



# TRADE DYNAMICS BETWEEN INDIA AND G20 NATIONS: A COMPREHENSIVE ANALYSIS

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## Abstract:

This research paper analyzes the trade dynamics between India and various G20 nations, encompassing developing and developed countries. The research paper examines export and import data over a significant period, ranging from 1996 to 2023, shedding light on trends, growth rates, variance, and correlations with India's exports and imports. The paper offers insights into the economic relationships and dependencies between India and its G20 trading partners by employing statistical analysis and correlation coefficients.

**Keywords:** Bi-lateral Trade Balance, Correlation, Economic Development, Economic Growth.

## Introduction:

The Group of Twenty (G20) is a key platform for international economic cooperation and has been instrumental in addressing a wide range of economic issues, including financial stability, trade, and climate change. Its membership includes 19 countries (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, United Kingdom, and the United States) and the European Union, representing two – thirds of the world's population and 85% of global GDP and over 75% of the global trade.

## History:

The G7, comprising the world's seven most powerful and developed nations, was not alone in its inability to address the many issues arising from globalization, such as job losses due to artificial intelligence, climate change, migration, poverty, and more. No matter how powerful a nation is, it cannot handle such issues all alone. It needs a better platform for discussion. Paul Martin believed that the G20 is an essential tool for addressing these issues more effectively, as it represents the power of individual nations.

As the Finance Minister of Canada, Martin was struck by the absence of major economies like India and China in the G7. This realization was amplified by the Mexican Peso Crisis in 1994, which illustrated the interconnected nature of global economies and the need for wider international cooperation.

The 1997 Asian Financial Crisis further highlighted the vulnerabilities of globalization. The crisis demonstrated that while global integration can offer significant benefits, it also exposes economies to greater risks.

The ripple effects of currency depreciation, high interest rates, and economic downturns in one region can quickly spread, impacting global markets. This crisis was a wake-up call, revealing the necessity for robust policy frameworks and institutions to manage the complexities of open economies.

The subsequent Russian Crisis in 1998 and Brazil's devaluation in 1999 reinforced the argument for a more inclusive and representative forum. The traditional G7, limited to a small group of developed nations, was insufficient to address the needs and impacts of a globally interconnected economy. Influential figures like Lawrence Summers echoed this sentiment, emphasizing the rise of emerging markets and the economic transformations in China and India.

In response to these crises and the evident need for broader cooperation, Paul Martin championed the creation of the G20. His proposal aimed to include major regional economies alongside G7 members, ensuring a more comprehensive and effective approach to global economic governance. The G20, established in 1999, initially served as a meeting of finance ministers and central bank governors. However, the financial crisis of 2008 elevated the G20 to a leaders-level organization, recognizing its crucial role in fostering international economic stability and cooperation.

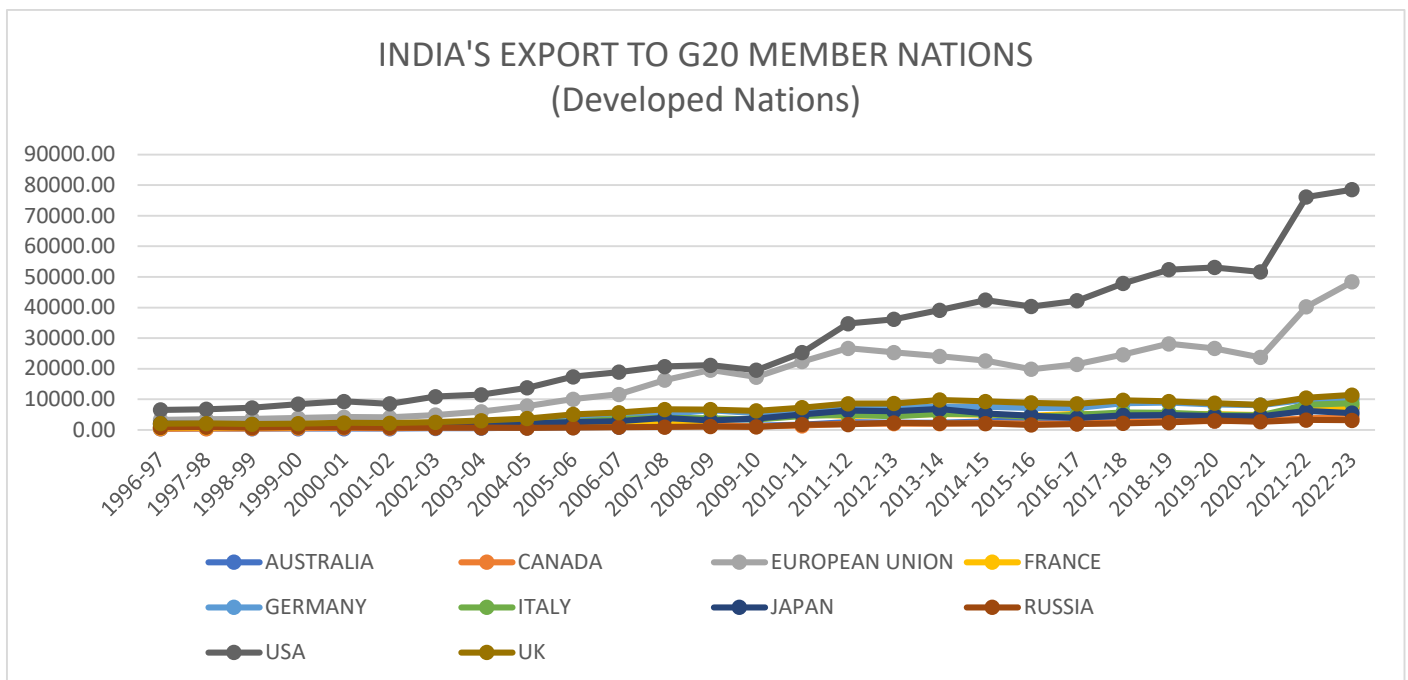
The G20's formation marked a significant shift towards a more inclusive global dialogue, reflecting the diverse and interconnected nature of the modern economy. By bringing together major economies from various regions, the G20 provides a platform to address global challenges more effectively, balancing the benefits and risks of globalization.

