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Economic Partnership between India and Japan – Comparative Trade and Sectoral Analysis

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Abstract

India entered into an economic partnership with Japan in the year 2010 called CEPA with an objective to liberalize and facilitate trade in goods and services between both the nations. The Comprehensive Economic Partnership Agreement (CEPA) signed by India and Japan in 2011 was expected to boost bilateral trade in goods and services. Analysis of India-Japan trade relations reveal that India has ranked quite low in Japan's external trade profile. In 2014, India was nineteenth among Japan's export destinations and twenty fourth among import sources. The question thus arises whether CEPA has contributed to India's exports or the effect is negligible or in worst case negative since bilateral trade has fallen, there has been increase in trade deficit and even TII does not show any improvement. In the backdrop of this, the objective of this research paper is to study the existing levels of trade between India and Japan and assess the impact of CEPA on exports from India to Japan at the macro level as well as specifically for individual sectors over a time period of ten years, from 2007 to 2016. The paper tries to examine the effect of CEPA on various sectors too.
F01, F02, F14, F15, F62.

Keywords: Economic Partnerships, Trade Agreements, Difference Indifference technique, economic impact, trade, exports.

Introduction

Until the early 2000s, India and Japan were not significant trade partners. This was fundamentally because Japan and other bigger South-East Asian economies had been following a foreign direct investment (FDI)-driven export-led growth strategy since the mid-1980s, while India's trade and investment policies remained quite conservative. To change this, India has been entering into number of regional economic initiatives both bilaterally and regionally with neighbors and others as well, over the years. On similar lines, India entered into an economic partnership with Japan in the year 2010 called CEPA with an objective to liberalize and facilitate trade in goods and services between both the nations. India and Japan signed a free trade agreement called as Comprehensive Economic Partnership Agreement (CEPA) on February 16, 2011 and came into effect from August of same year after a long negotiation process since the year 2007. It is Japan's 12th Free Trade Agreement (FTA) and India's first of such agreement with a developed country. The CEPA with Japan is only one of the two FTAs that India has signed with OECD economies, the other being with the Republic of Korea. It is also the FTA with the widest coverage when compared with all the FTAs that

India has become party to. It covers trade in goods and services, Immigration, Investments, Intellectual Property Rights, Government procurement, competition, cooperation and other trade related issues. The target of this agreement was to eliminate 94 percent of the tariff over a period of 10 years i.e. till 2021. This focus of our study is limited to goods and services covered by CEPA.

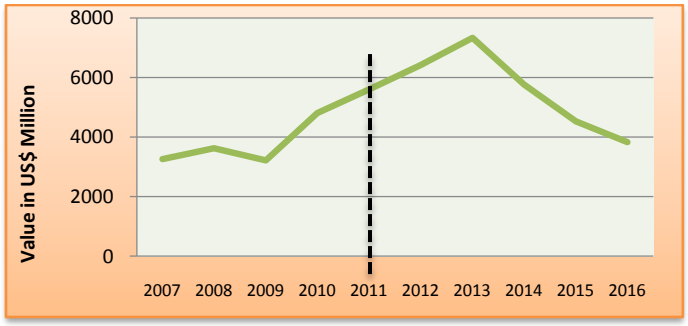
Under this trade agreement with Japan, India has brought down tariffs on 18.37 per cent of the tariff lines at eight-digit level, to zero by 1st August 2011. It also committed to bring down, in a phase by phase manner, tariffs on 4.51 per cent of tariff lines to zero in 2016, and 63.45 per cent to zero by 2021. Thus, we can see that only 13.62 per cent of tariff lines will be excluded from tariff liberalization policy under the CEPA agreement.

India and Japan share a similar structure especially with regard to their reliance on the services sector. Both the countries rely heavily (more than 50%) on services to contribute to their GDP growth. In view of this, broadly 12 sectors and more than 100 sub-sectors have been included in the agreement.

It is now seven years since the India-Japan Comprehensive Economic Partnership Agreement (CEPA) was signed in February 2011. As its name suggests, it is a comprehensive agreement covering trade in goods, trade in services, investment and economic cooperation. It is also fairly deep in terms of levels of liberalization, at least in comparison with many FTAs signed by India. Most of the CEPA tariff reductions have already kicked in, in respect of India.

Only a small percentage of tariff lines will have duties eliminated on them in future. There is, however, a general perception widely shared that this FTA has not brought commensurate benefits. The Foreign Trade Policy statement of the Government of India for 2015-20 specifically mentions that the projected gains from the CEPA have not materialized to the extent expected.

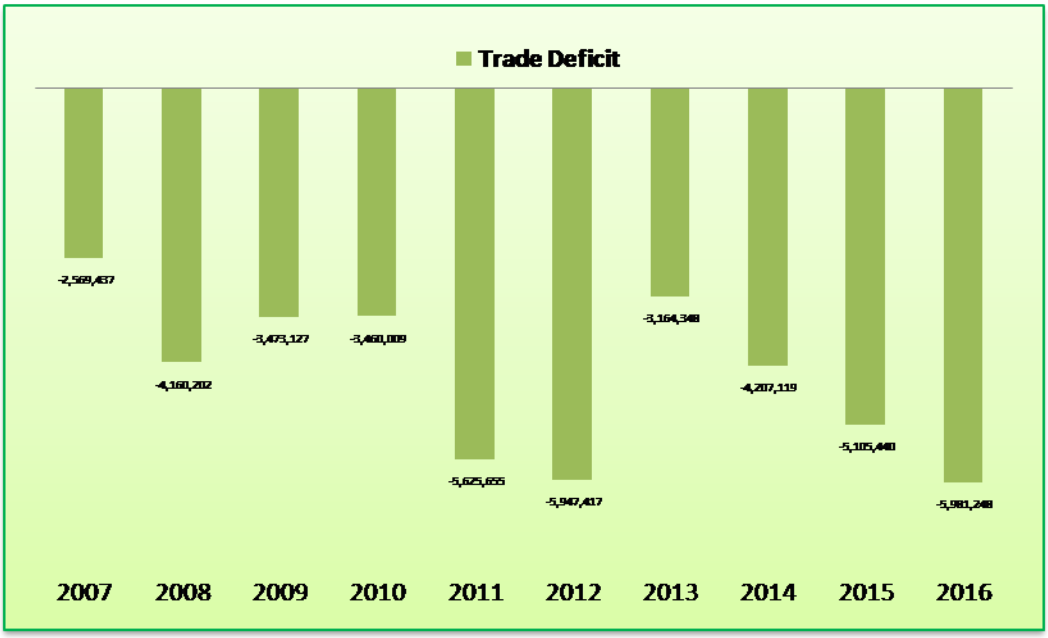
Chart 1. India's exports to Japan



Source: Trade map

The Comprehensive Economic Partnership Agreement (CEPA) signed by India and Japan in February 2011 and implemented from August 2011 was expected to boost bilateral trade in goods and services. However, India's merchandise exports started contracting in four out of five years between 2012-13 and 2016-17 as can be seen from chart 1. This decline has been a whopping 31% since the signing of the agreement in august. If we look at world's exports to Japan, the trend has been similar and the exports have fallen by as much as 29% almost similar to India's decline of 31%. Thus, on a macro level looking at overall trade, CEPA has not been able to help reduce, if not increase the fall in exports from India on an overall basis.

