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Exploring Export- Led Growth In India: A Multivariate-Regression Analysis

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Abstract:
As India aspires to be a five trillion-dollar economy in the coming years, exports will play a crucial role in providing broader market access. The objective of this research paper is to navigate the path of an export-led growth for India. It investigates the relationship between exports and GDP growth in India, employing a univariate regression model. Our analysis reveals a positive correlation, establishing exports as a significant determinant of India's economic growth. Delving deeper, a multivariate regression model is used to find identify the determinants of exports in India for the period 1990-2022. The study establishes World Gross Domestic Product (GDP), inflation and the number of regional trade agreements signed by India as the significant determinants of trade. This analysis also explores the effectiveness of regional trade agreements versus WTO membership. Surprisingly, our findings suggest that signing regional trade agreements has proven more impactful than participating in the World Trade Organization, emphasizing the supremacy of bilateralism in fostering international trade.
These results are significant especially against the backdrop of the contemporary challenges faced by the WTO, marked by the appellate body crisis and the collapse of the Doha Round negotiations. Our research proposes that bilateralism emerges as a more favorable strategy for nations seeking to enhance their economic ties in comparison to multilateral agreements. As the global economic landscape undergoes transformations, our findings contribute to the ongoing discourse on the future of international trade.
***Key Word**: Regional Trade Agreements (RTAs), Export-led growth, Multilateralism, Bilateralism.*

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I. Introduction

India is projected to be a five trillion-dollar economy in the next three years, as per government reports. As per IMF reports, it may happen even sooner by 2026-27. International trade will play a key role in shaping the future contours of Indian economy. Exports provide an increased market access for the domestic production. It is through these enlarged markets that India can aspire to become the 'manufacturing hub' of the world, which is crucial for generating jobs for the burgeoning labour force of our country. Thus, the path of an export led growth for the Indian economy would be an important strategy to navigate.

However, it is this aspect of income generation that has not been a strong point for India. We know that the Gross Domestic Product of a country is given by:

$$Y = C + I + G + (X-M)$$

where,
C: private final consumption expenditure
I: Investment
G: Government Expenditure
X-M: Net exports

If we look at the recent data (Department of Economic Affairs, 2024), in recent years, the private consumption expenditure has shown remarkable resilience, private investments have also picked up and government is also increasing its capital expenditure. It is the net exports(X-M) that has constantly been in the negative. India imports much more than it exports. A primary reason for high levels of imports has been that India imports eighty-five percentage of its oil requirements and the global price of oil has been volatile. Thus, increasing exports would be a navigate through the current situation.

For an export led growth, there are two ways ahead that can be explored- through multilateralism i.e. under the aegis of the World Trade Organization (WTO) and through bilateral agreements. The WTO is the international authority for negotiation of trade laws amongst the member countries. Under WTO, the members have to reduce tariffs and barriers for all the member states. Members also have to follow the agreements decided by consensus at the WTO- like the General Agreement on Trade and Tariffs (GATT), General Agreement on Trade in Goods (GATS), Trade Related Intellectual Property Rights (TRIPS), Trade Related Investment Measures (TRIMS) etc.

The other path is that led by regional trade agreements (RTAs) or bilateral trade agreements. Here, one country can make a pact with another country on a bilateral basis or with a group of countries, agreeing to relax trade between the members of the agreement. India has signed multiple such RTAs in the last few years with its trade partners such as UAE, Mauritius and Australia. India is also party to multiple free trade agreements such as South Asia Free Trade Agreement (SAFTA), Asia Pacific Trade Agreement (APTA), India – ASEAN free trade agreement, etc. Ideally, a balance is required between the two.

This paper, firstly, establishes the relationship between India's exports and its GDP using a univariate regression model. Then we attempt to identify the determinants of the value of export from India. Through this exercise, we also try to determine the relative importance of the regional trade agreement and multilateralism in promoting exports. This exercise will help us chart a way ahead for the Indian economy.

The rest of the paper is organized as follows. Section II discusses data and methodology. Section III discusses results and analysis. Section IV concludes.

II. Data and Methodology

This paper uses regression analysis to determine the feasibility and way ahead of using an export- led growth strategy for India. This study is conducted using two regression analysis. The first focuses on establishing a relationship between the Gross domestic product (GDP) of a nation and the level of exports. The second study empirically establishes the determinants of exports.

Study 1: Establishing the relevance of exports for GDP in India

We first begin by establishing if the relationship between exports and Gross Domestic Product (GDP). This is essential to understand if export led growth is a suitable strategy for India or not.
The following regression model is used for this study:

$$\text{Log Gross Domestic Product} = b1 + b2 \text{ Log Exports}$$

Here, log of exports is the independent variable and log of GDP is the dependent variable. This regression equation will help us establish if exports significantly affect the GDP of a country or not. Here, we have used the log of the variables to establish the relationship in percentage terms.

