have influenced its inter BRICS merchandise trade volume over the years. The below figure illustrates the relations of foreign exchange reserve and inter BRICS Merchandise Trade volume.

Figure 2. The BRICS Foreign Exchange Reserve and Inter Merchandise Trade Volume (Values in Billion USD)



Source: ITC Calculation based on UNCOMTRADE, ITC Statistics, and BRICS Joint Statistical Report 2020.

https://www.trademap.org/Country_SelProduct_TS.aspx?nvpm=1%7c%7c6757%7c%7c%7cTOTAL%7c%7c%7c2%7c1%7c1%7c2%7c2%7c1%7c3%7c1%7c1%7c1



The above figure 2 illustrates inter BRICS merchandise trade relations, in the case of inter BRICS merchandise trade volume (2002-2008) increased from 1041.37 to 4337.1 Billion USD. Similarly, BRICS Foreign Exchange Reserve also increased from 268.41 to 2894.32 Billion USD during this period. The BRICS foreign exchange reserve act as catalyst and boost external trade sector of BRICS.

In the period of 2009-18, inter BRICS merchandise trade volume increased from 3527.78 to 6760.3 Billion USD, and in the case of BRICS foreign exchange reserve increased from 3335.18 to 4739.25 Billion USD. The inter BRICS trade volume and foreign exchange reserve have helped the BRICS economy at a greater level to recover these nations from global financial crisis, and Eurozone crisis.

In the case of pandemic period (2019-21), inter BRICS trade volume increased from 6616.18 to 7933.52 Billion USD. In the case of BRICS foreign exchange reserve volume increased from 4573.54 to 4755.3 Billion USD. The above data portray BRICS as an institution that is actively engaged in the global volume of trade and global value chains on merchandise trade. The BRICS have succeeded to combat global financial crisis, and Eurozone crisis certain level.

In the case of the BRICS merchandise exports share contribution on world exports increased in the period of 2002-08. The percentage of exports share increased from 8.80% in 2002 to 14.73% in 2008 (see table 5 in the appendix part). The period of 2009-2018, same tendency also exhibited from 15.28 (2009) % to 18.63% (2018). In the period of pandemic (2019-21) BRICS exports share increased from 18.96 % (2019) to 20.07% (2021) on over World merchandise trade exports volume.

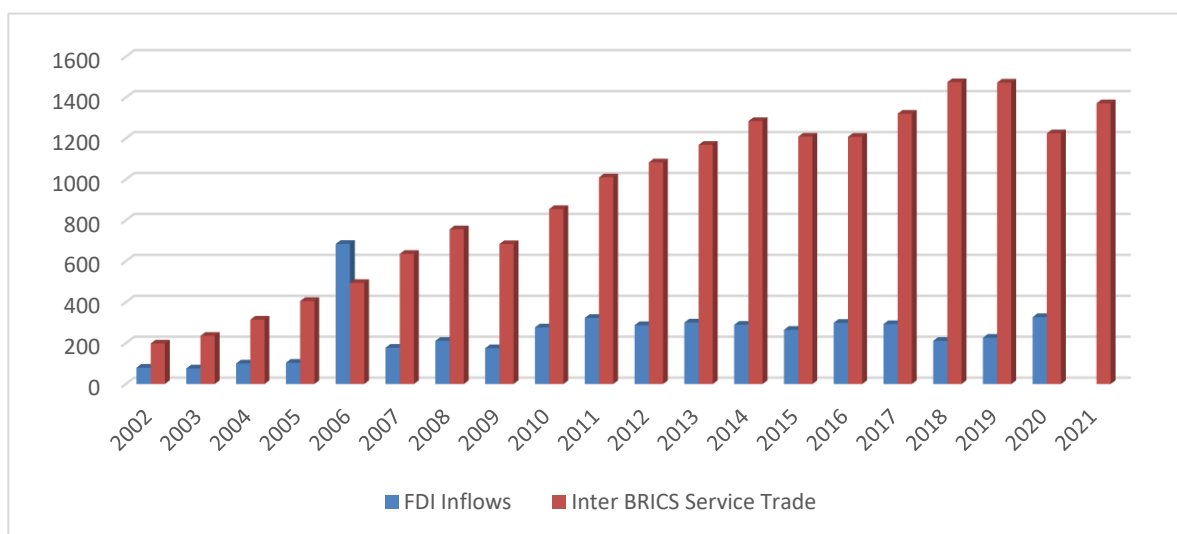
In the case of the BRICS merchandise imports share contribution on world imports increased in the period of 2002-08. The percentage of imports share increased from 7.15% in 2002 to 12.08% in 2008 (see the table 6 in the appendix part). The period of 2009-18, the imports contribution share increased from 12.94% (2009) to 16.04% (2018). In the period of pandemic (2019-21), the BRICS imports share increased from 15.99% (2019) to 16.52% (2021) on over World merchandise trade imports volume. To, conclude that the BRICS contributed total merchandise trade share on global trade volume reached 10.01% in 2021, 18.09 % in 2020, and 17.43% in 2019. This evidence clearly marked that the BRICS actively participated during the pandemic on global value chains and global supply chains of the trade in merchandise.

