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AN ANALYSIS OF INDIA'S MERCHANDISE EXPORT SINCE LIBERALIZATION

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AN ANALYSIS OF INDIA'S MERCHANDISE EXPORT
SINCE LIBERALIZATION

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Abstract

Post-liberalization era has witnessed significant growth in India's Export. The export has grown faster than the Gross Domestic Product (GDP). The present paper analyzes the qualitative and quantitative change in India's export for the period 1990-91 to 2013-14. Furthermore, it also examines the determinants of India's export at the macro level. The results show, India's export basket has been changed significantly over the period. In quantitative terms India's exports register the growth of 15.67 percent per annum during 1990-91 to 2013-14. The significant growth in the exports is largely backed by the sectors such as animal and vegetable fats, mineral products, arms and ammunitions *etc.* In case of qualitative measurement, the share of non-fuel primary and resource intensive manufactured products decreased to 40.48 percent in 2013-14 from 76.19 percent in 1990-91. While the share of medium-skill technology intensive and high-skill technology intensive manufactured products increased from 13.74 percent in 1990-91 to 24.82 percent in 2013-14. The rising share of medium and high-technology based products shows that India's export is improving on its quality ladder. Additionally, the causality test results support the view for growth-led export hypothesis. The uni-directional causality has been observed from export to Foreign Direct Investment (FDI).

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1. INTRODUCTION:

As a result of liberalization, Indian economy has witnessed several changes in its foreign trade policy. The policy changes have been in favour of increasing integration of Indian economy with the world economy. The substantial reduction in the trade barriers and adoption of the export promotion policies led to increase in India's foreign trade. This resulted in the increase in share of exports in India's GDP from 1.61 percent in 1990-91 to 32.14 percent in 2013-14 while imports to GDP ratio also rose from 2.74 percent to 45.80 percent during the same period. The Indian exports are not only grown faster but increased faster than the GDP. The compound annual growth rate of India's export is 15.67 percent during 1990-91 to 2013-14 while GDP registered only 6.84 percent growth per annum during the same period (RBI, 2014).

The increase in the exports paves a way for competition, acquisition of technical know-how and the development of new ideas. Export is also considered as an important source of foreign exchange which eases the pressure of the balance of payments. Moreover, rise in export assist domestic production and creates employment opportunities. In nutshell the growth in the exports leads to economic growth of the country. Furthermore, an export-led growth strategy encourages producers to export their goods through various economic and governmental policies (Kumari and Malhotra, 2014). The substantial growth in exports is driven by many factors. Whether the growth in the exports is only a quantitative phenomenon or is there any qualitative change in India's export is an important question which needs to be analyzed.

The present paper analyzes the nature of India's exports during 1990-91 to 2013-14. It investigates the qualitative change in India's export basket. It also examines the trend and pattern of India's exports. Besides, the paper also examines the determinants of the Indian exports. Thus, it is intended to find a causal relationship between India's exports and its determinants. The paper is organized into following sections. Following a brief introduction, the *Second* Section presents review of literature. Section *Three* deals with data sources and methodological issues. Section

Four examines the performance of India's exports in terms of quantitative and qualitative changes and Section *Five* concludes the paper.

2. REVIEW OF LITERATURE:

Empirical literature on performance of India's exports is extensive. Various studies examined the growth of India's exports for the different time periods and the data sets. The various aspects like the growth, determinants, change in commodity composition and geographical pattern, have been studied. There are two different stances in the empirical findings with regards to the relationship between export and economic growth. Firstly, as per the export-led hypothesis the increase in the exports led to boost up the economic growth. According to this view, exports open up the channels for establishment and expansion of other activities, also, rise in the exports act as a key for propelling the rest of the economy. However, the second stance opposed this view and supports the notion of growth-led export. This view asserts that economic growth of a country boosts up the skill and technology which leads to increase in efficiency and hence results in increased comparative advantage and finally higher exports.

Agarwal (1988) studied the performance of India's exports for the period 1965 to 1980. The India's export share in the world exports was compared with the sample of thirteen Asian and Latin American countries. With the help of Standard Industrial Trade Classification (SITC) data, he found that though the India's export basket was dominated by agricultural and raw materials, however, their share was declining during the period cover in the study. This was a contradictory feature with the other developing countries, which experienced the increase in export share of these goods due to comparative advantage. The study concluded that apart from price and exchange rate movements various other factors also influence the competitiveness of the Indian exports.

Virmani (1991) analyzed the demand and supply side factors which have been affecting India's trade. The various factors affecting the exports and imports of India were analyzed for the period 1961-62 to 1985-86. The total merchandise export was divided into manufactured exports and primary exports. He found that India's export

of manufactured goods was price elastic. The 10 percent depreciation in the domestic currency led to 15 to19 percent increase in the value of India's export of manufactured goods. However, as far as primary products are concerned, the value of their exports of was not changed significantly due to depreciation of currency. Moreover, other factors such as rainfall is found to be having negative effect on exports of primary products. It was also observed that increase in rainfall, in the previous year leads to decrease in export prices. In addition to this, world demand had positive impact on both primary and manufactured exports while that of domestic demand was negatively affected India's manufactured export prices.

Ghatak and Price (1997) examined the causal relation between exports and its determinants for the period 1960-1992. The SITC data has been used at the disaggregated level. They established that non-traditional manufactured export granger cause output growth. On the other hand, the causal relationship between traditional exports and output was not significant. The study highlighted the fact that the segregation of exports gave the clear idea about the export-led hypothesis. The total export did not cause the output because of the dominance of the traditional export.

Similarly, Lall (1999) studied the structure of Indian export by segregating the total export as per the technological base. For the purpose of analysis, export was segregated into four categories, *i.e.,* resource-based, low-technology, medium technology and high-technology for the period 1980 to 1995. It was inferred that India needs to upgrade the domestic skill and technological base to diversify its exports. It was also found that India's export was positively related with world demand. Therefore, India's export growth was aligned with the world trade cycles. He also pointed out that India was having sound industrial base as compared to other South Asian nations during the period of study. In spite of having strong industrial base, India's export was dominated by resource-based products. The contribution of high-technology products was found to be lower than that of the other south Asian countries like China, Taiwan, Korea, Malaysia, Singapore and Indonesia. He concluded that India needs to attract export oriented foreign direct investment (FDI) for promoting the export of high-technological intensive products.

