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ANALYSIS OF INDIA'S PRINCIPAL COMMODITIES OF EXPORTS: SOME OBSERVATIONS

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ABSTRACT

Exports do indicate the comparative and competitive advantages of a country and in some exceptional cases they also imply the most superior dominance in the level playing ground of international competitiveness. India has been promoting its exports essentially for foreign exchange earnings, expansion in the industrial activities, reaping the benefits of markets, increasing the degree of investment by reallocation of resources, promoting infrastructural investments through export earnings, pushing the growth process, etc. This study has chosen the sample period from 1991-92 up to 2016-17 and, for the purpose of comparison and also to understand some structural shift, the study period is classified into various sub-periods as 1991-92 to 1997-98, 1998-99 to 2004-05, 2005-06 to 2011-12 and 2012-13 to 2016-17. It was found that Agriculture sector has wide scope for exports but disappointingly our analysis suggests that the performance of agriculture exports is not satisfactory. This cannot be misread. Decline in agriculture exports for some of the year can be partly attributed to domestic demand for agro products and price disadvantage in the international market. Export of marine and dairy products could be another big area of advantage. Indian fishery products have an enormous scope to expand its production and also the market opportunities but logistics and transportation seem to be the impediments. This issue can be solved by proper trans-national logistic networks and proper processing of final products. Some of the items need to be improved in terms of its percentage share in total exports while making proper policies for consistent growth.

Keywords: Principal Commodities of Exports, Competitiveness, Export Variability, Logistics Network, Institutional Support.

I. INTRODUCTION

Exports play an important role in the globalized scenario of growth and development and it is quite often considered as an engine of growth, especially when outward looking strategies predominantly influence the growth process. Exports do indicate the comparative and

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competitive advantages of a country and in some exceptional cases they also imply the most superior dominance in the level playing ground of international competitiveness. India has been promoting its exports essentially for increasing foreign exchange earnings, expansion in the industrial activities, reaping the benefits of markets, increasing the degree of investment by reallocation of resources, promoting infrastructural investments through export earnings, pushing the growth process, etc. As evident from the empirical literature, exports are not stable and foreign exchange earnings are fluctuating. India's exports have increased from Rs. 44923 crores in 1991-92 to 1878943 crores in 2016-17. Correspondingly, trade balance has increased from -6494 crores to -754452 crores for the same period, in which imports have increased from Rs. 51470 crores to 2633395 crores. Approximately exports increased to the tune of 41 times and that of imports increased by 51 times but trade deficit has multiplied 116 times during the same reference period. This indicates the enormous pressure on external balance which is placed essentially because of unstable growth of exports and steady increased in imports. Although current account deficit is somewhat moderated by positive and steady growth of net invisibles, the focus is here only on exports of commodities under various broad groupings and categories and therefore the focus is mainly to analyze to what extent growth in principal commodities that are exported from India have been able to play significant role in the trade balance and subsequently on external sector.

II. BACKGROUND

India's export growth strategies and industrial development primarily have been focusing on enhancing exports and finding viable international markets for larger revenues and profits. Indian industries have grown in terms of their competitiveness and production of quality products including the development of Research and Development (R&D) over a period of last three decades. Globalization and privatization have given enough opportunities for entrepreneurs to diversify and specialize in the production of goods and services that are in line with India's competitive advantage but the reorganization of factors and product-specific specializations are not optimally sufficient to take advantage of the opportunities available in the international markets. Growth in the India's Gross Domestic Product (GDP) and increased level of development have not been able to substantially push exports, rather, they have multiplied imports. Mean of exports as a percent of GDP stood at 11.7 percent and that of imports was around 16.87 percent for the period 1991-92 up to 2016-17. Even in GDP percents of export and imports, one observes an unstable scenario of exports as against steady growth of imports[1]. Export as a percent of imports have declined from 87.37 percent to 71.35 percent from 1991-92 to 2016-17. This speaks volumes about the kind of exports and imports scenario, in particular the performance of exports, over a period of twenty six years. Annual growth rate of exports and trends in exports play predominant role in shaping export performance. Even though there are

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great amount of variabilities in aggregate exports, it is important to understand how variabilities are generated from individual commodities of exports that are crucial for overall export performance. This paper focuses on how the exports of various commodities have behaved and performed over a period of 1991-92 up till 2016-17 while concentrating on various broad disaggregated individual categories of exports of goods. The attempt is to identify the performance of individual exports and aggregate exports by analyzing the annual growth rates and other estimates that are obtained for the sample period.