### **Objective of Study:**

- No comprehensive study has been made in the past on such a topic.
- To examine the trends and patterns of India's bilateral trade with each G20 member nation over the period 1996-2023.
- To assess the impact of G20 meetings and policy decisions on India's bilateral trade relations with G20 countries.
- To know whether any significant change has happened in the Indian economy because of the initiatives taken in various G20 summits.

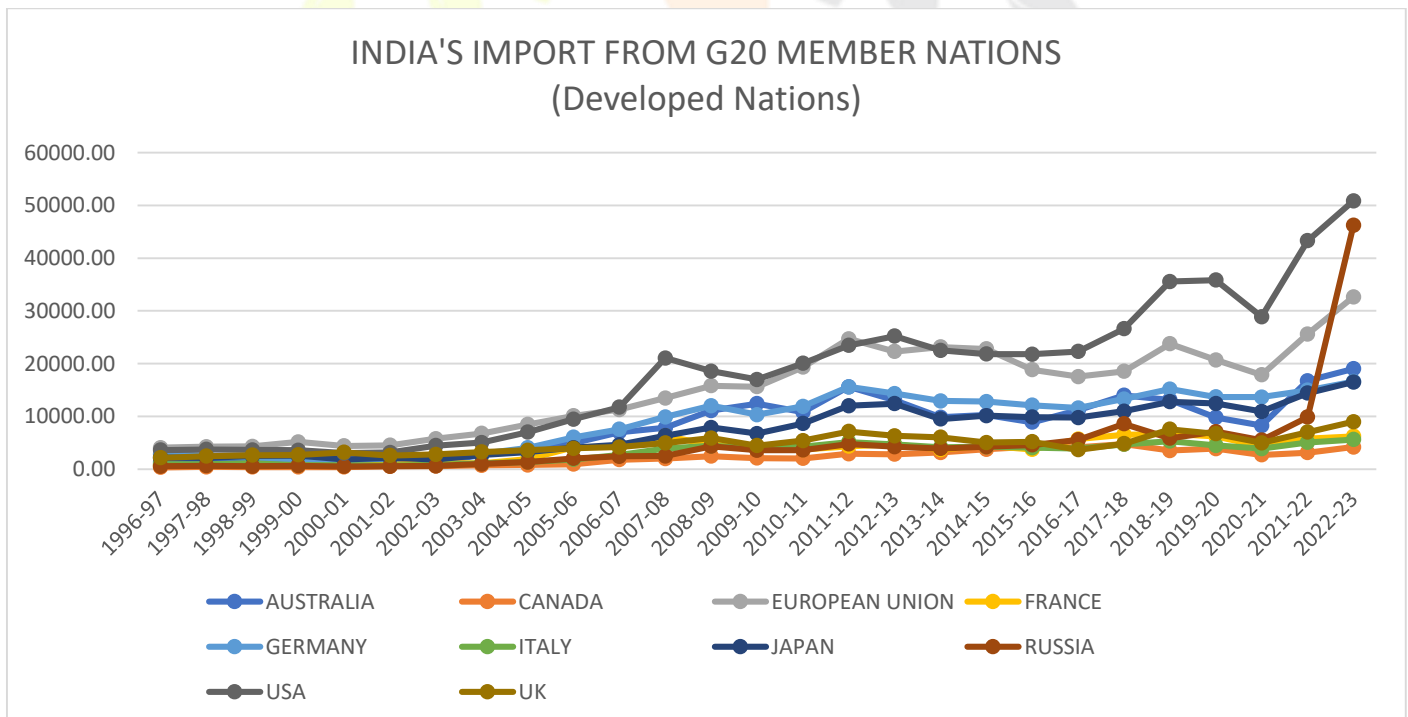
### **Methodology:**

The study is based on a Longitudinal Research approach utilizing export and import data obtained from reliable sources for the period spanning from 1996 to 2023 (values in ₹ lacs). Statistical analysis techniques, including calculation of growth rates, coefficient of variation, and correlation coefficients, are employed to analyze the data and derive meaningful insights into the trade relationships. The research focuses on identifying patterns, trends, and correlations between India's trade performance and its GDP growth.