The BRICS FDI Inflows and Trade Creation on GVCs

The BRICS FDI inflows significantly influenced on its inter BRICS service trade volume. The bellow figure gave the evidence of the BRICS institutional arrangements on FDI inflows leads to increase the intra BRICS service trade volume which exhibits trade creations on global value chains. The detailed analysis is given bellow.



Figure 3. The BRICS FDI Inflows and Inter BRICS Service Trade (Values in Billion USD)



Source: ITC, UNCTAD, WTO trade in services database based on Eurostat, International Monetary Fund, BRICS Joint Statistical Report 2020, Organisation for Economic Co-operation and Development (OECD) and relevant national statistical authorities statistics https://www.trademap.org/Country_SelProductCountry_TS.aspx?nvpm=1%7c%7c6757%7c%7c6757%7cTOTAL%7c%7c%7c2%7c1%7c1%7c2%7c2%7c1%7c3%7c1%7c1%7c1

The above figure 3, depict inter BRICS service trade relations, in the case of inter BRICS service trade volume (2002-2008) increased from 198 to 756 Billion USD. Similarly, BRICS Foreign Direct Investment Inflows also increased from 79.99 to 211.33 Billion USD during this period. The BRICS FDI inflows boost inter BRICS service trade volume such that the economy revives as a result of the pandemic shocks wherein the global value chains can positively benefit from such trade creations.

In the period of 2009-18, inter BRICS service trade volume increased from 684 to 1475 Billion USD, and in the case of BRICS FDI inflows increased from 175.04 to 211.19 Billion USD. The inter BRICS service trade volume and FDI inflows have helped the BRICS economy at a greater level to recover these nations from global financial crisis, and Eurozone crisis.

In the case of pandemic period (2019-21), inter BRICS service trade volume decreased from 1473 to 1372 Billion USD. In the case of BRICS FDI inflows volume reached 327.31 Billion USD in 2020. The economic system suffered a major setback as most parts of the world were forced into a complete lockdown due to the ongoing fatal contagion, causing a major decline in employment, output, and service trade. The Inter BRICS service trade volume assists in the economic recovery of these economies from pandemic uncertainties.

In the case of the BRICS service exports share contribution on world service exports increased in the period of 2005-10. The percentage of exports share increased from 7.29% in 2005 to 9.86% in 2010 (see table 7 in the appendix part). The period of 2011-2018, same tendency also exhibited from 10.13 (2011) % to 9.74% (2018). In the period of pandemic (2019-21) BRICS exports share increased from 9.80 % (2019) to 11.42% (2021) on over world service trade exports volume.



In the case of the BRICS service imports share contribution on world imports increased in the period of 2005-10. The percentage of imports share increased from 8.75% in 2005 to 11.99% in 2010 (see the table 8 in the appendix part). The period of 2011-18, the imports contribution share increased from 12.96% (2011) to 15.30% (2018). In the period of pandemic (2019-21), the BRICS service imports share decreased from 14.59% (2019) to 11.56% (2021) on over world service trade imports volume. To, conclude that the BRICS contributed total service trade share on global trade volume reached 11.49% in 2021, 12.59 % in 2020, and 12.03% in 2019. This evidence clearly marked that the BRICS actively participated during the pandemic on global value chains and global supply chains of the trade in service.

The paper postulated the following hypotheses based on the literature and theoretical explanations. Firstly, the institutional changes in the BRICS (FDI Inflow, FDI Outflow, and Foreign Exchange Reserve) can increase the trade within the BRICS countries, secondly; a decrease in the trade outflows, and finally; an increase in the trade inflows. The following functional model can represent the three hypotheses mentioned above.

