

Measuring Structural Changes and Product Concentration of India's Gems and Jewellery Exports Since 1991

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This paper examines the India's Gems and Jewellery Exports during the period 1990-91 to 2016-17. It measures the growth, structure and concentration of India's gems and jewellery exports. Their product concentration is measured with the help of Concentration ratio (CR), Hirschman- Herfindahl Index (HHI) and Comprehensive Measure of Concentration(CCI). It shows that the highest concentrated commodities are cut & polished diamonds, rough diamonds, gold jewellery, coloured gemstones and pearls.

Introduction

Development implies change that is to describe the process of economic and social transformation within countries. Economic development and foreign trade are intimately connected. There are many studies on the cause and effect relationship between Economic development and foreign trade. The Economist such as Prebisch, Myrdal, Singer, Emmanuel, Nurkse and other have suggested an inward oriented approach for development of developing countries. Whereas, economists such as J.N.Bhagwati, Kruger, Chenery, BelaBlassa and others have strongly recommended the export led growth strategy.(Manjappa and Hegde, 1998).

Exports act as a motivating force and plays a significant role to speed up the growth and development process of developing countries. The India's Manufacturing sector has the high potential in augmenting growth and development of an economy as it plays major role in employment generation and exports. India exports mainly seven types of manufacturing products, which consists of Leather and Manufactures, Chemical related products, Engineering goods, Textile and Textile Products, Gems and Jewellery, Handicraft and Other Manufactured Products. The Total Exports were Rs.440.42 billion for the year 1991-92, out of which Rs.324.14 billion are from Manufactured Goods Exports.

The present study will deal with the Gems and Jewellery Exports, which constitute a very important part of Manufacturing Exports. As we know, this is one of the fastest growing sectors contributing significantly to employment and exchequer. This industry is more likely to grow at a rapid pace because of the rising global demand and increasing disposable income of the Indian middle class. The role of jewellery as a luxury item and an instrument of investment also make the industry important for the policy makers.

Review of Literature

A brief review of literature related to the theme of present study gives an idea that most of the studies are based on India's total exports and India's total Gems and Jewellery Exports. Some of the studies are also based upon specifically Concentration of India's total Gems and Jewellery Exports.

Chandra, Rai Govind (1979) studied the Greek and Indian forms of Jewellery and also the growth of various forms of jewellery which developed out of the contact of these two great people of ancient heritages who had both received and absorbed Achemenid impulses. **Nayyar, D. (1987)** studied the India's Export Performance for the time period (1970-85). The study attempted to evaluate India's export performance in the recent past examining the underlying factors and assessing the relative importance of domestic and foreign constraints. The study sourced the data from DGCI&S, Calcutta. It found that the impressive growth in exports between 1970 and 1978 was attributable to an unusual combination of external and internal factors. **Chand, Ramesh and S.C. Tewari (1991)** studied the growth and instability of Indian exports and imports of agricultural commodities for the period 1970 to 1988. The study found that the imports of agricultural commodities pulses, vegetable oils and fertilizer exerted severe strain on India's foreign exchange earnings. **Kala Alok (2009)** discussed the impact of global economic recession on the export performance of the Indian Gems and Jewellery sector, product-wise. The study reveals the contrasting point that total Gems and Jewellery industry has shown a growth but Indian Gems and Jewellery has witnessed decline. Further study reveals that cut & polished diamonds showed decreasing export trends while gold jewellery registered an increase in the year.

Malhotra, Meenu (2010) analysed the growth, structure and concentration of Indices imports in order to find out the imports that are progressive and development oriented for our society. The study reveals the reasons for the dominance of imports like imports of base metal and articles or allied products which help the same industry and depend upon the pace of industrial development, infrastructural development and growth of the economy. **Kapoor, ASSOCHAM (2015)** examined the structure and concentration of Indian Gems & Jewellery industry and tried to find out that whether the Indian Gems and Jewellery Industry has a potential to contribute to the governments "Make in India" initiative and various economic indicators like GDP, gross value added, indirect tax collections. The study concluded that the G& J industry has the great potential to contribute to the government's "Make in India" initiative and has a significant positive contribution in the increment of GDP, indirect tax collections, gross value added and so on. **Parul A. et al. (2017)** studied the structure of exports of Indian gems & jewellery industry. The study suggested in order to fasten up the growth and increase the share of Indian gems & jewellery industry, problems like import dependency, prices rise, technical advancement need to be focused. **Chellam K. Chitra (2018)** studied the origin, history and structure

of gems & jewellery industry of India. From a very humble beginning in 1950-60's, the Indian gems & jewellery industry has become the manufacturing powerhouse and the fastest growing industry though it suffers from limited standardization and unorganized players.

Varma, ManoharLall (1983) studied the problems of the majority of Indian Diamond Exporters and found that the import of raw materials is the biggest problem for diamond manufacturers and suggested export policies to overcome this problem. **Padhi (2013)** examined the manufacturing exports and its policies in India. The paper suggests that Growth in manufacturing exports can be effectively achieved by cost reduction practices like greater industrial differentiation and specialization. **Njinyah Zisuh Sam (2018)** studied the significance of the direct and indirect impact of the government promotion policies on the cocoa exports. The study showed that the Government policies for export promotion had both direct and indirect effects on export performance. The study showed that the direct effect was it reduced the operating cost and indirect effect was it had firms advantages and the most significant path was export marketing information.

Indian Gems and Jewellery sector has the potential to augment growth and development of the country as it plays a major role in employment generation and exports. With the growth in this sector, its share in GDP tends to increase and also supplements other sectors of the economy. Such a study enables us to analyse the structural shifts taking place in the Gems and Jewellery exports, whereas export concentration reflects the degree to which India's Gems and Jewellery exports are concentrated in a small number of categories or a small number of trading partners.

The present paper makes an attempt to empirically analyse the growth, structure and concentration of India's Gems and Jewellery exports and changes therein overtime. It has been organized into four sections:

Section I deals with data base and methodology.

Section II discusses the India's Gems and Jewellery Exports Scenario and analyse their growth.

Section III deals with the structure and concentration of India's Gems and Jewellery exports.

Section IV deals with conclusions and policy implications.

I Database and Methodology

The data for the present study have been collected from various issues of Handbook of statistics on Indian Economy, Reserve Bank of India, GJEPC. They are also taken from secondary sources and analysed by calculating growth rates, percentage shares and concentration . The methodology used is explained below:

(1).Growth Rates of India's Gems and Jewellery Exports, Total Exports, Total Manufactured Exports and it's categories/Sub Categories.