Chart 2. Trade Deficit

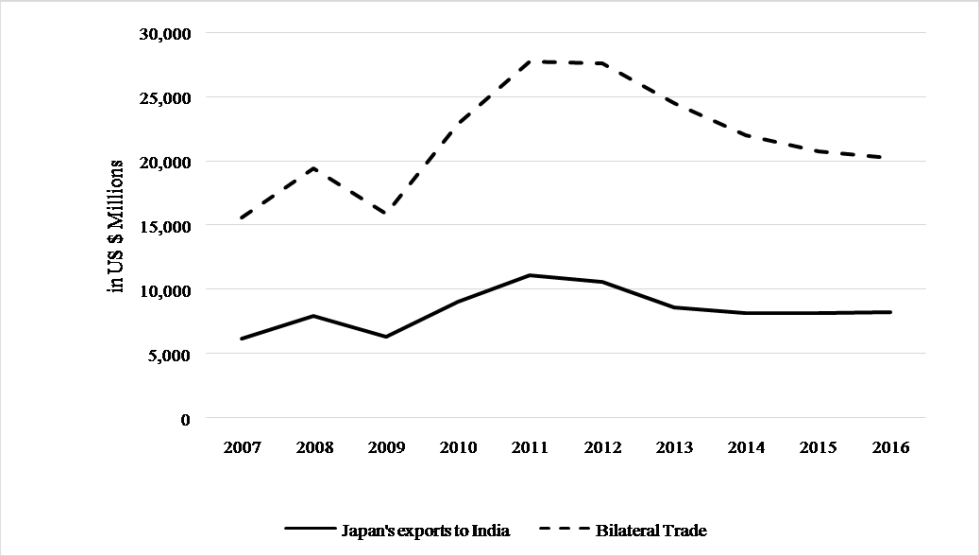


Source: Trade map

As a result, India's trade deficit with Japan has now widened to $5.9 billion (2016) against $3.1 billion in 2013-14 (chart 2). In 2016-17 alone, India's exports to Japan contracted 17.5%, and its imports fell by 1%.

India's primary exports to Japan have been petroleum products, chemical elements, fish and fish preparation, non-metallic mineral ware, metalliferous ores and scrap, clothing and accessories, iron and steel products, textile yarn/fabrics, machinery, feeding-stuff for animals

Chart 3. Trade between India and Japan



Source: Trademap

Bilateral trade has also been subdued with a continuous fall since the start of agreement. It has mostly followed the trend of fall of Japanese exports to India (Chart 3). Japan's exports itself have contracted by 5% since 2012. It has been making modest recovery after the lost decade. However, its trade balance has been still negative after three decades of positive trade balance.

Examining the trade intensity is another perspective in understanding trade relations between two countries. The trade intensity index (TII) is used to know whether the value of trade between two countries is greater or smaller than the expected on the basis of their importance in world trade.

The World Bank (2008) defined it as the share of one country's exports going to a partner divided by the share of world's exports going to the partner, calculated as:

$$Tij = (Xij/Xit)/(Xwj/Xwt)$$

Where, Xij and Xwj are the values of country I's exports and of world exports to country j and where Xit and Xwt are the total exports of country I and the world, respectively. An index of more (less) than one Eq. (1) indicates a bilateral trade flow that is larger (smaller) than expected, given the partner country's importance in world trade (World bank). Similar formula is applied on import to calculate import intensities.

Table 1. TII values for India-Japan in exports and imports

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TII (Exports)	0.49	0.41	0.40	0.47	0.39	0.45	0.49	0.42	0.44	0.38
TII (Imports)	0.52	0.51	0.54	0.46	0.53	0.58	0.59	0.59	0.65	0.68

Source: Author's Calculations

TII for exports has been falling consistently since 2012. This confirms that the bilateral trade flow is getting smaller contrary to expectation. Also, TII (imports) has risen indicating that the gain has been more for Japan than India.

Further analysis of India-Japan trade relations reveal that India has ranked quite low in Japan's external trade profile. In 2014, India was nineteenth among Japan's export destinations and twenty fourth among import sources.

China was its leading trade partner followed by the United States. Several ASEAN countries including Singapore, Thailand, Malaysia, Indonesia, Vietnam and Philippines had higher levels of trade with Japan than India. East Asian countries on the whole accounted for 53 per cent of Japan's exports and 43 per cent of its imports and have enhanced involvement with Japan in production networks with intra-firm trade taking place through Japanese invested enterprises in components and intermediate products.

The question thus arises whether CEPA has contributed to India's exports or the effect is negligible or in worst case negative since bilateral trade has fallen, there has been increase in trade deficit and even TII does not show any improvement.

Objective

India and Japan signed an agreement in the year 2011 called India-Japan Comprehensive Economic Partnership Agreement (CEPA). With the shift in the centre of economic activity towards Asia, this trade agreement has assumed significant importance for both the countries

In the backdrop of this, the objective of this research paper is to study the existing levels of trade between India and Japan and assess the impact of Comprehensive Economic Partnership Agreement (CEPA) on exports from India to Japan at the macro level as well as specifically for individual sectors. The paper tries to examine the effect of CEPA on various sectors with the help of trade indices and statistical tools. The paper attempts to analyse the patterns of export for two periods a) before the economic agreement and b) after the agreement to analyze the winners and losers of this agreement. It also analyses the potential for increase in exports of goods and services from India to Japan. The paper begins with the introduction about CEPA and a brief overview of the trends and patterns of sectoral exports and their growth between Japan and India. A vast review of literature is carried out in the next section.

It assesses the impact of CEPA by analyzing various trade indices between two countries for two periods: pre and post CEPA followed by empirical analysis using the econometric tool of Difference in Difference. Finally, the results supported by review of literature are enumerated.

Trends and Patterns in Exports and Sectoral Growth

The study covers a time period of ten years, from 2007 to 2016 i.e. 5 years before and after the implementation of CEPA between India and Japan. The analysis is based on products at 2, 4, and 6 digits and sectors at 2 digits classification of HS nomenclature. The major sectors have been shortlisted based on 2 digit HS code depending on their contribution to overall exports basket of India to Japan.

The HS Codes with high export values were shortlisted as depicted in Table-2

Table 2. India's Exports to Japan

Product code	Product label	Value in 2015	Value in 2016
TOTAL	All products	4529718	3827283
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	1017492	650287
29	Organic chemicals	366320	398839
03	Fish and crustaceans, molluscs and other aquatic invertebrates	387432	381314
71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	247632	296573
84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	215004	246068
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	143371	196111
62	Articles of apparel and clothing accessories, not knitted or crocheted	151177	151433
72	Iron and steel	170666	139845
38	Miscellaneous chemical products	92178	119243
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	105864	107195
08	Edible fruit and nuts; peel of citrus fruit or melons	67291	57545
32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring ...	57753	56178
52	Cotton	55663	54952
76	Aluminium and articles thereof	37768	54291
23	Residues and waste from the food industries; prepared animal fodder	38643	50179
63	Other made-up textile articles; sets; worn clothing and worn textile articles; rags	50668	49868
90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	43710	47513
73	Articles of iron or steel	44310	46364
09	Coffee, tea, maté and spices	42836	42561
28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, ...	45938	38464
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal ...	46651	38132
26	Ores, slag and ash	76932	36457
64	Footwear, gaiters and the like; parts of such articles	38284	35749

39	Plastics and articles thereof	32348	35347
30	Pharmaceutical products	27979	34637
13	Lac; gums, resins and other vegetable saps and extracts	41838	32626
42	Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles ...	29431	32196
61	Articles of apparel and clothing accessories, knitted or crocheted	32426	31936
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	36282	29959
33	Essential oils and retinoids; perfumery, cosmetic or toilet preparations	24740	25678
57	Carpets and other textile floor coverings	22025	21561
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial & medicinal	27091	20340

All values in US Dollar (Million)
Source: Trademap

It is important to concord the above shortlisted HS Codes with the Industries in India and also segregates them as per various sectors. To assess the impact of CEPA on various industries in India, 9 major sectors were identified as depicted in Table-3.