Change in trade within the BRICS = f [BRICS Institutional Arrangements]

Change in Trade Inflows to the BRICS = f [BRICS Institutional Arrangements]

Change in Trade outflows from the BRICS = f [BRICS Institutional Arrangements]

Table 1. Correlation between Institutional Arrangements and BRICS Trade

	FDI Inflows	FDI Outflows	Foreign Exchange Reserve
Intra BRICS Trade	0.32	0.90	0.97
Inter BRICS Service Trade	0.30	0.91	0.94
Trade Outflows from BRICS	0.35	0.90	0.97

In the first hypothesis, it is expected that institutional arrangements can positively impact the trade within BRICS, meaning that trade within BRICS will increase along with FDI inflow and Foreign Exchange reserve, and trade will decrease with an increase in FDI outflow. To test the same, a multiple linear regression was performed. The model is as follows:

Δ Trade within BRICS= f [Δ FDI Inflows, Δ FDI Outflow, Δ Foreign Exchange Reserve]

The regression result is explained in Table 1. It shows the model is significant where the R squared value is 0.93 and the model F value is less than 0.05. With respect to individual coefficients, it expects a positive relationship between Trade within BRICS and FDI inflow and Foreign Exchange Reserve with a statistical significance. However, the regression result revealed that both have a positive relationship with Trade within BRICS with no statistical significance where their corresponding p-values are greater than 0.05. On the other hand, we expect a negative relationship between Trade within BRICS and FDI outflows, although, it is statistically not significant.

**Table 2.** Regression Analysis of Trade within BRICS and BRICS Institutional Arrangements

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-20.1171571	53.86403	-0.37348	0.714386
FDI Inflows	0.000428431	0.150097	0.002854	0.997763
FDI Outflows	-0.77592637	0.766379	-1.01246	0.328499
Foreign Exchange Reserve	0.190778916	0.035783	5.331496	0.000106
R Square	0.936754723			
Standard Error	78.86251389			
<i>Significance F</i>	1.23609E-08 (95%)			

The second hypothesis, that is trade Inflow to the BRICS is dependent on BRICS institutional arrangements (FDI Inflow, FDI Outflow, and Foreign Exchange Reserve). As done in the first hypothesis test, a similar multiple regression is performed and Table 2 reveals the result. It shows the model is significant where the R squared value is higher and the F value is less than 0.05. With respect to individual coefficients, it expects a positive relationship between trade inflows to the BRICS and FDI inflow and Foreign Exchange Reserve. However, the regression result revealed that Foreign Exchange Reserve has a positive relationship with Trade within BRICS with a statistical significance where its corresponding p-values is less than 0.05. As against the hypothesis, the result shows a negative relationship between Trade inflows to the BRICS and FDI inflows, still, it is not significant. On the other hand, we expect a negative relationship between Trade Inflows to the BRICS and FDI outflows, but the result shows a positive relationship with no statistical significance.

The third hypothesis is trade outflow from the BRICS is dependent on BRICS institutional arrangements (FDI Inflow, FDI Outflow, and Foreign Exchange Reserve). As done in the previous analysis, multiple regression is performed and Table 3 reveals the result. It shows the model is significant where the R squared value is higher and the F value is less than 0.05. With respect to individual coefficients, it expects a positive relationship between trade outflows to the BRICS and FDI inflow and Foreign Exchange Reserve with a statistical significance. However, the regression result revealed that Foreign Exchange Reserve has a positive relationship with trade within BRICS with statistical significance where its corresponding p-values is less than 0.05. However, the result shows a positive relationship between trade inflows to the BRICS and FDI inflows with no statistical significance. On the other hand, we expect a negative relationship between trade inflows to the BRICS and FDI outflows, but it is not statistically significant.

Table 3. Regression Analysis of Trade Inflows to the BRICS and BRICS Institutional Arrangements

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	149.4699468	111.7667556	1.337338155	0.202435166
FDI Inflows	-0.105916187	0.311449205	-0.340075315	0.738848312
FDI Outflows	1.091043943	1.590221588	0.686095543	0.503857601
Foreign Exchange Reserve	0.180547784	0.074249775	2.431627373	0.029051999



R Square 0.93775944
Standard Error 163.6381
Significance F 1.10307E-06 (95%)

Table 4. Regression Analysis of Trade outflow from the BRICS and BRICS Institutional Arrangements

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	519.7003899	312.4668057	1.663217918	0.118484303
FDI Inflows	0.544366005	0.8707199	0.625190724	0.541902914
FDI Outflows	-6.660548235	4.445789422	-1.498169977	0.156294951
Foreign Exchange Reserve (FER)	1.364212298	0.207580418	6.571970077	1.24529E-05
R Square	0.977			
Standard Error	457.483			
<i>Significance F</i>	1.17601E-09 (95%)			