**Figure:1** Source: Author's Contribution

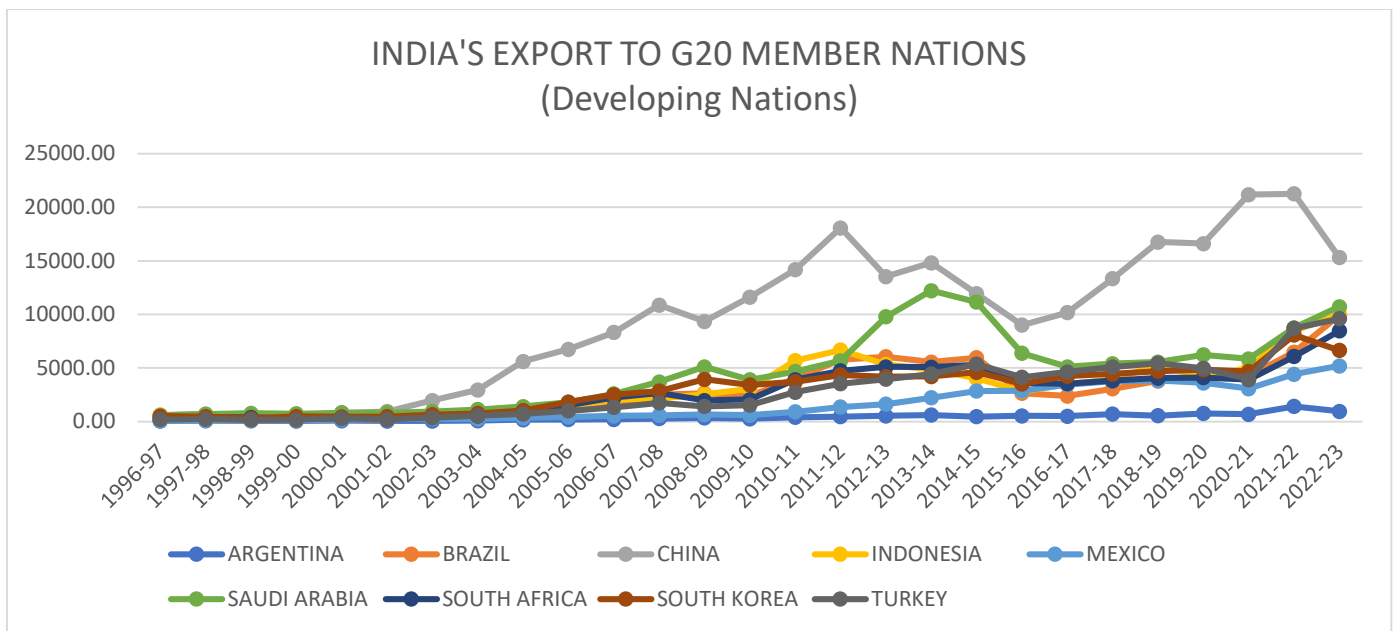
The Line chart given above shows India's exports to G20 member nations (Figure:1). This chart includes all those nations that are termed as "Developed Nations", it can be seen that all these nations started almost from the same footing but United States of America (USA) is leading the chart from the beginning and even after the financial crisis which occurred in 2008 and COVID in 2020 an exponential increase in export can be seen. European Union comes second after the USA, almost following the same pattern as that of the USA but after 2011-12 gap between the USA and the European Union increased by a major difference. The UK holds the third spot whereas Russia for the given study period has not shown any major changes and thus holds the last spot.



**Figure:2** Source: Author's Contribution

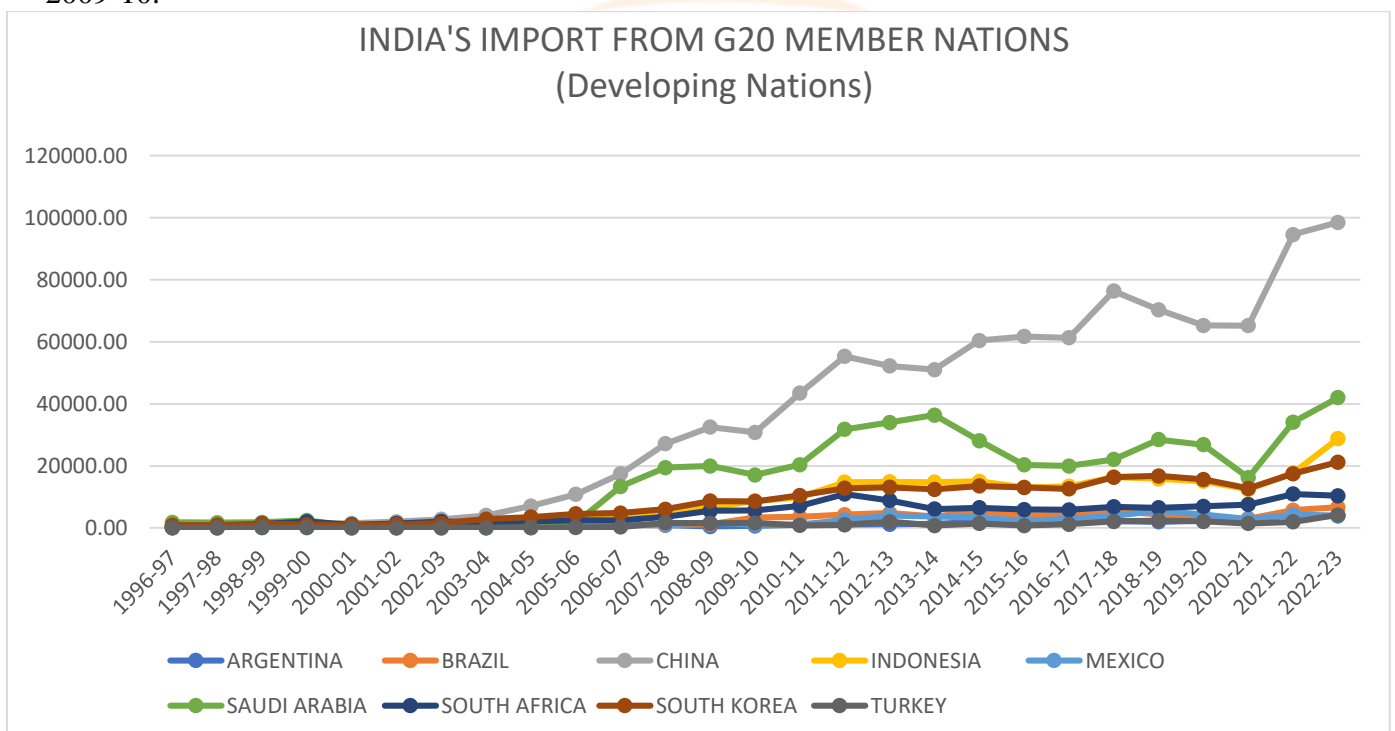
The line chart of India's import from G20 developed nations (Figure:2) is somewhat different as compared to the export line chart (Figure:1). From 1996-97 till 2005-06 European Union was the major importer of India and since 2005-06 onwards the USA took the first spot from the European Union. In 2011-12, 2013-14, and 2014-15 European Union took the first spot but the USA again took it back and to date, the USA is the largest supplier of India's imports. What's interesting for the second spot is that

