

THE STUDY OF INDIA'S INTERNATIONAL TRADE WITH ITS TOP 30 TRADING PARTNERS WITH SPECIAL REFERENCE TO THE LINDER HYPOTHESIS

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ABSTRACT

Linder theory implies that the more similar the demand structure of two countries is, the more intensive would be the potential trade between these two countries. This study examines Linder hypothesis for bilateral trade of India. Linder effects describe the impact of GDP per capita income differences of India and its trading partners on bilateral trade. Empirical estimations suggest that there is no such Linder effect for bilateral trade of India. However, this study also examines the effect of some other factors such as Population of trading partner, distance and trade agreement between India and its trading partner. The study concludes that distance and trade agreement have no such significant impact on bilateral trade but there is significant impact of Population of partner country on bilateral trade of India.

Keywords: *Linder Theory, GDP, Per Capita Income, Bilateral Trade, Linder Hypothesis.*

Introduction

International trade has exerted a profound influence on economic development of India. It has been observed that with the liberalization of 1991 India has grown over the years. After liberalization, India has entered into trading agreements with various countries of the world with the objective of boosting its external trade. Foreign trade policy of India has always focused on substantially increasing the country's share of global merchandise trade. Accordingly, the government of India has been taking various steps towards boosting its trade with the rest of the world by adopting policies and procedures which would help to increase and facilitate both exports and imports with the other countries of the world.

From the last decades trade with the rest of the world has been increased rapidly. India has expanded its commodity basket of trade from primary agro- products to manufactured goods and petro-related products. Major manufactured goods exported by India include engineering goods, chemicals, textiles, and readymade garments. Subsequently, Composition of imports baskets has also been changed. With these changes in trade composition, India's trade direction has also registered some shifts. Before Independence, U.K. used to hold first position in India's foreign trade. Before the liberalization period, USSR was the most important trading partner of India. But now, new trade relationships have been established by India. China has emerged as the most important trading partner of India followed by USA, UAE, and Saudi Arabia

Therefore, who are interested in studying and describing the development process of India must attempts to understand the factors that drive international trade of India. This research paper has provided some insight into this phenomenon by uncovering empirical support for the Linder hypothesis with respect to India and its trading partners.

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The inability of factor endowment theory to explain trade between countries with similar factor endowments leads many trade analysts to focus on demand, rather than supply, as the basis for trade. Linder's theory of "Overlapping Demands" is one of the important theories of international trade which explains the demand side factors behind the international trade.

Burenstam Linder (1961) explained that trade of manufactured goods was primarily determined by domestic demand conditions. Linder proposed that a country will export products for which there is a large and active domestic market. The simple reason is that the production for the domestic market must be large enough to realize scale economies. The resulting lower costs would help to penetrate foreign markets. One another reason is that, the foreign market is risky and domestic market is safe in a number of aspects. Therefore, producers do not want to depend upon the foreign markets alone. This demand-oriented explanation was in sharp contrast to the supply-oriented factor endowment theory (H-O theory) which focuses on factor endowments and intensities as sources of comparative advantage and international trade patterns.

Since consumer tastes depend on income levels, the types of products produced in a country are a function of the level of per capita income in the country. Given these patterns of production, international trade will occur in products that have overlapping demands, implying that consumers in different countries with similar per capita incomes will consume similar types of manufactured goods. Linder's hypothesis is therefore referred to as the *preference similarity hypothesis* or the theory of overlapping demands.

Thus, an important implication of the Linder hypothesis is that international trade in manufactured goods will take place largely between countries with similar income levels and demand patterns. That is, trade will be stronger between countries with similar per capita income levels than between countries with dissimilar per capita income levels.

"The more similar the demand structure of the two countries the more intensive potentially is the trade between these two countries"

One of the main issues in the reviewing India's trade patterns is to determine causes and criteria behind the country's decisions to choose its foreign relation and trade pattern and in addition, study the factors, which could affect the trade patterns. There are many possible ways to analyze how these changes in trade occur. In this paper, specific focus is aimed at the Linder hypothesis.

