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Causal Relationship between Exports, Imports, and GDP during COVID-19 Pandemic: Evidence from an Emerging Economy

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Abstract

The unexpected COVID-19 global pandemic has posed new challenges for global trade.Consequently, during the COVID-19 pandemic, the entire world has stagnated its economic growth; this is reflected in India's growth. The growth is contributed by effective foreign trade and its policies.The COVID-19 pandemic has opened up a new avenue to understand the contribution of trade to economic growth. The current study is aimed to understand the performance of Indian foreign trade inthe light of select agricultural and non – agricultural products in COVID-19 pandemic. The study results confirm that exports and imports have drastically declined due to India's global pandemic and economic lockdown. Somehow it is recovered gradually but not as it was before the pandemic. The study also found that bidirectional causality has existed between India's GDP and imports during the COVID-19 pandemic.

Keywords: Agricultural products, COVID -19 pandemic, foreign trade, Indian economy, Non-agricultural products

Introduction

The world is unprecedented through great uncertainty, and countries worldwide face economic depression as a severe consequence. Notably, many emerging economies havebeen magnified financial crises due to the toCOVID-19 pandemic. (McKee & Stuckler, 2020;Nicola *et al.*, 2020). As per the forecast of WTO, global trade was expected to decline up to 32 percent in 2020, which was the highest decline ever since the great depression in the 1930s(WTO, 2020). Accordingly, India's trade has been severely affected due to lockdown and production shutdown to face the economic impacts of the COVID-19 outbreak (Rakshit& Basistha, 2020; Veeramani & Anam, 2021). It has been witnessed that major companies Viz., Larsen & Toubro, Grasim Industries, Ultra Tech Cement, Bharat Forge, Aditya Birla Group, Tata motor, and BHEL have temporarily shut down their business operations. In the fourth quarter of 2020, India's growth declined 3.1 percent, as per the Ministry of statistics. Therefore, the Indian economy faces fresh challenges, particularly in the pandemic's demand and supply-side elements.

Despite the economic crises during the COVID-19 pandemic scenario, the government of India has initiated to face challenges in managing to overcome the crisis as theeconomy is reviving in a V shape from the recession and navigation of present policies to the new standard framework (Engineering Export Promotion Council of India, 2020).

According to the Economic Survey of India 2020, the balance of payments hasimproved from US$412.9 billion (March 2019) to US$433.7 billion (September 2019) of forex reserves. The current account deficit reduced to 1.5 percent (2019-20) from 2.1 percent (2018-19) of GDP. India's five top trading partners are the USA, UAE, China, Hong Kong, and Saudi Arabia. Further, as per ease of doing business, world Bank 2020report, India improved its ranking from 143 (2016) to 68(2019). The highest impacted sectors during the COVID-19 pandemic were tourism, aviation, hospitality, and trade, whereas other sectors(Economic Survey of India, 2020). As per the annual report of the Ministry of Commerce 2020, India's overall export was a growing trend from the year 2010 to 2019 from
$274.8 US Millions to $538.08 US Millions. In the same way, India's imports also a huge increasing trend from 2010 to 2019 from $348.4 US Millions to $455.14 US Millions. The year 2018-2019 was considered the highest importing trend, which reached $640.14 US Millions, and the highest exporting trend, which reached $538.08 US Millions. However, comparatively the growth of importing trend was higher than the exporting trend in India.

During the COVID-19 pandemic, imports and exports have been reduced by nearly 24% - 30% from the previous year. The trade balance of India has also had a negative trend

from 2010 to date (Ministry of Commerce, 2020). Overall, India's exports have declined by 25.42% during the quarter April-June, 2020 as compared to the same quarter in April-June 2019. As a percentage of India's GDP, foreign trade accounted for over 43 percent of India's foreign trade, with merchandise exports accounting for $331.02 US Billion last year, out of the total exports of $535 US Billion. Due to the sudden lockdown and logistics disruption on top of the global slowdown, India's exports sector is likely to face a nearly10 percent dip this financial year and between 20-30 percent in the crucial month of March. Based on the above information, the present study examines how the COVID-19 pandemic affects India's foreign trade performance about the GDP? This study explicitly reflects the COVID-19 pandemic perspective from November 2019 to October 2020. This study addresses two aspects of India's foreign trade. First, examine the performance of the exports and imports of agricultural and non-agricultural products during the pandemic, and second explore the causal relationship between exports, imports, and GDP due to the pandemic outbreak.

The paper is structured as follows: After the introduction, detailed review of literature in global and Indian contexts, the research gap, and the objectives of the study. The research methodology is explained in the subsequent section. The data analysis and results are presented and concluded with policy implications for sustainable economic development through foreign trade.

Review of literature

The literature review analyzes the exports and imports trade before and during the COVID-19 pandemic in global and Indian contexts.

