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A Study on Production and Export Performance of Engineering Goods Exports in India

KEYWORDS: Export Performance, Production of Engineering Goods, Analysis of Correlation

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ABSTRACT *Indian engineering industry has witnessed an unprecedented growth in the past few years as a result of increased investment in infrastructure development and industrial production. India has a diversified industrial machinery and capital base competent of catering to complex requirements and demands for an entire range of industrial machinery. This sector is very closely linked with the manufacturing and infrastructure sectors of the economy. Indian engineering industry is highly competitive with a number of players in each segment. Growth in the domestic engineering industry has been powered by user industries and several new projects undertaken in various core industries such as railways, power, and infrastructure. Capacity creation in sectors such as infrastructure, oil and gas, power, mining, automobiles, auto components, steel, refinery, and consumer durables drives this growth. This paper an attempt to analyze the performance of engineering industry in India for the year 2010-11 to 2014-15.*

INTRODUCTION

The Indian Engineering sector has witnessed a remarkable growth over the last few years driven by increased investments in infrastructure and industrial production. The engineering sector, being closely associated with the manufacturing and infrastructure sectors of the economy, is of strategic importance to India's economy. Growth in the sector is driven by various sub-sectors such as infrastructure, power, steel, automotives, oil & gas, consumer durables etc. Most of the leading players are engaged in the production of heavy engineering goods and mainly produces high-value products using high-end technology. The light engineering goods segment, on the other hand, uses medium to low-end technology. This segment is characterised by the dominance of small and unorganised players which manufacture low-value added products. However, there are few medium and large scale firms which manufacture high-value added products. Engineering exports from India are expected to cross US$ 70 billion in FY 15 registering a growth of 15 per cent over the previous fiscal, as demand in key markets such as the US and the UAE is on the rise. The engineering sector in India attracts immense interest from foreign players as it enjoys a comparative advantage in terms of manufacturing costs, technology and innovation.

IMPORTANCE OF THE STUDY

The Indian engineering sector is of strategic importance to the economy owing to its intense integration with other industry segments. India on its quest to become a global superpower has made significant strides towards the development of its engineering sector. The sector has been de-licensed and enjoys 100 per cent FDI. With the aim to boost the manufacturing sector, the government has relaxed the excise duties on factory gate tax, capital goods, consumer durables and vehicles. It has also reduced the basic customs duty from 10 per cent to 5 per cent on forged steel rings used in the manufacture of bearings of wind operated electricity generators. In the context of Working Group of Capital Goods and

Engineering Sector, sub-sectors such as machine tools, plastic machinery, dies/ moulds & tools, earthmoving & mining equipment, heavy electrical & power plant equipment, metallurgical machinery, textile machinery, process plant machinery and light engineering goods have been included.

METHODOLOGY

The study is based on secondary data. Information required for the study has been collected from the Centre Monitoring Indian Economy (CMIE), Economic survey and EEPC India. In this study various statistical tools are used as Mean, Standard deviation, Coefficient of Variation, Compound Annual Growth Rate (CAGR) and Correlation test have been used for data analysis.

PRODUCTION OF MACHINE TOOLS

Machine tool industry is considered as mother industry for capital goods sector as it supplies machinery for the entire manufacturing sector. The following table highlights the production of machine tools for 2010-11 to 2014-15.

Table 1
Production of Machine Tools
Rs (in crore)

S. No	Year	Production	% of share
1	2010-11	3624	12.18
2	2011-12	4530	15.23
3	2012-13	5663	19.04
4	2013-14	7078	23.79
5	2014-15	8848	29.75

Source: Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises

The table implies that the production of Machine tools gradually increases 3624 crore to 5663 crore in 2010-11to 2012-13. In the year 2014- 2015, the production of Machine tools was found to be 8848 crore having its percentage share to be 29.75%, which has led to a steady increase of production of Machine Tools in India.

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PRODUCTION OF EARTH MOVING AND MINING EQUIPMENT

There are 20 large and global manufacturers and nearly 200 small and medium manufacturers of Earthmoving & mining machinery are present in India. The following table highlights the production of Earthmoving & Mining Machinery for 2010-11 to 2014-15.

Table 2
Production of Earth Moving and Mining Equipment
Rs (in crore)

S. No	Year	Production	% of share
1	2010-11	7333	8.82
2	2011-12	10000	12.03
3	2012-13	16826	20.24
4	2013-14	22356	26.89
5	2014-15	26633	32.03

Source: Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises

Table 2 shows an increasing the production of Earth Moving and Mining Equipment from 7333 crore to 16826 crore in 2010-11to 2012-13.The production of Earth Moving and Mining Equipment was found to be 26633 crore having its percentage share to be 32.03%.

PRODUCTION OF HEAVY ELECTRICAL AND POWER PLANT EQUIPMENT

There are 675 manufacturers of electrical machinery in India including Heavy electrical power generation Equipment like Boiler, Turbine & Generator sets. Nearly 90% of them are small & medium manufacturers. PSU named BHEL is the major manufacturer of electrical and power equipment. The following table highlights the production of Heavy Electrical and Power Plant Equipment for 2010-11 to 2014-15.