Growth rates refer to the amount of increase that a specific variable has gained within a specific period and context. In order to find out the Growth Rates of India's Gems and Jewellery exports, total Exports, total Manufactured Exports and it's sub categories, the Annual Average Growth Rates will be worked out. The Growth Rates will be calculated by fitting the exponential function of the type:

$$Y_t = ab^t e^u$$

Transforming the above equation into linear form:

$$\text{Log } y_t = \text{log } a + t \text{ log } b + u \text{ log } e$$

Where, Y_t = value of dependent variable in the year t

T = trend variable

u = disturbance term

a and b = constants

For the estimated value of regression coefficient 'b' the compound growth rate 'r' was calculated as following:

$$r(\%) = (b^{\wedge} - 1) \times 100$$

Where, $b^{\wedge}$ = estimated value of b

The Growth rates will be calculated for whole of the study period (1990-91 to 2016-17) and also for the sub-periods (a) 1990-91 to 1999-00, (b) 2001-02 to 2016-17, (c) 1990-91 to 2008-09 and (d) 2009-10 to 2016-17,

(2) Structure of India's Gems and Jewellery Exports.

For analysing the structure, following shares will be calculated:-

(A) At all the points of study period (1990-91 to 2016-17)

(1) The shares of Gems and Jewellery Exports in Total Exports and Manufactured Exports.

(2) The share of Gems and Jewellery Exports, Total Exports and Manufactured Exports in G.D.P.

(3) The share of sub-categories in total Gems and Jewellery Exports.

(4) The share of sub-categories in Total Exports and Manufactured Exports.

(3) Concentration of India's Gems and Jewellery Exports .

By Concentration of India's Gems and Jewellery Exports, we mean when total Gems and Jewellery Exports are controlled by a small number of leading Gems and Jewellery products (commodity

concentration) or leading markets (market concentration). The most popular and simplest index for the measurement of concentration is Concentration Ratio.

In many studies, a single measure of concentration is decided upon as being the most appropriate one for the problem at hand. Appropriateness depends on the use to be made of the concentration measure and the nature of the data on which the estimate is based (Bailey and Boyle (1971:72). Erlat and Sahin (1998:06), Ergun (1991) and Togan (1994) are examples of such studies. We will follow Erlat (1975, 1976) and will use three different measures of concentration and compare the results of these different measures.

All three concentration measures are based on the shares of individual elements. Let m denote the number of categories of the concerned commodity and q_{it} represents the exports to the i th partner country at time t . Then the sum of q_{it} from 1 to m will be q_t and the share of each country in exports of that commodity and its sub-parts for year t , would be expressed as:

$$p_{it} = q_{it} / q_t$$

$$i = 1, \dots, m \text{ and } t = 1, \dots, T$$

In this study m is equal to 8, t is equal to 27. Therefore, a value for p_{it} is calculated for each commodity group and country at time t . All the concentration measures below are based on p_{it} .

The three measures of concentration can be classified into three groups:-

(1) **Discrete measures of concentration** consider only some of the p_{it} s and the first measure, Concentration Ratio (CR), belongs to this group. CR shows the total share of n commodities which have the largest shares in exports of a commodity group. It is denoted by $CR(k)$ and calculated as,

$$CR(k)_t = \sum_{i=1}^k p_{it}, \quad k < m$$

In most applications $CR(4)$, $CR(8)$ or $CR(16)$ are used; the selection of k is arbitrary.

(2) The second measure is a summary measure.

(a) The Hirschman-Herfindahl Index (HH) simply consists of the sum of p_{it} s weighted by themselves:

The HH index lies between $1/m$, the case where all p_{it} s are equal, and 1, where there is only one p_{it} , implying that $q_{it} = q_t \cdot 1$

$$HH_t = \sum_{i=1}^m p_{it}^2$$

(3) The final group of measures combine the characteristics of both discrete and summary measures. Our last measure of concentration, the Comprehensive Measure of Concentration (CCI), belongs to this group:

$$CCI_t = p_{it} + \sum_{i=2}^m p_{it}^2 (1 + (1 - p_{it}))$$

With the help of the above discussed concentration measures, we did the calculations of commodity concentration of India's Gems and Jewellery exports. The concentration measures denoted by CR(4) for Gems and Jewellery products is calculated for the study period. After this, the number of years that a commodity has a share in the concentration ratio (4) is found and then commodities are ranked accordingly. The maximum value that a commodity can take is 27 as the study period covered 27 years and the minimum value is zero.

The Gems and Jewellery products can be mainly classified into eight major groups based on the Gems and Jewellery Export Promotion Council (GJEPC) export data such as following:

- (1) Cut and Polished Diamonds
- (2) Gold Jewellery
- (3) Coloured Gemstones
- (4) Pearls
- (5) Non-gold Jewellery
- (6) Costume/Fashion Jewellery
- (7) Synthetic Stones
- (8) Rough Diamonds

II. India's Gems and Jewellery Exports Scenario

To analyze the India's Gems & Jewellery exports and its share, it is also pertinent to consider the total exports, manufactured exports and GDP of India. This section is devoted to India's Total exports, Manufactured goods exports, share of total exports, Gems and Jewellery exports and Manufactured exports in GDP.

As per **table 1**, India's total exports (32527.28 crores in 1990-91 to 1849430.71 crores in 2016-17), manufactured goods exports (26092.14 crores in 1990-91 to 1543726.24 crores in 2016-17) and Gems and Jewellery exports (5360.12 crores in 1990-91 to 54084.12 crores in 2016-17) have registered a continuous increase for the study period 1990-91 to 2016-17. The share of total exports in GDP measures the relative contribution of exports in a given country's income. The percentage share of India's total exports in GDP fluctuated between 5.43 percent and 10.02 percent for the years 1990-91 to 2003-04. Thereafter, it increased to 15.83 percent in 2008-09, but due to global economic slowdown, the share declined to 13.84 percent in 2009-10, further it recovered and increased to 18.08 percent in the year 2013-14, but started declining and reached to 15.16 percent in 2016-17. The share of manufactured goods in GDP fluctuated between 5.43 percent and 10.02 percent for the years 1990-91 to 2003-04 and it stabilized around 9 percent for four years (2004-05 to 2007-08). The share of manufactured goods exports in GDP was around 10 percent for the years 2009-10 to 2012-13. The share increased continuously 11.09 percent in 2013-14 to 14.52 percent in 2016-17. The percentage

share of Gems & Jewellery exports in GDP is also increasing but at a very slow pace from 0.89 percent to 1.9 percent for the years 1990-91 to 2003-04. The share of Gems & Jewellery exports in GDP declined from 2.36 percent in 2004-05 to 1.80 percent in 2008-09, but after that it increased to 2.64 percent in 2011-12. For the rest of the years (2012-13 to 2016-17), the share of Gems & Jewellery exports fluctuated between 2.31 percent to 2.59 percent.