III. DATA AND ESTIMATION ISSUES

The information pertaining to various variables used in this study are collected from the Handbook of Statistics on Indian Economy (various issues), Reserve Bank of India (RBI) and also from various volumes of the Economic Surveys published by the Ministry of Finance, Government of India. Product categories are classified according to the RBI classification and presentation of data and it has been observed that there are some variations in the categories of classification of exports. It is important to mention that the individual items broadly belonging to a particular group of commodities are kept together to arrive various categories as principal commodities of exports and there are variations of individual items which make up the broad category. The variations can be interpreted in terms of overlapping of commodities; where in same commodities are getting placed under multiple categories and, discontinuation of certain commodities. In order to make them approximately uniform, the classifications are made into commodity groups as principal commodities of exports in line with RBI classification and the same is presented in Appendix 2. This appendix shows how each commodity is classified into broad groups. To the best of our abilities there is no alternative for a straightforward accurate classification of broader groups in the absence of availability of uniform information across the sample period.

Total exports are therefore accordingly subdivided into agricultural and related products; marine, meat dairy products; ore, mineral and leather products; chemicals and related products; engineering and electronic goods; cotton, manmade yarn, readymade garments, jutes and carpets; handicraft, gems and jewellery; and petroleum products. Classification reported varies across various official sources of information and even private data generating agencies do differ from that of RBI and Finance Ministry but the aim of the study here is to make classification that is more useful for analytical purpose of understanding broad categories that can give a uniform structure of frame so that the detailed analysis is possible. The RBI classification is fairly well-rooted, coherent and has less overlapping and deficiencies in reporting. Therefore, this suited our analysis and some overlapping is taken care of by reorganizing the individual items into various categories that are mentioned above. The various estimates reported in terms of ratios and

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descriptive statistics are estimated by using the basic data from the above mentioned sources and are presented in the Appendix 1 at the end of the paper. This study has chosen the sample period from 1991-92 up to 2016-17 and for the purpose of comparison and also to understand some structural shift, the study period is classified into various sub-periods as 1991-92 to 1997-98, 1998-99 to 2004-05, 2005-06 to 2011-12 and 2012-13 to 2016-17.

IV. DISAGGREGATED ANALYSIS

The growth and trends in overall exports do not fully explain the underlying dynamics on the structure and scenario of exports by taking into account various industries and firm level production and sales of commodities at international markets and certainly it requires a detailed discourse on specific commodity-based export analysis. In what follows, we present detailed accounts of export performance of commodity groups to get a clear picture on the microscopic nature of export scenario in India.

1. Agriculture and other products

Agriculture and related products mainly include grains, pulses, oil, fruits, etc. Tea and coffee constitute an important portion of this category and even some of the processed items related to agriculture commodities are presented here. Tables 1 and 2 give the annual growth rate of exports of principal commodities and percentage share of the same in total exports. It can be noticed from Table 1 that the share of agriculture and related products has significantly declined in total exports. In 1991-92 it stood as 12.05 percent and it has reduced to around 6 percent in 2016-17. This is almost a significant decline considering the fact India is still predominantly an agrarian economy and has a very strong agricultural base but could not compete globally. Table 3 reports the descriptive statistical estimates of the percentage share of individual categories in the total exports which is presented in the form of sub-classification of total exports as narrated above.

The mean value of percentage share shows considerable decline even in the sub-classifications as it was observed to be 11.68 percent during the first period and went down to 6.33 percent in the last sub-period. Although there is a marginal improvement from period three to four, this does not contribute to any noteworthy expansion in the export growth of Indian agriculture. This is because the annual growth rate of the same during the sample period has fluctuated enormously as it can be noticed from Table 2 and, one finds negative growth rates for the periods 2014-15 and 2015-16. Table 4 gives a clear cut summary of distributional characteristics of annual growth rate of exports under various commodity groups. It is categorically clear that the exports of agriculture and related products have performed poorly due to the fact that the mean values of annual growth rates have declined over sub-classifications and for nearly ten years from 2005-06

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to 2016-17 growth rate has remained unaltered and, very poor mean growth is recorded for the second period. It is adequately clear that the performance of exports of agriculture commodities have not been meaningfully impressive.

2. Marine, meat and dairy Products

This category essentially includes fish and other related products, meat and meat preparations including that of various products related to dairy. The fluctuations in the annual growth rates of dairy products have been very high and the mean growth rates happened to be declining as estimates of variance turned out to be very high leading to fluctuations in the Coefficient of Variation (CV). The oscillations in the CV are accompanied by negative kurtosis value for the first and second periods and then kurtosis becomes positive[2]. This can be noticed from Tables 2 and 4. As it occurred in the agriculture commodity groups, marine, meat and dairy product also suffered a severe setback in the second period not only in terms of annual growth rate but also in terms of its variability. Surprisingly the exports of this category in terms of percentage share in total exports continuously diminished from 1991-92 to 2010-11 and from there, an increase in the trend can be observed. The estimates of percentage share presented in the Table 1 indicate that this category constituted 3.8 percent of total share and steadily declined to 1.83 percent during 2010-11 and thereon it moved to 3.73 percent during 2016-17. The descriptive statistical estimates suggest the same but the variability in terms of percentage share is very low thereby making the mean percentage share efficient while kurtosis has fluctuated more. This indicates that, though there is variability, the consistency is maintained.