Table 3
Production of Heavy Electrical and Power Plant Equipment
Rs (in crore)

S. No	Year	Production(in crore)	% of share
1	2010-11	110000	14.82
2	2011-12	126312	17.01
3	2012-13	145421	19.58
4	2013-14	167521	22.56
5	2014-15	193097	26.01

Source: Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises

Table3 implies that the production of Heavy Electrical and Power Plant Equipment increased from 110000 crore in 2010-11 to 193097 crore in 2014-15.It is increased continuously reaching a level of share in 26.01%.

PRODUCTION OF METALLURGICAL MACHINERY

Metallurgical machinery includes all types of steel plant equipment such as blast furnace, steel melting furnace and equipment, rolling mills, continuous casting machines, etc., coke oven equipment, mineral beneficiation plant, crushers, screens, mixer, magnetic separators and metal converters, metallurgical foundry, etc. The following table highlights the production of Metallurgical Machinery for 2010-11 to 2014-15.

Table 4
Production of Metallurgical Machinery
Rs (in crore)

S. No	Year	Production	% of share
1	2010-11	1129	12.64
2	2011-12	1300	14.56
3	2012-13	1600	17.91
4	2013-14	2100	23.52
5	2014-15	2800	31.36

Source: Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises

Table 4 reveals that increasing the production of Metallurgical Machinery from 1129 crore to 1600 crore in 2010-11to 2012-13. In the year 2014- 2015, the production of Metallurgical Machinery was found to be 2800 crore having its percentage share to be 31.36%.

Production of Other Engineering Goods

Engineering goods considered for the report are Bearings, Steel pipes and tubes, Seamless pipes and tubes, Nuts, Bolts, Rivets, Castings, Forgings, Metal Containers including cylinders, Steel wires and ropes, Engines, Pumps, Compressors, valves & actuators, gears, etc. The following table highlights the production of Other Engineering Goods for 2010-11 to 2014-15.

Table 5
Production of Other Engineering Goods
Rs (in crore)

S. No	Year	Production	% of share
1	2010-11	106820	14.29
2	2011-12	124558	16.66
3	2012-13	145551	19.47
4	2013-14	170451	22.80
5	2014-15	200059	26.76

Source: Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises

The table 5 implies that the production of Other Engineering Goods gradually increases from 106820 crore to 145551 crore in 2010-11to 2012-13. In the year 2014-2015, the production of Other Engineering Goods was found to be 200059 crore having its percentage share increase to be 26.76%.

PRODUCT-WISE EXPORT OF ENGINEERING GOODS FROM INDIA

The major products of engineering goods exported from India include Industrial Machinery, Machine Tools, Electric Machinery and Equipment, Medical and Scientific Instruments, Earth Moving and Mining Equipment, Metallurgical Machinery and Other Engineering Goods. Table 6 shows the product –wise engineering goods export by value.

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Table 6
PRODUCT-WISE EXPORT OF ENGINEERING GOODS FROM INDIA (Rs in crore)

Year	Industrial Machinery	Machine Tools	Electric Machinery and Equipment	Medical and Scientific instruments	Earth moving and mining equipment	Metallurgical machinery	Other Engineering Goods	Total Engineering Goods
2010-11	1615	91	1462	367	228	483	18526	5252.6
2011-12	1828	114	1627	479	380	530	21946	58635.46
2012-13	2091	142	1853	618	400	590	26555	58635.46
2013-14	2532	178	2256	714	500	660	32131	62261.21
2014-15	2979	222	2499	800	625	740	38879	70661.2
Mean	2209	149.4	1939.4	595.6	426.6	600.6	27607.4	255445.93
S.D	549.80	51.97	431.95	174.75	147.53	102.33	7254.55	26090.05
C.V	0.24	0.34	0.22	0.29	0.34	0.17	0.29	0.51
CAGR	13.03	19.53	11.32	16.87	22.35	8.91	15.98	68.17

Source: computed

The table 6 reveals that Industrial Machinery is the largest engineering goods exported from India in terms of value with mean value of 2209 constituting nearly one ten of the total engineering goods export. It is followed by Electric Machinery and Equipment with a mean value of 1939.4 respectively. Among these, the co-efficient of variations for Earth moving and mining equipment (0.29) and Machine Tools (19.53) and high indicating that the performance of growth is inconsistent, compared to this the export volatility is lower for Metallurgical machinery.

MAJOR MARKET FOR REGION-WISE INDIAN ENGINEERING GOODS

The quality of Indian engineering goods, their captive and tang, and exquisite nature have discerning consumers all over the India's major Region-wise engineering goods export markets are Africa, America, Europe, Asia, Oceania and others Region etc. India's export of engineering goods have posted a growth of 20.89% in US$ million during financial year 2011-2012 in comparison during same period in the fiscal.

