Assessing the Impact of SEZ Exports on India's Economic Growth

Capstone Project Report Submitted to

CENTRE FOR BUDGET STUDIES

In Partial Fulfilment of the Requirements for the Award of the Degree of

MASTER OF SCIENCE IN ECONOMETRICS AND FINANCIAL TECHNOLOGY

Submitted By
AHMMED SWALIH A
Reg. No: 24030335

Under the guidance of

Mr HARIKUMAR K K

CENTRE FOR BUDGET STUDIES,

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

KOCHI 682022

APRIL -2025

DECLARATION

   I, AHMMED SWALIH A, do hereby declare that the project titled "**Assessing the Impact of SEZ Exports on India's Economic Growth**" has been undertaken by me for the award of the degree of Master of Science in Econometrics and Financial Technology under the guidance of Mr. Harikumar K K, Special Economic Zone, Cochin

I also declare that the project is free from any plagiarism and has not been submitted for the award of any degree, diploma, associateship or fellowship, or any other title in this University or any other university.

Place: Cochin

Date: 16th April 2024

AHMMED SWALIH A

Reg.no: 24030335

PLAGIARISM CERTIFICATE

   I, AHMMED SWALIH A, hereby certify that this assignment is an original effort of mine and I have not copied from anybody or any source. In case, it is found that it is not my original work, then I will be liable for the same, and action can be taken against me as per the established procedures.

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ACKNOWLEDGEMENT

ABSTRACT

This study examines the effect of exports from India's Special Economic Zones (SEZs) on the country's economic growth between the years 2005–06 and 2023–24. Using time series data with statistical techniques like descriptive analysis, correlation, and log-log regression, the study finds a strong and significant relationship between SEZ exports and GDP growth. T0.35% increase in GDP, highlighting the vital role played by these zones in supporting the overall economy. This lead to adoption of policies that support SEZ development and export-led growth in India.

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1. INTRODUCTION

India recorded a historic achievement in Asian commerce when it established the Export Processing Zone (EPZ) model in Kandla in 1965 and became the first country in Asia to do so. However, it had some limitations that the Indian government decided to revisit and discover more innovative means of stimulating international trade. India, as a large economy the contribution of international trade is modest compared to other countries. This is a remarkable act faced to against the limitation of Indian trade.

The SEZ Act, made in 2005 and operational in 2006, for encourage increase exports, investments, and industrial development through incentives such as tax relief and duty-free trade. The contribution of SEZs towards export promotion increased by 92% between 2006 and 2008, an indication of the effectiveness of the policy. So far, around 1525 units are functioning in India's SEZs, greatly boosting the employment opportunities, both direct and indirect.

The Government of India is still providing various incentives to SEZs, including monetary benefits, tax relief, and subsidized land to attract more investments. These lead to influential development of SEZs, which form a key component of India's economic growth. Exports play a vital role in advancing the economy, and when exports increase compared to imports, the economy advances.

This development emphasizes the remarkable contribution of SEZs to India's economic growth. This research will concentrate on the contribution of SEZ exports and examine their contribution to India's Gross Domestic Product (GDP), how they have influenced the nation's trade policy and economic future.

2. OBJECTIVE

- To examine the relationship between SEZ exports and India's GDP.
- To analyse the export contribution of SEZ's to India's GDP.
- To provide policy-level insights based on the empirical findings

3. METHODOLOGY

This study adopts a time series analysis approach to examine the relationship between SEZ exports and India's GDP from the financial year 2005–2006 to 2023–2024, covering a period of 19 years. The objective is to determine whether the performance of SEZ exports has a statistically significant impact on the country's overall economic growth.

Data Source and Nature

This research is entirely based on secondary data. The variables and their sources are:

- SEZ Exports: Collected from the Ministry of Commerce & Industry, Government of India.

- GDP: Sourced from the Ministry of Statistics and Programme Implementation (MoSPI) and RBI publications.