Prior studies in the global context

Andrews (2015) investigated the significant relationship among three variables in the Liberian economy, namely exports, imports, and GDP. The study results show that imports cause a relationship between GDP and Exports. The results confirm that GDP and Importshavebi-directional causality relationship and exports and GDP, exports, and imports have a unidirectional causal relationship. Chabossou *et al.* (2021) assessed the COVID-19 pandemic effect on the export performance of Benin. The study results reveal that Micro, Small, and Medium Enterprises (MSMEs) are very slow, and the export performance of companies dropped by 53.31 percent in quarterly turnover in 2020 due to the COVID-19 crisis.

Moreover, the forecast results of the study show that the rate of change will remain negative until 2021. Hussaini (2015) examined the testing of the hypothesis on the export-led growth of India from 1980 to 2013. The study found that within 1980 the select variables are co-integrated and a bidirectional relationship between GDP and Export. Mohsen (2015) studied foreign trade and its impact on the economic growth in Syria. The study results exhibit that GDP is positively and significantly impacts exports and imports.

Moreover, it reveals that Imports have a higher impact on the GDP compared to exports. Saaed and Hussain (2015) assessed the significant effect of foreign trade on Tunisia's economic growth. The results show that exports and imports have a unidirectional causality relationship. Moreover, exports and economic growth show the same causality direction. Maliszewska *et al.* (2020) studied the potential effect of an outbreak of pandemic on the World GDP and trade. The study revealed a rise in the trade costs by 25% and, a decline in employment by 3%, a strident decline in the hospitality, aviation, tourism, and recreation sectors. The global GDP declined to 3.9%, while the average GDP of developing countrieshit the highest, i.e., 4%, and in some developing countries, GDP declined to 6.5% during the COVID-19 pandemic. Rababah *et al.* (2020) conducted a study in China on the impact between the COVID-19 outbreak and the financial performance of selected companies. The study results confirm that severely negative impact on financial performance. This results in a decrease in listed companies' overall revenue, profitability, and investment capacity. Taghavi *et al.* (2012) investigated the impact of exports, imports, and economic growth in Iran. The study results show that exports positively affect economic growth, and imports could not significantly affect them. Yuksel and Zengin (2016) emphasized the relationship between imports and exports growth profile in emerging nations, Argentina, Brazil, China, Malaysia, Mexico, and Turkey. The study results reveal no significant relationship between imports andexports of all emerging nations on its growth profile.

Prior studies in the Indian context

Agrawal *et al.* (2020) explored the impact of the COVID-19 outbreak in India and its supply chain. The study results confirm that COVID-19 influences manufacturing firms and their global supply chain, and the COVID-19 pandemic affects logistics and daily manufacturing productivity in India. Banerjee (2020) studied enhancing engineering exports of electrical machinery. The study results explored that India must empower domestic manufacturers to expand the productivity, access the new markets, and achieve, make it attractive for the global manufacturers to invest in the country. This will enhance the value chain of India at the global level. Britto and Santhiya (2020) examined the revival of 1930, when the

worldwide economy has encountered the most harmful recession are presently COVID-19 pandemic brought an adverse impact on all the financial sanctions over the world. The unforeseen decrease in economic activity due to the curfew is shocking throughout India. Dhinakaran and Kesavan (April 2020) examined the exports and imports stagnation during COVID-19 in India. The study results confirm that export and import of India have been dormant during the COVID-19 pandemic lockdown. Gopalakrishnan and Mahalakshmi (2018) studied the impact of India's foreign trade during the post-liberalization era. The study confirms that total exports have shown significant growth after implementing India's new economic policy in 1991. The overall growth is unbounded, even though India faces acontinuous deficit in its balance of payment and the volume of trade is increasing continuously, despite fluctuations in GDP growth rate.

Kumar (2021) examined the COVID-19 pandemic on economic implications and trade policy responses. The results show that India's foreign trade progress is relatively low compared to other nations in ASEAN. Therefore, it is difficult to recover from the economic crisis in the global market. Parth (2020) examined the effect of COVID-19 in various Indian Industries. The study revealed that Tourism Aviation is the seriously affected sector.

Moreover, a negative impact has been seen in the significant GDP contributing sectors like MSME, textile, automobile, etc. Rai and Jhala (2015) studied the dependence of growth profile on exports and imports during the economic reform period. The results show asignificant positive association between growth profiles of exports. A study by Singhal (2020) examined the COVID-19 pandemic crisis on the policy priorities in India's foreign trade. It explored to reduce the cost, promote cooperation, and reduce trade barriers on goods and services to recover both the supply and demand sides. Sahoo and Ashwani (2020) studiedthe impact of the COVID-19 pandemic on the Indian economy by assessing MSMEs' growth. The study results show that the outbreak had a severe impact on the growth of MEMEs;nearly 3-7 percent of negative growth was in 2020. Sutradhar *et al.* (2020) examined the effect of the COVID-19 on Indian foreign trade. It emphasizes the negative impact of this pandemic. There has been a massive contraction in exports and imports, primarily when strict lockdown has beenenforced in many countries. Virmani and Bhasin (2020) studied the Indian economy and its growth during the COVID-19 pandemic. The study's findings reveal that there was an enormous decline in the demand and supply of goods and services due to the lockdown measures taken by the Indian government. The summary of the literature review is presented in Table 1.

