

INTERNATIONAL TRADE AND ECONOMIC GROWTH OF INDIA: AN EMPIRICAL ANALYSIS

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ABSTRACT

The issues of international trade and economic growth have gained substantial importance with the introduction of liberalization policies in most of the developing countries as in India. We remark the fact that developing countries are benefitted from trade with developed countries and slowly enhancing their growth. We apply this fact in our study. Different theories and statistical evidences reveal that international trade has positive effect on growth. Hence, we continue our efforts to explain the relation between these two variables and the reliability of different related theories. To study the impact of international trade on economic growth, the time period has been taken from 1991 to 2020. To examine the relation between international trade and economic growth simple OLS method has been applied by using the SPSS software.

Keywords: *International Trade, Economic Growth, Correlation, Coefficient of Determination, OLS.*

Introduction

International trade has exerted a profound influence on economic growth of a country. It has worked as an engine of growth as has been witnessed by Great Britain in 19th century and by Japan in 20th century. Even in recent time the outward oriented growth strategy adopted by Newly Industrialized economies of Asia like Hong Kong, Singapore, Taiwan and South Korea etc. has enabled them to overcome the constraints of small resource poor underdeveloped economies. It has also been observed that with the opening up of the economy and liberalization of trade restrictions, the developing countries, especially India and China, have grown over the years. Hence, since opening of an economy to foreign trade would result in greater economic activities and more jobs and income that will improve the standard of living and the quality of life of residents of that nation. It will enable them to import more goods and services from abroad and also export more goods to other countries. Krueger (1997) finds a strong association between export and economic growth.

There have been different views regarding the role of foreign trade of a country in its economic development. The classical and neo-classical economists have particularly emphasized the growth promoting effects of international trade. According to traditional trade theory, if each nation specialize in the production of the commodity of its comparative advantage, world output would be greater and each nation will share in the gain.

According to Haberler, "International trade has made a tremendous contribution to the development of less developed countries in the 19th and 20th centuries and can be expected to make an equally big contribution in the future, if it is allowed to proceed freely."

On the theoretical side, since the time of Smith and Ricardo to Solow, trade has been shown to allow a country to reach a higher level of income, since it permits a better allocation of resources. On the contrary, Gunnar Myrdal and Raul Prebisch have argued that foreign trade has inhibited industrial

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development in poorer nations and that the classical doctrine of free trade has resulted in international inequalities. According to this point of view, foreign trade has led to international inequality whereby the rich countries have become richer at the expense of poorer countries. In general, international trade has positively influenced the economic growth of a country in the following ways-

International trade injects global competitiveness and hence the domestic business units tends to become very efficient being exposed international competition. trade can lead to the full utilization of resources otherwise they would have remained under employed. By expanding the size of market, trade makes possible division of labour and specialization, which leads to large production and economies of scales with lower unit costs. Trade enlarges the availability of variety of intermediate goods and capital equipment, which can expand the productivity of the country's other resources.

Due to the integration with the world economy the entrepreneurs can have easy access to the technological innovations. They can utilize the latest technologies to enhance their productivity. International trade is the vehicle for new ideas, new technology, new managerial and other skills.

International trade also stimulus and facilitates the international flow of capital from developed to developing nations. Many export processing zones and special economic zones have been established to facilitate manufacturer or reprocessing for export. All such efforts create a lot of employment opportunities and lead to an increase in income which lead to the demand for many new products which are very often manufactured in the country itself. Since, exports are a component of gross domestic product, rapid export growth means an even faster growth of GDP. These results increase in domestic savings which stimulates capital formation in the economy. The increasing capital formation leads to increase in employment opportunities and out put and it further contributes to GDP growth rate.

Economic Growth

Economists have always been aware of the importance of economic growth and development.

Economic growth is the backbone of any national economic activity. Generally speaking, economic growth is a result of greater quantity and better quality of natural, human, and capital resources, and also technological advances that boosts productivity (Chen and Gupta). As far as the impact of international trade on economic growth is concerned, the economists and policy makers of the developed and developing economies are divided into two separate groups.