The sectors along with the HS Codes in each of them are shown Table-3

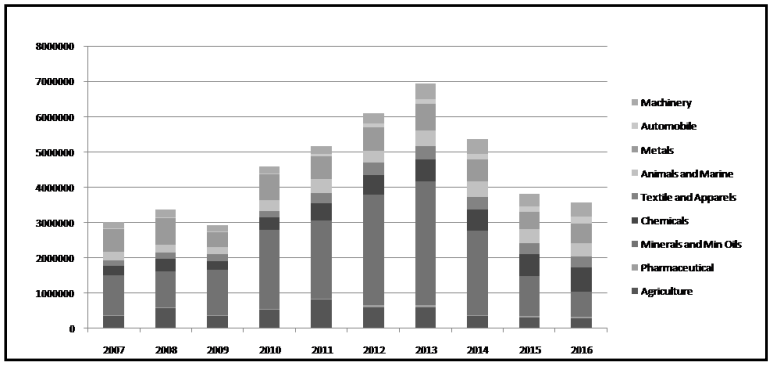
Table 3. Sector Specific HS Codes

Sectors	HS Codes
Agriculture	8,23, 13, 12, 52, 9, 15
Pharmaceutical	30
Minerals and Min Oils	25, 26, 27
Chemicals	28, 29, 38, 32, 33, 39
Textile and Apparels	42, 57, 61,62,63,64
Animals and Marine	3
Metals	71, 72, 73, 76,
Automobile	87
Machinery	84, 85, 90

Source: Based on Author's inference

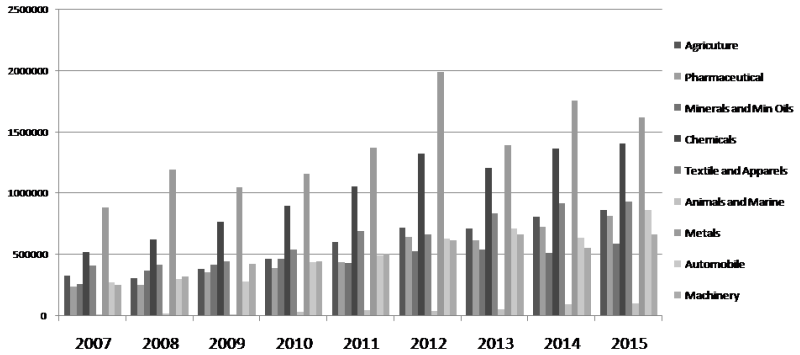
In order to assess the impact of exports on growth of the above chosen sectors, exports and gross value added for these sectors was aggregated as shown in Chart-4 and Chart-5.

Chart 4. India's Exports to Japan - Sector Wise Over the years



Source: Based on calculations from Trademap

Chart 5. Gross Value Added - Sector wise over the years



Source: Based on calculations from Annual Survey of Industries, Government of India

A very important factor has been the exchange rate of Rupee vs Yen. The historical data of exchange rate is as depicted in Table-4.

Table 4. Exchange Rate – INR per 100 YEN

Year	Exchange Rate
2007	38.7307
2008	35.3497
2009	46.1676
2010	51.1358
2011	53.2682
2012	60.7484
2013	65.853
2014	60.4026
2015	55.8266
2016	54.5934

In order to understand the relevance of the sectors chosen for the study it becomes important to assess their role in exports and growth of each one of them in detail.

India's Agricultural exports to Japan have consistently fallen since 2011. The fall has been as high as 63% since signing of the CEPA. In case of exports to world, agricultural exports have not significantly changed since 2011. In fact the agricultural exports to world have increased for straight 4 years from 2010 to 2013 as shown in the graph. Similarly, Exchange Rate has been favorable for agriculture. The INR has fallen from 38 per 100 YEN to 58 per 100 YEN. Both these factors have not prevented Indian agricultural exports to consistently reduce.The Gross value added in agricultural sector has increased significantly since 2007.The policies of the government like MSP have helped produce more. But despite supply being sufficient this has not translated into increased exports to Japan.

In case of Pharmaceutical sector, it can be seen that there has been slight increase in exports since 2011 i.e. the year of signing of the CEPA agreement. The exports of pharmaceutical medicines and other products have grown by more than 200 percent since 2007 and 70 percent since 2010-2011. The share of India in the Japanese drug market continued to be below par and limited mostly to active pharmaceutical ingredients (or APIs - raw materials for drugs) as per Indian government. Despite a big pharmaceutical market of more than $16 billion, Indian exports have not achieved much increase since the signing of CEPA. This is despite the high growth in pharmaceutical production.

Minerals and Mineral Oil sector has the largest share in India's exports to Japan as shown in graph. However the exports of Minerals are at their lowest levels in last 10 years. As with Pharmaceutical sector, the exports of this sector have started falling since 2013 and have not recovered since then. Since CEPA alone, the exports have fallen by as much as 50 percent. It is interesting to note that Mines and Minerals Act was introduced in the year 2013, same year India's exports started falling. By and large, this can be attributed to fall in oil prices and reduced demand from advanced economies, including Japan. As per DGCIS statistics, India's major exports consists of motor spirits, petroleum oils and oils obtained from bituminous minerals and other waste oil. One major factor that can be seen to be affecting this sector is India's exports to world. This has followed an almost similar path as exports to Japan. The exports have reduced by 51% since 2011 and around 60% since 2013 almost matching the 48% drop in Japanese exports since 2011 and the fall of 80 percent since 2013. The gross value added indicates that production has consistently increased in these years. Thus steps should actively be taken by the Indian government to promote exports of minerals

The export of chemicals has increased after CEPA i.e. after 2011 by nearly 40 percentages. Japan is a prime market for India's exports. Chemicals form second largest group of exports after minerals. India's exports of chemicals to world had shown similar trajectory as exports to Japan till 2014 but while export to Japan have increased since then by 10 percentages, the exports to world have declined by 5 percentages. In 2016, the chemical sector comprised of 19% of all major exports to Japan. This is nearly double the figure 9% in 2011 before CEPA was signed. If we look at Japan's imports from the world as shown in chart-4, we see that even chemicals imports have reduced consistently since 2011 for Japan. Thus we can say that domestic demand in Japan has remained subdued in this sector for many years but still Indian exporters have been able to increase their share since CEPA i.e. 2011.

India is a major textile exporter with textile exports worth $40 billion (2016). It ranks 4th, 5th among the top 10 textiles and clothing exporting countries respectively. Its major destinations include US and Europe. Japan is a major textile importing country with 97 per cent of its textiles being sourced through imports mainly from

China. India's exports to Japan stand at a mere 1 percentage. India's exports have been more or less stationary in this sector. After slight increase for two years after CEPA, the exports have declined and come down to 2011 levels. Even though average exports pre and post CEPA have shown growth of 66%, more can be done to promote exports in this important sector.