Table 1. Summary of Literature Review

S.No.	Author(s)	Country	Method	Major Findings
1.	Dhinakaran and Kesavan (2020)	India	Growth rate analysis	Export and import of India have been stagnated during the COVID-19 lockdown
2.	Singarayar andRani (2020)	India	Growth rate analysis	18 basic hindrances are discovered which influenced the flexibly chains in the India
3.	Sutradhar et al. (2020)	India	Percentage analysis	Exports and imports affected and started to recover after the May2020
4.	Rentala and Nandru (2019)	India	Multiple regression	Causality relationships between exports products, imports partners, no. of tariff agreement and GDP.
5.	Gopalakrishnan and Mahalakshmi(2018)	India	Augmented Dickey Fuller (ADF) Test	Post liberalization era has certainly helpedIndia in achieving high growth in the economy as there has been arapid growth
6.	Bakari and Mabrouki (2017)	Panama	Johansen cointegration analysis of VAR Model and the Granger-Causality tests	Bidirectional causality from imports to economic growth and from exports to economic growth
7.	Alkhateeb et. al. (2016)	Saudi Arabia	VEC	Increase in GDP leads to increase in exports but exports have also affected on growth in Saudi Arabia
8.	Bakari and Mabrouki (2016)	Turkey	Johansen Cointegration analysis of VAR Model and the Granger-Causality tests.	Bidirectional causality from imports to economic growth and from exports to economic growth.
9.	Yuskel and Zengin (2016)	Argentina, Brazil, China, Malaysia, Mexico and Turkey	Engle Granger Co-integration analysis, VectorError Correctionand Toda Yamamoto causality	Import of Brazil, import and growth rate of Turkey are not stationary on their levelvalues. long termrelationship between import and growth rate of Turkey
10.	Ajmi, et al. (2015)	South Africa	VAR	Causal relation between exports and GDP is episodic and nonlinear

11.	Andrews (2015)	Liberia	Cointegration and causality tests, VAR	Bi-directional causation betweenGDP and Imports and unidirectional causation betweenexports and GDP andexports and

				imports
12.	Mohsen (2015)	Syria	VAR, Cointegration test, Granger causality VCEM	Bidirectional causality relationships between exports, imports and GDP
13.	Rai and Jhala (2015)	India	Granger Causality Tests, Cointegration test,Multiple linear regression model	Export and growth rate are affected by import
14.	Gerni et al. (2013)	Turkey	Feder's model	Bidirectional causality between industrial production index(proxy for income),exports and total imports
15.	Rahman and Shahbaz (2013)	Pakistan	VECM	Contributions of imports and foreigncapital inflows arelinked with macroeconomic environment
16.	Pistoresi and Rinaldi (2012)	Italy	Cointegration Analysis	Bi-directionality between imports and exports
17.	Taghavi et al. (2012)	Iran	Cointegration analysis	Export contributes to economic growth
18.	Uğur (2008)	Turkey	Granger Causality test, Multivariate VAR analysis	Bidirectional relationship betweenGDP and investmentgoods import and rawmaterials import, thereis a unidirectional relationship betweenGDP and consumptiongoods import and other goods import
Source: Compiled by the author's				

Research gap and study Objectives

The literature review on foreign trade and GDP has revealed the existence of a significant relationship among three major economic variables, namely imports, exports, and GDP, in the ordinary course of the period. Examining the relationship among them in the pandemic is considered a research gap for this study. Therefore, the following objectives are formulated.

- To study the growth of agricultural and non-agriculture commodities of India's foreign trade during the COVID-19 pandemic.
- To find the causal relationship between exports, imports, and GDP during the COVID-19 pandemic.

Research methodology

The current study is carried out with the secondary data collected from World TradeOrganization published reports, economic survey of India and database of Department ofCommerce, Government of India. The Granger causality test has been employed for testingthe causal relationship between exports, imports, and GDP during the COVID-19 pandemic.

Data analysis and results

The data collected during the COVID-19 pandemic was analyzed on the dimensions of agricultural and non-agricultural imports and exports of India and also applied a Granger causality test to find the significant relationship among three major economic variables, namely the GDP, imports, and exports.