One group of economists is of the view that international trade has brought about unfavorable changes in the economic and financial scenarios of the developing countries. According to them the gains from trade gone mostly to developed nations of the world. Liberalization of trade policies, reduction of tariffs and globalization has adversely affected the industrial set up of the less developed and developing economies. The other groups of the economists which speak in favor of international trade come with the brighter view of the international trade and its impact on the economic growth of developing nations. According to them, developing countries, which have followed trade liberalization policies, have experienced all the favorable effects of globalization and international trade.

However Even if we take the positive impacts of international trade, it is important to consider that trade alone cannot bring about economic growth and prosperity in any country. There are many other factors like flexible trade policies, favorable macroeconomic scenario, political stability that need to be there to complement them gains from trade.

International trade or foreign trade implies that the trade between two or more countries. It is one of the important macro- fundamental variables of an Economy. The Foreign trade is considered as "Engine of growth" this Engine of growth is depended upon the various factors such as the ratio of foreign trade of an economy with world trade, terms of trade, volume of export, volume of import and trade balanced.

As far as foreign trade policy is concerned, It is highly restrictive and central to growth strategy. It was a major factor in India's poor growth performance. Number of changes have been taken place during the planning period i.e. 1953-1954 onwards, In the initial period of planning India has adopted restrictive trade and import licensing and 'licensing raj' policy till 1970s during this period public sector has assigned a major role to play in economic development of the country, on the other hand private sector play its role with regulation. Trade took place with high tariff rates and barriers. These are the reasons which contribute to the insignificance of the trade contribution to growth before liberalization period. And other reasons are high inflation, inadequate infrastructure, political instability and inward oriented policy etc. That's why our analysis of pre liberalization period is found to be insignificant.

However, at the end of 1970s and beginning of 1980s India has changed its foreign trade policy from restrictive trade to liberal trade policy. During 1980s and 1990s the drastic changes have been taken place in the economies of the world. Majorly government adopted liberalization reforms in 1990's due to high inflation, fiscal imbalance and BOP crisis, collapse of Soviet Union (India's major trading partner), gulf crisis (increase oil prices). Perhaps the most compelling reasons for reforms was then to clear the house and to restore India eventually to the position of improved economic performance in the world market. Thus, reforms are necessary to pull the economy out of the trapped situation. As a result of this a new industrial policy announced in period 1991, under which various steps have been taken to promote trade like removal of industrial licensing (for all industries except 14 specified industries and now remained up to 5), privatization, abolishment of MRTP act, establishment of FIPB (foreign investment promotion board), removal of import restriction on 715 items, reduction in tariffs, capital market, financial reforms, exchange rate reforms.

Since planning period, India's foreign trade has passed through the above-mentioned foreign trade policies, which has impacted on the volume of imports, exports, trade balance etc.

Literature Review

Many studies have been found which shows that the international trade has positive impact on economic growth of a country. These are as follows-

Feder (1982) proceeded with the empirical application of the developed framework, in semi industrialized and marginally semi-industrialized countries, between 1964-1973. He concluded that the allocation of one unit of capital to the exporter sector would create one marginal value for the economy superior to what would be obtained if it were affected by a non-exporter sector.

Ram (1987) extended the analysis of Feder to the estimation of time-series for each country from a sample of LDCs, in the years 1960-1985. The obtained regressions (being globally statistically significant) confirm the positive effect of the exporter sector, in about 70% of the countries.

Harrison (1991) conducted an empirical study looking the relationship between trade liberalization and the rate of economic growth. She concluded that correlation is positive. The more open is an economy, the higher is the growth rate or the more protected is the locale economy, the lower the growth rate seems to be. Grossman and Helpman (1992) suggested that a country's policy in opening its borders to trade plays a pivotal role in her technological progress.

Krueger (1997) finds a strong association between export and economic growth. In his comprehensive study, he examines the role of exports on the economic growth of countries from 1954 – 1974. Isakson (2002) concluded in his study that trade is important for transporting growth-enhancing factors like technological advances and knowledge. The author also argues that the positive impact of international trade can be much greater if countries engaged in trade had the same high level and quality of human capital.