Moreover, other possible stimuli behind trade patterns are studied. Such as population, trading agreements signed between countries, common border, distance etc.

As the Linder suggested, per capita income can be used as a proxy for preferences.

Therefore, In this paper the hypothesis will be tested by comparing per capita GDP of India and its top 30 trading partners using cross sectional data for 2019.

30 important trading partners which are taken into account are as follows:

U S A, China P Rp, United Arab Emirates, Saudi Arab, Hong Kong, Iraq, Singapore, Germany, Korea Rp, Indonesia, Switzerland, Japan, Malaysia, U K, Belgium, Nigeria, Australia, Vietnam Soc Re, Netherland, France, Thailand, South Africa, Kuwait, Russia, Bangladesh, Italy, Mexico, Nepal, Turkey.

Importance

The important contributions of this research are three-fold:

First, new information will be provided on the Linder hypothesis by focusing on India and its Trading Partners.

Second, this study will intend to investigate about the factors that affect India's trade pattern by the examination of the "Linder theory". In addition, effects of other important variables (such as population, trading agreements, distance, etc.) in forming India's trade patterns will be studied.

Objectives

The purpose of this research paper is to study the empirical validity of one of the important theory of international trade "the Linder Hypothesis" from the perspective of India and its trading partners. The main objectives of this research paper are:

- To examine the Linder hypothesis for bilateral trade of India.
- To study the existing trade pattern between India and its trading partners.
- To gain an insight into how these patterns are changing.

- To examine the effect of dissimilarity of per capita GDP of India and its trading partners on bilateral trade.
- To study the factors which could affect the trade patterns of India other than Linder effect, such as population, trade agreement, distance between capital of India and its trading partner.

Review of Literature

Linder's theory has been subjected to a variety of empirical tests. The overall results are generally inconclusive. On one hand, the Linder hypothesis has been supported by several studies. For instance-

Azadmehr Kahram, in his study (2014), "The Comparative Analysis of the Linder Hypothesis: The Bilateral Trade Model between Iran and Its Trade Partners" shows some insights in support of the Linder hypothesis between Iran and its potential trading partners. In particular, this study indicates that Iran trades more intensively with economies that have per capita income levels similar to its own. However, the Linder effect is not strong for all groups of study.

Helena Bohman and Desire Nilsson (2007), included two different variables in order to take the Linder hypothesis into account, both of which are based on the concept of what constitutes a common market. The first variable measures the common market in relation to the total home market, whereas the second one measures the absolute size of the market. They found a positive and significant effect of the Linder variables and interpreted their result as a support of the Linder Hypothesis.

Leitao and Faustino (2006) examine the features and determinants of Portuguese intra-industry trade from 1995 to 2003 and find that differences in income levels have a positive impact on intra-industry trade.

##Bukhari, Ahmad, Alam, Bukhari, and Butt (2005), in their research paper "An Empirical Analysis of the Linder Theory of International Trade for South Asian Countries: Bangladesh, India, and Pakistan" indicates that these countries trade more intensively with economies that have per capita income levels similar to their own. The results of this analysis provide strong evidence of the importance of modeling the Linder relationship within the appropriate context. However, this research does not conclusively demonstrate the applicability of the Linder hypothesis to the entire developing world; it does present some intriguing evidence on the possible validity of this theory in this setting. To date, the literature has not seriously tested this theory from the viewpoint of a developing country.

Fillat-Castejon and Serrano-Sanz (2004) in their study of Spain using data for the 1959-1986, which was the period of increasing openness and structural changes, they find that internal demand to be an important determinant of trade and suggest that foreign markets can be considered an extension of the domestic market.

Chow (1999) tests the Linder hypothesis for trade between the four original tiger economies (Hong Kong, Singapore, South Korea and Taiwan) and their major OECD markets during the 1965-1990 period, during which trade between these countries expanded at remarkable rate. They conclude that the Linder hypothesis may provide a relatively good explanation of trade for countries above some *per capita* income threshold and for trade in differentiated products.