because of Western countries' sanctions on Russia, imports with Russia (especially crude oil) increased because of this an exponential increase can be seen due to which Russia became the second largest importer for India in 2022-23, European Union became third largest importer followed by Australia and Japan for Fourth and Fifth spot respectively.



**Figure:3** Source: Author's Contribution

The line chart above shows (Figure:3) clearly that China is the biggest market for India's exports. Though we can see a sharp decline of almost 50% for the period 2011-12 to 2015-16 after that not only China retains its first spot but also increased its market share and even the Docklam Issue triggered in 2017 didn't seem to have created any adverse effect on the bi-lateral trade (export) with China. Saudi Arabia is the second big market for India after which a lot of tugs of war between the remaining developing countries can be seen which shows India's potential to tap the untapped market available to it. Indonesia took the third spot followed by Brazil. Export to Turkey had a 524.34% increase from 2009-10.



**Figure:4** Source: Author's Contribution



The chart above (Figure:4) shows India is importing a major chunk from China which is creating an exponential curve for the same. The second largest importer for India is Saudi Arabia followed by Indonesia and South Korea.

The dataset given above has been classified into developed and developing nations since G20 recognizes the world as developed or developing nations only and there is no place for underdeveloped nations. There are 10 (ten) developed and 9 (nine) developing nations with which India's bilateral trade data has been taken into consideration to trace the pattern and flow between the developed and developing nations.

## **Analysis and Result: Developing G20 Nations**

### **Argentina**

- The lowest export for the given period was US\$ 58.69 million (1996-97) and the highest was US\$ 1425.94 million in the year (2021-22), where Gear boxes showed the highest percentage growth rate for the said period as compared to the previous year followed by polyester shirting's, articles of apparel and clothing accessories taking the second and third spot respectively.
- The overall percentage growth rate (1996-2023) is 1536.39% showing a significant increase in exports over the years and on an average US\$ 398.29 million value of exports took place between India and Argentina.
- The coefficient of variation is 82.51%, indicating significant and consistent growth in exports beyond natural business fluctuations.
- The lowest import was US\$ 128.19 million (1997-98) and the highest was US\$ 4201.74 million (2021-22) where special transactions showed the highest percentage growth rate for the said period followed by leather further prepared after tanning and amino and phenolic resins for the second and third spot respectively.
- The overall percentage growth rate is 1851.96% and on an average US\$ 1329.93 million value of imports took place between the two nations for the said period.
- The coefficient of variation is 84.05%, reflecting a substantial increase in imports. India imported 233.19 times more than what it exported to Argentina.
- The correlation value of 0.9931 shows a very high positive degree of correlation between export and import values between these two nations.

### **Brazil**

- The lowest export was US\$ 132.49 million (1996-97) and the highest was US\$ 9919.47 million (2022-23) where polymers of vinyl chloride in primary form showed the highest percentage growth rate followed by acrylic polymers and flat-rolled products of iron or non-alloy steel of 600 mm width.
- The overall percentage growth rate (1996-2023) is 7386.96% which is the highest percentage growth rate when compared with other G20 developing and developed nations. On an average US\$ 2831.40 million value of exports took place between India and Brazil for the said period.
- The coefficient of variation is 90.40%, indicating exports to Brazil have witnessed significant and consistent growth over the years. Geographically, Brazil and Argentina are neighbouring countries still India has better bi-lateral trade relations with Brazil than Argentina, exporting 610.89% more and importing 90.81% more than Argentina which is also evident from the Balance of Trade figures whereas with Argentina India has a negative Balance of Trade and with Brazil favourable Balance of Trade.
- The lowest import was US\$ 145.17 million (2000-01) and the highest was US\$ 6672.52 million (2022-23) where valves, inlet, and exhaust took the first spot by showing the highest percentage growth rate for the said period followed by flat-rolled products, not in coils of a thickness exceeding 10mm and crankshaft for engines.
- The overall percentage growth rate of imports is 4272.27% and on an average US\$ 2537.70 million of imports taking place for the said period.
- The coefficient of variation is 84.28%, reflecting substantial and non-routine growth in imports. India exported 11.57 times more than what it imported from Brazil.