Sharma (2003) examined the determinants of India's export performance for the period 1970 to 1998. He found that India's export growth during this period was faster than its GDP growth. The devaluation of rupee in 1990s pushed up the export growth. Using two-stage least squares method, he stated that export demand was adversely affected by rupee appreciation. Ten percent appreciation of rupee led to reduction of the export demand by 3.39 percent. Thought, the study did not find any relationship between world income and export demand. However, it highlighted the fact that higher domestic demand reduces the export supply. He also argued that inward oriented policy of India had an adverse impact on export oriented FDI.

Konya and Singh (2009) analyzed the causal relationship between Indian exports, imports and GDP for the period 1950-51 to 2003-04. The composition of India's GDP has undergone a significant change during 1950-51 to 2003-04. Taking this into consideration, the modified causality approach was tested for agricultural GDP and manufactured GDP separately. The study highlighted the importance of segregated GDP. The causality results showcased long-run relationship between GDP and exports. Two-way causality was observed between manufacturing GDP and export. However, in case of agricultural GDP, uni-directional causality was found from export to agricultural GDP.

Kaushik and Klein (2008) supported the view of export-led hypothesis in the Indian context. Using vector error correction model (VECM) the relationship between export growth, economic growth, export instability and gross fixed capital formation was analyzed for the period from 1971 to 2005. They found that export promotion policies have affected positively on economic growth. There exist a long-run relationship between export growth and economic growth. The one percent rise in exports led to increase GDP by 0.42 percent. However, export instability and gross fixed capital formation had positively affected the economic growth rather than the exports. This result was similar to the Chandra (2003) study, who analyzed the causal relationship between export, import and terms of trade for the period 1950 to 1996. The granger causality test results showed the two-way causality between export and GDP. Kaushik and Klein (2008) results were in contrast with Sharma and Panagiotidis (2005) who examined the relationship between India's export and

economic growth for the period 1971 to 2001. They found that export-led hypothesis does not hold in case of India.

Dhawan and Biswal (1999) studied the export-led hypothesis for the period 1961 to 1993. With the help of VECM the relationship between real GDP, export and terms of trade was evaluated. Their finding suggested that in short-run the GDP growth causes the export growth. Moreover, in the long run the GDP and terms of trade jointly cause export growth. However, Pradhan (2010) observed the uni-directional relationship between export growth and GDP growth. He also analyzed the short-run and long-run relationship between export and GDP growth for the period 1970-71 to 2009-10. His study supported the view of export-led hypothesis. Bi-variate error correction model showed that in short run if GDP move above its equilibrium level then it will fall in the next period to adjust the equilibrium path. Furthermore, he also asserted that the export growth has a positive impact on re-allocation of domestic resources and economies of scale.

Shah (2013) focused on determinants of India's export for the period 1980 to 2011. The demand and supply side determinants were analyzed by using two-stage least squares method. The analysis showed that the world demand positively influenced Indian exports. It suggested that Indian export has been heavily depended on the demand by major trade partners. India's major trading partners are the developed nations, therefore, their instability affected the Indian economy. He suggested that India needed geographical diversification of the export basket which can be achieved by focusing on fast growing economies of Middle-East and developing Asia. Furthermore, he found that India's export was price elastic. He also highlighted that Indian export is concentrated on few commodities such as agricultural products, textile, and clothing. He suggested that India needs to focus on the export of chemical, fuel and mining products.

From the review of the literature, it can be concluded that causal relationship between exports and GDP is ambiguous. Some of the empirical findings support the export-led hypothesis while some studies could not found any evidence for it. Large number of studies focused only on the total export and not on the segregation of export. The present study analyzes the performance of India's export at the most

disaggregated trade classification. Furthermore, the study also aims to analyze the changing composition of Indian exports during the post-liberalization period.

3. DATA AND METHODOLOGY:

This section discusses the data sources, construction of the variables and methodology applied for the analysis. Sub-section 3.1 focuses on various data sources and adjustments made in the data. Furthermore, construction of the variables is also discussed in this part. The methodological details are explained in sub-section 3.2.

3.1. Data Sources, Adjustments and Construction of Variables:

In order to analyze the performance of India's export, the study considers the period form 1990-91 to 2013-14. India's Directorate General of Commercial Intelligence and Statistics (DGCI&S) publishes foreign trade data in the *Monthly Statistics of Foreign Trade* which is given together by the Center for Monitoring Indian Economy (CMIE). The study made use of India's foreign trade data given by INDIA TRADES compiled by CMIE. The study makes use of Harmonized System (HS) 8-digit classification for the analysis. The data for gross domestic product (GDP), per capita income (PCI), and foreign direct investment (FDI), gross fixed capital formation (GFCF) have been taken from Handbook of statistics on the Indian economy, published by Reserve Bank of India. The data is in Rupees Billion, which is converted into US Dollars Million by dividing annual average exchange rate (RBI, 2014). Since, the original data is at current prices, indices of real effective exchange rates have been used to convert it into constant prices with 2004-05 as the base year (RBI, 2014).

The other variables used to estimate causal relationship are constructed as follows:

3.1.1. Gross Domestic Product (GDP): It is considered as an indicator of economic growth of the country. The data for GDP at constant prices with base year 2004-05 is considered for the analysis.

3.1.2. Real Effective Exchange Rate (REER): REER is the geometric weighted average of Nominal Effective Exchange Rate adjusted by the ratio of domestic price to foreign prices. The fall in REER implies the depreciation of rupee and therefore it boosts the exports (RBI, 2014).

3.1.3. Industrial Performance (EG): It is estimated by taking ratio of India's export of merchandise goods to India's GDP. EG is used as a proxy for industrial performance of India (Bhattacharyya, 2005).

3.1.4. Foreign Direct Investment (FDI): FDI inflows are an indicator of participation of the multinationals in the production process. This indicator is assumed to positively influence export. However, the causal relation is dependent on nature of FDI (Veeramani, 2002).

3.1.5. Output Gap (OG): OG is constructed by using the Hodrick-Prescott filter. The net GDP that is the gap between real GDP and trend GDP is divided by the trend GDP. It used as a proxy for domestic demand. It is expected to negatively influence Exports (Shah, 2013).

3.1.6. Gross Fixed Capital Formation (GFCF): GFCF is the ratio of gross fixed capital to GDP at constant prices of 2004-05. It refers to the net increase in domestic investment. Increase in capital formation leads to domestic production, therefore, it is positively related with export growth (Rajni, 2013)

3.1.7. Export Unit value index (EUVI): It is the indicator of the fluctuations in the export in terms of unit prices. It is measured with the Paasche's formula (RBI, 2014).