Hanink (1988, 1990), By using gravity model Hanink presented a model to show that the Linder hypothesis is supported in some instances. In this model international trade is assumed to a function of market homogeneity across national boundaries, distance and variety across goods. According to Linder, market homogeneity is the important cause for the international trade but it limits by the distance, which is the same thing as the intraregional trade. However, Linder's model does not include the hierarchical flow of goods that is the common feature of trade within a region. This paper incorporates this phenomenon by using variety across goods, as an additional rationale for existing geographical patterns of international trade. Empirical tests of this extended Linder model presented that, trade intensity is an increasing and positive function of market homogeneity, a negative function of distance, and a positive function of variety across goods.

Thursby and Thursby (1987) in their study of trade in manufactured products of 13 European industrialized countries, Canada, Japan, the United States and South Africa found strong support for Linder's theory, after allowing for distance between countries and other determinants of trade. Only Canada and South Africa failed to have a significantly negative regression coefficient for per capita income differences with a trading partner on the volume of trade with that trading partner.

Sailors (193) found that the greater the difference in per capita incomes of countries, the less intensely the countries will trade with one another, supporting the Linder theory. However, it was argued that since countries with similar income levels have tended to be close geographically and culturally, this strong trade may reflect low transaction costs.

Linnemann and van Beers (1988), in their study of 13 developed and 34 developing countries using data for 1980 conclude that similar levels of *per capita* incomes are not associated with a stronger trade in manufactures. They find that trade intensity tends to increase as *per capita* income of trading partners increases. For developed countries, however, the Linder hypothesis is not rejected when the absolute difference in *per capita* incomes is used as an explanatory variable.

Hoftyzer (1984) using data for 58 countries for 1970 finds that international trade is affected by distance and membership in free trade areas but finds no support for the Linder trade thesis.

Kennedy and McHugh (1983) study U.S. trade with 57 countries using data for 1963, 1970 and 1976. They find no association between income differences and trade intensity.

Kennedy and McHugh (1980) test the Linder hypothesis for 14 industrialized countries using data for the 1960-1975 period. Their results do not support the Linder hypothesis.

Research Gap

Most of the literature has been found on Linder hypothesis, is related to developed countries.

But the literature has not been seriously tested this theory from the view point of a developing country. This study will test the Linder hypothesis for bilateral trade of India. With this study, this research gap will be minimized.

Hypothesis

- There is no significant impact of GDPPCID between India & its trading partner on its bilateral trade.
- No significant change in India's total trade due to the Population of trading partner country.
- There is no significant change in India's total trade due to distance between India and its trading partner.
- Trade agreement between India and its trading partner has no such significant effect on India's Trade.

Data and Research Methodology

The entire data used in this study will be obtained from the secondary sources. These are as follows:

Annual reports of Ministry of commerce and Industry, govt. of India, WTO and World Bank.

IMF: World Economic outlook, World development report.

And the official website of WTO, IMF, OECD, WORLD BANK.

AS with much of the existing empirical work on the Linder hypothesis, this research will also employ a regression analysis by using OLS method.

As discussed above, Linder's overlapping demands theory predicts that the bilateral trade pattern between two nations is determined by the similarity in their *per capita* incomes. We develop the following model in order to test Linder's hypothesis-

$$T = F(\text{PCI diff.}, P, D, TA)$$

Here,

T = sum value of exports and imports from a given country

PCI = is a measure of the difference in per capita GDP of India and its trading partner.

P = Population of trading partner country.

D = distance between capital of India and its trading partner.

TA = Trade agreement (PTA/FTA) signed between India and its trading partner; used as a dummy variable. {0 shows absence of trade agreement and 1 shows presence of trade agreement between India and its trading partner}

The depended variable of this model, which measures the trade intensity, is the sum value of exports to and imports from a given country, expressed in terms of thousands of current US dollar.