India's exports to world have been slowly but steadily increasing. It seems to have reached stagnancy in last couple of years but still there has not been any fall. The decline from 2011 to 2012 is a bit contrary to increase in India's exports to Japan in same period just after CEPA. One more important observation is that textiles and apparel sector is contributing more to India's basket now at 9 percentage than a mere 5% back in 2011. If we look at Japan's imports of apparels and textiles from the world, after achieving a peak in 2012, the imports have fallen. Thus in a way, the stagnancy of India's exports can be attributed to global import fall which might be due to reduced demand in Japan or barriers to trade.

Animal and Marine sector along with chemicals, textiles and metals is a main sector availing CEPA concessions. India's marine exports to Japan have been falling since 2013. The fall has not been steep but still a sign of worry because India's marine exports to the world have risen in 4 out of 5 years since the signing of CEPA as shown in graph. In 2017, the exports are at an all-time high indicating a strong demand for Indian products in world market but they have fallen in 4 out of 5 years in case of Japan. As shown in the graph, Japan's imports from the world have not grown for the last 10 years and have remained range bound. Since 2011 i.e. the year of CEPA, they have continued to decline, and thus Indian exports have found other destinations like Europe and South-East Asia (largest marine market).

Metals sector exports have been reducing since CEPA after a small increase till 2013. The exports of metals have declined by 18% since 2011 and around 30% from the peak in 2013. If we look at India's metal exports to world, the trend is not good. The exports have slightly reduced. This is despite the steadily increasing Gross value added (GVA) of metals sector i.e. production. However, imports from world too have consistently declined to an extent of 29% since CEPA. This indicates protectionism by Japanese government and inability by Indian exporters to utilize CEPA concessions.

If there is one sector which has tremendously improved since CEPA, it is the automobile sector. The exports have increased by a whopping 197% in 2016 since 2011 this number is 273% when compared with 2007 figures. No other sector has seen such a huge rise. This has been due to the concessional tariff to automobile parts rather than automobiles on a whole which attract 0% MFN.The imports of automobile from world in Japan have not increased much since 2012. This might be due to stagnancy in economic growth. Japan's imports from world are stable with the increase of just 17.35% from 2011 to 2016. It directly confirms that Indian automobile exports have

been capturing more Japanese market in recent years than its L2 competitors.India's world export has increased by 45 percentages since 2011 as shown in the graph. This is way below the 197% for Japan. It seems that whether by CEPA or by other factors, Japanese market is becoming more popular for Indian exporters in this sector. Gross value added has grown by 76 percentages still below the large export growth.

Machinery sector contributed 11% of total exports of India to Japan in 2016. By analyzing Trade Map data after CEPA i.e. 2011-2016, we can see an increase in exports of Machinery products from India to Japan by 70%. Meanwhile this number from 2007-2011 i.e. pre CEPA period is lesser at 32.3%. Notably, Machinery exports from India to Japan increased 46% just after CEPA was signed between the two countries (2012-2013 periods).It can be seen that the import of machinery products in Japan from world has been fairly stable in the period 2007-2016 and especially in 2011-2016. There has not being much growth or decline whereas the exports of the same from India to Japan have increased by 46%. On a preliminary basis, it means that CEPA has had a favorable impact on India and gave Indian machinery products a very favorable market access compared to other countries. Indian exports to the world have been staggering around 25000000 marks as can be seen from the graph. Also, the production has increased consistently barring one or two years since 2011. The increased production coupled with increased exports to Japan can be attributed in part to CEPA since exports to world as well as Japan's imports from world have not shown any growth in these years.

Literature Review

India has always been a firm believer of multilateral trading system and never used Regional Trade Agreements like FTAs or PTAs as a policy instrument for its economic engagement till early 2000's. However, in view of the fact that RTAs became popular economic measures to increase trade and welfare and were adopted by several countries, India started pursuing engagement through RTAs since 2003. It was the need of the hour in order to be a player in the international markets and keep its hold with its important trading partners (Ratna 2008). India and Japan are the two largest economies in the world. However, India's trade with Japan had been declining prior to 2011 (Subhasis 2012). India's share in Japanese global trade too was insignificant and required a positive push. Japan itself was late to enter into the foray of economic partnerships and only started entering into agreements in the decade 2000-2010. After several rounds of negotiations starting 2007, CEPA was signed in 2011 between both the countries.

The review of existing literature indicates that several studies have been done to identify the impact of economic partnerships of India with other countries/groups. Most of these studies however have focused on a specific sector or highlighted the impact on overall trade of both countries. These studies have been primarily for older agreements

like ASEAN-India FTA (2003). Very few studies have been carried out to see sector wise impact of recent FTAs like India-Japan CEPA or India-Korea.

GTAP analysis on the impacts on welfare by India-ASEAN FTA (Nag and Sikdar, 2011) suggests that the gains from it have been more for ASEAN than for India. The study stressed on the higher gains for the bigger members from this group. Thus, it becomes important to study the impact of CEPA on India both at overall country trade level as well as sector wise effect on various goods and service sectors to know the gains as well as losses. Biswanath and Kalki (2013) examine the benefits of CEPA and measure the partnership's economy-wide impact empirically using Computable General Equilibrium (CGE) analysis of the economy wide impact of the CEPA. They conclude that India's exports increase more than those of Japan to India whereas positive net welfare gains are expected for both countries as a result of trade liberalization. This is in contrast to the study by Ahmed (2010), which finds welfare gains only for Japan, not for India.

Nataraj and Ashwani () analyzed the initial impact of the CEPA on both trade and investment relations and other areas of cooperation. Though their study brought out some facts related to the effectiveness of the agreement in various sectors for both the countries. It finds that the reduction of tariff barriers as a result of CEPA has helped boost India's exports in various sectors such as pharmaceuticals, agricultural products, and textiles the benefits have accrued in the area of automobiles and high value-added consumer goods. Impact Assessment of India-Japan Comprehensive Economic Partnership Agreement on Fishery sector uses quantitative tools like SMART model and Finger-Kreinin (FK) index to know the degree of competitiveness and to find the resultant trade creation and trade diversion effects from the proposed tariff reduction agreement. This can be used as a reference to identify similar effects in other sectors.

Chaturvedi (2016) reviews the overall foreign trade performance in the two economies; bilateral trade in goods under CEPA; trade in services between India and Japan; investment and economic cooperation under India-Japan CEPA. It also makes a number of suggestions and recommendations regarding the future course of action for achieving the desired objectives of Japan-India CEPA.Francis () critically evaluates the effect of the agreement on agriculture and non-agriculture sectors. The study examines the effect of India’s tariff reduction commitments and concludes that ASEAN countries will gain significantly increased market access in India in several semi-processed or processed agricultural products and adversely affecting the domestic agricultural sector. Further, Indian SMEs in agriculture-related products and food products, as well as in some intermediate goods and light manufacturing products are likely to be negatively affected by the drastic tariff liberalization under the AIFTA. Similarly, Kallumal and Rajan (2013) argue that due to its relaxation of tariffs, India has almost reached the ASEAN level and in some sectors, the duties of some of the ASEAN members are higher than India’s tariffs. This has led to gains in fishery and agricultural products.

From existing literature, it can be inferred that there is a significant impact of various FTA's like India-ASEAN, India-Japan on Individual sectors like Tea Industry, Agriculture, and Fisheries etc. However,there are not many studies which present impact analysis on all the sectors and thus on the country as a whole of these trade agreements. This paper tries to eliminate that gap and present sector wise study of the impact and the gains and losses thereby for India and Japan under CEPA.

