



AN ANALYSIS OF THE CURRENT TREND OF EXPORT EARNINGS FROM PLASTIC PRODUCTS: A CASE STUDY OF BANGLADESH

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Abstract

Among the few sectors with diversified products, Plastic industry is contributing in the GDP at an increasing rate. Despite being relatively new to the export basket and facing other constraints like lack of skilled manpower, developed infrastructure, administrative institution it has a great potential for growth. This paper is an attempt to analyze the current situation of the export earnings from the plastic sector. A log-linear model is developed to see the dependence of GDP on Plastic Export Earnings. It reveals that if plastic export earnings increase by 1%, GDP goes up by .75%. Some initiatives are proposed to promote growth of the very sector such as relocation of the industry where environmental risks are low, government intervention on administrative issues, proper recycling etc.

Keywords: Plastic industry, export basket, skilled manpower

1. INTRODUCTION

Export is much about diversification in products. A rising economy as we can see, Bangladesh is setting a trend in export variation in Plastic sector. The plastic industry in Bangladesh is emerging as a contributing sector besides the export giants like textile and leather industries. It began its journey as a small industry in 1960s. Since early 1990s this particular sector has seen accelerated growth. (Islam, 2011). Because of low wage, primary plastic export boom and the quick growing plastic waste recycling industry this sector has a huge competence in the world. The current market size of plastic products in Bangladesh is around \$1 billion, of which \$714 million is for the domestic market and the rest is exported globally (PRI, 2013). Export recorded a robust earnings of 30186.62 million\$ in FY 2013-14 against USD 27026.51 million in 2012-13. From 2000-2001 to present, plastic export earnings faced a slow but steady growth (Export Promotion Bureau, EPB). Economic development is positively related to its net export.

The plastic sector provides direct and indirect employment for half a million people. The export promotion bureau has set a 33.13% export growth target for the plastic sector in FY13 (Shahiduzzaman, 2013). Bangladesh has a huge range of diversifying products in its export basket like PVC pipe, polythene sheet, plastic waste, shopping bag, injection molding products, garment bag, plastic hanger, PET/PE bottle, laminated packs, other household products, cosmetics and medicine packs and household accessories. The Survey of Manufacturing Industries says in 2012, the sector employs about 37689 workers among whom 27136(72%) are male and 10552(28%) are female workers. Most of the workers are production related workers (80%) and the rest are

temporary. In 2013, total global import of plastic products was USD 590 billion while that of textiles and apparels was USD 772 billion (where import of apparels is accounted for USD 403 billion). Plastic products are being exported in two forms- direct export of plastic products and deemed export of plastic products as accessories of apparel products (SMI, 2012). According to the BPGMEA, export of plastic products is accounted for USD 340 million in 2013 of which 75% is deemed export and the rest 25% is direct export (BPGMEA).

At present, plastic is exported to almost 77 countries of Asia, Europe, Africa, America and Oceania. In Asia, China is the top most export destination (33% of total export in 2013-14), followed by India (21%). In Europe, the top most export destination is Saint Barthelemy (20%) followed by France (6%), Germany (4%) and UK (1%). Also a significant amount is exported to USA which is accounted for 5% of total export in 2013-14. However, because of supply side constraints and lack of efficiency, plastic products are hindered in accessing to most developed and developing countries.

Table 1: World import of plastic products (Value in million USD)

	Asia	Europe	Africa	North America	South America	Eurasia	Oceania
2004-05	16.213	11.796	0.326	0.713	0.020	0.009	0.460
2005-06	10.177	11.356	0.409	0.468	-	-	0.627
2006-07	2.965	13.065	0.646	0.476	0.146	-	0.516
2007-08	3.191	16.208	0.174	0.060	0.082	-	2.718
2008-09	16.660	29.205	0.185	1.098	0.094	0.000	3.250
2009-10	20.631	25.561	0.133	0.902	0.090	0.028	1.944
2010-11	37.477	34.224	0.292	1.496	0.149	0.049	1.427
2011-12	52.571	25.593	0.689	2.158	0.149	0.131	1.127

Source: Bangladesh Export Statistics (2004-05 to 2011-12) Export Promotion Bureau and author's own calculations

The above table shows the region wise export of plastic products from 2004-05 to 2011-12. Some regions and countries like Iceland, Finland, and Aruba are exempted from the calculation. It is evident that Asia and Europe are the major export destinations of plastic products. In Asia China and in Europe Saint Barthelemy, Poland and France are the top most destinations. Also a significant amount is exported to North America especially in USA and to Oceania especially in Australia. Observing the upward trend of plastic sector, the authors make an attempt to make a time series analysis on plastic export earnings in Bangladesh in the last fifteen years. So, this paper analyzes the present trend of export earnings from plastic goods in Bangladesh and some proposal to make a steady growth in this very sector.