3.2. Estimation of Causality:

The main objective of the study is to find the determinants of India's export. After defining all the variables, the causal relationship between these variables and export is established with the help of granger causality test. X_t is said to granger-cause Y_t if lagged values of X_t provide statistically significant information to

forecast Y_t. The null hypothesis of X_t not granger causing Y_t is tested by using standard F-test. Therefore, the causality between the exports and its determinants can be given as follows:

LExport = f (LGDP, LREER, LEG, LFDI, LOG, LGFCF, EUVI) .... (1)

where,

LExport = Log of export

LGDP = Log of gross domestic product

LREER = Log of real effective exchange rate

LEG = Log of merchandise export as a percentage of GDP

LFDI = Log of FDI

LOG = Log of output gap

LGFCF = Log of Gross fixed capital formation

LEUVI = Log of export unit value index

To estimate the causal relation, the three step methodology has been adopted. In the first step, the stationarity of the time series is checked by Augmented Dickey-Fuller (ADF) test developed by Dickey and Fuller (1979). The null-hypothesis of non-stationary is tested against the alternative hypothesis of stationary. To check the stationarity of the variables the t-statistic is compared with appropriate critical values designed by Dickey and Fuller. If the value of t-statistic is greater than the critical value, then time-series is confirmed as a stationary (Enders, 2004). If variables are found to be mixture of level stationary and first difference stationary, then the methodology proposed by Toda and Yamamoto (1995) can be used to establish the causality.

Toda and Yamamoto (1995) developed a technique to estimate causal relationship for the variables with different order of integration. The method proposed by Toda and Yamamoto is also known as modified Wald test. This procedure requires the estimation of an augmented VAR in three steps. In the first step, the lag length (k) is determined with the help of Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC). Second step is the selection of the maximum order of integration (d_{max}) for the variables in the system. In the final stage, augmented VAR is

formulated with selected lags plus the maximum order of integration ($k+d_{max}$) (Toda and Yamamoto, 1995).

4. EMPIRICAL RESULTS:

The empirical results based on the methodology are presented in the following two sub-sections. First sub-section describes the performance of India's export during post-liberalization period. Section 4.2 explains the determining factors for the growth of India's export. The results from the causality test are exhibited in this sub-section.

4.1 Performance of India's Export:

The liberalization process favored the trade openness. The New Economic Policy (NEP) of 1991 came with the systematic change in foreign trade, investment, tariff and tax policies. The reduction in the tariff rate and other trade barriers were the part of foreign trade policy. Before the liberalization, foreign trade policy was characterized by high tariffs and quota. As a result, integration of Indian economy with the world economy was very limited. However, after the adoption of NEP, India's export has been increased considerably (Figure 1). India's export to GDP ratio increased from 1.61 percent in 1990-91 to 32.14 percent in 2013-14. India's exports to GDP ratio recorded a double digit mark in 2003-04 and remain persistent thereafter. This remarkable increased in India's exports is driven by many factors such as export promotion policies, reduction in tariff barriers, rise in foreign direct investments *etc.*

Moreover, India's export basket also changes significantly during 1990-91 to 2013-14. The segregated data at section level depicts that in 1990-91, textile and textile articles, natural and cultured pearls precious and semi-precious stones and vegetable products were contributing nearly fifty percent to the total exports. However, in 2013-14 the share of these three sectors to total export came down to 31.77 percent (Appendix table 1). This is mainly because of the sharp deceleration in the share of textile and textile articles from 34.48 percent in 1990-91 to 11.93 percent in 2013-14. It can be seen from table 2 that CAGR of the share of textile and

Table 1: India's Export to GDP ratio

Year	Export to GDP Ratio
1990-91	1.61
1991-92	2.34
1992-93	2.61
1993-94	3.99
1994-95	4.98
1995-96	5.78
1996-97	6.16
1997-98	6.46
1998-99	6.52
1999-00	6.98
2000-01	8.49
2001-02	8.31
2002-03	9.94
2003-04	10.72
2004-05	12.74
2005-06	13.97
2006-07	16.05
2007-08	17.30
2008-09	19.15
2009-10	19.11
2010-11	23.32
2011-12	27.19
2012-13	29.26
2013-14	32.14
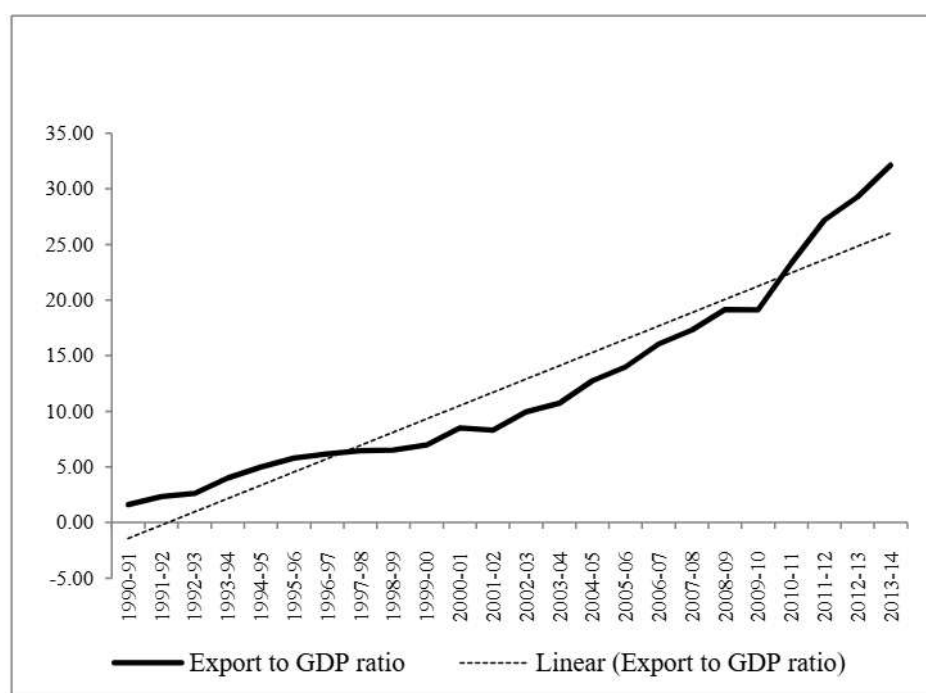
Figure 1: India's Export to GDP ratio

textile articles registered a negative growth of 5.23 percent during 1990-91 to 2013-14. Furthermore, it can also be inferred from table 2 that the CAGR of traditional sectors such as live animals, vegetable products, raw hide and skin, wood and articles of wood, textiles and textile articles and footwear, headgear section display a slowdown in their share in the total exports. On the other hand, section such as animal and vegetable products registered an increase in its share from merely 0.02 percent in 1990-91 to 0.27 percent 2013-14. Furthermore, the export share of mineral products (S-5) recorded a threefold rise during the period of study. It rose from 6.65 percent in 1990-91 to 21.92 percent in 2013-14. As a result, the CAGR of the export share increased 10.47 percent during 1990-91 to 2013-14. The foreign trade mineral policy focused on the export of minerals in the value added forms. To cope up with the change in technology, increasing demand for mineral product in the international markets and maintaining India's comparative cost advantage in mineral products were the key policy interest. In addition to this, India-ASEAN trade in mineral fuel, oils

and distillation products increased after 2007 due to major tariff reduction (Francis, 2011).