Data and Methodology

An empirical study largely based on secondary research has been conducted using statistical tools. In order to establish the effect of CEPA on exports, certain variables were identified that affect the exports of any nation significantly. These variables have been identified based on review of literature. The following are the variables have been identified that affect exports significantly:

1. Tariffs on Indian Exports: Tariff's affect exports negatively in the absence of any other external factor. Tariffs are also an important factor in this research paper because an FTA between countries essentially reduces or removes Tariff's on the agreed Tariff lines which in turn increase exports. The primary reason for signing CEPA too was to eliminate Tariff lines on many products/sectors. Thus, it becomes essential to see if Tariff as a variable affects trade and its extent. Tariff data collected from the WITS database, World Bank.
2. Exchange Rate between INR and YEN: Exchange rate fluctuations play an important role in determining trade flows between two countries. Depreciation in currency of a country helps increase exports value since foreign exchange increases as exports get more home currency for same foreign currency value. This encourages more exports.Chit, Rizov & Willenbockel (2010) indicate that a country in South East Asia discovered that volatility of exchange rates depends on the policies that policy makers initiate. They argue that exchange rate policies have had a profound effect on the nature of international trade that countries have with other countries. During the last few years, the Japanese Yen depreciated quite rapidly in respect of US Dollar (Table-4). When CEPA came into force on 1 August 2011, the Japanese Yen was trading visà- vis the Indian Rupee at 1 Re = 1.70 Yen that rapidly became 1.46 Yen by December 2011. However, in four years' time, by March 2015, the Rupee level firmed up against the Yen trading at 1 Rupee equal to 1.93 Yen. Also the currencies of several of India's competitors in the Japanese market showed greater depreciation vis-à-vis the US Dollar. This would have been a factor affecting *inter se* competitiveness between India and certain ASEAN countries on items like textiles, leather items, sea food, etc. Thus exchange rate is an important variable to see its impact on Exports. This data has been collected from the website of Reserve Bank of India.
3. Gross Value Added or GDP: The famous GDP equation that is used in economics is given by the following formulae: GDP = G + I + C + NX ……1

Where GDP is the Gross Domestic Product, I is Investment, C is Consumption and NX is net exports i.e. the exports minus the imports. Exports depend directly on GDP of a country. The more the GDP, the better it is assumed to be for Exports. In fact Exports is in itself a factor affecting GDP and Vice Versa. A close proxy of GDP is Gross Value Added. Gross value added (GVA) is the measure of the value of goods and services produced in an area, industry or sector of an economy. GVA is linked as a measurement to gross domestic product (GDP), as both are measures of output. The relationship is defined as: GVA+ taxes on products-subsidies on products=GDP……2

Thus it becomes important from 1 and 2 equation that we consider Gross value added into our analysis. The GVA data for the various NIC codes can be obtained from Ministry of Statistics. Similarly the GVA for all the economy has been obtained from the same from 2007 to 2016. GVA data has been collected from Annual Survey of Industries carried out by Ministry of Statistics and Planning.

4. World exports: In today's globalized environment, the countries' economies are closer to each other than any time before in the history of trade and business. The 2008-2009 Financial Crisis was a prime example wherein most of the world economies were affecting by one single event. In other words, the economics of a country depends on events affecting world on a whole. Thus we also considered world exports to see how significant world trade is to exports of India. Is there a correlation? Also this will help us eliminate any biases, measure the impact due to CEPA alone.ITC Trademap - Trade statistics for international business development. This source has been used to find out export-import data for 10 years.

The methodology adopted to assess the impact of CEPA on exports from India to Japan is the Difference-In-Difference method. Difference-in-Difference is a linear regression that is used in policy analysis when there exists a treatment and a control group and two time periods before and after. It is a technique to analyze the impact of a policy or decision on pre-defined criteria pre and post the decision. It is a more accurate way of verifying that the average differences between treatment and control groups across time are really meaningful. It is a way of eliminating unobserved heterogeneity, in other words it is a way of eliminating fixed factors that might have an impact between treatment and control groups. The General equation is given as below:

$$\boldsymbol{y} = \boldsymbol{\beta o} + \eth \boldsymbol{od2} + \boldsymbol{\beta 1 dT} + \eth \boldsymbol{1 d2} * \boldsymbol{dT} + \boldsymbol{otherfactors} T = \sum \{ \begin{pmatrix} = 1 \; if in Treatment Group \\ = \; 0 \; if in Control Group \end{pmatrix} \}$$

$$d2 = \sum \{ \begin{pmatrix} = 1 \; if Post Policy \\ = \; 0 \; if Pre - Policy \end{pmatrix} \}$$

Where Y is dependent variable which is to be studied pre and post Policy period. Other Factors are other independent variables that affects Y. dT and d2 are the dummy variables introduced in regression. Their value is 1 or 0 depending on treatment/Control or Post/Pre period respectively.

The variable d2*dT is the Difference-in-Difference variable and is used to estimate the difference between treatment group and control group due to the policy difference.

Table 5. DID Indicator

	BeforeChange	AfterChange	Difference
Group 1(Treat)	Y_{t1}	Y_{t2}	$\Delta Y_t = Y_{t2} - Y_{t1}$
Group 2(Control)	Y_{c1}	Y_{c2}	$\Delta Y_c = Y_{c2} - Y_{c1}$
Difference			$\Delta\Delta Y$, $\Delta Y_t - \Delta Y_c$

Applying this to the research paper we get the following equation: *Exports = C1 + C2*Dummy_Tariff + C3*Dummy_Time + C4*Dummy_Tariff*Dummy_Time +*

Other Factors

Other Factors here include: Exchange Rate and Gross Value Added variables.

The Dummy_Time variable will take the value of 0 pre CEPA period i.e. from 2007 to 2011 and the value of 1 post CEPA i.e. from 2012 to 2016. Similarly, the Dummy_Tariff variable will assume the value of 1 for treatment group which includes the 9 sectors identified and the value of 0 when considering the control group which is exports of India to world in these 9 sectors.

Since majority of India's export basket is concentrated to these 9 sectors, overall impact can be measured by regression the exports on a binary variable for the CEPA period and a number of control variables allows us to determine the Exports increase/decrease and significance to Tariff increase/decrease.

Empirical Analysis

To understand the effect of CEPA on overall trade, empirical analysis by using Difference In-Difference (DID) technique of Regression equation. With Exports as the dependent variable and Tariff (Dummy Variable used is Dummy_Tariff), Time (Dummy Variable used is Dummy_Time), Exchange Rate and Overall Gross Value added being the independent variables and the regression is done for treatment group which is the data of Exports of India to Japan and the Control group which is Exports of India to the world.

It is assumed that in the absence of CEPA, India's exports will have followed world export path and thus use DID to measure the difference and measure the impact.The output is shown in the table-6.