1.1 Objectives of the study

The aim of the study is to follow the current situation of plastic export earnings in Bangladesh, determine the log-linear relationship between Gross Domestic product (GDP, current price) and plastic export earnings and recommend some measures so that plastic export earnings become a steady sector for international trade and national employment.

2. LITERATURE REVIEW

Moazzem and Sehrin (2015) find the opportunities and challenges of the export-oriented plastic industry of Bangladesh. They say plastic products are among the few products outside textiles, apparels, leather and jute goods which have contributed towards export diversification though at a limited scale. Per capita consumption of plastics and plastic based products is still low in Bangladesh compared to global average consumption. Likewise, the huge potentials in the global market remain unexplored due to various kinds of constraints. The paper also suggests relocation of the industry from Dhaka because of environmental issues.

Study of Islam (2011) reveals multi-dimensional constraints and an excellent prospect for future

growth in the plastic sector. Major constraint in the plastic sector is the lack of an institutional arrangement dedicated to this sector, in order to provide supporting services such as skilled manpower, testing facilities for quality control, innovative technology and consultancy services. An expert (BUET, BCSIR, BITAC, BPGMEA) consultation meeting held on the plastic sector organized by the SME Foundation in 2008, has recommended setting up Bangladesh Institute of Plastic Engineering and Technology (BIPET). Aims and activities of this institute are given in this paper. The entrepreneurs in the plastic sector have developed the plastic industry with their own initiative and finance. Now, considering huge potential of this sector and the multi-dimensional nature of the constraints, the government must provide supportive policy and institutional arrangements.

Policy Research Institute of Bangladesh (PRI, 2013) suggests, due to lack of government initiatives the country is lagging behind in the plastic industry. If proper infrastructure is provided, proper waste management and recycling procedure is ensured and skills development is done, Bangladesh could definitely hope to become a global player in plastic products. The study estimates the input cost structure and the value added to the plastic sector based on 2012 data.

2.1 Limitations of the study

As far evident that Plastic sector is comparatively new to the export basket, only recent data were available and applicable. So the time period is small relative to other time series analysis.

2.2 Sources of data

The research paper is mainly based on secondary data. Data on GDP is collected from [Bangladesh Bureau of Statistics \(BBS\) \(2013\)](#) and data on plastic export earnings is collected from Export Promotion Bureau (EPB). Besides this, a number of articles, books and websites were observed. Authors try to capture the time frame from 1999-00 to 2013-14, a fifteen-year span to observe the trend of plastic export earnings and its impact on GDP.

The following table represents the trend of plastic export earnings, its share to total export and its export growth from 1999-00 to 2013-14.

Table 2: Trend of GDP and plastic export earnings

Year	GDP (million US \$)	Plastic Export Earnings (million US \$)	Share of Export (%)	Growth of Export (%)
1999-00	30224.125	25.487	0.440	
2000-01	32322.580	18.806	0.290	-26.213
2001-02	34828.186	11.357	0.190	-39.609
2002-03	38318.526	12.341	0.190	8.664
2003-04	42448.047	21.433	0.280	73.673
2004-05	47258.437	40.580	0.470	89.334
2005-06	52934.569	46.710	0.440	15.105
2006-07	60232.514	46.420	0.380	-0.620
2007-08	69579.883	52.360	0.370	12.796
2008-09	78565.573	52.390	0.340	0.057
2009-10	88265.799	50.630	0.310	-3.359
2010-11	100395.703	68.760	0.290	35.808
2011-12	134519.425	88.690	0.360	28.984
2012-13	152841.023	84.510	0.310	-4.295
2013-14	172217.917	85.700	0.280	1.408

Source: [Bangladesh Export Statistics \(1999-2000 to 2013-2014\)](#) by Export Promotion Bureau, www.bbs.gov.bd and author's own calculations

We see that the GDP of the country increases from year to year. Although in earlier years it witnessed slow growth but in recent years it is increasing rapidly. As the data shows, the GDP of 2013-14 is USD 172217.917 million which is very high as compared to USD 30224.125 million of 1999-00. In the case of plastic export earnings we see that there is a fluctuation in export earnings.