Table 2: Compound Annual Growth Rate of India's export share at section level for the period 1990-91 to 2013-14

Section	Description	CAGR (%)
S-01	Live Animals	-5.08
S-02	Vegetable Products	- 4.27
S-03	Animal and Vegetable Fats	16.92
S-04	Prepared Foodstuffs	-3.11
S-05	Mineral Products	10.47
S-06	Products of Chemical and Allied Industries	1.23
S-07	Plastic and Rubber Articles Thereof	2.54
S-08	Raw Hides and Skin	-8.49
S-09	Wood and Articles of Wood	-1.44
S-10	Pulp of Wood	3.10
S-11	Textiles	-5.23
S-12	Footwear, Headgear	-5.83
S-13	Articles of Stone, Plaster and Cement	1.01
S-14	Natural and Cultured Pearls	1.70
S-15	Base Metals	3.05
S-16	Machinery and Mechanical Appliances	3.40
S-17	Vehicles, Aircraft and Transport Equipment	3.36
S-18	Optical, Photographic Precision Equipment	4.47
S-19	Arms and Ammunitions	6.10
S-20	Miscellaneous Manufactured Products	2.26
S-21	Works of Art	1.83
Total	**All Sections**	**15.67**

The export share of base metals and machinery and mechanical appliances increased during 1990-91 to 2013-14. It is argued that an export plays a crucial role for the structural transformation of the economy. However, the dynamics of structural transformation also depends on the types of exported products.

Economic development is underpinned not only by exporting new products, but also by qualitative improvements to existing products. The export of higher quality of existing products led to favorable structural transformation. Therefore, structural transformation and export performance depends on two things, first, the diversification of exports across products and second, composition of the export basket measured by technological content, sophistication, and complexity (Anand *et al.*, 2015). Therefore, the segregation of exports into six categories is based on the technological content.

On the basis of skill and technology-contents the exported products are grouped into (1) Non-fuel primary commodities, (2) Resource-intensive manufactures, (3) Low skill- and technology-intensive manufactures, (4) Medium skill- and technology-intensive manufactures, (5) High skill- and technology-intensive manufactures and (6) mineral fuels, and remaining as (7) Unclassified products, (UNCTAD, 2015). Table 3 provides share of each of these category into total exports. It indicates India's journey from primary commodities to manufactures-skill and technology content products. It can be seen from table 3 that in 1990-91, more than 70 percent of exports consist of non-fuel primary products and recourse-intensive manufactured products. However, in recent years these shares have come down to 40 percent. The decelerated share of fish and crustaceans, molluscs and other aquatic invertebrates (C-3), coffee, tea, mate and spices (C-9) and ores, slag and ash (C-26) resulted in fall in the total share of non-fuel primary commodities. On the other hand, within this category, share of natural or cultured pearls, precious or semi-precious stones (C-71) increased from 18.08 percent in 1990-91 to 36.56 percent in 2013-14.

Furthermore, the share of mineral fuel products and high skill technology intensive manufactured products increased substantially during 1990-91 to 2013-14. Organic chemicals (C-29) and pharmaceutical products (C-30) contribute nearly fifty percent of the total export of high skill technology-intensive manufactured products. However, the share of nuclear reactors, boilers, machinery and mechanical appliances; parts (C-84), electrical machinery and equipment and parts thereof; sound recorders and reproducers (C-85) and Aircraft, spacecraft and parts thereof (C-88) increased significantly during 1990-91 to 2013-14. The share of low-skilled and technology-intensive manufactured products and medium-skilled and technology-intensive manufactured products increased from 5.61 and 6.30 percent in 1990-91 to 7.80 and 9.92 respectively in 2013-14.

The dominance of export resource-intensive manufactures and non-fuel primary products during 1990-91 indicate that country was suffering from a lack of a diversified export and industrial base. With the economic reforms, the improvement in the economic growth, planned policy framework for heavy industrial base, increase

Table 3: Classification of India's Export on the Basis of Technological Content

(Per Cent)

Years	(1) Non-fuel primary products	(2) Resource-intensive manufactures products	(3) Low-skill and technology-intensive manufactures products	(4) Medium skill-and technology intensive manufactures products	(5) High-skill-and technology intensive manufactures products	(6) Mineral fuels products	(7) Unclassified products	Total
1990-91	31.85	44.34	5.61	6.30	7.44	0.01	4.45	100
1991-92	32.11	42.47	5.82	6.18	8.73	0.02	4.68	100
1992-93	30.49	41.47	7.28	6.91	9.02	0.22	4.60	100
1993-94	32.02	37.95	7.92	7.10	9.91	0.44	4.67	100
1994-95	34.84	37.39	6.00	6.59	10.25	0.30	4.64	100
1995-96	37.28	34.93	6.19	6.17	10.76	0.18	4.48	100
1996-97	35.60	34.46	6.19	6.75	12.00	0.07	4.93	100
1997-98	33.62	33.76	6.38	6.87	12.35	1.11	5.91	100
1998-99	34.18	34.80	5.85	6.46	11.36	0.37	6.97	100
1999-00	34.46	34.26	6.50	6.16	12.19	0.22	6.22	100
2000-01	29.74	33.45	6.78	6.77	12.93	4.31	6.02	100
2001-02	29.45	31.33	6.43	7.10	13.74	4.94	7.01	100
2002-03	30.46	29.17	7.80	7.14	13.98	5.09	6.35	100
2003-04	29.59	27.15	8.41	9.19	13.41	5.79	6.45	100
2004-05	29.94	22.69	9.81	9.08	12.99	8.52	6.97	100
2005-06	28.71	22.03	8.96	9.80	12.82	11.51	6.17	100
2006-07	26.99	19.35	9.49	9.93	12.62	14.96	6.67	100
2007-08	27.49	16.87	9.64	9.69	12.53	17.82	5.96	100
2008-09	24.13	15.53	10.47	10.38	14.23	15.17	10.09	100
2009-10	26.33	15.85	7.50	9.83	13.92	16.19	10.37	100
2010-11	26.78	13.67	8.67	9.44	13.05	16.91	11.48	100
2011-12	25.25	13.04	8.98	9.09	13.48	18.73	11.43	100
2012-13	25.55	13.42	7.89	9.99	14.23	20.67	8.24	100
2013-14	25.64	14.84	7.80	9.92	14.90	20.62	6.27	100

in the infrastructural facilities, etc., led to advancement of export products. Furthermore, rising share of high-skill and medium-skill technology intensive manufactures product reveals that manufacturing base for the export of high value-added manufacturing products is improving. The declining share of resource-intensive and primary fuel products shows that Indian economy moving is up on quality ladder.