The share of Total exports, Manufactured exports and G&J exports in GDP showed an increasing trend over the study period with few fluctuations, specifically 2010-11 onwards.

Table1: India's Total Exports, Manufactured Goods Exports, Gems and Jewellery Exports and their share in GDP

Years	Total exports (in crores)	Total Gems and Jewellery Exports (in crores)	Total manufactured exports (in crores)	GDP factor cost (in crores)	Total exports/GDP*100	Manufactured Exports/GDP*100	G&J Exports/GDP*100
1990-91	32527.28	5360.12	26092.14	598701.14	5.43	4.36	0.89
1991-92	44041.81	7234.02	32413.23	614235.61	7.17	5.28	1.18
1992-93	53688.12	9108.13	40660.41	704523.12	7.62	5.77	1.35
1993-94	69748.85	10982.34	52245.71	818628.28	8.52	6.38	1.58
1994-95	82673.23	12856.12	64067.08	956704.42	8.64	6.69	1.53
1995-96	106353.41	14730.06	79433.15	1119567.91	9.49	7.09	1.62
1996-97	118817.31	16604.18	87377.52	1302876.82	9.12	6.70	1.42
1997-98	130100.62	18478.24	98660.09	1448723.28	8.98	6.81	1.42
1998-99	139751.81	20352.36	108506.03	1669608.25	8.37	6.49	1.56
1999-00	159095.22	22226.52	128761.41	1859624.08	8.55	6.92	1.89
2000	201356.53	24100.13	156858.62	2001721.12	10.06	7.83	1.76

2001-01							
2001-02	209018.03	25974.28	159146.71	2177243.05	9.60	7.30	1.65
2002-03	255137.31	27848.56	194765.82	2345089.25	10.88	8.30	1.89
2003-04	293366.83	29722.72	222829.26	2926341.52	10.02	7.61	1.90
2004-05	375339.52	31596.81	272872.25	2971812.13	12.63	9.18	2.36
2005-06	456417.91	33470.32	321261.16	3390915.51	13.46	9.47	2.17
2006-07	571779.32	35344.61	384261.08	3954210.82	14.46	9.72	1.96
2007-08	655863.51	37218.14	414599.51	4583214.25	14.31	9.05	1.84
2008-09	839978.32	39092.08	566402.41	5304432.51	15.83	10.68	1.80
2009-10	845534.02	40966.18	654656.32	6109316.62	13.84	10.71	2.27
2010-11	1142922.12	42840.52	719863.23	7552008.72	15.13	9.53	2.55
2011-12	1465919.52	44714.52	888599.58	8395823.28	17.46	10.58	2.64
2012-13	1634319.14	46588.81	995441.61	9392601.18	17.40	10.59	2.49
2013-14	1894182.84	48462.71	1162383.82	10476623.32	18.08	11.09	2.39
2014-15	1896450.72	50336.46	1359988.04	10527674.23	18.01	12.92	2.39
2015-16	1716380.61	52210.32	1426758.06	11386145.15	15.07	13.42	2.26
2016-17	1849430.71	54084.12	1543276.24	12196006.26	15.16	14.53	2.38

Source: Author's calculations.

2. Growth Rates of India's Total Exports, Gems & Jewellery Exports and its Categories/ subcategories

COMMODITY/PERIOD	1990-91 to 2016-17	1990-91 to 1999-00	2000-01 to 2016-17	1990-91 to 2008-09	2009-10 to 2016-17
Total Manufactured Exports	14.65	18.21	11.98	15.82	1.98
Total Exports	14.63	20.56	12.67	17.91	2.32
Gems & Jewellery	14.66	19.86	12.08	16.49	5.94
Cut & Polished Diamonds	13.39	18.58	11.80	14.37	8.12
Gold Jewellery	23.23	28.38	19.74	25.79	7.67
Coloured Gemstones	9.09	16.12	8.19	9.79	7.03
Pearls	3.03	5.179	4.93	1.61	9.05
Non- Gold Jewellery	23.95	35.67	19.28	26.76	9.56
Synthetic stones	4.67	27.95	5.81	4.04	10.08
Costume/ Fashion Jewellery	12.29	25.69	8.83	13.24	7.01
Rough Diamonds	18.27	41.01	11.23	28.56	5.92

Source: Author's calculations

Table 2 is devoted to analyse the growth performance of Total Exports, Total Manufactured Exports and Gems & Jewellery Exports and its categories/ sub categories for whole of the study period (1990-91 to 2016-17) and also for some sub periods (1990-91 to 1999-00, 2000-01 to 2016-17, 1990-91 to 2008-09 & 2009-10 to 2016-17). The sub-period 1990-91 to 2008-09 revealed the effect of global recession on the growth of India's Gems & Jewellery exports while the sub-periods 1990-91 to 1999-00 represent the immediate decade after liberalisation & 2001-02 to 2016-17 provides the growth in G& J exports after a lag of decade of liberalisation reforms.

The compound annual growth rate of India's total exports, total gems & jewellery exports and its sub-categories for the whole study period and sub-periods are shown in Table 2. India's total exports grew at the rate of 14.63 %, total manufactured exports grew at the rate of 14.65% whereas India's gems & jewellery exports grew at the rate of 14.66 % for the study period 1990-01 to 2016-17. For the sub-periods 1990-91 to 1999-00 and 2000-01 to 2016-17, total exports increased at the rate of 20.56 % and 12.67% respectively, total manufactured exports increased at the rate of 18.21% and 11.98%, whereas for the same sub-periods India's gems & jewellery exports grew at the rate of 19.86% and 12.08% respectively. During the sub-periods 1990-91 to 2008-09 and 2009-10 to 2016-17, India's total exports grew at the rate of 17.91 % and 2.32 % respectively, India's total Manufactured Exports grew at the rate of 17.91 % and 2.32% whereas India's gems & jewellery exports grew at the rate of 16.49% and 5.94 % respectively.