Conclusion

To conclude that, it is hypothesized that BRICS institutional arrangements have an impact on intra BRICS trade, inter BRICS service trade, and merchandise trade outflows from BRICS. The study considers FDI inflows, outflows, and foreign exchange reserves as proxies for BRICS institutional arrangements. A multiple regression analysis is performed to assess the impact of institutional arrangements on trade and it developed three models based on the hypothesis. The regression result revealed that all the three models are fit and statistically significant, meaning that institutional arrangements can explain the changes in the BRICS trade. With respect to individual coefficients, the sign of FDI inflow, outflow, and FER are as expected, however, they are statistically not significant. In the second test, as against the expectation, FDI inflows had a negative sign and outflows had a positive sign, which reveals an opposite relationship. Although, the values are statistically not significant. In the third model, the signs of the coefficients are as expected, however, only the coefficient of the Foreign Exchange Reserve is statistically significant. To overall conclude that the BRICS FDI inflows have positively influenced inter service and intra merchandise trade volumes. In the case of BRICS, foreign exchange reserve influenced them for inter merchandise trade volume. The above institutional arrangements on FDI inflows, Foreign exchange reserves made impacts in trade creations in BRICS group. This would be exhibiting factors of trade creation on global value chains along with total trade volume 10.4 Trillion USD in 2021 compare with previous year data of 8.44 Trillion USD volume. There are 1.95 Trillion USD trade volume difference between 2020 and 2021. The above trade creation also good for global value chains and global supply chains in the era of pandemic. The BRICS contributed total volume of merchandise trade on 8.73 Trillion USD out of 48.17 Trillion USD world merchandise trade volume in 2024 along with 18.12 % share of global merchandise trade volume. The BRICS also contributed total service trade on 2.2 Trillion USD out of 20 Trillion USD world service trade volume in 2024 along with 11 % share of global service trade volume.

The above data demonstrated that the interaction between Foreign Direct Investment (FDI), intra-BRICS trade, and Global Value Chain (GVC) participation forms a mutually reinforcing cycle within the BRICS economies. Rising FDI inflows have played a catalytic role in strengthening production capacity, industrial diversification, and technology



transfer across the BRICS. Investment in manufacturing, infrastructure, logistics, and digital sectors has enhanced productive efficiency and created the necessary conditions for expanding cross-border production networks.

The findings suggest that FDI acts as a bridge connecting domestic industries with regional and global markets. Increased investment flows stimulate intra-BRICS trade by creating demand for intermediate inputs, encouraging supply-chain complementarities, and facilitating the relocation of production stages across member countries. As firms expand operations and integrate supply chains within the bloc, trade in intermediate goods and services grows, reflecting deeper production interdependence.

In turn, the expansion of intra-BRICS trade strengthens GVC participation. Greater exchange of components, technology, and services allows BRICS economies to move beyond primary commodity exports toward higher value-added manufacturing and services. This process contributes to industrial upgrading, improves export competitiveness, and enhances the position of BRICS within global production hierarchies. The study therefore concludes that FDI, intra-BRICS trade, and GVC integration operate as an interconnected triad: FDI enables trade expansion, trade fosters production linkages, and these linkages deepen integration into global value chains.

However, sustaining this virtuous cycle requires continued policy coordination, improved infrastructure, and stronger institutional cooperation to reduce structural asymmetries among member economies. Strengthening these foundations will enable BRICS to maximize the long-term developmental benefits of FDI-driven trade creation and to play a more influential role in the evolving architecture of global value chains.

Overall, the study concludes that BRICS cooperation represents an important driver of South–South economic integration and a significant force in the ongoing restructuring of the global trading system. Strengthening policy coordination, improving logistics and infrastructure, and promoting innovation-led industrial upgrading will be essential for sustaining trade creation and enhancing the long-term contribution of BRICS to global value chains.

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**Table 7.** World Service Exports (Value in Trillion USD)

Year	World Service Trade Exports	Inter BRICS Service Exports	% of Share Contribution
2005	2.55	0.18	7.29
2006	3.02	0.23	7.61
2007	3.62	0.30	8.36
2008	4.06	0.36	9.08
2009	3.64	0.32	8.81
2010	3.96	0.39	9.86
2011	4.45	0.45	10.13
2012	4.58	0.46	10.15
2013	4.87	0.48	9.86
2014	5.23	0.49	9.53
2015	4.99	0.47	9.52
2016	5.07	0.46	9.24
2017	5.52	0.52	9.43
2018	6.07	0.59	9.74
2019	6.21	0.60	9.80
2020	4.96	0.56	11.42
2021	7.31	0.64	8.75
2022	8.35	0.82	9.82
2023	8.18	0.81	9.90
2024	9.27	0.91	9.81

Source: ITC, UNCTAD, WTO trade in services database based on Eurostat, International Monetary Fund, Organisation for Economic Co-operation and Development (OECD) and relevant national statistical authorities statistics,
https://www.trademap.org/Service_SelService_TS.aspx?nvpm=1%7c%7c%7c%7c%7c%7c%7cS00%7c1%7c3%7c1%7c2%7c2%7c1%7c5%7c1%7c1%7c1