4.2. Intensive and Extensive Margin of India's total export:

The change in the annual export basket is due to the contribution of new products and disappearance of some other products from the export baskets. Following Amiti and Freud (2010) and Nadakarni and Desai (2012) contribution of new products into export growth analyzed. Thus, decomposition of export growth into new, disappearing, and existing products provides the information about the products

which are added to export and products which are disappeared from the export basket. Thus, with the help of equation the growth on the total export can be divided as follows.

$$(X_1 - X_0) = (X_{1C} - X_{0C}) + (X_1 - X_{1C}) - (X_0 - X_{0C}) \quad \dots\dots\dots\dots\dots\dots\dots\dots \quad (2)$$

Where X_1 and X_0 is the total exports in the current and the base year, whereas X_{1C} and X_{0C} refer to exports of common commodities in the current and the base year, respectively. Dividing the value of total exports in the base period on both sides, the right side of the equation shows the growth in the export whereas three terms in the left hand side explain the export growth because of common products (intensive margin), new products (extensive margin) and products which are disappeared from the export basket. The two-time period has been chosen for the analysis. For the comparison we have divided the whole time period into two different periods. Although, India witnessed the trade deficit from the year 1990-91onwards, since 2001-02 imports are growing at a higher rate. Therefore, widening gap between export and import is more prominent from 2001-02 onwards. Thus, in the first time period the export basket of 2000-01 is compared with the export of 1990-91. Where as in the second time period export basket of 2013-14 is compared with the 2000-01's export.

The total export growth is 256.76 percent in 2000-01 as compared to 1990-91 out of which 197.43 percent growth is due to the growth in exports of intensive margin. Exports of new commodities are 67.42 percent whereas the disappearing margin is only 8.08 percent of the value of exports in the base period. However, the export exhibited the substantial growth of 609.83 percent in the year 2013-14 as against 2000-01. This export growth is largely driven by the growth in new commodities (extensive margin). The extensive margin increased by 325.52 percent in the year 2013-14 as compared to 2000-01. The growth in the intensive margin recorded 318.84 percent while 34.53 percent product has been disappeared in the year 2013-14 over 2000-01. In both the time period more than fifty percent of the growth has been contributed by the intensive margins. This result exhibited that growth in the export is mainly driven by the export of existing commodities. However, the contribution of new products is increased in 2013-14 as compared to 2000-01. In case of new products, the export of mineral fuels products

increased substantially followed by resource-intensive manufactures products and high skill- and technology intensive manufactures products.

Therefore, it can be confirmed that although India's export basket has been driven by the intensive margin, the growth in the extensive margin showed that the export of high-skilled products increased over the period of time. The India's exports are moving ahead on the quality ladder. There are various factors responsible for this growth. With the help of granger causality test, the next section tries to examine some of the important determinates of India's export growth.

4.3. Determinants of India's Export:

To analyze the determinants of India's export the Modified Granger causality test has been applied. Before applying the granger causality test the stationarity of the variables has been tested with the ADF test. The results of ADF test are presented in Table 4. The null hypothesis of the existence of unit root has been tested

Table 4: ADF Test Results

Variable	LEVEL			First Difference			Order of Integration
	t-statistic	Critical Value	P-value	t-statistic	Critical Value	P-value	
Export	-0.29086	-2.998064	0.9121	-3.88600	-3.004861	0.0077	I (1)
EG	-0.04627	-2.998064	0.9444	-4.40214	-3.004861	0.0024	I (1)
GDP	-3.90676	-3.622033	0.0286	---	---	---	I (0)
OG	-1.80983	-3.622033	0.6668	-3.78919	-3.632896	0.0370	I (1)
FDI	-3.68129	-3.632896	0.0456	---	---	---	I (0)
REER	-3.58256	-3.632900	0.0550	---	---	---	I (0)
GFCF	-2.45623	-3.622000	0.3442	-4.56102	-3.632900	0.0078	I (1)
EUVI	-1.49481	-3.622033	0.8016	-4.36632	-3.632896	0.0117	I (1)

for all the variables. It can be inferred from Table 4 that variables such as GDP, FDI and REER are found to be stationary at level. In contrast, variables such as exports, EG, OG, GFCF, and EUVI are non-stationary at level. These variables become stationary after first differencing. The time trend is found to be significant for the variables. Therefore, the model with constant with trend is chosen to formulate VAR. The Toda and Yamamoto (1995) method has been used to construct a VAR of the variables with different order of integration. The proposed methodology has an advantage that VAR can be constructed irrespective of the order of integration and co-

integration properties. Before proceeding with the causality test, one lag has been chosen based on AIC and SBC (Table, 5).

Table 5: Lag Selection Criteria

Lag	Log L	LR	FPE	AIC	SC	HQ
0	131.6939	NA	2.95E-15	-10.756	-10.361	-10.6567
1	284.5494	186.0850*	1.85e-18*	-18.48255*	-14.92796*	-17.58858*

Furthermore, the results of the modified Wald test are presented in Table 6. It can be seen from the table that the past values of GDP are assisted to predict the future value of export. Result supports the view for growth-led export. Moreover,