For the whole study period **1990-91 to 2016-17**, the category of non-gold jewellery and gold recorded the highest growth rate (23.95% and 23.23%) and the category of pearls and synthetic stones recorded the lowest growth rate (3.03% and 4.67%). The categories of rough diamonds, cut & polished diamonds, costume/ fashion jewellery and coloured gemstones grew at a rate of 18.27%, 13.39 %, 12.29% and 9.09% respectively.

For the sub-periods **1990-91 to 1999-00**, the category of rough diamonds and non-gold jewellery recorded the highest growth rates, i.e., 41.01% and 35.67% and the category of pearls recorded the

lowest growth rate, i.e., 5.179%. The categories of gold jewellery, synthetic stones, costume/ fashion jewellery, cut & polished diamonds and coloured gemstones grew at a rate of 28.38%, 27.95 %, 25.69 , 18.58% and 16.12% respectively. For the sub-period of **2001-02 to 2016-17**, the category of gold jewellery and non-gold jewellery recorded the highest growth rate, i.e., 19.74% and 19.28% and the category of pearls and synthetic stones recorded the lowest growth rates, i.e., 4.93% and 5.81 % respectively. The categories of cut& polished diamonds, coloured gemstones, costume/ fashion jewellery and rough diamonds grew at a rate of 11.80 %, 8.19%, 8.83% and 11.23% respectively.

For the sub-period of **1990-91 to 2008-09**, the categories of rough diamonds, non-gold jewellery and gold jewellery recorded the highest growth rates, i.e., 28.56%, 26.76% and 25.79% and the category of pearls and synthetic stones recorded the lowest growth rates, i.e., 1.61 % and 4.04 % respectively. The categories of coloured gemstones, costume/fashion jewellery and cut& polished diamonds grew at a rate of 9.79%, 13.24% and 14.37 % respectively. For the sub-period of **2009-10 to 2016-17**, the category of Synthetic stones, non-gold jewellery and pearls recorded the highest growth rates, i.e., 10.08%, 9.56% and 9.05% and the category of rough diamonds recorded the lowest growth rate, i.e., 5.92% respectively. The categories of gold jewellery, coloured gemstones, costume/ fashion jewellery and cut& polished diamonds grew at a rate of 7.67%, 7.03%, 7.01% and 8.12 % respectively.

2)Structure of India's Gems and Jewellery Exports.

As per **table 3**, the changes in the structure of India's gems and jewellery exports have been analysed by (measuring the share of India's gems and jewellery exports in Total Exports and Manufactured Exports and its various sub- categories in India's Gems & Jewellery Exports at all points of time during the study period 1990-91 to 2016-17).

Gems & Jewellery Exports

The share of Gems & Jewellery exports in total manufacturing exports remained more than 20 percent for the years 1990-91 to 2007-08 and 2009-10 to 2013-14. In the study period (1990-91 to 2016-17), the maximum percentage share of Gems and Jewellery exports in total manufacturing exports is recorded for the year 2010-11 (i.e., 26.18 percent) and lowest is recorded in the year 2008-09 (due to global economic recession, i.e., 16.88 percent). The share of Gems and Jewellery exports in total exports remained more than 15 percent for the years 1990-91 to 2005-06, 2009-10 to 2011-12, 2016-17. In the study period (1990-91 to 2016-17), the maximum percentage share of Gems and Jewellery exports in total exports is recorded for the year 2003-04 (i.e., 18.99 percent) and lowest is recorded for the year 2008-09 (i.e., 11.38 percent). The shares of Gems and Jewellery exports in manufactured exports and total exports for the study period indicate a significant contribution of Gems & Jewellery exports to total Manufactured exports and also to Total exports.

A. Cut and polished diamonds

This category is the most important category in India's gems and jewellery exports. This category has recorded a share between 10 to 15 % in Total Exports and 11 to 19 % in Manufactured Exports throughout the study period though its share has declined. In fact, India is today the largest cutting and polishing centre for diamonds in the world and exports 95 percent of the world diamonds, according to Gems and Jewellery Export Promotion Council. India's share in global polished diamond market is estimated to be 70 percent in terms of value, 85 percent in terms of volume, and 92 percent in terms of prices. India has been adding modern techniques and establishing several well organised polishing units to improve productivity and need of growing global demand (GJEPC, www.Internationalseminar.org). It recorded at least more than 60 percent of the share of the India's total

gems and jewellery exports for the whole of the study period 1990-91 to 2016-17. However, the share of cut & polished diamonds exports in total India's gems and jewellery exports continuously declined throughout the study period(1990-91 to 2016-17), still was highest contributor. The category of cut & polished diamonds exports recorded 88.4 percent share for the year 1990-91, The share declined to 81.62 percent for the year 1999-2000 and further to 70.83 percent in 2005-06. The share further declined to 65 percent in 2011-12, but after that it increased to 66 percent in 2013-14, then again it declined to 65 percent for the subsequent two years, then it increased to 68 percent in 2016-17.

Table3: Structure of India's Gems & Jewellery Exports and sub-categories of India's Gems and Jewellery Exports (Percentage share for the years 1990-91 to 2016-17)

Years	share of G&J in TE	share of G&J in ME	share of cut & polished diamonds	share of gold jewellery exports	share of coloured gemstones exports	share of pearls exports	share of non-gold jewellery exports	share of synthetic stones exports	share of costume/fashion jewellery exports	share of rough diamonds exports
1990-91	16.48	20.54	88.41	6.79	3.88	0.14	0.27	0	0.037	0
1991-92	16.42	22.32	85.19	10.36	3.55	0.13	0.34	0.013	0.041	0
1992-93	17.70	23.37	87.50	8.88	2.84	0.10	0.30	0.021	0.126	0
1993-94	18.55	24.77	88.16	8.87	2.41	0.11	0.17	0.007	0.139	0
1994-95	17.70	22.84	85.89	10.37	3.02	0.11	0.24	0.054	0.136	0
1995-96	17.06	22.84	85.42	10.47	2.68	0.10	0.45	0.066	0.088	0.58
1996-97	15.59	21.19	80.53	14.23	2.59	0.07	0.55	0.048	0.113	1.68
1997-98	15.80	20.84	80.64	15.06	2.38	0.073	0.62	0.038	0.058	0.87
1998-99	18.63	23.99	80.93	13.60	2.86	0.06	0.93	0.038	0.084	1.30
1999-00	22.11	27.31	81.62	13.34	2.51	0.04	0.59	0.031	0.073	1.65
2000-01	17.52	22.49	79.49	14.79	2.61	0.03	0.72	0.019	0.124	2.02
2001-16	17.16	22.53	79.048	15.44	2.41	0.03	0.85	0.031	0.133	1.87