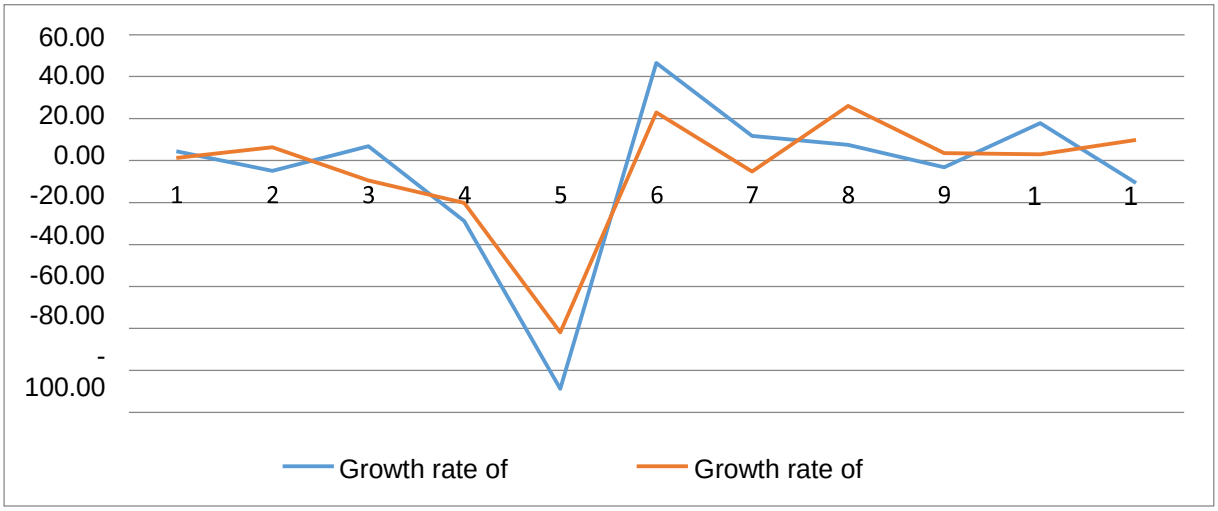
Total imports and exports performance of India during COVID-19 pandemic

Table 2 represents the growth of imports and exports of India during the COVID-19 pandemic. The results reveal that exports and imports have drastically declined due to the global pandemic and economic lockdown in India. Somehow it is recovered gradually but notas it was before the pandemic.

Table 2. Growth rate of imports and exports of India during COVID-19 pandemic

Periods	**The total value of Exports**(US$ in Millions)	**Growth (%)**	**The total value of Imports** (US$ in Millions)	**Growth(%)**
Nov-19	25880.35		38109.66	
Dec-19	27046.31	4.31	38580.14	1.22
Jan-20	25773.13	-4.94	41129.39	6.20
Feb-20	27661.75	6.83	37497.92	-9.68
Mar-20	21456.84	-28.92	31178.64	-20.27
Apr-20	10271.38	-108.90	17118.38	-82.14
May-20	19183.13	46.46	22201.41	22.90
Jun-20	21739.45	11.76	21074.24	-5.35
Jul-20	23464.22	7.35	28461.71	25.96
Aug-20	22711.53	-3.31	29472.78	3.43
Sep-20	27603.11	17.72	30321.57	2.80
Oct-20	24934.21	-10.70	33593.12	9.74
Source: https://tradestat.commerce.gov.in/				

Figure 1: Trends of imports and exports



Trends of major exports of agricultural products

The growth rate of agricultural exports during the COVID-19 pandemic is presented in table 3. The results show that the export performance of rice, meat, cane or beet sugar essential oils, and cotton are the top 5 exporting commodities of agricultural products of India. All these

significant commodities have shown a declining trend in March and April and started torise in May till July, and again there was a declining trend. From this analysis, it is clear that export performance in cotton is positive, whereas the other commodities are affected seriously because of the lockdown.

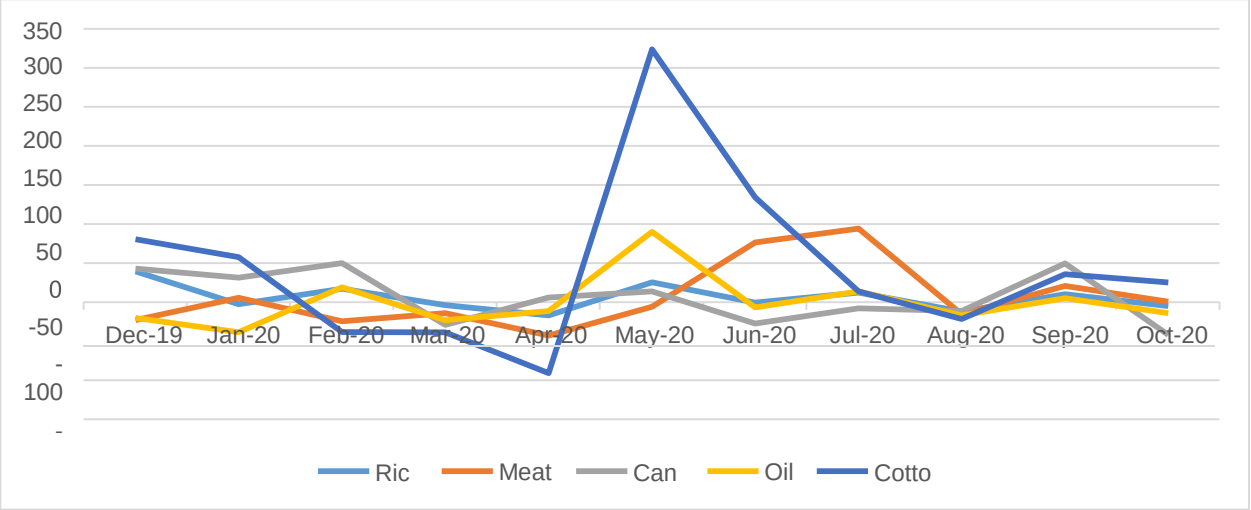
Table 3. Growth rate of major exports of agricultural products