Study 2: Establishing the determinants of exports for India

In this study, I use multiple regression model to establish the determinants of exports in India. The determinants of exports considered in the study are: world GDP (current prices, US $), India's GDP (current prices US $), domestic inflation (Wholesale Price Index), exchange rate (value of domestic currency in terms of foreign currency: Rs./ $), the number of RTAs in effect that year and a dummy variable for WTO membership, reflecting whether or not India was a part of multilateral trade system. The following regression model is used:

Log Exports = b1 + b2 log world GDP + b3 log India GDP+ b4 domestic inflation rate + b5 exchange rate + b6 Number of existing RTAs+ b7 dummy variable for WTO membership

We expect the world GDP to have a positive relationship with exports as it would create greater demand for our products. Higher domestic inflation will make Indian products more expensive for the outside world, and thus, reduce the demand for our exports. A higher exchange rate, would be associated with a depreciated rupee, thus, making our products more expensive for the world. These are the usual determinants of trade. However, in my study I have also included two variables that determine the effect of multilateral trading system and bilateral trading system on exports. The first variable used is number of regional trade agreement (RTAs) in effect in a given year. More the number of RTAs, we expect an increase in the volume of exports. The second variable used is a dummy variable for WTO membership. This will depict if there has been an increase in the exports of India owing to joining the WTO in 1995.

For both the studies, the time period considered is 1990 to 2022. The data has been obtained from World Bank database and the RBI Handbook of Statistics for the Indian economy. The level $P < 0.05$ was considered as the cutoff value or significance.

III. Result and Analysis

Study 1: The following results were obtained for the first regression analysis.

Table No. 1: Shows results of regression analysis of Study 1

Regression Statistics	
Multiple R	0.98874
R Square	0.977607
Adjusted R Square	0.976885
Standard Error	0.056433
Observations	33
F	1353.358
Significance F	0.000000000*

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	4.067338	0.215092	18.90976	0.000000*
log exports	0.70754	0.019233	36.78801	0.000000*

If we look at Table 3, we see that the p-value is almost zero for the intercept term as well as the variable log exports. Thus, both the variables are statistically significant. The value of the coefficients tells us that a 1% increase in the exports by India will lead to a 0.70% increase in the GDP of India. We can see that the R- square value is also very high, and thus, the model is overall significant. Thus, exports are an important determinant of GDP.

Study 2: The following results were obtained for the second regression analysis:

Table No. 2: Results of Study 2

Regression Statistics	
Multiple R	0.998167
R Square	0.996337
Adjusted R Square	0.995492
Standard Error	0.034826
Observations	33
F	1178.76
Significance F	0.000000000*

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-25.2863	3.75268	-6.73819	0.0000000377*
IndiaGDPlog	0.200738	0.180247	1.113686	0.275604
WorldGDPlog	2.500412	0.353245	7.078405	0.000000000162*
Inflation	-0.00822	0.002126	-3.86574	0.000663 *
WTO membership	0.028157	0.029898	0.941774	0.354977
Exchange rate	0.00181	0.001908	0.948811	0.351453
No. of RTA	0.037048	0.010172	3.642031	0.00118 *

Source: Own calculation

Firstly, if we look at the results of the partial coefficients, we understand that the following variables are significant determinants of exports for India (as their p value is near zero): log of World GDP, inflation, number of RTAs. Our analysis tells us that a 1% increase in the world GDP leads to a 2.5% increase in the value of exports from India. Further, if there is a 1% rise in the domestic levels of inflation, it will lead to a 0.008% fall in the exports from India. While the number itself looks small, please note that this is in percentage terms of exports, so the actual fall in the value of exports may be significant.

Lastly, we have some interesting results with respect to the multilateralism vs bilateralism debate. We can see that the WTO membership per se has not increased the exports from India significantly for the period under study. However, the number of RTA's India is a part of has a significant impact on Indian exports. One additional RTA increases the exports from India by 0.03%. Thus, we can see that bilateral trade agreements have helped India increase its value of exports, whereas multilateral trade agreement at WTO has not helped India increase its value of exports.

The R square value of our regression analysis is also very high at 99% reflecting that our variables are able to explain the variations in exports pretty well, and the overall model is also significant.

IV. Conclusion

The previous result tells us that exports are an important determinant of the GDP of India. It also tells us that the world GDP, inflation and number of RTAs signed have a significant influence on the exports of India for the period under study. World GDP is not something that can be controlled through domestic policies. Inflation can also be led by global factors like geopolitical instability and rise in price of crude oil. To the extent it is caused by internal factors, government should try to fix the infrastructural bottlenecks that can cause inflation and closely scrutinize the relationship between the minimum support prices and inflation.

We see interesting results in terms of the global dynamics India should follow. It can be observed that WTO membership hasn't increased the exports significantly. However, the number of RTAs signed has a significant relationship. Thus, India seems to have benefitted more from bilateralism than multilateralism.

The WTO was introduced with the objective of having a consensus-based decision making in terms of global trade rules. However, there has been a long debate about the structure being biased against the developing countries. The Doha Development Agenda was put forward to meet the requirements of the developing countries, but unfortunately there has been no progress on that for the last two decades. The dispute settlement Understanding (DSU) is the crown jewel of the WTO. The highest authority of the DSU is the Appellate Body. The Appellate Body is currently not functional as it does not have sufficient number of members to hear the dispute. The appointment of new members was being continuously blocked by the United States. Thus, WTO is in needs for severe reforms for multilateralism to survive this crisis.

The way ahead for India seems to be through regional trade agreements and bilateral talks. Our study brings out that RTAs in fact have a significant relationship with the value of exports. RTAs can be designed to meet the specific requirements of India, which has been difficult under the 'one size fits all' approach of the WTO.

Thus, India should explore more mutually beneficial RTAs with its trade partners. Deeper forms of integration like the Comprehensive Economic Cooperation Agreements (CECA) can facilitate not just trade in goods, but also investments, services and movement of people. Moving ahead, thus, India can attempt to deepen the existing RTAs as well.

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