- The correlation value of 0.8898 shows a positive high degree of correlation between the export and import values of these two nations.

## China

- The lowest export was US\$ 427.16 million (1998-99) and the highest was US\$ 21259.79 million (2021-22). Notably, high-speed steel products exhibited the most substantial percentage growth during this period, followed by gaskets and cold-rolled high-speed steel in coils.
- The overall percentage growth rate of exports to China is 2389.61% which is approximately 209 times less than the growth rate for exports to Brazil. On an average US\$ 9545.41 million value of export took place for the said period.
- The coefficient of variation is 70.27%, indicating an increase in exports, but less significant than that of Argentina (82.51%).
- The lowest import was US\$ 756.91 million (1996-97) and the highest import was US\$ 98505.77 million (2022-23) where semi-finished products of iron or non-alloy steel took the first spot followed by parts of steam or vapour boilers and parts of other steam and vapour boilers.
- The overall percentage growth rate of 12914.20% indicates India imported much more from China than it exported.
- The coefficient of variation, 85.58%, shows a significant increase in imports, outpacing the growth in exports. India has imported 286.56 times more to China than what it exported.
- The correlation value of 0.8879, shows a positive high degree of correlation between the export and import values of these two nations. Despite being geographically smaller and less economically influential than China, the higher correlation values for Brazil (0.8898) and Argentina (0.9931) suggest more consistent and proportionate growth in trade with India. This could be attributed to more stable bilateral trade agreements and market conditions.

## Indonesia

- The lowest export was US\$ 185.27 million (1998-99) and the highest was US\$ 10024.30 million (2022-23) where propylene co-polymers took the first spot followed by rock salt and tanks, casks, drums of capacity of 50 litre or more.
- The overall percentage growth rate is 1593.69% (3.73 times higher than exports to Argentina). On average US\$ 3213.40 million value of exports took place yearly.
- The coefficient of variation is 81.04%, indicating significant trade growth.
- The lowest import was US\$ 597.05 million (1996-97) and the highest import was US\$ 28820.41 million in (2022-23), where Others took first spot followed by non-galvanized and tube/pipe fittings of other iron/steel for the second spot and tube or pipe fittings of iron or steel bags.
- The overall percentage growth is 4727.14%. India imported 177.46 times more than it exported to Indonesia.
- The coefficient of variation stood at 82.93%, showing a significant increase in imports.
- The correlation value of 0.9292 shows a very high positive degree of correlation between the export and import values of these two nations.

## Mexico

- The lowest export was US\$ 78.29 million (1996-97) and the highest export was US\$ 5196.36 million (2022-23), showing an overall percentage growth rate of 6537.32% (second highest among G20 nations after Brazil), clearly depicts that India since 1996 has been increasing its export supplies to Brazil followed by Mexico. Notably, unwrought aluminium, followed by aluminium alloys and industrial and laboratory furnaces and ovens, showed the highest percentage growth during 2022-23.
- Mexico is 1,964,375 sq. km, while Argentina is 2,780,400 sq. km i.e., Argentina is 42% larger than Mexico and the geographical trade distance of Mexico is more from India than Argentina still India exported 308.30% and imported 40.20% more than Argentina.
- On an average US\$ 1626.22 million value of export took place yearly.
- The coefficient of variation is 99.19% (the highest variation value among all the G20 member nations), which gives a very strong basis to say that the export relations between India and Mexico have grown manifolds as compared to others.

- The lowest import was US\$ 43.05 million (1996-97) and the highest import was US\$ 5577.03 million (2018-19), where heterocyclic compounds with nitrogen showed the highest percentage growth rate followed by glassware for table, kitchen, toilet, office indoor decoration and pigment and preparation containing  $\geq 80\%$  by weight of titanium dioxide (dry).
- The overall percentage growth rate of imports was 8883.88%, the highest among G20 member nations.
- The coefficient of variation stood at 95.02%. India imported 14.66 times more from Mexico than what it exported to Mexico.
- The correlation value is 0.8952, showing a very high positive degree of correlation between the export and import values of these two nations.

## Saudi Arabia

- The lowest export was US\$ 577.18 million (1996-97) and the highest was US\$ 12218.95 million (2013-14) where the highest percentage growth rate was for Live Animals followed by other waste oil and casein, caseinates, and other caseinate derivatives.
- The overall percentage growth rate is 1758.63% and on average US\$ 4541.35 million value of exports took place yearly.
- The coefficient of variation is 78.65%, indicating significant growth due to actual trade initiatives.
- The lowest import was US\$ 463.99 million (2001-02) and the highest import was US\$ 42035.27 million (2022-23) where sheets, film foil, strip, etc of polymer of vinyl chloride showed the highest percentage growth rate followed by polycarbonate and machinery for preparing/making/repairing article of footwear made up of skin/leather.
- The overall percentage growth rate was 2210.07% and on average US\$ 16432.69 million value of imports was done yearly. India Imported 261.84 times more than what it exported. This is also justified by the coefficient of variation figure which stood at 81.83%.
- The coefficient of variation is 81.83%, indicating significant growth due to actual trade initiatives.
- The correlation value is 0.9307 (slightly higher than South Africa), showing a very high positive degree of correlation between the export and import values of these two nations.