The data has been collected for the study are as follows:

Top 30 Trading Partners	Total Trade	GDP per Capita Difference	Population	Distance between Capital	Trade Agreement
U S A	88908.65	63178.78	328329953	12044	0
China P Rp	81873.5	8115.88	1397715000	3781	1
U Arab Emts	59110.23	41002.58	9770526	2287	1
Saudi Arab	33094.24	21039.05	34268529	3061	1
Hong Kong	27902.43	46253.72	7507400	3761	0
Iraq	25618.34	3557.74	39309789	3161	0
Singapore	23669.44	63539.96	5703569	4145	1
Germany	21982	44694.15	83092962	5780	0
Korea RP	20504.85	29745.47	51709098	4575	1
Indonesia	19191.2	2034.45	270625567	5006	1
Switzerland	18099.96	83233.77	8575280	6351	0
Japan	16954.92	38676.86	126264931	5840	1
Malaysia	16146.94	9313.45	31949789	3837	1
U K	15450.49	40253.66	66836327	6710	0
Belgium	14689.35	44313.68	11488980	6412	0
Nigeria	13823.51	129.11	200963603	7560	0
Australia	12634.36	52956.45	25365745	10356	0
Vietnam Soc Re	12343.32	614.52	96462108	3000	1
Netherland	11757.08	50375.52	17344874	6356	0
France	11266.63	38477.89	67248926	6586	0
Thailand	11087.67	5716.26	69625581	2915	1
South Africa	11077.97	3900.65	58558267	9303	1
Qatar	10954.33	59987.22	2832071	2556	1
Kuwait	10860.36	30272.5	4207077	2836	1
Russia	10110.68	9396.9	144406261	4342	0
Bangladesh PR	9465.49	245.06	163046173	1420	1
Italy	9461.74	31466.04	59729081	5915	0
Mexico	7920.51	7845.28	127575529	14657	0
Nepal	7871.95	905.79	28608715	801	1
Turkey	7086.03	7025.84	8342960	4217	0

Source: Ministry of commerce and industry, Govt. of India

<http://commerce.gov.in/eidb/iecntq.asp>

<http://distanceworld.com/from/2668117>

world development indicator

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
Total trade (export + import of all products) in us \$ thousand-2019	21363.9390	20180.37160	30
GDP per capita difference (in current US \$)-2019	27942.2743	23856.33341	30
Population of trading partner countries-2019	1.1825E8	2.54674E8	30
Distance (in km) between capital city of India and capital city of trading partner countries	5319.0333	3091.20735	30
Trade agreement - PTA/FTA between India and trading partner countries-2019	.50	.509	30

Correlations

		Total trade (export + import of all products) in us \$ thousand-2019	GDP per capita Income (PCI) differences (in current us \$)-2019	Population of trading partner countries-2019	Distance (in km) between capital city of India and capital city of trading partner countries	Trade agreement - PTA/FTA between India and trading partner countries-2019
Pearson Correlation	Total trade (export + import of all products) in US \$ thousand-2019	1.000	.208	.635	.090	.080
	Gdp per capita income (PCI) differences (in current US \$)-2019	.208	1.000	-.227	.224	-.296
	Population of trading partner countries-2019	.635	-.227	1.000	.031	.154
	Distance (in km) between capital city of India and capital city of trading partner countries	.090	.224	.031	1.000	-.536
	Trade agreement - PTA/FTA between India and trading partner countries-2019	.080	-.296	.154	-.536	1.000
Sig. (1-tailed)	Total trade (export + import of all products) in US \$ thousand-2019	.	.135	.000	.317	.338
	Gdp per capita income (PCI) differences (in current US \$)-2019	.135	.	.114	.117	.056
	Population of trading partner countries-2019	.000	.114	.	.435	.209
	Distance (in km) between capital city of India and capital city of trading partner countries	.317	.117	.435	.	.001
	Trade agreement - PTA/FTA between India and trading partner countries-2019	.338	.056	.209	.001	.
N	Total trade (export + import of all products) in us \$ thousand-2019	30	30	30	30	30
	GDP per capita income (PCI) differences (in current US \$)-2019	30	30	30	30	30
	Population of trading partner countries-2019	30	30	30	30	30
	Distance (in km) between capital city of India and capital city of trading partner countries	30	30	30	30	30
	Trade agreement - PTA/FTA between India and trading partner countries-2019	30	30	30	30	30