(US$ in Millions)

Period	Rice	Growth (%)	Meat	Growth (%)	Cane	Growth (%)	Oil	Growth (%)	Cotton	Growth (%)
Nov-19	443.71	-	319.09	-	118.03	-	112.52	-	89.97	-
Dec-19	616.22	38.88	245.70	-23.00	168.55	42.81	89.85	-20.15	162.54	80.65
Jan-20	597.32	-03.07	259.62	05.66	221.09	31.17	55.18	-38.59	255.78	57.37
Feb-20	696.90	16.67	195.75	-24.60	331.01	49.71	65.65	18.99	157.57	-38.40
Mar-20	667.83	-04.17	168.23	-14.06	235.31	-28.91	50.40	-23.23	96.68	-38.64
Apr-20	551.05	-17.49	96.40	-42.70	249.49	06.03	44.60	-11.52	8.66	-91.04
May-20	687.18	24.70	90.46	-06.16	283.20	13.51	84.83	90.22	36.70	323.69
Jun-20	680.31	-01.00	159.65	76.48	206.01	-27.26	79.00	-06.88	85.98	134.29
Jul-20	759.09	11.58	309.92	94.12	189.68	-07.93	89.77	13.63	97.62	13.54
Aug-20	663.17	-12.64	262.49	-15.30	168.15	-11.35	74.43	-17.09	76.56	-21.57
Sep-20	725.49	09.40	316.57	20.60	251.22	49.40	78.17	05.03	104.02	35.87
Oct-20	685.24	-05.55	318.34	00.56	146.09	-41.85	67.14	-14.11	129.99	24.97

Source: https://tradestat.commerce.gov.in/

Figure 2. Trends of exports of Agricultural products



Trends of significant exports of non-agricultural products

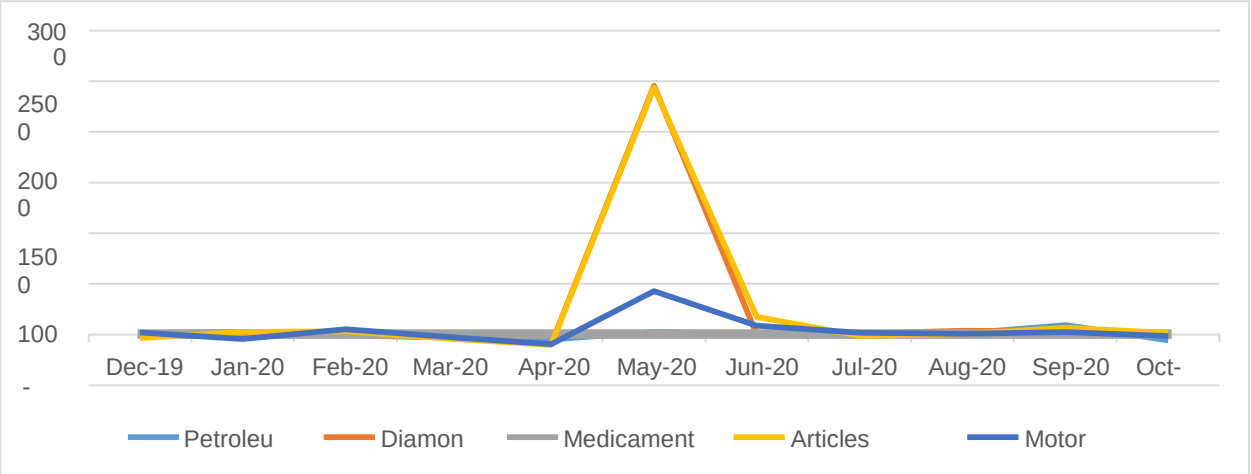
Table 4 shows the growth of exports of non-agricultural commodities during the COVID-19 pandemic. The results reveal the top 5 export commodities of non-agricultural products like petroleum oils, diamonds, medicaments, articles, and parts of jewelry and motor cars. The performances of export of non-agricultural commodities were almost declined trend, but in May the diamond, articles of jewelry has grown compared to the previous trend.