Wacziarg and Welch (2003) showed that trade liberalizing countries comparatively tend to have higher volumes of trade, higher investment and economic growth. These authors have also highlighted another effect of trade liberalization. In their work it has been implied that political stability is one of the consequences of trade liberalization, which in turn will affect economic growth.

Maksymenko and Rabbani (2011) conducted research about the role of economic reforms and human capital accumulation in the post-reform economic growth in South Korea and India. They have detected a significant positive correlation between human capital accumulation and trade liberalization in both India and South Korea.

Söderbom and Teal (2004) ask the question "Do openness to trade and higher levels of human capital promote faster productivity growth?" To answer this question authors used panel data on 93 countries for the 1970-2000 periods. Their findings show that there is a significant correlation between trade openness and the rate of economic productivity. The study shows that if the level of openness is doubled the underlying rate of technical progress will increase by 0.8 per cent per annum.

Chang et al. (2005) states, opening the economy to foreign trade will promote the efficient allocation of resources. This is because comparative advantage allows the dissemination of knowledge and technological progress and encourages competition in domestic and international markets.

Chen and Gupta (2006) examined the impact of trade openness on economic growth for the SADC region in Africa over the period of 1990 to 2003. The results of their study confirm that trade openness have a strong positive impact on economic growth in this region over this period. The study

also highlights the role of education in strengthening the effect of openness on sustainable growth via better absorption of knowledge and technological spillovers from trade liberalization economic growth positively.

Chaudhary et al. (2007) investigates the impact of trade policy on the economic growth in Bangladesh by employing annual data from 1973 to 2002. Co- integration test has been used to test the long run relationship among the export, import and economic growth. Results indicates that export and import growth have positive and significant effect on economic growth.

Samiullah et al. (2009) re-examine the ELG hypothesis in Pakistan by using annul data from 1970 to 2008. Co integration results confirm that increase in export leads to the economic growth in Pakistan.

Rizavi et al. (2010) investigates the effect of trade openness on the economic growth in three south Asian countries, namely Pakistan, India and Bangladesh have by using panel data from 1980 to 2008. Panel regression results show that the trade openness has the significant positive effect on the economic growth. It is suggested that the future policies should be framed to enhance openness in the region.

Mohammad (2010) investigates the effect of financial development and trade liberalization on the economic growth of Pakistan by using annual time series data from 1975 to 2009. Results show that the trade liberalization and financial development have significant positive effect on the economic growth.

Sakyi (2011) examines the effect of trade openness and the foreign aid on the economic growth in Ghana for the period of 1984-2007 by employing ARDL bound testing approach. Results show that both the trade openness and the foreign aid have significant positive effect on economic growth in the long run as well as in short run.

Some economists have found that openness prevent economic growth due harmful effects on infant industry or due balance of payment constraints in a demand led approach. Empirical evidence in several countries, mainly in developing ones seems to support these studies –

Daumal, M. and Ozyurt, S. (2011) studied impact of trade openness on economy of Brazilian states over the period 1989-2002. They found that trade openness is related to a positive but not significant coefficient that is to say trade openness does not exert any significant effect on growth of Brazilian states. The results indicate that openness is more beneficial to states with the high level of initial per capita income and therefore contributes to increase regional disparities in Brazil.

Hey (2012) report the negative association between the trade openness index and the economic growth in Pakistan. However, dimensions of trade like export and import have not been discussed separately.

Objective of the Study

- To examine the relationship between international trade and economic growth in India.
- To study the impact of Net Domestic Capital Formation (NDCF) on India's economic growth.
- To examine the relationship between population of India and its economic growth.

Hypothesis and Specification of Variables

Three hypotheses have been taken into account for the analysis of the impact of India's international trade on its economic growth

H₀: There is no significant impact of India's International trade on its national income i.e NNPfc.

H₁: There is significant impact of India's International trade on its national income (NNPfc)

H₀: There is no significant change in India's national income due to the Investment, measured in NDCF.

H₁: There is significant change in India's national income due to the Investment, measured in NDCF.

H₀: There is no significant change in India's national income due to the Population of India.

H₁: There is significant change in India's national income due to the Population of India.

In order to analysis the impact of India's international trade on its economic growth following model has been developed.