## South Africa

- The lowest export was US\$ 285.40 million (1999-00) and the highest export was US\$ 8474.42 million (2022-23) where copper bars, rods, and profiles showed the highest percentage growth rate followed by bars and rods of copper-zinc base alloys and esters of acetic acid.
- The overall percentage growth for exports was 2580.17% and on average US\$ 2825.09 million value of exports took place yearly.
- The coefficient of variation is 77.54%.
- The lowest import was US\$ 321.05 million (1996-97) and the highest import was US\$ 10971.76 million (2011-12) where thermionic cold cathode valves and tubes showed the highest percentage growth rate followed by cathode-ray T.V. tubes and oil seeds and olea. Fruits; Industrial or Medicinal plants.
- The overall percentage growth rate was 3138.69% and on average US\$ 4932.71 million value of imports was done yearly. Overall, India imported 74.60 times more than what it exported.
- The coefficient of variation is 65.97%.
- The correlation value is 0.9178, showing a positive high degree of correlation between the export and import values of these two nations.

## South Korea

- The lowest export was US\$ 307.90 million (1998-99) and the highest export was US\$ 8085.03 million (2021-22) where non-alloy pig iron containing  $\leq 0.5\%$  phosphorous showed the highest percentage growth rate followed by other craft paper and paperboard weighing  $\leq 150/m^2$  strips and naphthenic acid-their water-insoluble salts and esters.
- The overall percentage growth rate was 1183.39% and on average US\$ 3037.67 million value of exports took place yearly.
- The coefficient of variation is 69.62%.
- The lowest import was US\$ 883.59 million (1996-97) and the highest import was US\$ 21227.32 million (2022-23) where leather footwear of plastic and synthetic soles showed the highest percentage



growth rate followed by strips of flat-rolled products in coils having a thickness of >1mm and thermistors.

- The overall percentage growth rate of 2302.39% and on an average US\$ 8710.19 million value of import was happening yearly.
- The coefficient of variation is 72.48%. India imported 186.73 times more than what it exported.
- The correlation value is 0.9526, showing a positive high degree of correlation between the export and import values of these two nations.

## Turkey

- The lowest export was US\$ 169.90 million (1998-99) and the highest export was US\$ 9609.67 million (2022-23) where flat-rolled products of width of  $\geq 600$ mm showed the highest percentage growth rate followed by flat-rolled products of iron or non-alloy steel of width of  $\geq 600$  mm and ethyl acetate.
- The overall percentage growth rate of exports was 4661.03% and on average US\$ 2839.63 million value of exports took place yearly.
- The coefficient of variation is 92.88% (second highest after Mexico), indicating significant growth in exports over the period.
- The lowest import was US\$ 43.33 million (2000-01) and the highest import was US\$ 4208.84 million (2022-23) where reception apparatus with or without incorporating radiobroadcast receivers showed the highest percentage growth rate followed by toilet and kitchen linen terry fabrics and parts for diesel engines for motor vehicles.
- The overall percentage growth rate was 5940.24% and on average US\$ 1052.99 million in imports took place every year from Turkey.
- The coefficient of variation is 97.10% India exported 169.67 times more than it imported.
- The correlation value is 0.8518, showing a positive high degree of correlation between the export and import values of these two nations.

## Developed G20 Nations

### Australia

- The lowest export was US\$ 385.36 million (1996-97) and the highest export was US\$ 8283.13 million (2021-22), where Fish Body Oil showed the highest percentage growth rate followed by Ships, boats, and floating structures, and Copper waste and scrap.
- The overall percentage growth rate was 1703.85% and on average US\$ 2128.70 million value of exports took place yearly.
- The coefficient of variation is 93.74%.
- The lowest import was US\$ 1062.76 million (2000-01) and the highest import was US\$ 19011.31 million (2022-23), where Ships, boats, and floating structures showed the highest percentage growth rate followed by Other gloves, mittens, mitts, and Minerals/Chemical Fertilizers with two/three of the fertilizing elements N, P and K.
- The overall percentage growth rate was 1343.31% and on average US\$ 8121.31 million value of imports happened yearly.
- The coefficient of variation is 67.18%. India imported 281.51 times more than it exported.
- The correlation value is 0.8109, showing a moderate positive degree of correlation between the export and import values of these two nations.

### Canada

- The lowest export was US\$ 352.99 million (1996-97) and the highest export was US\$ 4109.74 million (2022-23), where meat and edible meat offal showed the highest percentage growth rate followed by flat-rolled products of iron and non-alloy steel of thickness  $\geq 3$ mm, flat rolled products coils  $\geq 3$ mm.
- The overall percentage growth rate of 1064.27% and an average of US\$ 1630.56 million worth of exports took place yearly.
- The coefficient of variation is 63.97%.
- The lowest import was US\$ 313.36 million (1996-97) and the highest import was US\$ 4728.51 million (2017-18), Where rectangular (including square) plate sheets, strips of aluminium-not alloyed showed the highest percentage growth rate followed by others and selenium.