The fluctuation leads to negative export growth from 1999-00 to 2001-02, 2005-06 to 2006-07, 2008-09 to 2009-10 and 2011-12 to 1012-13. However in the remaining years there is a huge positive export growth which dominates the negative export growth. The export earnings in 2013-14 is USD 85.70 million which is more than a threefold increase as of 1999-00 which is USD 25.487 million. So it is safe to assume if we can diversify the plastic products and recycle the plastic waste efficiently it will have a significant positive impact on GDP.

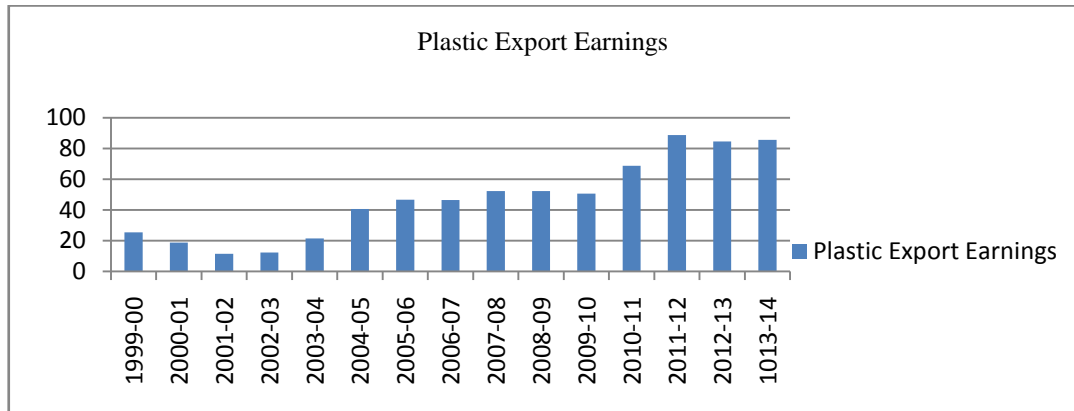


Chart 1: Bar chart presentation

A bar chart is given so that we can easily see the trend of plastic export earnings over the time. It shows that the earning was highest in 2011-12 which is USD 88.69 million and lowest in 2001-02 which is USD 11.357 million. The overall data shows an upward trend of the export earnings.

3. METHODOLOGY

To specify our analysis, we run the following log linear regression model. We use the Ordinary Least Squares (OLS) estimation approach. Here we use bivariate regression model because according to EPB, although plastic export is increasing but compared to other export items like RMG (82% of total export), Leather (2.4% of total export) etc. its share (0.28%) to total export is small(Appendix, section 3:supplementary table 1). Therefore if we use non plastic export earnings as a control variable, the contribution of plastic exports become insignificant (Appendix, section 2). Moreover its contribution to the GDP (Table 2) is also limited although increasing. So, due to the probability of an insignificant result, control variables are avoided. As the authors are primarily concerned with depicting plastic sector as an emerging export power in the economy. The regression model is as follows

$$\ln \text{GDP} = \beta_0 + \beta_1 \ln \text{PEE} + u$$

Where

GDP = Gross Domestic Product (million USD).

PEE = Plastic Export Earnings (million USD).

U = residual

That means we want to see only the impact of plastic export earnings on the GDP of Bangladesh. We take the logarithmic form of the variables to estimate the percentage impact of the independent variable on the dependent variable.

Table 3: Results of bivariate regression analysis

Dependent variable (lnGDP)	Coefficient	Std. Error	T	P> t	95% confidence interval	
					Lower	Upper
Constant	8.322	0.402	20.68*	0	7.453	9.192
ln plastic export earnings	0.751	0.108	6.95*	0	0.517	0.984
R ²	0.787	Adjusted R ²	0.772	n=15		

* P< 0.001, 0.05

The above regression results show that there exists a positive and significant relationship between GDP and plastic export earnings

The coefficient of independent variable is 0.751. It implies that if the plastic export earnings increase by 1% then GDP of the country will increase by 0.75%. The critical t statistic for 5% significance level with 15 observations and 13 degrees of freedom is 2.160. That means the calculated t statistic which is 6.95 is greater than this critical t statistic and there is a strong evidence of positive impact of plastic export earnings on GDP. Both the R-squared and adjusted R-squared are very high which imply that 79% variation of the dependent variable is explained by the independent variable. Thus the results satisfy our expectation. So if we are able to diversify our plastic export basket and produce them efficiently it will help to boost our GDP. Therefore the govt. and the policymakers should give more concern on this industry and help the country develop more.