NNPfc =F(TT, NDCF, POP)

Here

NNPfc- India's National Income measured as Net National Product at factor cost

TT- India's total trade (Export+ Import)

NDCF- Net domestic capital formation

POP- Population of India

The depended variable of this model, is NNPfc- India's National Income measured as Net National Product at factor cost, expressed in terms of % Growth.

Data: Nature and Sources

The entire data used in this study have been obtained from the secondary sources; the data required for the analysis of different periods are collected from the following source: NNPfc, NDCF, and Population Data has been obtained from Hand Book of statistics on Indian economy and Data related to trade has been taken from Economic surveys 2021- Ministry of finance, Govt of India.

Research Methodology

As far as research methodology is concerned OLS methods has been used with simple to moderate statistical tools like Averages, Percentages, and Graphs, correlation analysis, coefficient of determination regression analysis. The magnitude of variables is analyzed after post liberalization, (1991-2020).

- **Collection of Data:** In order to analysis the impact of international trade on India's economic growth following data have been obtained from different sources. These are shown in the following table and graphs.

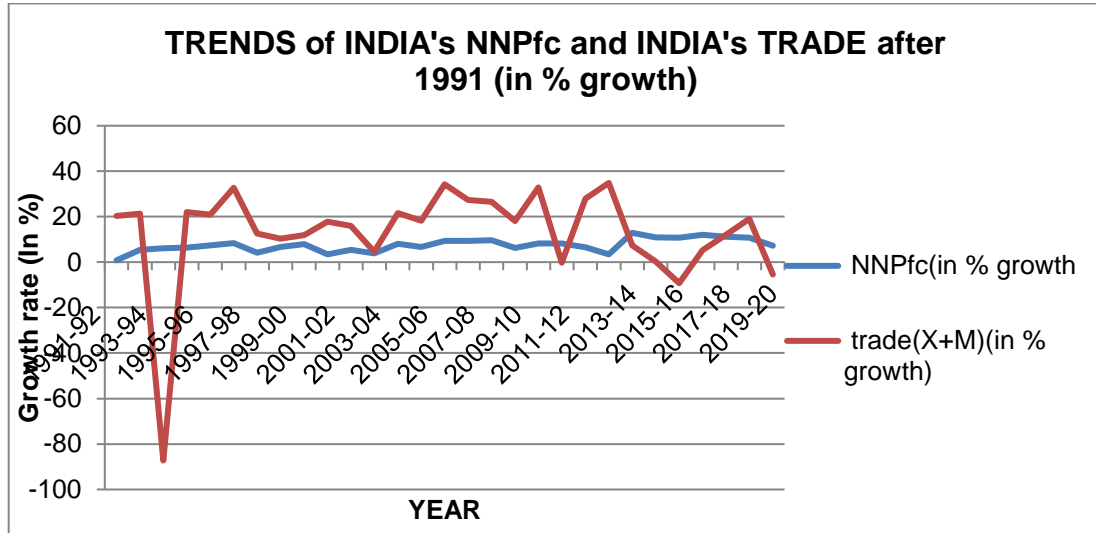
Table 1: Data set for the Regression Analysis