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.736 ^a	.542	.468	14714.40627	.542	7.387	4	25	.000	1.274
a. Predictors: (Constant), Trade Agreement - PTA/FTA Between India and Trading Partner Countries-2019, Population of Trading Partner Countries-2019, GDP Per Capita Difference (In Current US \$)-2019, Distance (in Km) between capital city of India and capital city of trading partner countries b. Dependent Variable: Total Trade (Export + Import of All Products) in Us \$ Thousand-2019										

Elements of this table relevant for interpreting the results:

This table provides the *R* and *R*² values. The *R* value represents the **multiple correlation coefficient** and is 0.736 which indicates a high degree of correlation. The *R*² value represents the coefficient of determination which is the proportion of variance in the dependent variable that can be explained by the independent variables. In this case, 54.2% can be explained, which is very large.

R-value represents the correlation between the dependent and independent variable. A value greater than 0.4 is taken for further analysis. In this case, the value is .736, which is good.

R-square shows the total variation for the dependent variable that could be explained by the independent variables. A value greater than 0.5 shows that the model is effective enough to determine the relationship. In this case, the value is .542, which is good.

Adjusted R-square shows the generalization of the results i.e. the variation of the sample results from the population in multiple regression. It is required to have a difference between R-square and Adjusted R-square minimum. In this case, the value is .468, which is not far off from .542, so it is good.

Therefore, the model summary table is satisfactory to proceed with the next step.

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.39	4	1.59	7.387	.000 ^a
	Residual	5.41	25	2.16		
	Total	1.18	29			

a. Predictors: (Constant), Trade Agreement - PTA/FTA Between India and Trading Partner Countries-2019, Population of Trading Partner Countries-2019, GDP Per Capita Difference (In Current Us \$)-2019, Distance (in Km) between Capital City of India and Capital City of Trading Partner Countries
b. Dependent Variable: Total Trade (Export + Import of All Products) in US \$ Thousand-2019

Statistical Significance

The *F*-ratio in the **ANOVA** table shows that the independent variables statistically significantly predict the dependent variable, $F(4, 25) = 7.387$, $p < .000$ which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., the regression model is a good fit of the data).

These results estimate that as the *p*-value of the ANOVA table is below the tolerable significance level, thus there is a possibility of rejecting the null hypothesis in further analysis

Estimated Model Coefficients

The general form of the equation to predict total trade from GDPPCID, population, distance, trade agreement, is:

Predicted

Total trade = 2020.39 + .331 x GDP PCI D + 5.59 x population + .251 x Distance + 4271.56. Trade agreement

This is obtained from the **Coefficients** table, as shown below:

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	2020.392	8984.306		.225	.824	-16483.133	20523.916					
GDP PCI Difference (in current us \$)-2019	.331	.123	.392	2.695	.012	.078	.584	.208	.474	.365	.868	1.152
Population of trading partner country-2019	5.594	.000	.706	4.994	.000	.000	.000	.635	.707	.676	.918	1.090
Distance (in km) between capital city of India & capital city of trading partner country	.251	1.063	.038	.236	.815	-1.938	2.441	.090	.047	.032	.691	1.447
Trade agreement (PTA/FTA) - between India and trading partner country-2019	4271.565	6597.330	.108	.647	.523	-9315.889	17859.020	.080	.128	.088	.663	1.508

Dependent Variable: Total Trade (Export + Import of All Products) in Us \$ Thousand-2019
In the above **Coefficients** Table, Unstandardized coefficients indicate how much the dependent variable varies with an independent variable when all other independent variables are held constant. Consider the effect of GDP PCI Difference in this example. The unstandardized coefficient, B₁, for GDPPCID is equal to 0.331. This means that for each one year increase in GDP PCI Difference (GDPPCID), there is an increase in total trade of 0.331.