Variables Used

- SEZ Exports: Refers to the total value of goods and services exported from all officially recognized Special Economic Zones in India during a given year.

- Gross Domestic Product (GDP): India's annual gross domestic product at current prices, representing the total value of all goods and services produced within the country.

Statistical Tools and Techniques

The analysis was carried out using Microsoft Excel and EViews. The following tools were used:

1. Descriptive Statistics – To summarize and understand the central tendency and dispersion of SEZ exports and GDP.

2. Correlation Analysis – To measure the strength and direction of the linear relationship between SEZ exports and GDP.

3. OLS Regression Model – A regression analysis was conducted using the natural logarithm of SEZ exports and GDP.

4. MODEL

This study uses OLS regression model to examine the relationship between SEZ exports and India's GDP. Both variables are transformed using natural logarithms to interpret the results in percentage terms. In this study, India's GDP is taken as the dependent variable, while SEZ exports are considered the independent variable. The analysis aims to examine how changes in SEZ exports influence the country's economic growth.

The model is represented as:

Gross Domestic Product = f (SEZ Export)

Econometric model

$$\log GDP = \alpha + \beta \log (SEZ\ Export) + \varepsilon$$

log (GDP): Natural log of GDP

log (SEZ Exports): Natural log of SEZ exports

α: Constant

β: Elasticity coefficient

ε: Error term

5. HYPOTHESIS OF THE STUDY

H_0: SEZ exports have no effect on GDP

H_1: SEZ exports positively impact GDP

6. ANALYSIS AND INTERPRETATION

Table 6.1: Descriptive Statistics

Statistic	SEZ Exports (₹ Lakh Crore)	GDP (₹ Lakh Crore)
Mean	5.26	95.88
Median	4.76	91.94
Maximum	13.55	170.72
Minimum	0.23	37.52
Standard Deviation	3.85	37.61
Skewness	0.64	0.25
Kurtosis	2.76	2.18
Jarque-Bera	1.36	0.73
Probability	0.51	0.69
Sum	99.98	1821.64
Sum of Sq. Dev.	267.08	25464.28
Observations	19	19

The average SEZ exports over the period were ₹5.26 lakh crore, while the average GDP was ₹95.88 lakh crore. Both variables exhibit positive skewness, indicating a longer right tail in their distribution. The Jarque-Bera test p-values (0.51 for exports, 0.69 for GDP) suggest that the data for both variables follow a normal distribution. The dispersion is higher in GDP, as seen from the greater standard deviation.

Table 6.2: Correlation Matrix

	Exports	GDP
Exports (INR Lakh Cr)	1.000	0.977
GDP (INR Lakh Cr)	0.977	1.000

The Pearson correlation coefficient between SEZ exports and India's GDP is 0.977, indicating a very strong positive linear relationship. This suggests that increases in SEZ exports are

closely associated with increases in GDP, making exports a significant variable to consider in GDP modelling and forecasting.

Table 6.3: OLS Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	45.67577	3.260730	14.00783	0.0000
SEZ EXPORTS	9.540133	0.504675	18.90353	0.0000

R-squared	0.954587	Mean dependent var	95.87579
Adjusted R-squared	0.951916	S.D. dependent var	37.61226
S.E. of regression	8.247657	Akaike info criterion	7.157036
Sum squared resid	1156.405	Schwarz criterion	7.256451
Log likelihood	-65.99184	Hannan-Quinn criter.	7.173861
F-statistic	357.3434	Durbin-Watson stat	0.933027
Prob(F-statistic)	0.000000		

$$\log GDP = \propto + \beta \log (SEZ\ Export) + \varepsilon$$

$$\log GDP = 4.0483 + \beta\ 0.352 + \varepsilon$$

The log-log regression model reveals a statistically significant positive relationship between SEZ exports and GDP:

- The coefficient of LOG SEZ EXPORTS is 0.352, indicating that a 1% increase in SEZ exports leads to approximately a 0.35% increase in GDP, holding other factors constant.
- The R-squared value of 0.925 shows that about 92.5% of the variation in GDP is explained by SEZ exports, suggesting a very good fit.
- The p-value (0.000) confirms the coefficient is statistically significant at all conventional levels.
- However, the Durbin-Watson statistic of 0.478 indicates the presence of positive autocorrelation in the residuals, which may affect the efficiency of the estimates. This highlights the need for further time series diagnostics, such as checking for stationarity and model refinement using dynamic models (e.g., ARDL or ECM).