| Year | NNPfc (in % growth) | trade(X+M) (in % growth) | NDCF (in % Growth) | Population (in % Growth) |
|---------|------------------------|-----------------------------|-----------------------|-----------------------------|
| 1991-92 | 0.80 | 20.27 | -28.56 | 2.03 |
| 1992-93 | 5.40 | 21.31 | 18.29 | 1.87 |
| 1993-94 | 6.10 | -87.26 | 0.97 | 2.29 |
| 1994-95 | 6.40 | 22.03 | 28.52 | 2.02 |
| 1995-96 | 7.40 | 20.86 | 8.63 | 1.98 |
| 1996-97 | 8.30 | 32.66 | -2.26 | 1.94 |
| 1997-98 | 4.10 | 12.53 | 19.29 | 1.90 |
| 1998-99 | 6.70 | 10.30 | 1.95 | 1.97 |
| 1999-00 | 8.00 | 11.89 | 23.43 | 1.83 |
| 2000-01 | 3.50 | 17.78 | -11.93 | 1.80 |
| 2001-02 | 5.40 | 15.97 | 3.35 | 2.06 |
| 2002-03 | 3.90 | 4.55 | 9.12 | 1.54 |
| 2003-04 | 8.10 | 21.58 | 21.51 | 1.52 |
| 2004-05 | 6.70 | 18.15 | 40.70 | 1.59 |
| 2005-06 | 9.40 | 34.32 | 19.07 | 1.56 |
| 2006-07 | 9.40 | 27.43 | 14.74 | 1.45 |
| 2007-08 | 9.60 | 26.50 | 20.91 | 1.43 |
| 2008-09 | 6.20 | 18.07 | -10.40 | 1.41 |
| 2009-10 | 8.20 | 32.79 | 19.79 | 1.39 |
| 2010-11 | 8.20 | -0.27 | 15.98 | 1.37 |
| 2011-12 | 6.50 | 27.93 | 1.65 | 1.35 |
| 2012-13 | 3.40 | 34.85 | 3.50 | 1.25 |
| 2013-14 | 12.90 | 7.36 | -6.74 | 1.29 |
| 2014-15 | 10.91 | 0.28 | 9.21 | 1.27 |
| 2015-16 | 10.78 | -9.21 | 4.77 | 1.26 |
| 2016-17 | 12.01 | 5.23 | 11.90 | 1.24 |
| 2017-18 | 11.19 | 11.98 | 22.80 | 1.15 |
| 2018-19 | 10.82 | 19.05 | 1.06 | 0.98 |
| 2019-20 | 7.20 | -5.44 | -3.21 | 1.05 |

Source: Hand Book of statistics on Indian economy.

Economic surveys 2021- Ministry of finance, Govt of India.

Figure 1: Trend of NNPfc and Trade After 1991 (in % Growth)



Analysis of the Results

To study the annual growth in the variables simple average (mean) has been calculated with the standard deviation which shows variation from the mean of the variable.

Table 2: Descriptive Statistics for the Analysis

| Descriptive Statistics | | | |
|--|---------|----------------|----|
| | Mean | Std. Deviation | N |
| India;s Net national product at fator cost(in growth %) | 7.5003 | 2.85773 | 29 |
| India;s Total International trade (Export+Import)- in growth % | 12.8792 | 22.50345 | 29 |
| Net Domestic Capital Formation- in growth % | 8.8983 | 14.19561 | 29 |
| Population of India- in growth % | 1.5779 | .34942 | 29 |

Table 3: OLS Model Summary with D-W Test of Autocorrelation

| Model Summary ^b | | | | | | | | | |
|----------------------------|-------------------|----------|-------------------|-------------------|----------|-----|-----|---------------|---------------|
| Model | R | R Square | Adjusted R Square | Change Statistics | | | | | Durbin-Watson |
| | | | | R Square Change | F Change | df1 | df2 | Sig. F Change | |
| 1 | .648 ^a | .420 | .350 | .420 | 6.030 | 3 | 25 | .003 | 2.027 |

a. Predictors: (Constant), Population of India- in growth %, Net Domestic Capital Formation- in growth % , India Total International trade (Export+Import)- in growth %
 b. Dependent Variable: India's Net national product at fator cost (in growth %)

The multiple correlation coefficient R is a measure of the strength of the relationship between NNPfc and 3 predictor variables (trade, NDCF, and population). In this case R =.648 which tells us that there is moderate degree of positive correlation between these variables. By squaring R, we identify the value of the coefficient of multiple determination (R²). This statistic enables us to determine the amount of explained variation in NNPfc from the predictor on a range from 0-100 %. The value of R² is .420 implies that the 42 % of the total variation in NNPfc is accounted for through the combined linear effects of the predictor variable.

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 large difference between R-square and Adjusted R-square minimum. In this case, the value of R² is 0.420, and value of adjusted R² is 0.350. Since the difference is not too much, It can be considered good.