Table 6. Regression results

Variable	Coefficient	t-statistic	Prob.
C	4323177	0.600681	0.5489
Dummy Tariff	-18196118	-7.673214	0.0000**
Dummy Time	1695890	0.477976	0.6333
Dummy Tariff* Dummy Time	-8600955	-2.417987	0.0168**
Exchange Rate	182562.4	1.164910	0.2458
Gross Value Added	12.80027	5.468249	0.0000**

R-squared	0.562563
Adjusted R-squared	0.548543
Prob(F-statistic)	0.000000
Akaike info criterion	35.34569
Durbin-Watson statistic	0.204351

Since all the P values (Prob.) are not less than 0.05, not all the independent variables introduced in the model are significant at 5% level of significance. In other words, not every variable significantly affects overall exports of India to Japan. Also, the coefficient for Dummy_Tariff*Dummy_Time is the differences-in differences estimator interaction and is statistically significant as its p value is less than 0.05 and the value of the coefficient is negative. Thus we can conclude two things out of the results:

1. CEPA has a significant impact on India's exports to Japan
2. The impact is negative which means Tariff's and Exports are negatively related

Also, it can be noted that Gross Value Added and Exchange Rate (INR per 100 YEN) are statistically significant in impacting exports both having positive coefficient signifying that decrease in exchange rate has significantly affected India's exports and GDP growth of India although with a lesser positive coefficient has impacted the exports in a significant way. CEPA has thus been beneficial to India's exports although other factors like Exchange Rate and GDP have also affected it and thus, the export numbers don't reflect the gains due to CEPA.

In the next stage the impact of CEPA individually on exports of each of the 9 sectors chosen for research are carried out. The output for Regression is shown in table-7.

For the agricultural sector, the coefficient of regression for the variables Dummy_Tariff is less than .05 which means that Tariff irrespective of the agreement plays an important role in this sector affecting exports. Also it can be observed too that

Coefficient for Difference-in-Difference estimator Time is less than .05 (i.e. Dummy_Tariff*Dummy_Time). Thus, CEPA has made an impact on agricultural exports even though the exports have reduced. The negative coefficient in Tariff and DID variable indicates negative correlation between Tariff and CEPA. Gross Value Added variable is insignificant since its value if > 0.05 and it explains why despite the fact that GVA has increased 116% since 2007, the exports have lagged behind considerably. The government should utilize the higher produce coupled with reduced tariffs to educate and encourage more agricultural exports For this, SPS and other health related stringent requirements are more important than tariffs. Even Exchange rate has had no effect on exports and the value of 0.09 > 0.05 suggests insignificance at 5% level of significance.To conclude, India should focus more on Non-Tariff barrier removal in agricultural sector. Exchange rate and production is not a significant factor in agricultural exports to Japan.

For the Pharmaceutical Sector, the p value of variable Dummy_Tariff*Dummy_Time is less than 0.05. This means that the Difference-in-Difference estimator is significant at 5% level of significance. Thus, CEPA seems to have made significant impact on Pharmaceutical exports to Japan even if the exports on a whole have reduced due to other factors. High R square value also tells about the strong correlation between CEPA and Exports. Even though Dummy_Tariff variable has a value of less than 0.05 indicating that tariff is significant factor in pharmaceutical sector, India's pharmaceutical exports have not gained much from tariff reductions under the India-Japan CEPA, mainly because it's too cumbersome to deal with Japan's drug regulator. Thus India should work with Japan to reduce the regulations. Similarly, the high negative coefficients of Tariff and DID estimator tells that both of these have a high negative impact on exports in the absence of other variables. Gross Value Added is insignificant at 5% level of significance and has a very small coefficient which also shows why despite the increase in production, there has been no effect on increase in exports. Exchange rate too does not seem to have an effect on this sector (insignificant at 5% level of significance).To conclude, we can say that India should focus on removing non-tariff barriers in this sector rather than tariff reductions since tariffs impact has been more than compensated by regulations in this sector. Also exports to world, exchange rate and Gross value added are not factors the government should focus to improve exports to Japan.

Table 7. Sector wise regression results

Variables	Coefficient	Agriculture	Pharmaceutical	Minerals and Mineral Oil	Chemical	Textiles and Apparel	Animals and Marine	Metals	Automobile	Machinery
C	4323177 (0.5489)	2374005 (0.6673)	2276803 (0.2318)	9615457 (0.6306)	8023350 (0.0792)	12715405 (0.0014))	72094.54 (0.9399)	5616727 (0.6854)	1654259 (0.5022)	8659395 (0.0593)
Dummy Tariff	-18196118 (0.0000)	-12624124 (0.0000)	-5626324 (0.000)	-40706520 (0.0000)	-16852002 (0.0000)	-18026797 (0.0000)	-1666820 (0.0002)	-43691083 (0.0000)	-7059722 (0.0000)	-17511668 (0.0000)
Dummy Time	1695890 (0.6333)	5368390 (0.1255)	3132073 (0.0256)	5435034 (0.5814)	4842022 (0.0659)	4546421 (0.0193)	1501900 (0.0118)	166888.5 (0.9808)	3341978 (0.0406)	2689134 (0.2358)
Dummy Tariff* Dummy Time	-8600955 (0.0168)	-8764978 (0.0065)	-5710753 (0.0000)	-14966343 (0.1276)	-8792704 (0.0011)	-8280219 (0.0001)	-2494887 (0.0002)	-15100449 (0.0238)	-6444922 (0.0001)	-6853342 (0.0055)
Exchange Rate	182562.4 (0.2458)	260097.0 (0.0933)	32980.54 (0.4521)	1101325 (0.0407)	143854.6 (0.2573)	-8682.454 (0.9103)	35800.26 (0.1047)	654780.5 (0.0273)	76576.33 (0.1971)	100433.8 (0.4816)
Gross Value Added	12.80027 (0.0000)	-2.174791 (0.8129)	5.700942 (0.0905)	-43.92766 (0.3715)	3.510009 (0.4543)	11.88258 (0.0117)	12.23922 (0.0471)	8.227094 (0.3168)	5.660957 (0.1283)	11.74175 (0.2857)
R-squared	0.562563	0.937902	0.973114	0.909218	0.974146	0.986952	0.948096	0.964266	0.967489	0.973917
Adjusted R-squared	0.548543	0.912028	0.961912	0.871392	0.963374	0.981515	0.926470	0.949377	0.953942	0.963049
Prob(F-statistic)	0.000000	0.000001	0.000000	0.000007	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Akaike info criterion	35.34569	32.79565	30.59298	35.26138	32.28891	31.66259	29.29549	34.36488	31.16212	32.24844
Durbin-Watson stat	0.204351	1.508699	2.441220	2.069970	2.080007	2.536988	2.532059	1.565443	1.8097118	1.833782

In case of Minerals and Mineral Oil Sector, the p value for the Difference –in-Difference estimator Dummy_Tariff*Dummy_Time is > 0.05 which means the estimator variable is statistically insignificant at 5% level of significance. It can be concluded that CEPA has had no significant impact on Minerals and Mineral Oils exports of India to Japan.A look at Tariff variable alone, it is significant at even 1% level of significance and has a high negative coefficient. Tariff thus irrespective of CEPA, affects this sector significantly when compared with control group but since CEPA seems to have no significant impact, it point to Non-Tariff barriers like TBT and SPS for Indian exporters. Exchange Rate increase (i.e. depreciation of INR) is a significant factor for this sector's exports whereas Gross value added is insignificant with a value > 0.05 at 5% level of significance. To conclude, Tariffs and Exchange rate play an important role in encouraging exporters to export to Japan whereas CEPA has had no impact on this sector.