3. Ore, mineral and leather products

This category mainly includes all kinds of minerals and ores and manufacture of basic leather and leather products. Comparatively, India is a mineral-rich country except in crude oil category. The percentage share of this category has had its fluctuation which is unique and not observed in any of other categories. For example the percentage share in total exports has continuously declined for over ten years from 1991-92 to 2000-01 and approximately for another ten years the same has increased until its decline started from 2010-11 till 2016-17. This decline during the last ten years is considerable. One can notice that there are five negative growth rates as against two positive growth rates after 2010-11. Tables 3 and 4 give a sharp account about the typical growth rate in this category as very high inconsistency is observed for the last two sub-periods along with a decline in the annual growth rate compared to the first two sub-periods. Mean value of percentage share does decline continuously. In fact the growth rate of mineral and leather products has disappointed the overall export performance. The government policies towards minerals and leather products have changed across the sample period particularly after 2006-07. Mineral imports constrained the export policies of the same.

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4. Chemical and related products

An important and significant breakthrough is achieved in the composition of various exports by this category at least in terms of annual growth rates as there is no negative growth which is observed across the sample period. This is reaffirmed form the information in Table 1 that no significant fall in the exports of chemicals and related products has been observed. Descriptive statistics reported in the Table 3 concerning to percentage share suggest that there is a continuous improvement in the mean value of the same with very low variability and significant consistency. This can be observed from the mean, standard deviation and coefficient of variation that have been reported there. Despite an increase in the percentage share, mean value of annual growth rate seems to be somewhat falling though it is constant for the last two periods. While, there is less variability in the percentage share of chemicals and related products in total exports, the variations in annual growth rates are comparatively higher. Kurtosis and skewness of annual growth rate moved around the values 3 and zero respectively indicating that the characteristics of the distribution are quite closer to the normal distribution[3].

5. Engineering and electronic goods

Engineering and electronic goods hosted very strong growth rates except for a few years. The percentage share in total exports has steadily increased over the sample period of time in terms of mean estimates of percentage shares. Variability is also observed to be very low in this category as values of CV more or less remained very low. Skewness and kurtosis are also satisfactory except for the last period. The mean value of annual growth rate observed in Table 4 suggests very strong positive and significant growth and it is interesting to observe that the values of annual growth rates remained above twenty percent on an average for each of the time-period though CV value seems to be relatively high for the last two sub-periods. The skewness and kurtosis estimates are fairly good for the annual growth rates across all sub-periods. Table 2 suggests that despite strong growth rate in the export of engineering and electronic goods, there are negative growth rates for years 1998-99, 2009-10 and 2015-16. This indicates that export trend is not smooth despite very strong upward trend observed for this category.

6. Cotton, manmade yarn, readymade garment, jutes and carpets

This category includes a wide variety of products such as cotton yarn, fabrics, manmade yarn and related fabrics, readymade garments and jute related products. Moreover, the individual commodities grouped into this category have many sub-classifications in yarn, fabrics, readymade garments and jute. Traditionally, India has got strong comparative advantage and production specializations in the products that are included in this category. The village and cottage industries, use of labour intensive technologies, availability of raw material, etc. have

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propelled the production and specialization of various commodities grouped in this classification. Despite strong footing in the Indian industrial scenario, export performance of this commodity group is disappointing. The percentage share of this commodity group to the total exports was 25.15 percent in 1991-92 and this has considerably fallen to the single digit of around 9 percent in 2012-13. This speaks about the enormous lacuna in the export promotion policies related to cotton yarn, fabrics, manmade yarn, jute, etc. One also observes that from 2012-13 onwards there is a marginal increase in the percentage share of exports of this category in total exports. The descriptive statistics of this suggest that the estimates of CV are very low, indicating that the decline in the percentage share is statistically significant as the standard deviation of the same is very low. The mean value of percentage share has declined across all sub-periods. The annual growth rate of the same has been unsatisfactory given the fact that there is an enormous fluctuation in the annual growth rate. To some extent this can be attributed to the decline in international competitiveness of this product and, price and exchange rate dynamics that must have hampered quantum of exports of this category.