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

Table 4: Anova table to Check the Statistical Significance of the Regression Model

| ANOVA ^b | | | | | | |
|--|------------|----------------|----|-------------|-------|-------------------|
| | Model | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 96.000 | 3 | 32.000 | 6.030 | .003 ^a |
| | Residual | 132.665 | 25 | 5.307 | | |
| | Total | 228.665 | 28 | | | |
| a. Predictors: (Constant), Population of India- in growth %, Net Domestic Capital Formation- in growth %, India;s Total International trade (Export+Import)- in growth % | | | | | | |
| b. Dependent Variable: India;s Net national product at factor cost (in growth %) | | | | | | |

The *F*-ratio in the **ANOVA** table shows that the independent variables statistically significantly predict the dependent variable, $F(3, 25) = 6.030$, *p* value is .003 which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable at 5% level of significance. (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, there is a possibility of rejecting the null hypothesis in further analysis.

Estimated Model Coefficients

The general form of the equation to predict NNP_{fc} from total international trade (TIT), Net domestic capital formation (NDCF), Population (POP) is:

Predicted

$$\text{NNP}_{fc} = 14.860 - (.027 \times \text{TIT}) + (.058 \times \text{NDCF}) - (4.775 \times \text{POP})$$

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

Table 5: OLS Results for India's International Trade and other Independent Variables

| Coefficients ^a | | | | | | | |
|--|-----------------------------|------------|------|---------------------------------|-------------|-------------------------|--------|
| Model | Unstandardized Coefficients | | Sig. | 95.0% Confidence Interval for B | | Collinearity Statistics | |
| | B | Std. Error | | Lower Bound | Upper Bound | Tolerance | VIF |
| | 1 (Constant) | 14.860 | | 2.144 | .000 | 10.444 | 19.276 |
| India;s Total International trade (Export+Import)- in growth % | -.027 | .020 | .196 | -.068 | .015 | .939 | 1.065 |
| Net Domestic Capital Formation- in growth % | .058 | .031 | .073 | -.006 | .122 | .978 | 1.022 |
| Population of India- in growth % | -4.775 | 1.275 | .001 | -7.400 | -2.150 | .955 | 1.047 |
| a. Dependent Variable: India;s Net national product at factor cost(in growth %) | | | | | | | |

Unstandardized coefficients indicate how much the dependent variable varies with an independent variable when all other independent variables are held constant. The unstandardized coefficient, B_1 , for trade is equal to -.027 (in **Coefficients** table). This means that for each one % increase in trade there is a decrease in NNP_{fc} of .027%. However, it is not significant because *P* value .196 is larger than the 0.05.

Likewise, there is also no significant relation between India's growth of NNP_{fc} and NDCF. This is because of the *Sig.* value is 0.133 and 0.956 respectively, which is more than the acceptable limit of 0.05.

Diagnostic Statistics

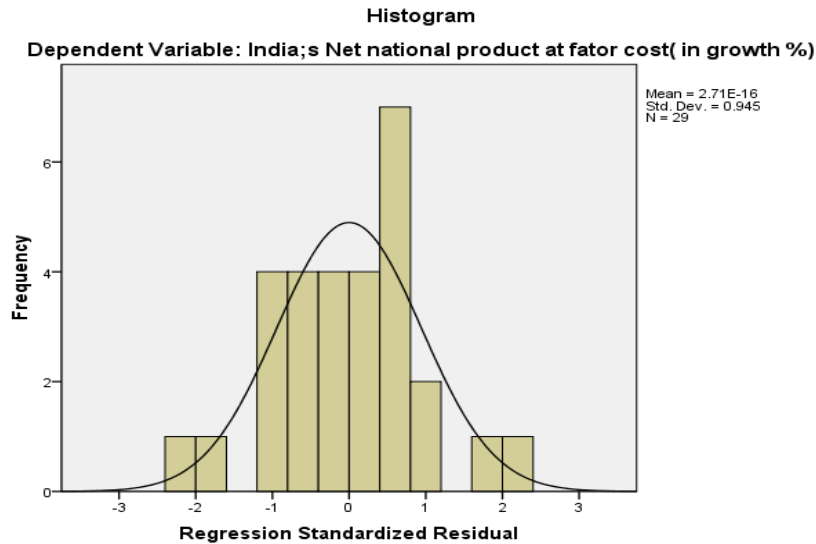
In order to check multicollinearity, Variance inflation factor (VIF) has been used. It can be seen that none of the VIF values for the predictor variables in coefficient table are greater than 5, which indicates that multicollinearity will not be a problem in the regression model.