Table 6: Granger Causality Test Results

Null Hypothesis	Chi-square	Probability	Granger Causality
Export Does Not Granger Cause GDP	9.609124	0.0082	GDP to Export
GDP Does Not Granger Cause Export	1.605756	0.4480	
Export Does Not Granger Cause REER	1.017509	0.6012	Export to REER
REER Does Not Granger Cause Export	5.727842	0.0570	
Export Does Not Granger Cause EG	7.249492	0.0267	Bi-Directional causality
EG Does Not Granger Cause Export	6.462139	0.0395	
Export Does Not Granger Cause FDI	4.491529	0.1058	Export to FDI
FDI Does Not Granger Cause Export	26.72804	0.0000	
Export Does Not Granger Cause OG	22.0836	0.0000	OG to Export
OG Does Not Granger Cause Export	1.061264	0.5882	
Export Does Not Granger Cause GFCF	7.857681	0.0197	GFCF to Export
GFCF Does Not Granger Cause Export	3.636067	0.1623	
Export Does Not Granger Cause EUVI	3.321239	0.1900	---
EUVI Does Not Granger Cause Export	3.050881	0.2175	

there exists the bi-directional causality between EG and exports during 1990-91 to 2013-14. This result is in line with the theoretical explanation that export increases with the growth in manufactured product. It has been argued that the new economic policy paves a way for industrialization. The growth of heavy industry such as steel, textile boosted the industrial production. Increase in industrial production also assists for the expansion of the exports. India has initiated liberalisation and entered into trading arrangements as a result cost of trade reduced substantially which encouraged trade. With the growing volumes of trade, the focus of policy makers in the

developing countries shifted from traditional import substitution policies to export promotion one. Thus, Government of India adopted several export promotion policies such policies also attract foreign investors. This could be the reason of existence of uni-directional causality from export to FDI (Majeed and Eatzaz, 2006). The uni-directional causality from export to REER is also observed.

In addition to this, the past values of OG assist to predict the future value of export. This asserts that the domestic demand which is proxied by output gap influencing the exports. Furthermore, the uni-directional causality from GFCF to export also been observed. However, no causal relationship has been found between EUVI and export during the period of study.

4. CONCLUSIONS:

The paper attempts to examine the performance of Indian exports during 1990-91 to 2013-14. Qualitative and quantitative changes in India's export basket are analyzed by segregating exports on the basis of nature of technology. India's export to GDP ratio increased from 1.61 percent in 1990-91 to 32.14 percent in 2013-14. The dominance of textile articles, natural and cultured pearls precious and semi-precious stones and vegetable products came down. These sections were contributing nearly fifty percent to the total exports. However, in 2013-14 the share of these three sectors to total export came down to 31.77 percent. The change in the export is not only in quantitative terms but also in terms of quality as well.

At the initial phase of liberalization, India's export basket has been dominated by resource-intensive and non-fuel primary products. In 1990-91 the share of these two categories was more than sixty percent. However, with the advancement of NEP, several macroeconomic policy changes led to increase in growth, FDI, infrastructural facilities. Furthermore, restriction on the trade also been reduced substantially. Therefore, the production and export of medium and high technological intensive products increased. The growing share of medium and high technology-intensive products confirms that Indian export is improving on its quality ladder.

The development of Indian export can also be observed through extensive and intensive margin. With the advancement of export some commodities get added into the export basket, at the same time exports of some commodities get discarded with the technological enhancement. If the share of new commodities is increased over the period of time, then country is having diversified the exports. Results exhibited that the contribution of new products is increased in 2013-14 as compared to 2000-01. However, more than fifty percent of the growth in export is still contributed by the intensive margins. It can be therefore inferred that although the growth in the export is due to the growth in the existing commodities or intensive margin, but there is also an increase in the export of new products.

Furthermore, determinants of exports show that there exists bi-directional causality between EG and exports. Rise in export also has favorable impact on FDI. The result supports the growth-led hypothesis as there is uni-directional causality from GDP to export. It also suggests that the export promotional policies of the government are also helping in increasing investment. An increase in the investment would lead to increase in production and income of the people. In the long run this will turn up to rise in GFCF. The existence of uni-directional causality from GFCF to export reveals the same. In short, the slow but sustainable growth in the Indian exports is visible in qualitative and quantitative terms.

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Appendix-A

Table A1: Share of export at section level from 1990-91 to 2013-14

(Per cent)

Section	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	CAGR
1	5.20	3.75	3.61	3.45	4.90	3.96	4.21	4.21	3.81	3.82	3.97	3.59	3.38	2.72	2.32	2.26	1.99	1.73	1.56	1.91	1.85	2.17	2.38	3.24	**-5.08**
2	8.08	9.62	7.44	8.41	7.65	11.05	9.40	9.25	11.10	8.54	6.63	6.48	6.82	6.24	5.77	4.76	4.37	5.06	4.54	4.46	3.94	5.90	7.08	6.60	**-4.27**
3	0.02	0.04	0.04	0.02	0.02	0.04	0.04	0.04	0.02	0.03	0.03	0.05	0.04	0.34	0.41	0.27	0.26	0.31	0.31	0.31	0.30	0.36	0.32	0.27	**16.92**
4	2.65	4.13	4.92	4.71	3.12	3.76	5.17	4.33	2.66	2.28	2.28	2.55	1.74	2.63	1.85	2.20	2.51	3.02	2.87	2.20	2.43	2.33	2.57	2.39	**-3.11**
5	6.65	5.89	4.35	4.41	3.52	3.19	2.86	3.45	2.46	2.15	6.39	7.29	8.13	8.87	14.02	16.71	19.74	22.83	18.78	20.51	19.56	21.03	22.05	21.92	**10.47**
6	6.94	8.26	8.18	8.89	8.71	8.67	9.51	10.36	10.00	10.50	10.41	10.81	11.44	10.37	9.93	10.44	10.10	9.90	9.99	10.24	9.20	9.40	10.31	10.42	**1.23**
7	1.32	1.13	1.92	2.53	2.65	2.53	2.25	2.07	1.86	1.93	2.37	2.62	2.87	3.14	3.43	3.10	3.11	2.56	2.21	2.29	2.34	2.59	2.64	2.64	**2.54**
8	7.37	5.53	5.59	4.61	4.39	3.94	3.34	3.40	3.47	2.91	3.15	3.08	2.52	2.44	2.02	1.80	1.55	1.39	1.26	1.17	0.97	1.00	1.06	1.16	**-8.49**
9	0.08	0.10	0.08	0.26	0.17	0.12	0.13	0.10	0.07	0.08	0.08	0.08	0.09	0.10	0.11	0.10	0.11	0.11	0.10	0.09	0.07	0.08	0.09	0.11	**-1.44**
10	0.24	0.24	0.30	0.28	0.39	0.48	0.42	0.33	0.37	0.44	0.54	0.57	0.60	0.57	0.54	0.54	0.55	0.42	0.42	0.44	0.43	0.41	0.44	0.43	**3.10**
11	34.48	33.17	31.46	28.93	28.01	26.31	28.10	26.99	27.28	27.16	26.10	23.76	22.50	21.11	17.14	17.32	15.40	13.76	11.73	13.13	11.50	11.29	11.04	11.93	**-5.23**
12	3.07	2.58	2.50	2.60	2.18	1.94	1.81	1.59	1.86	1.75	1.55	1.62	1.29	1.33	1.20	1.13	1.11	1.05	0.95	0.97	0.79	0.78	0.80	0.93	**-5.83**
13	0.38	0.70	0.84	0.91	1.01	1.04	1.00	0.95	0.92	1.06	1.18	1.16	1.17	1.16	0.88	0.97	1.02	0.92	0.82	0.81	0.69	0.65	0.73	0.80	**1.01**
14	8.12	9.62	11.31	12.24	17.56	17.08	14.54	15.38	17.91	20.61	16.74	16.85	17.28	16.86	17.28	15.38	12.73	12.16	15.32	16.34	17.40	15.44	14.59	13.24	**1.70**
15	5.26	5.56	7.00	7.19	5.59	5.57	5.93	6.31	5.37	6.24	6.79	6.52	8.01	8.82	10.34	9.31	11.46	10.52	9.51	7.15	8.52	7.27	7.45	7.42	**3.05**
16	4.62	4.06	4.48	4.92	4.64	5.03	5.81	5.84	5.32	5.07	6.12	6.50	6.03	6.90	6.44	6.75	7.28	7.45	9.54	8.09	7.61	7.33	7.46	7.12	**3.40**
17	2.59	3.20	3.45	3.06	3.00	2.98	2.96	2.67	2.30	2.22	2.38	2.34	2.54	3.06	3.39	4.19	3.92	4.31	6.10	5.51	6.40	6.91	6.11	6.81	**3.36**
18	0.41	0.30	0.31	0.41	0.38	0.39	0.43	0.45	0.50	0.67	0.74	0.82	0.81	0.86	0.80	0.74	0.69	0.61	0.67	0.72	0.63	0.66	0.71	0.71	**4.47**
19	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	**6.10**
20	0.34	0.35	0.39	0.45	0.48	0.41	0.42	0.39	0.41	0.41	0.40	0.42	0.40	0.61	0.61	0.59	0.59	0.56	0.51	0.53	0.52	0.49	0.55	0.58	**2.26**
21	2.16	1.78	1.84	1.72	1.61	1.52	1.67	1.88	2.30	2.12	2.14	2.88	2.33	1.87	1.53	1.43	1.52	1.33	2.80	3.11	4.85	3.90	1.60	1.25	**1.83**