Table 7
REGION-WISE EXPORT OF ENGINEERING GOODS FROM INDIA (US $ in million)

Year	Africa	America	Europe	Asia	Oceania	Others Region
2010-11	6,282.60	7,433.90	11,232.10	23,665.10	1,144.20	3258.52
2011-12	6,725.50	10,225.50	12,914.10	27,101.00	791.2	4701.76
2012-13	7,786.20	10,498.20	12,817.40	24,893.20	864.3	3809.85
2013-14	7,956.20	11,121.00	13,506.40	28,483.80	747.2	7528.71
2014-15	8473.46	10302.56	12181.58	18548.4	1252.3	9182.55
Total	37223.96	49581.16	62651.58	122691.5	4799.2	28481.39
Mean	7,444.79	9,916.23	12,530.32	24,538.30	959.84	5,696.28
S.D	2579.31	3191.03	3744.57	5749.29	430.78	2280.44
C.V	0.35	0.32	0.30	0.23	0.45	0.40
CAGR	6.17	6.74	1.64	-4.76	1.82	23.02

Source: Computed

As could be seen from the Table 7 reveals the Asia was the largest importer of Indian engineering goods with the mean value of 24,538.30, followed by Europe and America with mean value of 12,530.32 and 9,916.23.However high co-efficient of variation for Oceania and other Region that the export growth performance of Indian engineering goods in these countries is inconsistent. In absolute terms, the major share of Indian engineering goods export goes to Asia with US$ 18548.4 million, next to Europe US$ 12181.58 million in the year 2014-2015.

The Compound Annual Growth Rate of selected importing Region of engineering goods during the study period 2010-11 to 2014-15.It reveals that America has recorded the highest positive growth at the rate of 6.74 per cent followed by Africa 6.17 per cent, Europe 1.64 per cent and Oceania 1.82 per cent. The negative growth at the rate of 4.76 in Asia. Hence, it may be concluded that America, Africa and Europe are the emerging markets for Indian engineering goods.

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Table 8
Correlation between world and Region-wise Engineering Goods Export (US $ in million)

		Africa	America	Europe	Asia	Oceania	Other Region	World
Africa	Pearson Correlation	1	.745	.468	-.348	.081	.801	.860
	Sig. (2-tailed)		.149	.427	.566	.897	.103	.061
	N	5	5	5	5	5	5	5
America	Pearson Correlation	.745	1	.919*	.255	-.550	.562	.671
	Sig. (2-tailed)	.149		.027	.679	.337	.324	.215
	N	5	5	5	5	5	5	5
Europe	Pearson Correlation	.468	.919*	1	.615	-.824	.319	.371
	Sig. (2-tailed)	.427	.027		.270	.086	.601	.539
	N	5	5	5	5	5	5	5
Asia	Pearson Correlation	-.348	.255	.615	1	-.932*	-.377	-.454
	Sig. (2-tailed)	.566	.679	.270		.021	.532	.443
	N	5	5	5	5	5	5	5
Oceania	Pearson Correlation	.081	-.550	-.824	-.932*	1	.230	.208
	Sig. (2-tailed)	.897	.337	.086	.021		.709	.737
	N	5	5	5	5	5	5	5
Other Region	Pearson Correlation	.801	.562	.319	-.377	.230	1	.938*
	Sig. (2-tailed)	.103	.324	.601	.532	.709		.018
	N	5	5	5	5	5	5	5
World	Pearson Correlation	.860	.671	.371	-.454	.208	.938*	1
	Sig. (2-tailed)	.061	.215	.539	.443	.737	.018	
	N	5	5	5	5	5	5	5

Source: Computed

Note: * Correlation is significant at the 0.05 level (2-tailed)

Table 8 reveals that there is no significant correlation (0.860) of Africa exports of engineering goods to rest of the world, whereas on 5% level of significance Indian exports of engineering goods to America and Europe having a significant and high degree of correlation (.919*) with world over exports to other region. Asia, Oceania and Other Region were having negative correlation coefficient with the rest of the exports to World but that was not significant. One of the most interesting observation was that America was maintaining a high degree of positive and significant correlation coefficient (0.919*). From above table it can be proved that Africa, America and Europe were amongst those exporting region whose exports of engineering goods is not affected by the export pattern rest of the world is following whereas Indian export of engineering goods is highly dependable on the world exports to region.

CONCLUSION

The Engineering Sector to remain healthy primarily on account of the Government's increased thrust on infrastructure development.Fresh investments in the power equipment, metals, oil & gas, and petrochemicals industries, coupled with robust industrial activity is expected to drive the growth momentum in the capital goods industry in the near term. The Indian engineering industry has been witnessing significant level of capability enhancement over the years. As export markets open up, this will help India develop a strong presence in global engineering exports. Emerging trends such as outsourcing of engineering services can provide new opportunities for quantum growth. India's engineering sector has significant potential for future growth, in manufacturing as well as services.

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