Table 6: F test for Multicollinearity

| Coefficients ^a | | | |
|--|-------------------------|-------|--|
| Model | Collinearity Statistics | | |
| | Tolerance | VIF | |
| 1.(Constant) | | | |
| 2.India's Total International trade (Export-import)- in growth % | .939 | 1.065 | |
| 3.Net Domestic Capital Formation- in growth % | .978 | 1.022 | |
| 4.Population of India- in growth % | .955 | 1.047 | |
| a. Dependent Variable: India;s Net national product at factor cost(in growth %) | | | |

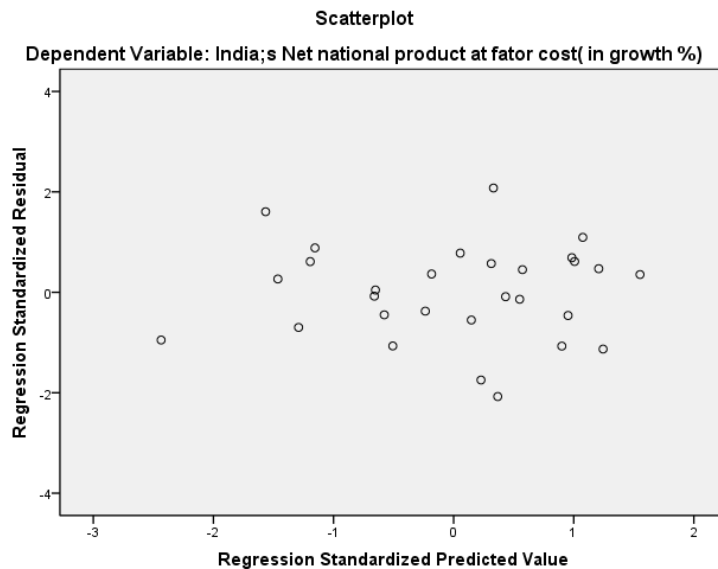
To check the **Normality of Residuals**, Histogram has been used. It is clear from the Histogram that Residual error has been distributed normally. Histogram is similar to bell shaped curve which shows normality of distribution.

Figure 2: Histogram for the Normality test of Residuals



With the Normality of residuals, it is also assumed that residuals must be equally distributed or Homoscedasticity. This assumption has been checked by plotting the predicted values and residuals on a scatterplot.

Figure 3: Scatterplot for the Test of Homoscedasticity



Based on the SPSS scatterplot output above, it appears that the spots are diffused and do not form a regular pattern. So it can be concluded that there has not been a problem of heteroskedasticity in the above regression model.

In order to check the autocorrelation D-W test has been used. D-W value is 2.02 which show that there is no autocorrelation.

After analyzing all relevant assumptions, it can be concluded that the growth of Trade and NDCF have no significant impact on growth of India's national Income (NNPfc). But there is significant and negative relation between growth of NNPfc and growth of Population of India

Conclusion and Policy Recommendations

This paper examines that whether there is positive or negative relationship between trade and growth. Various empirical studies have found that there is a positive relationship between these two variables. But this research paper finds that there is no significant effect of trade and capital formation on growth. However, in post reform period population has negative and significant effect on economic growth of India. The effect of trade is still less significant on growth. It may be, due to some reasons like less share in world trade, protection of domestic industries from highly competitive international industries, unable to create suitable environment for foreign trade, trade norms which is not as liberal as other countries. As in the year 2009 share of India was 1.5 and that of china is 10.3 in world merchandise trade. And if this share will increase than it can surely be contributed much to economic growth.

We can improve this effect by eliminating the reasons which adversely affect our growth or insignificant trade. Like trade policy should be more liberal by signing more bilateral trade agreements, diversification of exports basket, provide world class exports infrastructure; specially ports infrastructure, more incentives should be given to exporters, explore more potential sector, intertwining in domestic and foreign policies. Exports should be more demand based than supply based.

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