- The overall percentage growth rate was 1229.96% and on average US\$ 2179.66 million value of imports took place yearly.
- The coefficient of variation is 67.43%. India imported 33.67 times more from Canada than it exported.
- The correlation value is 0.84728, showing a moderate positive degree of correlation.

## European Union

European Union comprises 27 member countries but when we look at G20 member nations it comes to our knowledge that Germany, France, and Italy being a member of the European Union represent their nation individually it is because during the financial crisis in 2008, the European Union member states have different views on issues such as public debt to stimulate growth and the governance of global trade imbalances. Therefore, though these countries are a part of the European Union still these countries represent their countries separately for their domestic interests and societal foundations.

In this study data regarding France, Germany, and Italy are shown separately while the other 24 nation's data have been grouped under European Union Head.

- The lowest export was US\$ 3284.80 million (1996-97) and the highest export was US\$ 48400.48 million (2022-23) showing an overall percentage growth rate of 1373.47 % and on an average US\$ 17398.13 million worth of exports took place every year. Overall, India exported 16.95 times more than the imports.
- The coefficient of variation is 67.98%, indicating consistent growth in exports over the period and the notable export growth rates of EU member nations are Slovenia at 11170.66%, Lithuania at 9692.877%, Croatia at 5988.351%, Latvia at 4468.537%.
- The lowest import was US\$ 4049.89 million (1996-97) and the highest import was US\$ 32660.40 million (2022-23), showing an overall percentage growth of 706.45% which states that imports from the European Union shows a rising trend but the overall percentage increase in export is far much better than the import.
- The correlation value (0.9694), showing a very high positive degree of correlation between export and import.

## France

- The lowest export was US\$ 716.17 million (1996-97) and the highest was US\$ 7610.06 million (2022-23) where personal protective garments for women and girls showed the highest percentage growth rate followed by acrylic polycarboxylic acid and their derivatives and black lithographic ink and jelly.
- The overall percentage growth of exports to 962.61% and on an average US\$ 3399.72 million worth of exports were taking place yearly.
- The coefficient of variation is 61.06%.
- The lowest import was US\$ 640.81 million (2000-01) and the highest was US\$ 6665.67 million (2018-19) where the Mining Project showed the highest percentage growth rate followed by woven pile fabrics and chenille fabrics and hand-decorated manufactured articles.
- The overall percentage growth rate stood at 789.93% and on average US\$ 3622.73 million worth of goods were imported from France yearly.
- The coefficient of variation is 58.65%.
- The correlation value (0.8337), shows a moderate positive degree of correlation between both nations. India imported 6.55 times more than what it exported.

## Germany

- The lowest export was US\$ 1738.39 million (1999-00) and the highest was US\$ 10134.55 million (2022-23), where direct dye sand preparations showed the highest percentage growth rate followed by carbonaceous pastes for electrodes and furnace linings and pancreatin and dried powder for the pancreas.
- The overall percentage growth rate is 435.35% which is also the second lowest percentage growth rate among the developed G20 nations and on average US\$ 5494.95 million worth of goods were exported to Germany yearly.
- The coefficient of variation is 52.40%.
- The lowest import was US\$ 1759.59 million (2000-01) and the highest was US\$ 16601.53 million (2022-23), where tinted other non-wired float and surface ground/polished showed the highest

percentage growth rate followed by hexane lactam (epsilon-caprolactam) and cotton combing machines.

- The overall percentage growth rate stood at 486.56% and on average US\$ 9141.59 million worth of goods were imported from Germany yearly.
- The coefficient of variation is 57.82%.
- The correlation value (0.9815) shows a very high positive degree of correlation for the bilateral trade between India and Germany.

## Italy

- The lowest export was US\$ 933.70 million (1996-97) and the highest was US\$ 8691.43 million (1996-97) where agglomerated iron ore pellets showed the highest percentage growth rate followed by others and paraffin wax containing by weight < 0.75% of oil.
- The overall percentage growth rate is 830.36% and on average US\$ 3723.21 million worth of exports happened yearly.
- The coefficient of variation is 56.94%.
- The lowest import was US\$ 704.78 million (2001-02) and the highest was US\$ 5591.91 million (2022-23) where Galvanised showed the highest percentage growth rate followed by injection pumps for diesel engines and other in containers holding more than 2 litres.
- The overall percentage growth rate is 511.08% and on average US\$ 3128.96 million worth of goods were imported yearly.
- The coefficient of variation is 55.92%.
- The correlation value (0.9176) shows a very high positive degree of correlation for the bilateral trade between India and Italy.

## Japan

- The lowest export was US\$ 1510.44 million (2001-02) and the highest was US\$ 6814.07 million (2013-14) where other offset printing machinery showed the highest percentage growth rate followed by other machinery for printing repetitive word or design or colour and saturated acyclic monocarboxylic acids and their halogenated, sulphonated, nitrated or nitrosated derivatives.
- Overall percentage growth of exports of 172.26% (one of the lowest amongst developed G20 nations) and on an average US\$ 3723.02 million worth of exports was happening yearly (almost equal to that of Italy).
- The coefficient of variation is 45.99%, showing natural business transactions (no direct relationship between G20 policies implementation and increase in exports between both the nations).
- The lowest import value stood at US\$ 1836.33 million in 2002-03 and the highest in 2022-23 for US\$ 16495.32 million where Central Heating Boilers showed the highest percentage growth rate followed by Boat/Dock Fenders within Inflatable and Doors, Windows, and Their Frames and Thresholds for doors.
- The overall percentage increase in imports stood at 654.09% and on average US\$ 7441.85 million worth of goods were imported yearly.
- The coefficient of variation is 60.96%, indicating significant growth in imports.
- The correlation value (0.9015) shows a very high positive degree of correlation for the bilateral trade between India and Japan.