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- t-Statistic (14.46) and p-value (0.0000) for `LOG_EXPORTSCRORE` indicate that SEZ exports have a highly significant positive effect on GDP.

- F-statistic (209.02) with p-value (0.0000) confirms that the overall model is statistically significant.

- These results validate that SEZ exports are a strong and reliable predictor of GDP growth.

7. CONCLUSION

  Special Economic Zones, which were created for the enhancement of export performance have emerged as a significant factor in India's economic growth. The enactment of the SEZ Act in 2005 has affected in the consistent increase in SEZ-related exports, whose share in total exports has increased step by step with years.

This study examined the relationship between India's exports and gross domestic product (GDP) from 2005 to 2024 using a range of statistical methods, including descriptive statistics, correlation analysis, and log-log regression modelling. The results indicate a high, statistically significant positive correlation between exports and GDP, which highlights the significance of export performance as a key factor of economic growth in India. The results of this study suggest that policies to increase export activities could have a valuable impact on India's GDP.

Finally, the research finds the relevance of SEZs for India's export growth strategy. SEZs continue to span this gap and continue to play a vital role in generating economic development through enhanced export performance. To ensure the continuity and reinforcement of these roles, it is significant to pay special attention to those policies that seek to increase the efficiency of SEZs and enhance their export-led growth prowess.

8. REFERENCES

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9. ANNEXURES

Data

Year	Exports (INR ₹ Lakh Crore)	GDP (INR ₹ Lakh Crore)	Contribution (%)
2005-2006	0.2284	37.52	0.61%
2006-2007	0.34615	42.73	0.81%
2007-2008	0.66638	55.8	1.19%
2008-2009	0.99689	55.11	1.81%
2009-2010	2.20711	61.48	3.59%
2010-2011	3.15868	75.46	4.19%
2011-2012	3.64478	82.15	4.44%
2012-2013	4.76159	82.36	5.78%
2013-2014	4.94077	83.72	5.90%
2014-2015	4.6377	91.94	5.05%
2015-2016	4.67337	94.83	4.93%
2016-2017	5.23637	103.46	5.06%
2017-2018	5.81033	119.56	4.86%
2018-2019	7.01179	121.91	5.75%
2019-2020	7.96669	127.94	6.23%
2020-2021	7.59524	120.69	6.29%
2021-2022	9.90747	142.92	6.93%
2022-2023	12.63578	151.34	8.35%
2023-2024	13.5522	170.72	7.94%

Source: Ministry of Commerce and Industry (2025) & the Ministry of Statistics and Programme Implementation (2025), Government of India

Descriptive statistics (Source: EVIEWS)

	SEZ Export	GDP
Mean	5.261984	95.87579
Median	4.76159	91.94
Maximum	13.5522	170.72
Minimum	0.2284	37.52
Std. Dev.	3.851969	37.61226
Skewness	0.644482	0.253741
Kurtosis	2.758202	2.183949
Jarque-Bera	1.361582	0.731086
Probability	0.506216	0.69382
Sum	99.97769	1821.64
Sum Sq. Dev.	267.078	25464.28
Observations	19	19

Correlation matrix (Source: EVIEWS)

	Exports	GDP
Exports	**1.000**	**0.977**
GDP	**0.977**	**1.000**

OLS Regression (Source: EVIEWS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	45.67577	3.260730	14.00783	0.0000
SEZ EXPORTS	9.540133	0.504675	18.90353	0.0000

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