02										
200 2- 03	17.3 4	22.7 1	77.54	16.50	2.09	0.05	0.92	0.011	0.103	2.62
200 3- 04	18.9 9	25.0 1	71.04	21.93	1.46	0.05	0.82	0.008	0.084	4.39
200 4- 05	18.7 1	25.7 4	71.28	24.16	1.23	0.01	0.82	0.007	0.056	2.27
200 5- 06	16.1 2	22.9 0	70.83	23.24	1.40	0.01	0.87	0.007	0.072	3.38
200 6- 07	13.5 4	20.1 5	63.55	30.35	1.43	0.01	1.01	0.004	0.045	3.29
200 7- 08	12.8 3	20.3 0	67.89	26.58	1.32	0.01	1.09	0.005	0.026	2.71
200 8- 09	11.3 8	16.8 8	61.49	32.37	1.25	0.017	0.91	0.005	0.042	3.63
200 9- 10	16.4 4	21.2 4	61.93	32.93	0.97	0.011	1.40	0.004	0.052	2.53
201 0- 11	16.8 7	26.7 8	68.67	27.38	0.89	0.009	1.04	0.003	0.041	1.93
201 1- 12	15.1 4	24.9 8	65.76	30.55	0.81	0.008	1.13	0.003	0.041	1.72
201 2- 13	14.3 3	23.5 2	65.27	30.80	0.84	0.009	1.20	0.003	0.043	1.72
201 3- 14	13.2 2	21.5 3	66.62	29.62	0.83	0.009	1.19	0.004	0.044	1.66
201 4- 15	13.2 9	18.5 4	65.98	29.98	0.82	0.010	1.26	0.004	0.044	1.90
201 5- 16	14.9 9	18.0 4	65.03	30.67	0.88	0.010	1.31	0.004	0.044	1.92
201 6- 17	15.7 3	18.8 5	68.84	27.28	0.79	0.009	1.24	0.004	0.039	1.78

Source: Author's calculations

B. Gold Jewellery

This category is the second most important category in India's Gems and Jewellery exports. This category has recorded 1 to 5% in Total Exports and 1 to 7 % in Manufactured Exports with increased share throughout the study period . The share of gold jewellery in India's total Gems and Jewellery exports registered a continuous increase except for few years for the whole study period 1990-91 to 2016-17. The category of gold jewellery exports had a share of 6.79 percent in 1990-91, which raised to 10.40 percent for the year 1995-96 and further raised to 15 percent in 1997-98. Afterwards, this category showed a declining trend and it falls to 13 percent in 1999-00. Furthermore, this category showed a rising trend and reached 24 percent in 2004-05 and 32 percent in 2009-10. This category experienced a share of 27 percent in 2016-17. The highest share of this category was 32.93 percent for the year 2009-10 and lowest share of this category was 6.79 percent for the year 1990-91. This sector had shown a tremendous growth in India's Gems and Jewellery exports.

C. Coloured Gemstones

This category has recorded a share of 0.10 to 0.69% in Total Exports and 0.14 to 0.79 % in Manufactured Exports throughout the study period though its share had shown a continuous decline . The share of coloured gemstones in India's total Gems and Jewellery exports showed a decreasing trend for the whole of the study period 1990-91 to 2016-17. The category of coloured gemstones exports experienced a share of 3.88 percent in 1990-91. The share declined to 2.68 percent in 1995-96 and further declined to 1.40 percent in 2005-06. This category further declined to 0.89 percent in 2010-11 and 0.79 percent in 2016-17.

D. Pearls

This category has recorded a share of 0.001 to 0.002 % in Total Exports and 0.009 to 0.02 % in Manufactured Exports throughout the study period with very few fluctuations. It recorded 0.14 percent share in Gems & Jewellery Exports in the year 1990-91, which decreased to 0.070 percent in the year 1996-97 and thereafter it continuously declined throughout the study period. The share even remained less than 0.05 percent for the years 1999-00 to 2016-17. The highest and lowest shares were 0.14 percent and 0.008 percent for the years 1990-91 and 2011-12.

E. Non-Gold Jewellery

This category has recorded a share of . It recorded 0.27 percent share in Gems& Jewellery exports in the year 1990-91, which increased to 0.55 percent in 1996-97. Further the share of this category slightly improved to 1.01 percent in 2006-07 and 1.24 percent in 2016-17. The highest share of this category was 1.31 percent in 2015-16 and lowest share was 0.17 percent in 1993-94.

F. Synthetic stones

This category has recorded 0.013 percent in the year 1991-92, which increased to 0.048 percent in 1996-97, thereafter it continuously declined throughout the study period and recorded 0.004 percent in 2016-17. The highest share of this category was 0.06 percent in 1995-96 and lowest share was 0.0036 percent in 2011-12.

G. Costume/Fashion Jewellery

This category has recorded even less than 0.02 percent in India's total exports and 0.0003 percent in India's total GDP. It recorded 0.03 percent in the year 1990-91, which increased to 0.13 percent in 2001-02. Further the share of this category continuously declined throughout the study period and

recorded 0.039 percent in 2016-17. The highest share of this category was 0.13 percent in 2001-02 and lowest share was 0.02 percent in 2007-08.

H. Rough Diamonds

This category has recorded even less than 0.8 percent in India's total exports and 0.08 percent in India's total GDP. It recorded 0.58 percent in the year 1995-96, which increased to 1.8 percent in 2000-01. Further, the share of this category improved to 3.38 percent in 2005-06 and recorded a decline to 1.78 percent in 2016-17. The highest share of this category was 4.39 percent in 2003-04 and lowest share was 0.58 percent in 1995-96.

The sub-categories of India's gems and Jewellery exports whose share is very low and almost continued to be so throughout the study period (i.e., 1990-91 to 2016-17) may be described as **low and constant categories** of India's Gems and Jewellery exports(with a share of less than even 5%). The sub –categories of India's Gems and Jewellery exports whose share is very high described as **leading categories** of India's gems and Jewellery exports(with a share of more than 5 % for the study period 2016-17). The sub-categories of India's Gems and Jewellery exports whose share is very less ,had almost negligible impact on India's total Gems and Jewellery exports considered as **lagging categories** of India's Gems and Jewellery exports(with a share of less than 2 percent for the study period 1990-91 to 2016-17).