## Russia

- The lowest export was US\$ 631.26 million (2004-05) and the highest was US\$ 3254.68 million (2021-22) where Other Single Vaccines showed the highest percentage growth rate followed by Plates, Sheets, etc of Polymers of ethylene and Vaccines for Human Medicines.
- Overall percentage growth of exports of 287.96% and an average of US\$ 1551.72 million worth of exports was happening yearly.
- The coefficient of variation is 54.33%.
- The lowest import value was US\$ 517.66 million (2000-01) and the highest was US\$ 46212.71 million (2022-23) where Printed books, brochures, leaflets, and similar other matter, whether or not in single

sheet showed the highest percentage growth rate followed by Boat/Dock Fenders within Inflatable and Doors, Windows and Their Frames and Thresholds for doors.

- The overall percentage increase in imports stood at 654.09% and on average US\$ 7441.85 million worth of goods was imported yearly.
- The coefficient of variation is 172.59%, indicating the highest & significant growth in imports.
- The correlation value (0.6059) shows a moderate positive degree of correlation for the bilateral trade between India and Russia.

## USA

- The lowest export value was US\$ 1510.44 million (2001-02) and the highest was US\$ 6814.07 million (2013-14) where Proclaim post-insulators showed the highest percentage growth rate followed by Bars and rods, hot-rolled, in irregularly wound coils, of iron or non-alloy and Battery scraps ISRI codes – rails and racks.
- The overall percentage growth of exports of 172.26% (one of the lowest amongst developed G20 nations) and on an average US\$ 3723.02 million worth of exports was happening yearly, almost equal to that of Italy.
- The coefficient of variation is 70.56%, indicating significant growth in imports.
- The lowest import value was US\$ 1836.33 million (2002-03) and the highest was US\$ 16495.32 million (2022-23) where Vinyl Acetate showed the highest percentage growth rate followed by Snow plows and snow boilers and other Coal, whether or not pulverized but non-agglomerated.
- The overall percentage increase in imports stood at 654.09% and on average US\$ 7441.85 million worth of goods were imported yearly.
- The coefficient of variation is 72.49%, indicating significant growth in exports.
- The correlation value (0.9681) shows a very high positive degree of correlation.

## UK

- The lowest export was US\$ 1510.44 million (2001-02) and the highest was US\$ 6814.07 million (2013-14) where Flat-rolled products, not in coils of a thickness  $\geq 4.75\text{mm}$  but  $\leq 10\text{mm}$  not further worked than hot-rolled pickled showed the highest percentage growth rate followed by anti-malaria drugs and plates of flat-rolled products, not in coils of a thickness exceeding 10mm hot-rolled pickled.
- The overall percentage growth of exports of 172.26% (one of the lowest amongst developed G20 nations) and on an average US\$ 3723.02 million worth of exports was happening yearly, almost equal to that of Italy.
- The coefficient of variation is 49.91%. (Natural business fluctuations).
- The lowest import value was US\$ 1836.33 million (2002-03) and the highest was US\$ 16495.32 million (2022-23) where Surgical gloves, mittens, and mitts sizing showed the highest percentage growth rate followed by unwrought silver and all other semi-manufactured forms of silver.
- The overall percentage increase in imports stood at 654.09% and on average US\$ 7441.85 million worth of goods was imported yearly.
- The coefficient of variation is 38.19% (The lowest among G20 member nations, showing natural business fluctuations).
- The correlation value (0.8820) shows a moderate positive degree of correlation.

## Conclusion:

The analysis of India's trade dynamics with G20 nations over the period 1996-2023 reveals a complex interplay of factors influencing bilateral trade relationships. Following are the key findings:

- **Divergent Trade Patterns:** India's trade patterns with developing and developed G20 nations exhibit distinct characteristics. While trade with developing nations has generally witnessed robust growth, though with varying degrees, the relationship with developed nations has been more stable, characterized by lower growth rates and trade imbalances in India's favour.



- **Dominance of China:** China emerges as a dominant player in India's trade landscape, with both exports and imports experiencing substantial growth. This highlights the complex economic interdependence between the two nations.
- **Geographical Proximity:** The analysis suggests that geographical proximity plays a role in trade dynamics, with neighbouring nations like Argentina, Mexico, and Brazil exhibiting relatively strong trade ties with India.
- **Product Composition:** The composition of exported and imported goods varies significantly across G20 nations, reflecting differences in comparative advantages and industrial structures.
- **Trade Imbalances:** India's trade balance with most G20 nations, particularly developed ones, shows a persistent deficit. This highlights the need for strategies to enhance export competitiveness and reduce import dependency.
- **Positive Correlation:** Despite trade imbalances, a generally positive correlation between export and import values exists for most G20 nations, indicating a degree of synchronicity in trade flows.

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