7. Handicrafts, gems and jewellery

Handicraft is essentially a typical category of exports not only for India but also for many major developing Asian countries. Handicrafts consist of wide range of products that come from rural and cottage industries and even from small scale industries which are specifically raised for hundred percent exports and export processing zones. India has been cautiously nourishing and promoting the age-old traditional commodities not only for export earnings and employment but also to sustain and preserve the technologies which are consistent with environment-friendly production processes. Although India is one of the largest importers of gold, gems and jewellery exports have flourished due to the traditional skills of the labour force and modernization of traditional jewellery designing. India does have considerable amount of market for products in this category. Table 1 points this out. It is important to note that the percentage share of handicrafts, gems and jewellery remained very high as there has been double digit growth throughout the study period. The mean value of percentage share remained more or less the same across all sub-periods. Despite very strong footing the exports of handicrafts, gems and jewellery from India could not manage to get consistent annual growth rates. This is a very important observation as fluctuations in the annual growth rates are very high. The mean value of annual growth rates seem to be satisfactory as against the annual estimates of growth rate since the mean growth rate remained very high at around 20 percent though comparatively high CV is observed. Good amount of variability is also observed in the value of kurtosis and skewness.

8. Petroleum products and others

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Export of petroleum products is a slightly different category as the values of petroleum exports shown are strictly not export of crude petroleum though some amount of crude petroleum is exported for revenue purpose. More often it refers to the swap against petroleum products and therefore export of petroleum products cannot be conceived as pure exports. Swaps play derivative role in the future markets of swapped quantities of petroleum products. The category "others" mostly include those products whose data is not consistently available or recorded over time. There are also cases where exports of certain commodities are abandoned and new exports have emerged. Therefore, the analysis of this category should be made subjected to the validity of the classification that is provided. Despite this odd classification the export values recorded in this category do have an implication in the swap markets and the structure of the exports that can be viewed across time. Both the percentage shares and annual growth rates of this category have been unsatisfactory at least in terms of estimates of standard deviation and variance and percentage shares reported on annual basis. As it is noted in the Table 1, the swaps and other future contracts mentioned in 2005-06 stood at 12 percent which have phenomenally increased to 20 percent in 2013-14. Other product category remained very low for most of the period except for the last category where it has recorded 7.41 mean value of percentage share in total exports as against around 2.5 percent in the remaining period. The composition and structure have undergone a tremendous change from 2007-08 onwards.

V. TRENDS IN TOTAL EXPORTS

The overall movement in the aggregate exports either at given a point in time or over a period of time is largely influenced by multidimensional variations of individual items and commodity groups that constitute the export basket. The analysis of individual categories attempted in this paper does not show a coherent and consistent pattern and, behavioural movements for all commodities across. In other words the behaviour of individual exports is completely different from each other. We do have exports which are subjected to very high fluctuations in the annual growth rate coupled with decrease in trend in terms of percentage share. There are also cases where annual growth rates are volatile but their long term movement in terms of percentage share is satisfactory. There are no indications where the instabilities and variabilities in annual growth rates purely expressed in terms of CV, skewness and kurtosis are satisfactory, while one can observe that the percentage shares of some categories of exports are increasing over time making somewhat satisfactory growth of overall exports for some particular periods under investigation. Annual growth rates of total exports have declined over a period of time and the decline is very significant after 2013-14 as there are negative growth rates of -0.45 and -9.49 for 2014-15 and 2015-16 respectively. In fact, the phase of decline can be classified into two segments where one decline is observed from 1991-92 to 1998-99 as annual growth rate declines from 35.2 percent to 7.42 percent and another declining phase can be noticed from 2010-11 to

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2016-17. In between these two periods annual growth rates have fluctuated widely. Estimates of descriptive statistics for various sub-periods are unsatisfactory in terms of its CV and variance and indicate the stagnation of exports at least in terms of mean value of annual growth rate from 2005-06 to 2016-17 at around 22 percent. In fact, the last sub-period has extreme fluctuations that can be noticed from Table 2 as range of growth rate is observed to be 28.26 percent to -9.49 percent, whereas the third sub-period in which the mean value of growth rate is observed to be same as that of the last sub-period has no negative growth rate. Therefore there is a qualitative difference in interpreting mean value of growth rate which happened to be the same for both third and fourth sub-periods.

Variabilities in the individual commodity groups are reflected in the total exports. Although there are good number of negative values for individual items such as ore, minerals and leather products; marine, meat and dairy products; agriculture and related products, the overall annual growth rate of total exports turned out to be positive except for the years 2014-15 and 2015-16 due to the fact that other commodity groupings have compensated for the negative growth rates. Inconsistencies and variabilities expressed in the estimates of CV are very high for some commodity groups but overall exports have relatively less value of CV indicating that export variabilities are also compensated. This is considerably a healthy development in the export performance of commodities analyzed here.