Analysis of the structure of India's Gems and Jewellery exports showed that :

-Low and constant categories: rough diamonds and coloured gemstones exports.

-Leading categories: cut & polished diamonds and gold jewellery.

-Lagging categories: pearls, non -gold jewellery, synthetic stones and costume/fashion jewellery exports.

3. COMMODITY CONCENTRATION OF INDIA'S GEMS AND JEWELLERY EXPORTS

By concentration of India's Gems and Jewellery Exports , we mean when Total Gems and Jewellery Exports are controlled by a small Jewellery Exports. Various quantitative indices have been suggested for this purpose.

With the help of various measures of concentration, we have calculated commodity concentration of India's Gems and Jewellery exports for the study period of 1990-91 to 2016-17. Table 4 shows the Concentration Figures for India's gems and Jewellery Exports , Table 5 shows the Frequency of Commodities CR(4) and Table 5 gives an idea about Position Wise numbers of Years for Top Four Commodities as per CR(4).

Table 4. Concentration of India's gems and jewellery exports

YEARS	CR(4)	HH	CCI
1990-91	0.9936	0.7878	0.8909
1991-92	0.9946	0.7378	0.8657
1992-93	0.9953	0.7744	0.8848
1993-94	0.9955	0.7856	0.8910
1994-95	0.9954	0.7495	0.8723
1995-96	0.9910	0.7414	0.8675
1996-97	0.9905	0.6698	0.8307

1997-98	0.9896	0.6736	0.8343
1998-99	0.9871	0.6746	0.8326
1999-00	0.9913	0.6849	0.8384
2000-01	0.9893	0.6551	0.8227
2001-02	0.9877	0.6496	0.8204
2002-03	0.9876	0.6297	0.7769
2003-04	0.9890	0.5553	0.7756
2004-05	0.9896	0.5673	0.7890
2005-06	0.9887	0.5572	0.7801
2006-07	0.9866	0.4978	0.7634
2007-08	0.9851	0.5327	0.7737
2008-09	0.9875	0.4845	0.7622
2009-10	0.9881	0.4930	0.7704
2010-11	0.9914	0.5849	0.8533
2011-12	0.9845	0.6543	0.9398
2012-13	0.9654	0.7099	0.9711
2013-14	0.9873	0.6995	0.9487
2014-15	0.9543	0.6939	0.9375
2015-16	0.9083	0.6458	0.9057
2016-17	0.9803	0.7108	0.9445

Source: Author's calculations

Table 5. Frequency of Commodities in CR(4)

Commodities	CR(4) Years
Cut & polished diamonds	27
Gold jewellery	27
Coloured gemstones	19
Pearls	12
Non-gold jewellery	1
Synthetic stones	0
Costume/fashion jewellery	0
Rough diamonds	22

Source: Author's calculations

Table 6. Position Wise number of years for Top Four Commodities as per CR(4)

COMMODITIES/ POSITIONAL YEARS	FIRST POSITION	SECOND POSITION	THIRD POSITION	FOURTH POSITION
Cut & polished diamonds	1990-91 to 2016-17 (27 Years)			
Gold jewellery		1990-91 to 2016-17(27 Years)		
Rough diamonds			2002-03 to 2016-17(15 Years)	1995-96 to 2001-02(7 Years)
Coloured gemstones			1990-91 to 2001-02(12 Years)	2002-03 to 2008-09(7 Years)

Source: Author's calculations

As per table 4, the comparison of concentration figures shows that the discrete concentration measures CR(4), give high concentration figures as compared to the summary measure Hirschman- Herfindahl Index(HH) and Comprehensive Concentration(CCI) Measures. The relationship between HH and RHT differed from year to year. From Table 4, the Hirschman- Herfindahl Index(HHI) dominated the Comprehensive Measure of Concentration(CCI) throughout the study period 1990-91 to 2016-17.

The Concentration Ratio(4) measures the concentration of top four categories of Gems and Jewellery exports products. The concentration figure was higher than 0.9 for all the years of the study period 1990-91 to 2016-17. As per CR(4) top four products are Cut & Polished Diamonds, Gold Jewellery, Rough Diamonds and Coloured Gemstones which experienced a noticeable position in the top four products of India's Gems and Jewellery Exports for all the years of the study period 1990-91 to 2016-17, except minor fluctuations. The highest figure in Concentration Ratio (CR4) was 0.9955 for the year 1993-1994 and 0.9543 for the year 2014-15.

On the whole, the concentration result for CR(4) indicate high concentration of four products in India's Gems and Jewellery Exports for all the years of the study period 1990-91 to 2016-17, i.e., Cut & Polished Diamonds, Gold Jewellery, Rough Diamonds and Coloured Gemstones.

Hirschman- Herfindahl Index(HH) of concentration for India's Gems and Jewellery Exports showed that the concentration figures are fluctuating between 0.73 to 0.78, for the years 1990-91 to 1995-96. The Hirschman- Herfindahl Index(HH) gives fluctuating years 2008-09 to 2016-17. The concentration figure for Hirschman- Herfindahl Index(HH) was the highest one, i.e., 0.9955 for the year 1993-94.

On the whole, Hirschman- Herfindahl Index(HH) showed fluctuating concentration figures for the whole of the study period 1990-91 to 2016-17 except the continuous increase from 0.9936 to 0.9955 for the years 1990-91 to 1993-94 and continuous decline from 0.9954 to 0.9871 for the years 1994-95 to 1998-99.

The Comprehensive Measure of Concentration (CCI) showed the concentration figure, which was more than 0.7622 for the whole of the study period 1990-91 to 2016-17. For the years 1990-91 to 2001-02, the concentration figure was fluctuating between 0.8204 to 0.8909, but after 2001-02, it declined and fluctuated between 0.7622 to 0.7890 for the years 2002-03 to 2009-10. For the last seven years, concentration figure increased and fluctuated between 0.85 and 0.97 till 2016-17. The highest figure for Comprehensive Measure of Concentration was 0.9711 for the year 2012-13 and lowest figure was 0.7622 for the year 2008-09.