Only one value is important in interpretation: Sig. value. The value should be below the tolerable level of significance for the study i.e. below 0.05 for 95% confidence interval in this study. Based on the significant value the null hypothesis is rejected or not rejected.

If Sig. is < 0.05, the null hypothesis is rejected. If Sig. is > 0.05, then the null hypothesis is not rejected. If a null hypothesis is rejected, it means there is an impact. However, if a null hypothesis is not rejected, it means there is no impact.

The value for VIF starts at 1 and has no upper limit. A general rule of thumb for interpreting VIFs is as follows:

A value of 1 indicates there is no correlation between a given predictor variable and any other predictor variables in the model.

A value between 1 and 5 indicates moderate correlation between a given predictor variable and other predictor variables in the model, but this is often not severe enough to require attention.

A value greater than 5 indicates potentially severe correlation between a given predictor variable and other predictor variables in the model. In this case, the coefficient estimates and p-values in the regression output are likely unreliable.

We can see that none of the VIF values for the predictor variables in this example are greater than 5, which indicates that multicollinearity will not be a problem in the regression model.

In this case, the interpretation will be as follows:

Coefficients Table

Independent Variable	Sig value	Hypothesis Testing Result at 95% confidence interval	Interpretation
GDP pci difference (in current us \$)-2019	0.012	Null Hypothesis rejected (0.012<0.05)	There is significant change in total trade due to GDP pci differences. This is because of the Sig. value is 0.012, which is less than the acceptable limit of 0.05. with a 1% increase in the GDP pcid, the total trade will increase by .331
Population of trading partner countries-2019	.000	Null Hypothesis Rejected (0.000 < 0.05)	The significant change in total trade of India due to the Population of trading partner country, because of the Sig. value is 0.000, which is less than the acceptable value of 0.05. With a 1% increase in the population, the ctotal trade will increase by 5.594 (B value).
Distance (in km) between capital city of india and capital city of trading partner countries	0.815	Null Hypothesis not rejected (0.815 > 0.05)	No significant change in total trade due to distance between the two trading countries. This is because of the Sig. value is 0.815, which is more than the acceptable limit of 0.05.
Trade agreement - PTA/fta between India and trading partner countries-2019	0.523	Null Hypothesis not rejected (0.523 > 0.05)	No significant change in total trade due to Trade agreement between the two trading countries. This is because of the Sig. value is 0.523, which is more than the acceptable limit of 0.05.

Therefore, the analysis suggests that the GDP per Capita Income (PCI) Differences between two trading countries has a significant positive relationship with the total trade. According to evidences the size of countries which is measured by Population, shows positive, strong and significant effect on India's trade.

This study finds that there is No significant change in total trade due to distance between the two trading countries. Empirical evidence of this study shows that Trade agreement (dummy variable) between India and its trading partner does not have significant effect on trade. Although it is positive impact on trade.

Conclusion

We expected that the coefficient of GDP PCID To be negative according the Linder hypothesis. Likewise Distance should have had a negative coefficient and population and trade agreement should all have been positive coefficients. But the result of the analysis is not supported by the Linder Hypothesis because the coefficient of GDPPCID is positive which means volume of trade between India and its trading partner countries shows increasing trend with the increase in GDP PCI differences. Or result shows that Linder theory is not applicable for bilateral trade of India. But there is significant change in total trade of India, due to the Population of trading partner country, because of the Sig. value is 0.000, which is less than the acceptable value of 0.05. With a 1% increase in the population, the total trade will increase by 5.594 (B value).

Therefore, The study has come to the conclusion that it is income difference which can affect trade positively rather than income similarities. Therefore, we can conclude that this study of India's international trade with its top 30 trading partners does not support the Linder Hypothesis.

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