4. IMPLICATION OF EMPIRICAL RESULTS

Although there is a fluctuation of export during 1999-00 to 2002-03, after that there is an increasing trend of plastic export earnings and also some fluctuation occurs in the succeeding years. However the overall trend shows the increasing pattern. The reason behind this is that the prices of the plastic products are low and plastic waste can be recycled again which creates a huge demand not only in national market but also on abroad. Initially only the final plastic products like Polythene sheet, PVC bags, PVC pipes, plastic hangers etc. were exported. But in recent, it is exported not only in finished forms but also on primary forms which helps to increase the export earnings.

5. CONSTRAINTS FOR THE DEVELOPMENT OF PLASTIC SECTOR

There are some constraints hindering the development of this sector. These are as follows-

1. Shortage of skilled manpower.
2. Shortage of mold making and designing.
3. Lack of quality testing institutes.
4. Negative environmental reflection.
5. Withdrawal of Preferential Access.

6. RECOMMENDATIONS

Followings are some suggestions for corroborative growth of this sector:

1. Establishing a Plastic Foundation and making BPGMEA stronger.
2. Arrangement of plastic fair to explore new export markets in abroad.
3. Appropriate training program for the labor force.
4. Increasing local and foreign investment on plastic sector.
5. Making research institutes and inclusion of "Plastic Engineering" in the universities.
6. Technological up gradation program.
7. Taking environmental-friendly policies to reduce the pollution.
8. Establishment of green plastic industry.
9. Subsidization by government.

7. CONCLUSION

In this article the main focus is to capture the increasing contribution of plastic industry in our GDP. Although its contribution to GDP is very small but it has a great potential. The demand curve of plastic products is upward in home and abroad. If quality product is made and exported, soon it will be one of the best sectors to gather foreign revenue.

However, if we are able to take the advantage of GSP in USA and the other facilities given by the government as it is a rising sector and thrust area, it will help to grab the market in abroad. The industry should be maintained in a proper way and be located in those areas which will be environmentally friendly as we know that there is an environmental issue associated with it. Also plastic wastes should be recycled in a proper way. The government should help to establish a plastic industry park and a plastic park to make this sector more efficient. Brands like RFL, Bengal, Taj should maintain quality and diversification in a parallel manner. Only then it will become a genuine contributing sector in the economy.

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Appendix

1. Regression results of plastic export earnings on GDP

. reg lgdp lplastic

Source	SS	df	MS			
Model	3.62933474	1	3.62933474	Number of obs =	15	
Residual	.976923812	13	.075147986	F(1, 13) =	48.30	
Total	4.60625855	14	.329018468	Prob > F =	0.0000	
				R-squared =	0.7879	
				Adj R-squared =	0.7716	
				Root MSE =	.27413	

lgdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lplastic	.7508649	.1080456	6.95	0.000	.5174466	.9842832
_cons	8.322583	.4025132	20.68	0.000	7.453006	9.19216

2. Regression results of plastic export earnings and non plastic export earnings on GDP:

. reg lgdp lplastic lnonplastic

Source	SS	df	MS			
Model	4.53347353	2	2.26673677	Number of obs =	15	
Residual	.072785022	12	.006065418	F(2, 12) =	373.71	
Total	4.60625855	14	.329018468	Prob > F =	0.0000	
				R-squared =	0.9842	
				Adj R-squared =	0.9816	
				Root MSE =	.07788	

lgdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lplastic	-.11762	.077474	-1.52	0.155	-.2864215	.0511814
lnonplastic	1.105558	.0905513	12.21	0.000	.9082641	1.302853
_cons	1.10829	.6018536	1.84	0.090	-.2030365	2.419616

Table 1: Supplementary

Allunit Millus\$	Rmg	Leather	Plastic
Exportearnings	25396	745.617	85.7
Shareofexportearnings	82%	2.40%	0.28%
Shareofgdp	14.74%	0.43%	0.05%

Source: Export Data 2013-14 from EPB and GDP data 2013-14 from BBS website and author's calculations