Table A2: Classification of export as per the UNCTAD classification

(1) Non-fuel Primary Products					(2) Resource-intensive manufacture product					(3) Low-tech product		(4) Medium-tech Product			(5) High-tech Product					(6) Mineral fuel product	(7) Unclassified Product	
0101	1506	2303	3102	7401	2522	5007	5806	6307	7019	6910	7417	3917	8443	8539	1108	2908	3303	3911	9033	2612	106	8486
0102	1507	2304	3104	7402	2523	5106	5807	6308	7020	7014	7418	3918	8444	8543	1109	2909	3304	3912	9101	2702	261	8487
0103	1508	2305	4001	7403	3816	5107	5808	6401	7101	7201	7419	3919	8445	8545	1520	2910	3305	3913	9102	2703	420	8523
0104	1509	2306	4002	7404	3926	5108	5809	6402	7103	7202	7508	3922	8446	8546	2207	2911	3306	3914	9103	2704	520	8524
0105	1510	2307	4003	7405	4015	5109	5810	6403	7104	7203	7610	3923	8447	8547	2801	2912	3307	3915	9104	2705	570	8710
0201	1511	2308	4004	7406	4104	5110	5811	6404	8544	7205	7611	3924	8448	8548	2803	2913	3401	3916	9105	2706	601	8804
0202	1512	2309	4101	7407	4105	5111	5901	6405	8715	7206	7612	3925	8449	8701	2804	2914	3402	3920	9106	2707	702	9021
0203	1513	2401	4102	7408	4106	5112	5902	6406	9018	7207	7613	4005	8450	8702	2805	2915	3404	3921	9107	2708	803	9113
0204	1514	2402	4103	7409	4107	5113	5903	6501	9303	7208	7614	4006	8451	8703	2806	2916	3405	8469	9108	2709	904	9201
0205	1515	2403	4301	7410	4201	5204	5904	6502	9304	7209	7615	4007	8452	8704	2807	2917	3407	8470	9109	2710	1005	9202
0206	1516	2501	4401	7411	4202	5205	5905	6503	9306	7210	7616	4008	8453	8705	2808	2918	3501	8471	9110	2711	1106	9203
0207	1517	2502	4402	7412	4203	5206	5906	6504	9401	7211	7806	4009	8454	8706	2809	2919	3502	8472	9111	2712	2701	9204
0208	1518	2503	4403	7501	4204	5207	5907	6505	9402	7212	7907	4010	8455	8707	2810	2920	3503	8473	9112	2713	2802	9205
0209	1521	2504	4406	7502	4205	5208	5908	6506	9403	7213	8007	4011	8456	8708	2811	2921	3504	8517	9114	2715	2852	9206
0210	1522	2505	4407	7503	4302	5209	5909	6507	9404	7214	8201	4012	8457	8709	2812	2922	3505	8518	--	2716	2853	9207
0301	1601	2506	4409	7504	4303	5210	5910	6801	9405	7215	8202	4013	8458	9022	2813	2923	3506	8519	--	3403	3406	9208
0302	1602	2507	4501	7505	4304	5211	5911	6802	9406	7216	8203	4014	8459	9619	2814	2924	3507	8520	--	3824	3605	9209
0303	1603	2508	4502	7506	4404	5212	6001	6803	9501	7217	8204	4016	8460	9701	2815	2925	3601	8521	--	--	3606	9301
0304	1604	2509	4701	7507	4405	5306	6002	6804	9502	7218	8205	4017	8461	--	2816	2926	3602	8522	--	--	3825	9302
0305	1605	2510	4702	7601	4408	5307	6101	6805	9503	7219	8206	8401	8462	--	2817	2927	3603	8525	--	--	3826	9305
0306	1701	2511	4703	7602	4410	5308	6102	6806	9504	7220	8207	8402	8463	--	2819	2928	3604	8526	--	--	3929	9307
0307	1702	2512	4704	7603	4411	5309	6103	6807	9505	7221	8208	8404	8464	--	2820	2929	3701	8527	--	--	4112	9601
0308	1703	2513	4705	7604	4412	5310	6104	6808	9506	7222	8209	8405	8465	--	2821	2930	3702	8528	--	--	4113	9602
0401	1704	2514	4706	7605	4413	5311	6105	6809	9507	7223	8210	8406	8466	--	2822	2931	3703	8529	--	--	4114	9603
0402	1801	2515	4707	7606	4414	5401	6106	6810	9508	7224	8211	8407	8467	--	2823	2932	3704	8540	--	--	4115	9604
0403	1802	2516	5001	7607	4415	5402	6107	6811	9605	7225	8212	8408	8468	--	2824	2933	3705	8541	--	--	4206	9606
0404	1803	2517	5002	7608	4416	5403	6108	6812	--	7226	8213	8409	8474	--	2825	2934	3706	8542	--	--	4602	9607
0405	1804	2518	5003	7609	4417	5404	6109	6813	--	7227	8214	8410	8475	--	2826	2935	3707	8801	--	--	4821	9608
0406	1805	2519	5101	7801	4418	5405	6110	6814	--	7228	8215	8411	8476	--	2827	2936	3801	8802	--	--	4901	9609
0407	1806	2520	5102	7802	4419	5406	6111	6815	--	7229	8301	8412	8477	--	2828	2937	3802	8803	--	--	4902	9610
0408	1901	2521	5103	7803	4420	5407	6112	6901	--	7301	8302	8413	8478	--	2829	2938	3803	8805	--	--	4903	9611
0409	1902	2524	5104	7804	4421	5408	6113	6902	--	7302	8303	8414	8479	--	2830	2939	3804	9001	--	--	4904	9612
0410	1903	2525	5105	7805	4503	5508	6114	6903	--	7303	8306	8415	8481	--	2831	2940	3805	9002	--	--	4905	9613
0501	1904	2526	5201	7901	4504	5509	6115	6904	--	7304	8307	8416	8482	--	2832	2941	3806	9003	--	--	4906	9614
0502	1905	2528	5202	7902	4601	5510	6116	6905	--	7305	8308	8417	8483	--	2833	2942	3807	9004	--	--	4907	9615