Table 5 showed the frequency of commodities in CR(4), which means that for all the years of the study period which four categories of India's Gems and Jewellery Exports were listed on the top four positions. The categories namely, Cut & Polished Diamonds, Gold Jewellery, Rough Diamonds, Coloured Gemstones and Pearls were found to be listed on top four positions.

Table 6 showed that the category of Colored Gemstones remained at fourth position for the years (2002-03 to 2008-09). For the initial years (1990-91 to 2001-02), this category remained at third position which clearly stated that this category has been replaced by other category in the later years.

The category of Rough diamonds remained at fourth position for the years (1995-96 to 2001-02). For the later years(2002-03 to 2016-17),this category remained at third position which clearly states that this category's position in India's Gems and Jewellery Exports improved in the later years.

The category of Gold Jewellery remained at second position throughout the study period 1990-91 to 2016-17 which clearly stated that this category dominated the second position throughout the study period 1990-91 to 2016-17.

The category of Cut & Polished Diamonds remained at first position throughout the study period 1990-91 to 2016-17 which clearly stated that this category dominated the first position throughout the study period 1990-91 to 2016-17.

The recent years of the study period 1990-91 to 2016-17 give clearer picture about the present concentration position of commodities and by considering whole of the study period , an idea about the movement of concentrated commodities to other positions, can be possible to draw. For considered study period , these top four commodities remained the same , but the position of these top four commodities has been shifted. The Cut & Polished Diamonds always remained at first position throughout the study period and gold jewellery also remained at second position throughout the study period. The position of rough diamonds had improved from fourth position to third position in the later years and the position of coloured gemstones deteriorated from third position to fourth position in the later years.

As per GJEPC Report, published April 20, 2019 “ Some countries are now a days importing more and more rough diamonds and re-exporting them to the units abroad . Now, many Indian diamondries have setup processing centres in Africa, Russia & China , re-export the sorted diamonds to these countries. This re-exporting helps in maintaining the trade turnover levels for bank finance purposes too.” This report supported the fact that the rough diamonds exports of India are increasing continuously.

4. CONCLUSION

India's exports, after trade reforms in 1991 , have experienced major compositional and directional shifts which are also true for Gems& Jewellery exports (as share in total exports recorded a level of 14.99 % in 2015-16.

The analysis of growth, structure and concentration of India's gems & jewellery exports for few years indicates the dominance of cut& polished diamonds, rough diamonds, gold jewellery, coloured gemstones and pearls.

Analysis of the structure of India's gems & jewellery exports shows that the group of low and constant categories include rough diamonds and coloured gemstones exports (with a growth of less than 5%), leading categories include cut & polished diamonds and gold jewellery (with a growth rate of more than 5%) and lagging categories include pearls, non -gold jewellery, synthetic stones and costume/fashion jewellery exports (with a growth rate of less than even 5%).

The growth rate results confirmed about the noticeable growth in gems& jewellery exports throughout the study period 1990-91 to 2016-17 ,i.e., 14.66%. The categories of gems & jewellery exports experienced noticeable growth rates throughout the study period 1990-91 to 2016-17 are non-gold jewellery (23.95%), gold jewellery (23.23%), rough diamonds (18.27%), cut & polished diamonds(13.39%) and costume/fashion jewellery (12.29%). The concentration analysis shows that the top four categories of gems & jewellery exports : cut& polished diamonds, rough diamonds ,

coloured gemstones & gold jewellery continue to dominate India's gems & jewellery exports market. There is a noticeable structural shift in India's gems & jewellery exports from coloured gemstones in the initial years to rough diamonds in later years from third to fourth position.

The structure of India's Gems and Jewellery exports and its sub-categories in total exports for the selected years shows that there are some categories of Gems and Jewellery exports which recorded a very high share in total exports like cut & polished diamonds (almost above 60 percent), the share of gold jewellery continuously increased throughout the study period. The share of cut and polished diamonds recorded high in total exports but its share continuously declined from 13 percent in 1991-92 to 10 percent in 2009-10 to 8 percent in 2015-16. Furthermore, its share increased to 10 percent in 2016-17. The share of gold jewellery continuously increased from 1.7 percent in 1991-92 to 3.7 percent in 2005-06 to almost 4.2 percent in 2016-17. Some categories have a very low share in total exports, i.e., almost negligible, less than even .05 percent, they are pearls, non-gold jewellery, synthetic stones and costume/fashion jewellery. Wholesome categories which had a significant share but declined through the selected years, i.e., coloured gemstones and rough diamonds.

The concentration of India's gems & jewellery exports shows that the cut & polished diamonds, gold jewellery, rough diamonds, coloured gemstones & pearls are the highest concentrated categories throughout the study period, i.e., 1990-91 to 2016-17.

The study shows that India had a competitive advantage in gems & jewellery exports and tried to maintain its high share in total exports. The share was 14.99% in 2015-16 in India's total exports. The growth rate also confirmed the same story. The study shows that there has been a gradual shift from the exports of coloured gemstones to rough diamonds but the most prominent and constant leading categories of India's gems & jewellery exports were Gold jewellery and cut & polished diamonds. Analysis of growth and share of India's gems & jewellery exports also showed that the categories synthetic stones and costume/fashion jewellery were not performing well, even though India has a comparative advantage and there is great demand for such products in developed countries.

Policy Implications

1. The Indian Government will have to evolve a comprehensive long-term strategy based on an extensive study on consumer preferences, style, design, material, quality, etc. of countries to which India exports its gems & jewellery exports.
2. Technological upgradation, export incentives as per requirements and credit facilities, easing labour regulations and removing infrastructural bottleneck are required to promote to increase export earnings and employment in gems & jewellery sector.
3. The gems & jewellery sector can also be promoted by organising training and skill development programmes specifically for unskilled labour. The cost of such programmes should be at minimum possible level.
4. The gems & jewellery sector exhibited a declining trend in the last few years of the study period. As, India is the world's largest cutting and polishing centre for diamonds and to maintain this position, we should find out new markets and also develop new designs of jewellery.
5. The main focus of the Government of India should be the curbing of gems & jewellery imports. The main problem faced by Indian gems & jewellery industry is its over reliance on imports that constitutes around 90 percent. The category rough diamonds constitute major chunk, i.e., 50 percent of imports. The Government of India should promote recycling of gems & jewellery products.
6. The Indian gems & jewellery industry started facing very tough competition from neighbouring countries like China, Africa in diamond processing. Though, India is still dominant in the diamond processing industry due to easy availability of cheap labour, export

craftsmen. So, the Government of India need to focus on the development of the diamond industry of India.