For the Chemical Sector, the DID estimator Dummy_Tariff*Dummy_Time has a p value of 0.0011 which is less than 0.05. Thus the estimator is significant at 5% level of significance. We can conclude that CEPA has had a significant impact on Chemical

sector with the effect being positive for the exports (since the coefficient is negative). Dummy_Tariff variable has a p value less than 0.01 which implies that Tariffs play an important role in exports of this sector whether for India exports to Japan or India's exports to world. The high negative coefficient of -16852002 states the high impact tariff reduction can bring to this sector. The tariff reduction commitments under CEPA have thus influenced exports growth of India even when exports growth to world has decreased. There is also a very high correlation between CEPA and exports as shown by R square value of 0.97. Other factors likeexchange rate is an insignificant factor and so is Gross value added with p values of both being greater than 0.05 at 5% level of significance. Also the coefficient of GVA is very small and thus increase in domestic production has marginal or no effect on exports of chemicals to Japan.

In case of Textiles and Apparel Sector, the p value of DID estimator Dummy_Tarifff*Dummy_Time is 0.0001 which is less than 0.05. Thus, DID estimator is statistically significant in affecting the Exports of apparels and textiles. The coefficient of this variable is negative and affects exports negatively. In this way, CEPA seems to have positively impacted textiles and apparels sector keeping other factors constant. The high R square value of 0.98 implies strong correlation between CEPA and exports.The p value of Dummy_Tariff is 0.00001 which is less than 0.05 and thus tariffs affects the exports significantly. Exchange rate and Gross value added variables are insignificant at 5% level of significance. The Exchange rate in fact seems to affect exports negatively (negative coefficient) which is surprising given that INR has depreciated from 2011 to 2016. The coefficient of GVA is very small and thus exports are almost independent of production of textiles and apparels in India. Indian exports to Japan have a lot to achieve in this sector. India's share is still small in Japan's 97% import market and even though CEPA has helped exports by preventing their decline, other factors like world imports to Japan suggest some form of barriers or reduced demand for apparels and textiles in Japan. More effective customs, trade facilitation measures, flexibility in labor policy etc. can be some measure that can be taken.

For the Animals and Marine Sector, the Difference-in-Difference estimator has a p value of 0.0002 which is less than 0.05. This means that the DID estimator is statistically significant at 5% level of significance. Also the coefficient of DID estimator variable is highly negative suggesting a negative correlation between CEPA and Exports.Thus, CEPA has had a significant impact on marine sector's exports to Japan. The tariff concession has helped the sector by limiting the decline in exports.Gross value added has a p value of 0.047 which is less than 0.05 however the coefficient is very small (12.2). Thus, GVA is a significant variable for marine exports to Japan but per unit production does not increase exports by much. For GVA to affect exports tremendously, production will have to increase a lot. The value of p for Exchange rate is greater than 0.05 and thus Exchange rate has no significant impact on marine exports. The depreciating INR against YEN is no incentive for Indian exports to export to Japan. Rules of Origin are an ongoing issue that should be looked into as many exporters face

trouble regarding ROO. In case of Metals Sector, the DID estimator variable Dummy_Tariff*Dummy_Time has a p value of 0.02 which is less than 0.05. Thus the DID estimator variable is said to be statistically significant to exports at 5% level of significant. Also the coefficient is highly negative.Thus, keeping other factors constant CEPA has been highly beneficial to this sector. Also there is high correlation between CEPA and exports (R square of 0.96). The p value of Exchange rate is less than 0.05 which means that Exchange rate affects exports of metals to Japan significantly. Also the positive coefficient suggests even slight depreciation in INR vs YEN is tremendously beneficial to exporters. This might be due to the fact that metals like iron and steel are high value exports and even small fluctuations can cause huge profit or loss to exporters. Tariff as a standalone variable is significant factor too. However Gross value added is insignificant with p value greater than 0.05 and the coefficient is very small too suggesting no impact of greater production on exports to Japan.

For the Automobile Sector, the Difference-in-Difference estimator variable has a p value of 0.0001 which is less than 0.05. Thus DID variable is statistically significant for Exports variable. Thus CEPA has significantly affected the exports of automobile from India to Japan with the effect being negatively correlated with a high coefficient i.e. with small decrease in tariff due to CEPA, the exports have risen tremendously. Also the correlation between CEPA and Exports is very high indicated by the high R square value of 0.96.The coefficient of regression for the variable Dummy_Tariff is almost 0.0 which means that Tariff irrespective of the agreement plays a significant role in this sector and affects exports in a big way (high coefficient of variable). If we look at control factors, Gross Value Added variable is insignificant since its value is > 0.05. Similarly, Exchange rate has had no impact on exports and its prob. result > 0.05 suggests insignificance.

Thus, to conclude we can say that automobile sector has benefitted a lot due to CEPA. With an almost negligible share of 1% in India's export basket to Japan, currently automobiles form 6% of the major exports of India. Tariff reductions should be focused more in future to help increase automobile exports more.

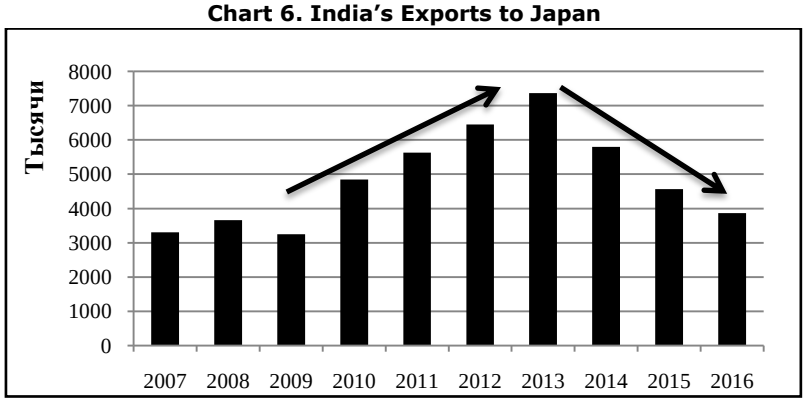
In case of Machinery Sector, the p value of coefficient of regression for the variable Dummy_Tariff is less than .05 which means that Tariff irrespective of CEPA plays an important role in this sector affecting exports. Also we observe that p value of Coefficient for DID estimator Dummy_Tariff*Dummy_Time is less than .05. This means that the DID estimator is statistically significant in affecting exports of machinery. The coefficient of DID variable is highly negative and impacts exports negatively.Thus, CEPA has made a positive impact on machinery exports. The negative coefficient in Tariff and DID variable indicates negative correlation between Tariff and CEPA. Also the high R square value suggests high correlation between CEPA and exports.Gross Value Added variable is insignificant since its p value is > 0.05. Also, the coefficient is a small positive value and per unit increase in GVA does not increase exports a lot. Even

Exchange rate has had no impact on exports and the value of 0.48 > 0.05 suggests statistical insignificance. Through this analysis, we found that Indian exporters did a good job in Machinery sectors and in the future, this sector looks promising and stable there has been growth in exports even when Indian exports of the same to world and Japan slightly decreased in 2014-2016 period.