Table 4. Growth rate of major exports of non-agricultural products

(US$ in Millions)

Period	Petroleum	Growth (%)	Diamond	Growth (%)	Medicaments	Growth (%)	Articles jewels	Growth (%)	Motor cars	Growth (%)
Nov-19	4041.17	-	1196.07	-	1261.6	-	1252.62	-	560.02	-
Dec-19	364.99	-9.68	1365.91	14.19	1340.36	6.24	826.39	-34.02	677.70	21.01
Jan-20	3137.48	-14.04	1674.53	22.59	1244.49	-7.15	1053.40	27.46	394.89	-41.72
Feb-20	3343.74	6.57	1517.40	-9.38	1241.46	-0.24	1417.46	34.56	601.46	52.3
Mar-0	2462.72	-26.34	1088.33	-28.27	1096.80	-11.65	843.84	-40.46	455.71	-24.23
Apr-20	1313.67	-46.65	34.26	-96.85	1157.66	5.54	.70	-99.91	30.69	-93.26
May-20	1669.31	27.07	874.89	2453.65	1454.84	25.67	171.62	2434	161.45	426.06
Jun-20	1801.64	7.92	856.62	-2.08	1428.36	-1.81	471.41	174.68	301.75	86.9
Jul-20	1673.40	-7.11	920.16	7.41	1459.84	2.2	414.90	-11.98	354.05	17.33
Aug-20	1854.62	10.82	1266.97	37.68	1414.49	-3.1	438.83	5.76	386.17	9.07
Sep-20	3577.10	92.87	1633.81	28.95	1615.88	14.23	734.35	67.34	483.17	25.12
Oct-20	1619.07	-54.73	1855.77	13.58	1487.02	-7.97	857.84	16.81	413.20	-14.48
Source: https://tradestat.commerce.gov.in/										

Figure 3. Trends of exports of Non-Agricultural products



Trends of major imports of agricultural products

The growth rate of import of agricultural products during the corvid-19 pandemic is presented in table 5. The results show the import performance of the top 5 agricultural commodities, namely palm oil, soya bean sunflower oil dried leguminous vegetables, and cotton. These commodities' growth rates were not stable in this COVID-19 pandemic. All these significant commodities have declined in this pandemic due to lockdown.

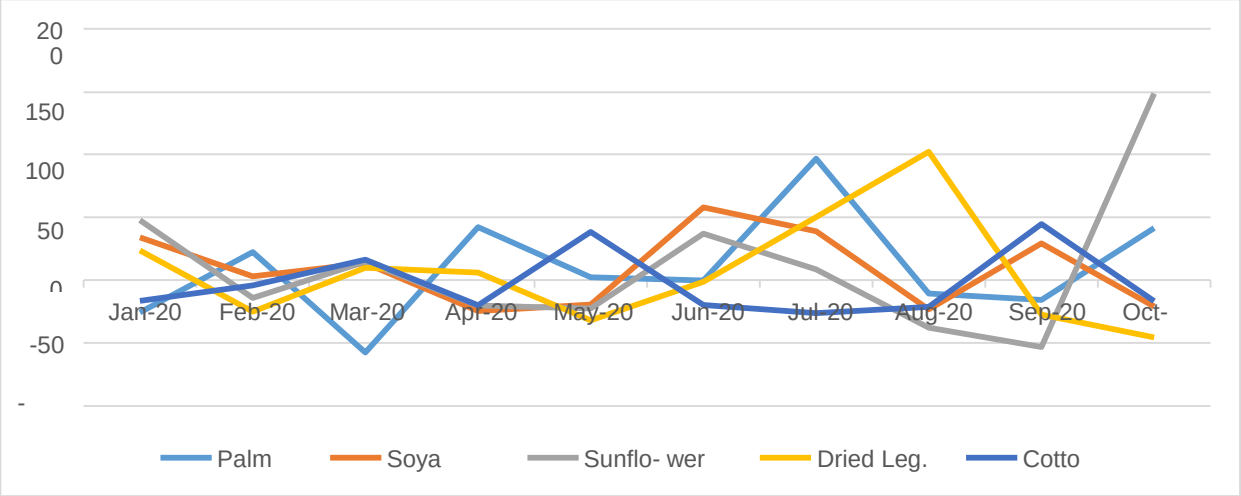
Table 5. Growth rate of major exports of non-agricultural products