Contd …

(1) Non-fuel Primary Products						(2) Resource intensive manufacture product					(3) Low-tech product		(4) Medium-tech Product			(5) High-tech Product				(6) Mineral Fuel product	(7) Unclassified Product	
0503	1201	2001	2529	5203	7903	4801	5511	6117	6906	--	7306	8309	8418	8484	--	2834	3001	3808	9005	--	4908	9616
0504	1202	2002	2530	5301	7904	4802	5512	6200	6907	--	7307	8310	8419	8501	--	2835	3002	3809	9006	--	4909	9617
0505	1203	2003	2601	5302	7905	4803	5513	6201	6908	--	7308	8311	8420	8502	--	2836	3003	3810	9007	--	4910	9618
0506	1204	2004	2602	5303	7906	4804	5514	6202	6909	--	7309	8403	8421	8503	--	2837	3004	3811	9008	--	4911	9702
0507	1205	2005	2603	5304	8001	4805	5515	6203	6911	--	7310	8480	8422	8504	--	2838	3005	3812	9009	--	6003	9703
0508	1206	2006	2604	5305	8002	4806	5516	6204	6912	--	7311	8513	8423	8505	--	2839	3006	3813	9010	--	6004	9704
0509	1207	2007	2605	5501	8003	4807	5601	6205	6913	--	7312	8601	8424	8506	--	2840	3103	3814	9011	--	6005	9705
0510	1208	2008	2606	5502	8004	4808	5602	6206	6914	--	7313	8602	8425	8507	--	2841	3105	3815	9012	--	6006	9706
0511	1209	2009	2607	5503	8005	4809	5603	6207	7001	--	7314	8603	8426	8508	--	2842	3201	3817	9013	--	6601	9801
0602	1210	2101	2608	5504	8006	4810	5604	6208	7002	--	7315	8604	8427	8509	--	2843	3202	3818	9014	--	6602	9802
0603	1211	2102	2609	5505	8101	4811	5605	6209	7003	--	7316	8605	8428	8510	--	2844	3203	3819	9015	--	6603	9803
0604	1212	2103	2610	5506	8102	4812	5606	6210	7004	--	7317	8606	8429	8511	--	2845	3204	3820	9016	--	6701	9804
0701	1213	2104	2611	5507	8103	4813	5607	6211	7005	--	7318	8607	8430	8512	--	2846	3205	3821	9017	--	6702	9805
0703	1214	2105	2613	6309	8104	4814	5608	6212	7006	--	7319	8608	8431	8514	--	2847	3206	3822	9019	--	6703	9991
0704	1301	2106	2614	6310	8105	4815	5609	6213	7007	--	7320	8609	8432	8515	--	2848	3207	3823	9020	--	6704	9992
0705	1302	2201	2615	7102	8106	4816	5701	6214	7008	--	7321	8711	8433	8516	--	2849	3208	3901	9023	--	7113	9993
0706	1401	2202	2616	7105	8107	4817	5702	6215	7009	--	7322	8712	8434	8530	--	2850	3209	3902	9024	--	7114	9999
0707	1402	2203	2617	7106	8108	4818	5703	6216	7010	--	7323	8713	8435	8531	--	2851	3210	3903	9025	--	7115	--
0708	1403	2204	2618	7107	8109	4819	5704	6217	7011	--	7324	8714	8436	8532	--	2901	3211	3904	9026	--	7116	--
0709	1404	2205	2619	7108	8110	4820	5705	6301	7012	--	7325	8716	8437	8533		2902	3212	3905	9027	--	7117	--
0710	1501	2206	2620	7109	8111	4822	5801	6302	7013	--	7326	8901	8438	8534	--	2903	3213	3906	9028	--	7118	--
0711	1502	2208	2621	7110	8112	4823	5802	6303	7015	--	7413	8902	8439	8535	--	2904	3214	3907	9029	--	7401	--
0712	1503	2209	2714	7111	8113	5004	5803	6304	7016	--	7414	8903	8440	8536	--	2905	3215	3908	9030	--	8001	--
0713	1504	2301	2818	7112	--	5005	5804	6305	7017	--	7415	8904	8441	8537	--	2906	3301	3909	9031	--	8304	--
0714	1505	2302	3101	7204	--	5006	5805	6306	7018	--	7416	8905	8442	8538	--	2907	3302	3910	9032	--	8305	--
--	--	--	--	--	--	--	--	--	--	--	--	8906	--	--	--	--	--	--	--	--	--	--
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Total Products-1268 (100)	358 (28.24)					266 (20.98)					123 (9.70)		138 (10.88)			254 (20.03)				17 (1.34)	112 (8.83)	

Note: Figures in parenthesis represent per cent to total number of products.

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