Conclusion

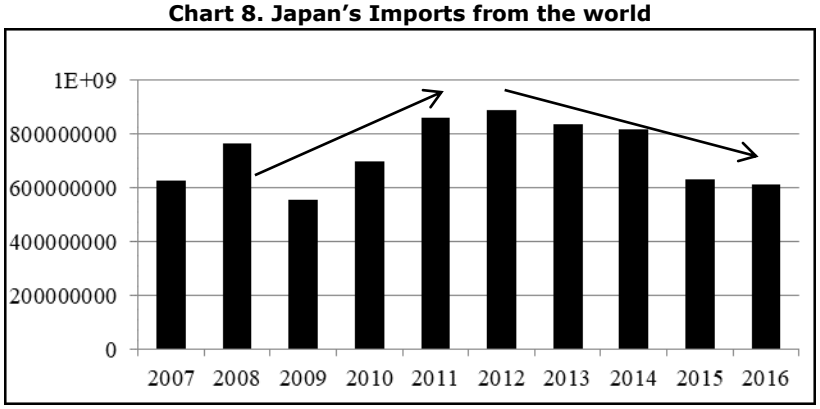
It has been five years since Comprehensive Economic Partnership Agreement was signed between India and Japan. If we look at overall exports to Japan, the numbers do not tell the entire story and may be misleading. India's overall exports to Japan have consistently fallen since the signing of CEPA barring one or two years. But this is not due to CEPA's impact. Empirical analysis in this study clearly states that it has helped Indian exports. However other factors have been more prominent in affecting India's exports negatively and have neutralized the positive effects due to CEPA agreement.

Chart 6. India's Exports to Japan



Source: Trademap

Chart 8. Japan's Imports from the world



Source: Trademap

As shown in the two charts, world's export to Japan has reduced since 2012. The world's exports to Japan have fallen by almost 30 percent since 2011. This is very

similar to the 31% fall in Indian exports. This indicated Japan's internal conditions affecting India's exports. Japan has been experiencing long periods of deflation and the economic growth is still hovering around 1 to 2 percentages. The burden of over aged population is adding to the cause. All of this has stagnated demand and affected imports to Japan whether from world or from India.

In the absence of consumer demand in Japan, Indian exporters have found other emerging economies with higher growth rates and less stringent policies like South-East Asia, Brazil, and China etc. This is despite CEPA in place because the risk of all other externalities has far exceeded the benefits of CEPA. However this in no way suggests negative impact of CEPA. Keeping all other factors constant, DID regression analysis suggest positive impact of CEPA on India's overall exports to Japan. The agreement has helped prevent the decline of exports and many sectors have been positively impacted.

The combined result of regression for each sector is shown in the table-8. We can clearly see that p value for all the sectors except Minerals and Min Oils in our analysis is less than 0.05. Thus CEPA has been beneficial to majority of the sectors individually too. But why then is there so much skepticism regarding CEPA's impact among researchers and policy makers?

Table 8. CEPA's impact on each sector as per Empirical Analysis

Sector	P value using DID analysis	Has CEPA impacted this sector?
Agriculture	< 0.05	YES
Pharmaceutical	< 0.05	YES
Minerals and Min Oils	> 0.05	NO
Chemicals	< 0.05	YES
Textile and Apparels	< 0.05	YES
Animals and Marine	< 0.05	YES
Metals	< 0.05	YES
Automobile	< 0.05	YES
Machinery	< 0.05	YES

For the years 2007 to 2011 i.e. pre CEPA, all the sectors witnessed increased exports as can be seen in Table-9. It was also the period that was seeing more India-Japan trade and resulted in CEPA agreement to improve the relations more. However if one looks at only post CEPA period and tries to analyze the impact, most of the sectors' exports to Japan declined. By looking at only post CEPA figures, many experts have termed CEPA failure for India. However one needs to look deeper to analyze clearly. The third column shows average change from 2007-11 to 2012-16.

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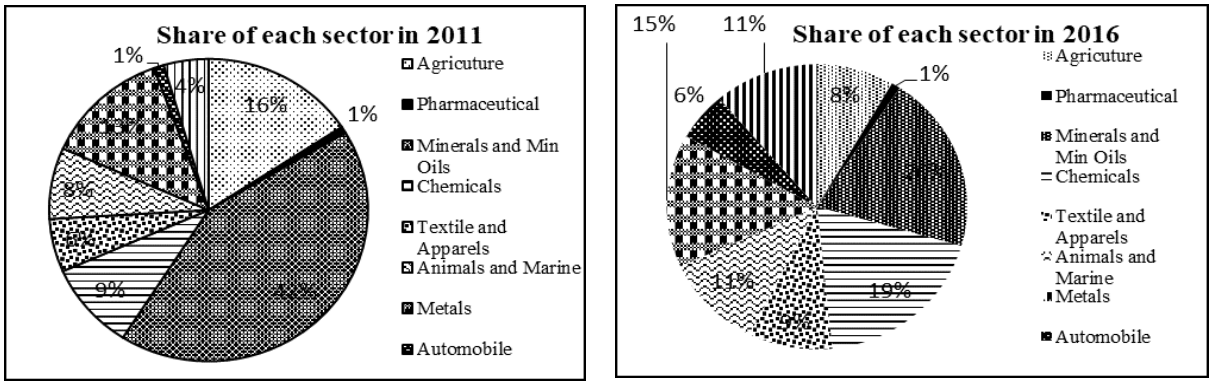
Table 9. % change in different sector's Exports to Japan

Sector	% change from 2007 to 2011	% change from 2011 to 2016	Average % change from period (2007-2011) to (2012-2016)
Agriculture	118.52	-63.62	-19.64
Pharmaceutical	350.78	-6.34	205.70
Minerals and Min Oils	95.92	-67.46	38.04
Chemicals	81.39	39.46	81.00
Textile and Apparels	78.96	9.68	66.46
Animals and Marine	62.00	-3.22	48.82
Metals	3.44	-18.61	-3.78
Automobile	196.58	272.99	388.43
Machinery	32.35	70.21	91.48

Source: Author's calculations based on trademap

It can be seen that 7 out of the 9 sectors in this study have shown positive growth. The other two sectors have marginally declined (Metals by 3% and Agriculture by 19%) which is negligible. India's export basket has changed significantly since CEPA as can be seen from Chart-9. It is more diversified now reducing the risk to Indian economy as a whole. Due to the tariff concessions available in many sectors, India's dependence on some products like Minerals and mineral oils has reduced. From 42% share in the basket of major exports to Japan, its share has reduced to 20% in 2016. From just 9% share in 2011, Chemicals' share has more than doubled to around 19% in 2016 and is just behind Minerals sector. Automobiles sector has been the most positively affected. It now commands a significant 6% share from almost 0% share in 2011. This sector looks promising even in future and government should frame policies to encourage automobile exports to Japan. Metals sector has been consistent with an almost equal share.

Chart 9. Sectoral Share of India's exports to Japan in 2011-16



Source: Based on Author's own calculations from Trademap

Pharmaceutical sector has shown promise but still accounts for only 1% share in the basket. India has not been able to utilize CEPA to achieve the desired increase in trade in pharmaceutical medicines and devices. More work needs to be done in this sector especially in generic medicine exports. Agriculture's share has reduced by half to just around 8%. The government should focus on removing non-tariff barriers like TBT and SPS in this sector. Textiles and Apparels sector is similar to Pharmaceuticals in the sense that despite being a world leader, India has not captured enough market in Japan. The share has increased but still is less than increase in India's exports to other countries.

After due consideration and careful analysis, it can be concluded that India would benefit from focusing on the following sectors where CEPA offers an advantage and where India also has export strengths. These sectors are mainly Automobiles, Chemicals, Minerals & Mineral Oil, and Machinery. Agriculture is a concern and policies in other sectors like Metals, Textiles & Apparels and Pharmaceuticals should be refined more to achieve more benefits.

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