VI. SOME OBSERVATIONS

Agriculture sector has wide scope for exports but disappointingly our analysis suggests that the performance of agriculture exports is not satisfactory. This cannot be misread. Decline in agriculture exports for some of the year can be partly attributed to domestic demand for agro products and price disadvantage in the international market. In fact, some of the studies suggest that the food security scenario in India has become vulnerable and therefore absorption of agricultural goods in terms of domestic demand and government procurement must have pushed exports downward. However, there are considerable amount of scopes to increase the export of agro products through quality food processing and trans-national production of logistics and supply chain. Agriculture sector gives enormous scope not only for increasing exports but also for enhancing export earnings if markets are properly captured. Ideally, modernization and privatization along with big push in the public investment in agriculture must contribute towards increasing percentage share of agricultural commodities in the total exports and thereby pushing the export growth. Export of marine and dairy products could be another big area of advantage. Indian fishery products have an enormous scope to expand its production and also the market opportunities but logistics and transportation seem to be an impediment. This issue can be solved by proper trans-national logistic networks and proper processing of final products. Presumably,

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ores and minerals have less scope and as a policy option also one would expect that domestic demand should be taken care of first before exporting the same, because ores and minerals are input products rather than output products.

There is also scope in engineering and electronic goods if R&D and production processes are properly modernized and innovation is given a scope. The unprecedented opportunities in the exports lie in cotton, jute and garments while evolving technologies to maintain labour intensive skills in certain line of productions in cotton and jute while identifying opportunities in the export markets.

VII. CONCLUSIONS

This analysis is not exhaustive. It merely organizes the thoughts around how various categories of exports have behaved over the sample period and what are the opportunities for increasing exports. As estimates suggest, the variability observed in annual growth rates can be reduced by proper policy measures aimed at exploring the markets for exports as well as expanding the foreign exchange earnings. Though quantitative regulations are imprudent, there can be a better institutional framework than existing arrangements to guide the export promotion right from the beginning of production till the marketing of the same. Some of the items need to be improved in terms of its percentage share in total exports while making proper policies for consistent growth.

Notes

1. All the information and data that are presented in this section including those placed in the Introduction are obtained from various issues of Handbook of Statistics on Indian Economy published by the Reserve Bank of India (RBI) and various volumes of Economic Surveys published by the Ministry of Finance, Government of India. Estimates are author's calculations.

2. The estimates of kurtosis reported here pertain to excess kurtosis and this means that the estimates reported here are above the value of three which correspond to normal distribution. Therefore comparison of kurtosis across various estimates can be interpreted with reference to values pertaining to normal distribution.

3. The analytical idea presented here on the various estimates of descriptive statistics reported does not scrutinize to the statistical issue of normality for various commodity groupings of exports. The study focuses more in terms of analytical issues and policy constraints than mere statistical properties.

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Appendix 1: Tables

Table 1: Percentage shares Pertaining to Principal Commodities of Exports

Year	Principal Commodities								
	AR	MMD	OML	CR	EE	CMR GJC	HGJ	PP	OT
1991-92	12.06	3.80	15.57	8.47	14.10	25.15	16.68	2.32	0.95
1992-93	11.25	3.73	12.93	7.00	14.53	25.77	18.06	2.57	0.99
1993-94	11.46	4.15	11.81	7.68	15.03	23.57	19.40	1.79	1.21
1994-95	9.66	4.76	11.44	8.51	14.89	25.98	18.56	1.58	1.12
1995-96	13.02	3.77	10.82	8.66	15.92	24.38	17.95	1.43	1.06
1996-97	12.41	3.97	9.74	9.07	17.17	24.87	15.62	1.44	1.01
1997-98	11.91	4.07	9.12	9.53	17.41	24.79	16.77	1.01	1.20
1998-99	12.52	3.69	8.84	9.41	14.95	25.64	19.76	0.27	1.23
1999-00	9.22	3.73	7.54	10.03	15.84	25.63	22.19	0.11	1.48

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2000-01	7.40	3.85	7.75	10.28	17.66	24.28	18.06	4.20	2.76
2001-02	7.64	3.39	8.21	10.69	18.55	22.32	17.92	4.84	2.68
2002-03	7.50	3.26	8.94	11.15	19.51	21.12	18.62	4.89	2.26
2003-04	6.88	2.67	8.86	11.90	22.14	19.13	17.34	5.59	2.95
2004-05	6.13	2.23	12.90	12.18	22.96	15.43	16.93	8.37	2.71
2005-06	5.42	2.14	12.28	11.59	23.18	15.20	15.51	11.29	2.44
2006-07	4.52	1.98	11.02	11.25	25.66	13.06	12.99	14.78	2.43
2007-08	5.72	1.63	11.32	10.66	25.00	11.36	12.39	17.41	2.46
2008-09	5.57	1.48	8.80	10.19	29.59	10.48	15.46	14.68	4.10
2009-10	5.44	1.91	10.10	10.73	24.54	10.63	16.40	15.72	4.84
2010-11	4.59	1.83	6.88	9.56	26.45	9.23	16.24	16.52	7.40
2011-12	5.71	2.16	4.24	10.22	22.56	9.53	15.47	18.28	11.28
2012-13	6.55	2.42	3.41	10.87	22.45	9.53	14.66	20.24	9.42
2013-14	6.72	3.30	3.55	11.02	22.85	10.41	13.62	20.12	8.00
2014-15	6.21	3.51	3.37	11.38	25.59	11.14	13.74	18.25	6.25
2015-16	6.12	3.57	3.53	13.77	25.32	12.75	15.62	11.63	7.21
2016-17	6.05	3.73	3.71	13.36	26.44	12.20	16.44	11.44	6.16