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APPENDIX

Table: Structure of India's Gems and Jewellery Exports and its sub-categories in total exports (Percentage share for the years 1990-91 to 2016-17)

Years	share of gems and jewellery exports	share of c & p diamonds	share of gold jewellery exports	share of coloured gemstones exports	share of pearls exports	share of non-gold jewellery exports	share of synthetic stones exports	share of costume/fashion jewellery exports	share of rough diamonds exports
1990-91	16.47	14.56	1.11	0.63	0.02	0.04	0.002	0.001	0
1991-92	16.42	13.99	1.70	0.58	0.02	0.05	0.002	0.001	0
1992-93	17.70	15.48	1.57	0.51	0.01	0.05	0.001	0.002	0
1993-94	18.55	16.35	1.64	0.44	0.02	0.03	0.002	0.002	0
1994-95	17.70	15.20	1.83	0.53	0.01	0.04	0.001	0.002	0
1995-96	17.06	14.57	1.77	0.45	0.01	0.07	0.001	0.001	0.09
1996-97	15.58	12.55	2.21	0.40	0.01	0.08	0.001	0.001	0.26
1997-98	15.80	12.74	2.38	0.37	0.01	0.09	0.001	0.002	0.13
1998-99	18.63	15.07	2.53	0.53	0.01	0.17	0.002	0.001	0.24
1999-00	22.10	18.04	2.93	0.55	0.01	0.13	0.001	0.002	0.36
2000	17.51	13.92	2.59	0.45	0.02	0.12	0.001	0.002	0.35

0-01									
200									
1-02	17.15	13.52	2.64	0.41	0.01	0.14	0.001	0.002	0.32
200									
2-03	17.33	13.44	2.86	0.36	0.01	0.16	0.002	0.001	0.45
200									
3-04	18.99	13.49	4.17	0.27	0.001	0.15	0.001	0.002	0.83
200									
4-05	18.71	13.34	4.52	0.23	0.02	0.15	0.001	0.001	0.42
200									
5-06	16.12	11.42	3.74	0.22	0.01	0.14	0.002	0.001	0.54
200									
6-07	13.54	8.61	4.11	0.19	0.02	0.13	0.001	0.002	0.44
200									
7-08	12.83	8.71	3.41	0.16	0.01	0.14	0.001	0.001	0.34
200									
8-09	11.38	6.99	3.68	0.14	0.01	0.10	0.002	0.002	0.41
200									
9-10	16.44	10.18	5.41	0.16	0.02	0.23	0.001	0.001	0.41
201									
0-11	16.86	11.58	4.62	0.15	0.01	0.17	0.001	0.001	0.32
201									
1-12	15.14	9.95	4.62	0.12	0.01	0.17	0.001	0.002	0.26
201									
2-13	14.33	9.35	4.41	0.12	0.01	0.17	0.002	0.001	0.24
201									
3-14	13.21	8.80	3.91	0.10	0.02	0.15	0.001	0.002	0.22
201									
4-15	13.29	8.76	3.98	0.11	0.01	0.16	0.001	0.001	0.25
201									
5-16	14.99	9.75	4.60	0.13	0.02	0.19	0.001	0.001	0.28
201									
6-17	15.72	10.82	4.29	0.12	0.01	0.19	0.002	0.002	0.27

Source: Author's calculations

Table: Structure of India's Gems and Jewellery Exports and its sub-categories in total Manufactured exports (Percentage share for the years 1990-91 to 2016-17)

Year s	share of c & p diamond s	share of gold jeweller y exports	share of coloured gemstone s exports	share of pearls export s	share of non- gold jeweller y exports	share of syntheti c stones exports	share of costume/fashio n jewellery exports	share of rough diamond s exports
Year s	18.16	1.39	0.797	0.030	0.05	0	0.0076	0
1990 -91	19.01	2.31	0.792	0.031	0.07	0.003	0.0092	0
1991 -92	20.45	2.07	0.664	0.024	0.071	0.004	0.0295	0

1992-93	21.83	2.19	0.597	0.026	0.044	0.002	0.0344	0
1993-94	19.62	2.37	0.689	0.023	0.056	0.012	0.0312	0
1994-95	19.51	2.37	0.614	0.023	0.104	0.015	0.0201	0.1334
1995-96	17.07	3.01	0.550	0.014	0.117	0.011	0.0240	0.3582
1996-97	16.80	3.13	0.496	0.015	0.130	0.008	0.0121	0.1824
1997-98	19.42	3.26	0.688	0.014	0.223	0.009	0.0202	0.3133
1998-99	22.29	3.64	0.687	0.013	0.163	0.008	0.0201	0.452
1999-00	17.87	3.32	0.589	0.007	0.162	0.004	0.0280	0.4545
2000-01	17.81	3.47	0.544	0.008	0.191	0.006	0.0301	0.4228
2001-02	17.60	3.74	0.475	0.011	0.210	0.002	0.0236	0.5966
2002-03	17.76	5.49	0.367	0.008	0.205	0.002	0.0210	1.0999
2003-04	18.35	6.22	0.316	0.004	0.212	0.001	0.0146	0.5859
2004-05	16.22	5.32	0.320	0.003	0.201	0.002	0.0165	0.7762
2005-06	12.81	6.11	0.289	0.002	0.205	0.001	0.0092	0.6632
2006-07	13.78	5.39	0.268	0.004	0.222	0.001	0.0053	0.5500
2007-08	10.37	5.46	0.211	0.003	0.154	0.001	0.0072	0.6135
2008-09	13.15	6.99	0.207	0.002	0.298	0.002	0.0112	0.5385
2009-10	18.39	7.33	0.239	0.003	0.279	0.001	0.0111	0.5177
2010-11	16.41	7.63	0.204	0.002	0.283	0.001	0.0103	0.4304
2011-12	15.35	7.24	0.199	0.002	0.282	0.002	0.0101	0.4042
2012-13	14.34	6.37	0.178	0.001	0.256	0.001	0.0096	0.3595
2013-14	12.22	5.56	0.160	0.002	0.234	0.001	0.0082	0.3525
2014-15	11.73	5.53	0.159	0.001	0.235	0.002	0.0079	0.3473
2015-16	12.97	5.14	0.149	0.002	0.256	0.001	0.0075	0.3355
2016-17								

Source: Author's calculations