Period	Palm oil	% of change	Soya bean	% of change	Sunflo-wer oil	% of change	Dried Leg. v	% of change	Cotton	% of change
Nov-19	392.78	-	130.54	-	186.90	-	196.41	-	69.09	-
Dec-19	515.72	31.3	156.39	19.8	148.04	-20.79	89.67	-54.34	39.41	-42.96
Jan-20	382.03	-25.92	210.03	34.3	218.60	47.66	111.09	23.88	33.03	-16.18
Feb-20	467.35	22.33	216.80	3.22	187.36	-14.28	83.35	-24.97	31.66	-4.13
Mar-20	197.09	-57.82	246.28	13.59	214.51	14.48	91.77	10.1	36.83	16.33
Apr-20	280.19	42.16	186.13	-24.42	171.16	-20.2	97.38	6.1	29.54	-19.8
May-20	285.79	1.99	150.13	-19.33	132.25	-22.73	66.41	-31.79	40.82	38.18
Jun-20	284.43	-0.47	237.24	58.02	181.22	37.02	65.63	-1.18	32.85	-19.53
Jul-20	559.22	96.61	330.01	39.1	196.54	8.45	98.63	50.28	24.34	-25.89
Aug-20	498.81	-10.8	253.70	-23.12	121.87	-37.99	199.40	102.17	19.20	-21.09
Sep-20	418.95	-16	328.54	29.49	56.90	-53.31	145.17	-27.19	27.73	44.41
Oct-20	592.49	41.42	260.29	-20.77	141.44	148.58	79.34	-45.34	23.18	-16.41

Source: https://tradestat.commerce.gov.in/

(US$ in Millions)

Figure 4. Trends of imports and Agricultural products



Trends of significant imports of non-agricultural products

The import trends of non-agricultural products during the COVID-19 pandemic are presented in table 6. The data shows that the import performance of crude oil, gold, coal, briquettes, diamond, and Petroleum gases are the top 5 importing commodities of non-agricultural products. The growth of the major commodities of non-agricultural products is stagnant. The import growth of diamond alone was high, and other significant commodities were not grown in the same direction.

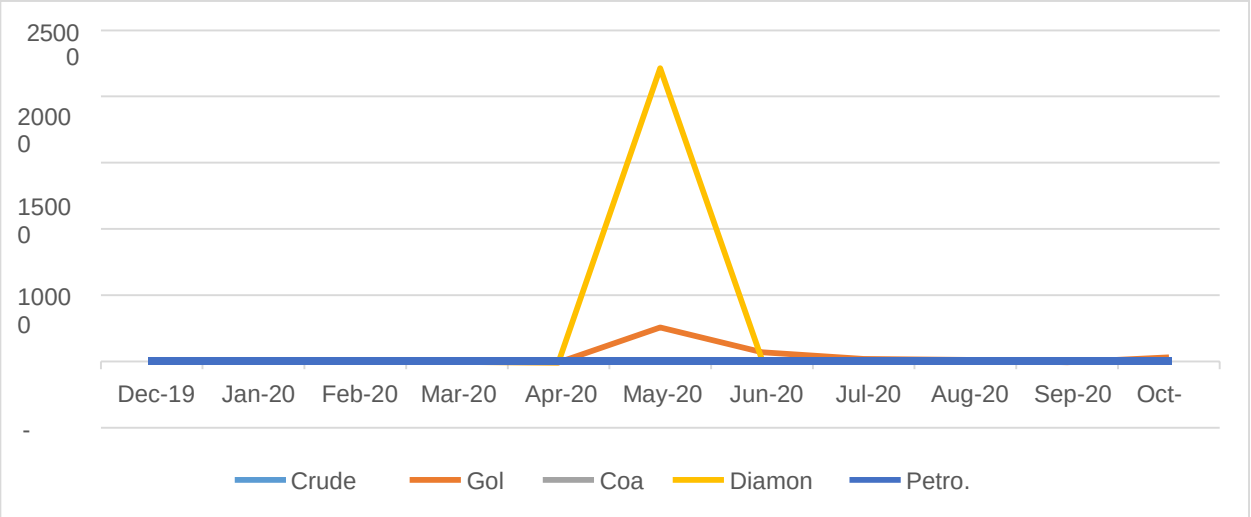
Table 6. Growth rate of major imports of non-agricultural products

(US$ in Millions)

Period	Crude oil	% of change	Gold	% of change	Coal	% of change	Diamond	% of change	Petro. gases	% of change
Nov-19	8984.71	-	2945.52	-	1675.93	-	1838.02	-	1468.49	-
Dec-19	8520.96	-5.16	2467.36	-16.23	1687.32	0.68	2086.80	13.53	1426.24	-2.87
Jan-20	10282.42	20.67	1584.02	-35.8	1648.21	-2.31	1324.94	-36.5	1541.18	8.05
Feb-20	7925.84	-22.92	2362.23	49.13	1780.45	8.02	2350.62	77.41	1802.14	16.93
Mar-20	7983.63	0.73	1228.46	-48	1545.02	-13.22	1332.09	-43.33	1314.86	-27.03
Apr-20	3390.47	-57.53	2.84	-99.77	1177.23	-23.8	1.61	-99.87	928.27	-29.4
May-20	2102.70	-37.98	76.31	2,591	1256.81	6.76	358.75	22129	1026.99	10.63
Jun-20	3363.19	59.95	608.84	697.86	918.38	-26.93	579.24	61.45	1002.97	-2.33
Jul-20	4617.17	37.29	1783.89	193	907.44	-1.19	874.49	50.97	1150.48	14.7