Where; AR = Agricultural and Related Products, MMD = Marine, Meat and Dairy Products, OML = Ores, Mineral and Leather Products, CR = Chemicals and Related Products, EE = Engineering and Electronic Goods, CMRGJC = Cotton and Manmade Yarn, Readymade Garments, Jute and Carpets, HGJ = Handicrafts, Gems and Jewellery, PP = Petroleum Products and OT = Unclassified items.

Source: The source of the table is author's calculations and the data required is obtained from Handbook of Statistics on Indian Economy (Various Issues), Reserve Bank of India.

Table 2: Annual Growth Rates Pertaining to Principal Commodities of Exports

Year	Principal Commodity Groups									Total
	AR	MMD	OML	CR	EE	CMRGJC	HGJ	PP	OT	
1991-92	40.01	52.16	27.20	54.39	39.37	47.92	30.05	9.01	-22.66	35.27
1992-93	13.72	19.53	1.25	0.75	25.64	24.92	31.99	34.92	26.49	21.90
1993-94	32.31	44.80	18.66	42.66	34.38	18.83	39.57	-9.53	58.47	29.92
1994-95	-0.07	36.01	14.84	31.28	17.44	30.64	13.39	4.90	10.09	18.53
1995-96	73.43	1.75	21.73	30.94	37.54	20.73	24.45	15.95	21.90	28.64
1996-97	6.47	17.67	0.49	17.00	20.50	13.95	-2.80	12.69	6.80	11.72
1997-98	5.12	12.27	2.60	15.01	11.06	9.14	17.57	-23.35	29.50	9.50

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1998-99	12.87	-2.62	4.13	6.08	-7.77	11.12	26.52	-71.30	10.54	7.42
1999-00	-15.89	15.27	-2.63	21.64	20.97	14.10	28.25	-55.21	36.91	14.17
2000-01	2.37	31.85	31.14	30.76	42.25	20.89	3.81	4969.26	137.81	27.58
2001-02	6.02	-9.51	8.74	6.79	7.83	-5.62	1.93	18.32	-0.27	2.68
2002-03	19.82	17.11	32.87	27.38	28.40	15.48	26.79	23.38	3.03	22.06
2003-04	5.40	-5.84	14.00	22.70	30.47	4.18	7.12	31.50	49.73	14.98
2004-05	14.08	7.09	86.27	30.90	32.69	3.15	24.86	91.52	17.66	27.94
2005-06	7.50	16.86	15.77	15.73	22.74	19.81	11.44	64.10	9.34	21.60
2006-07	4.39	15.62	12.37	21.58	38.69	7.65	4.91	64.01	25.22	25.28
2007-08	45.17	-5.65	17.82	8.76	11.77	-0.22	9.42	35.11	16.00	14.71
2008-09	24.87	16.50	-0.35	22.54	51.73	18.21	59.90	8.06	113.23	28.19
2009-10	-1.71	30.14	15.49	5.86	-16.61	2.04	6.68	7.70	18.93	0.57
2010-11	14.07	28.98	-7.99	20.43	45.69	17.41	33.87	42.05	106.70	35.17
2011-12	59.40	51.99	-20.91	37.17	9.40	32.40	22.16	41.92	95.36	28.26
2012-13	27.95	24.57	-10.38	18.57	10.94	11.48	5.68	23.48	-6.91	11.48
2013-14	19.60	58.85	21.32	18.18	18.64	27.37	8.30	15.85	-0.93	16.56
2014-15	-8.04	6.15	-5.43	2.74	11.50	6.49	0.45	-9.70	-22.26	-0.45
2015-16	-10.81	-8.17	-5.24	9.56	-10.44	3.59	2.89	-42.31	4.47	-9.49
2016-17	6.81	12.94	13.46	4.80	12.80	3.33	13.64	6.21	-7.83	8.02

Where; AR = Agricultural and Related Products, MMD = Marine, Meat and Dairy Products, OML = Ores, Mineral and Leather Products, CR = Chemicals and Related Products, EE = Engineering and Electronic Goods, CMRGJC = Cotton and Manmade Yarn, Readymade Garments, Jute and Carpets, HGJ = Handicrafts, Gems and Jewellery, PP = Petroleum Products and OT = Unclassified items.

Source: The source of the table is author's calculations and the data required is obtained from Handbook of Statistics on Indian Economy (Various Issues), Reserve Bank of India.

Table 3: Descriptive Statistics of Percentage shares Pertaining to Principal Commodities of Exports

Commodity Groups	Descriptive Statistics	Years			
		1991-92 to 1997-98	1998-99 to 2004-05	2005-06 to 2011-12	2012-13 to 2016-17
Agricultural and related products	Mean	11.68	8.18	5.28	6.33
	SD	1.07	2.13	0.51	0.29
	CV	9.15	26.00	9.65	4.60
	Variance	1.14	4.53	0.26	0.08
	Kurtosis	1.87	3.14	-0.96	-2.07

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	Skewness	-1.05	1.71	-1.02	0.63
Marine, Meat and Dairy Products	Mean	4.04	3.26	1.88	3.30
	SD	0.36	0.60	0.25	0.52
	CV	8.90	18.49	13.56	15.70
	Variance	0.13	0.36	0.06	0.27
	Kurtosis	3.02	-0.29	-0.86	3.30
	Skewness	1.65	-0.96	-0.48	-1.77
Ores, Mineral and leather Products	Mean	11.63	9.01	9.23	3.51
	SD	2.15	1.81	2.84	0.13
	CV	18.49	20.05	30.72	3.77
	Variance	4.63	3.26	8.04	0.02
	Kurtosis	1.04	5.02	0.14	-0.10
	Skewness	0.94	2.12	-0.96	0.60
Chemicals and Related Products	Mean	8.42	10.80	10.60	12.08
	SD	0.85	1.00	0.68	1.38
	CV	10.04	9.29	6.45	11.39
	Variance	0.72	1.01	0.47	1.89
	Kurtosis	0.14	-1.16	-0.39	-2.95
	Skewness	-0.61	0.14	-0.01	0.58
Engineering, Electronic Goods	Mean	15.58	18.80	25.28	24.53
	SD	1.30	3.00	2.33	1.77
	CV	8.33	15.94	9.21	7.23
	Variance	1.68	8.98	5.43	3.14
	Kurtosis	-1.42	-1.22	1.29	-2.71
	Skewness	0.57	0.22	0.95	-0.38
Cotton and Manmade Yarn, RDM Garments Jute, Carpets	Mean	24.93	21.94	11.36	11.21
	SD	0.82	3.74	2.11	1.30
	CV	3.29	17.05	18.62	11.64
	Variance	0.67	13.99	4.47	1.70
	Kurtosis	0.01	0.00	0.65	-1.55
	Skewness	-0.39	-0.82	1.11	-0.10

Table 3: Contd.

Handicraft, Gems and Jewellery	Mean	17.58	18.69	14.92	14.82
	SD	1.29	1.79	1.58	1.21
	CV	7.32	9.60	10.58	8.19
	Variance	1.66	3.22	2.49	1.47

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	Kurtosis	-0.68	2.05	-0.68	-1.83
	Skewness	-0.17	1.44	-1.03	0.43
Petroleum Products	Mean	1.73	4.04	15.52	16.34
	SD	0.54	2.95	2.29	4.45
	CV	31.38	73.08	14.72	27.27
	Variance	0.30	8.70	5.22	19.84
	Kurtosis	-0.60	-0.48	1.32	-3.18
	Skewness	0.50	-0.25	-0.95	-0.48
Others	Mean	1.08	2.30	4.99	7.41
	SD	0.10	0.68	3.31	1.35
	CV	9.35	29.48	66.24	18.28
	Variance	0.01	0.46	10.94	1.83
	Kurtosis	-1.70	-0.98	1.31	-0.32
	Skewness	0.25	-0.93	1.37	0.80

Notes: Descriptive statistics are calculated for seven year periods for each of the period except the last period where only last five years are put together. SD and CV refer to Standard Deviation and Coefficient of Variation respectively.

Source: The source of the table is author's calculations.