Aug-20	4873.59	5.55	3702.53	107.55	1045.07	15.17	1061.24	21.35	1145.26	-0.45
Sep-20	4212.97	-13.56	601.29	-83.76	1144.63	9.53	1953.16	84.04	1224.22	6.89
Oct-20	4100.67	-2.67	2499.39	315.67	1446.59	26.39	2160.31	10.6	1429.77	16.79
Source: https://tradestat.commerce.gov.in/										

Figure 5. Trends of major imports of non-agricultural products



Causality test between exports, imports, and GDP

Stationary test

The present study examined the Granger causality analysis between three economic variables and hence a stationary test is conducted to trace out the integration order for the selected economic variable. Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) unit root tests are administered to test the integration level and ascertain the possible cointegration between variables. The variables, namely log values of GDP, imports, and exports, have been considered for the unit root test. The unit root test results show that the null hypothesis of unit root is rejected for the first difference statically significant at 1 percent level. The results confirm that, If the null hypothesis is rejected, that indicates variables are in stationarity form and further no issues for further analysis. The unit root test results are presented in Table 7.

Table 7. Results of the unit root test

Variables	Augmented Dickey-Fuller unit root test(ADF)		Philips-Perron unit root test(PP)		Order of Integration
	Adj.t-Stat	P-value	Adj.t-Stat	P-value	
Log(GDP)	-2.867486	0.0090**	-2.867486	0.0090**	I(1)
Log(Imports)	2.2710562	0.0123**	-2706158	0.0124**	I(1)
Log (Exports)	-3.7465599	0.0017**	-4.514099	0.0004**	I(1)

*Note: ** denotes p-values significant at 1percent level*

Causal relationship

Granger's causality test is employed to know the casual relation direction among the selected variables. Table 8 presents the causal relationship between India's GDP, imports, and exports during the COVID-19 pandemic. The results confirm a bidirectional relationship between India's imports and GDP during the COVID-19 pandemic, and no causal relation is found between GDP and exports, imports, and exports.

Table 8. Results of pairwise Granger Causality test

Null Hypothesis	F-Statistics	p-value	Decision on hypothesis	Causal relation
L_EXPORTS does not Granger Cause L_GDP	1.70514	0.2725	Accepted	No causal relation
L_GDP does not Granger Cause L_EXPORTS	1.87217	0.2472	Accepted	
L_IMPORTS does not Granger Cause L_GDP	5.60689	0.0428	Rejected	Bidirectional relation
L GDP does not Granger Cause L_IMPORTS	15.1150	0.0076	Rejected	
L_IMPORTS does not Granger Cause L_EXPORTS	0.23735	0.7971	Accepted	No causal relation
L_EXPORTS does not Granger Cause L_IMPORTS	0.12813	0.8825	Accepted	

Source: Data Analysis

Conclusion and policy implications

The present study examines the current performance of India's imports and exports of both agricultural and non-agricultural commodities in the theCOVID-19 outbreak. The study results found that major trading commodities have declined in the COVID-19 pandemic. The study reveals that the export and import of non-agricultural commodities are affected severely due to the protection shutdown compared to the export and import of agricultural commodities. The study also found a bidirectional causality relationship between India's GDPand imports. A similar result is reported by (Andrews, 2015;Bakari & Mabrouki 2016; Bakari & Mabrouki,2017; 2015; Rentala &Nandru, 2019;Uğur, 2008). It implies that imports are much higher than exports in the pandemic, which causes an effect on the country's GDP. The government of India may bring potential policy initiatives to overcome the economic crisis due to the Covid-19 outbreak. Therefore, the government has to revise the economic policies to overcome the problems for possible economic growth.

The COVID-19 pandemic is one of the rare historical events, but the effect of the outbreak is severe in terms of human lives and economic progress around the world. Due to lockdown restrictions imposed by the governments to stop the spread of COVID-19 effects, all nations are in an enormous economic crisis. Hence, policymakers may propose potential policies to boost economic growth to overcome this unexpected disruption, especially in global trade. Thus, special initiatives have to be considered by the policymakers in pandemicsfor sustainable economic development. The policymakers may adopt special promotion schemes for the export of specific commodities affected in the pandemic period through the reduction in excise and customs duties and facilitate pre and post-shipment finance. Besides, production in the domestic territory can be retrieved by administering industry-specific special recovery package for those who had severe financial loss due to production shutdown to enhance the exports and reduce the imports. These policy decisions will positively grow the economy in the post-COVID-19 pandemic scenario.

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