Table 4: Descriptive Statistics of Annual Growth Rates Pertaining to Principal Commodities of Exports

Commodity Groups	Descriptive Statistics	Years			
		1991-92 to 1997-98	1998-99 to 2004-05	2005-06 to 2011-12	2012-13 to 2016-17
Agricultural and related products	Mean	24.43	6.38	21.95	21.95
	SD	26.19	11.51	22.69	22.69
	CV	107.23	180.38	103.36	103.36
	Variance	686.05	132.53	514.93	514.93
	Kurtosis	0.99	2.15	-0.62	-0.62
	Skewness	1.21	-1.22	0.86	0.86
Marine, Meat and Dairy Products	Mean	26.31	7.62	22.06	22.06
	SD	18.37	14.81	17.68	17.68
	CV	69.83	194.27	80.15	80.15
	Variance	337.56	219.23	312.68	312.68
	Kurtosis	-1.37	-0.68	1.29	1.29
	Skewness	0.22	0.50	0.25	0.25

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Ores, Mineral and leather Products	Mean	12.40	24.93	4.60	4.60
	SD	10.90	30.10	14.79	14.79
	CV	87.97	120.75	321.55	321.55
	Variance	118.90	906.28	218.65	218.65
	Kurtosis	-2.03	3.13	-0.40	-0.40
	Skewness	0.06	1.68	-0.96	-0.96
Chemicals and Related Products	Mean	27.43	20.89	18.87	18.87
	SD	18.08	10.50	10.32	10.32
	CV	65.90	50.26	54.72	54.72
	Variance	326.78	110.27	106.59	106.59
	Kurtosis	-0.49	-1.22	0.83	0.83
	Skewness	0.05	-0.77	0.62	0.62
Engineering, Electronic Goods	Mean	26.56	22.12	23.34	23.34
	SD	10.85	16.95	24.03	24.03
	CV	40.87	76.65	102.95	102.95
	Variance	117.80	287.45	577.61	577.61
	Kurtosis	-1.66	0.37	-0.42	-0.42
	Skewness	-0.15	-0.93	-0.51	-0.51
Cotton and Manmade Yarn, RDM Garments Jute, Carpets	Mean	23.73	9.04	13.90	13.90
	SD	12.75	8.99	11.45	11.45
	CV	53.72	99.40	82.41	82.41
	Variance	162.59	80.83	131.17	131.17
	Kurtosis	1.65	-0.39	-0.52	-0.52
	Skewness	1.16	-0.45	0.30	0.30

Table 4: Contd.

Handicrafts, Gems and Jewellery	Mean	22.03	17.04	21.20	21.20
	SD	14.07	12.07	19.87	19.87
	CV	63.88	70.82	93.75	93.75
	Variance	198.05	145.62	394.93	394.93
	Kurtosis	0.49	-2.56	1.82	1.82
	Skewness	-0.76	-0.41	1.49	1.49
Petroleum Products	Mean	6.37	715.35	37.56	37.56
	SD	18.67	1876.60	23.13	23.13
	CV	293.14	262.33	61.58	61.58
	Variance	348.72	3521635.03	535.13	535.13
	Kurtosis	0.43	6.98	-1.26	-1.26
	Skewness	-0.21	2.64	-0.28	-0.28

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Others (All Commodities)	Mean	18.65	36.49	54.97	54.97
	SD	24.82	48.20	47.41	47.41
	CV	133.05	132.10	86.25	86.25
	Variance	616.02	2323.28	2247.65	2247.65
	Kurtosis	1.33	4.03	-2.59	-2.59
	Skewness	-0.12	1.94	0.38	0.38
Total Exports/All Commodities	Mean	22.21	16.69	21.97	21.97
	SD	9.63	9.71	11.36	11.36
	CV	43.37	58.17	51.72	51.72
	Variance	92.80	94.29	129.08	129.08
	Kurtosis	-1.46	-1.36	1.49	1.49
	Skewness	-0.08	-0.18	-1.17	-1.17

Notes: Descriptive statistics are calculated for seven year periods for each of the period except the last period where only last five years are put together. SD and CV refer to Standard Deviation and Coefficient of Variation respectively.

Source: The source of the table is author's calculations.

Appendix 2:

Classification of Principal Commodities of Exports

Principal Commodity Group	Items
Agriculture and related products	Tea, Coffee, Rice, Wheat, Tobacco, Cashew including Cashew Nut Shell Liquid, Spices, Oil Meals, Fruits and Vegetables, Processed Fruits, Juices, Miscellaneous Processed Items
Marine, Meat and Dairy Products	Marine Products, Meat and Meat Preparations
Ores, Minerals and leather Products	Ores and Minerals, Iron Ore, Leather and Manufactures
Chemicals and Related Products	Basic Chemicals, Pharmaceuticals & Cosmetics, Plastic and Linoleum Products, Ceramic products & glassware, Organic & Inorganic Chemicals
Engineering, Electronic Goods	Engineering Goods, Electronic Goods
Cotton and Manmade Yarn, Readymade Garments, Jute, Carpets	Cotton Yarn, Fabrics, etc., Manmade Yarn, Fabrics, etc., Readymade Garments, Jute & Jute Manufactures and Carpets.
Handicrafts, Gems and Jewellery	Gems and Jewellery, Handicrafts (excluding Handmade Carpets)
Petroleum and Other Products	Petroleum and petroleum products including crude oil.

