

A Review of Literature on Factors Affecting Trade: India, China And USA

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ABSTRACT

Purpose: Foreign trade is an integral part of a country. To be a part of a global world a country needs to trade with other countries. This review systematically examines the factors that affect trade which comprises of Export-Import, inflation, exchange rate, GDP, Anti-dumping, Tariffs, Investment. We studied the various tools used by researchers in their research: Regression, Gravity model, GARCH, Unit Root test Constant Market share Analysis.

Design/ methodology: We do this by carrying out a literature review on the various factors affecting trade. As there are many factors affecting trade, we took 7 factors in our review. They are; import-export, inflation, exchange rate, tariffs, anti-dumping, GDP and FDI. Foreign trade is a very wide concept and include may countries. Therefore, to make our research simpler we have considered 3 major countries i.e., India, USA and China. We have studied the various policy implementations and their impact on foreign trade.

Findings: there are various factors affecting trade. Each factor has positive or negative impact according to the various studies done by different authors. We conclude that foreign trade in India has evolved as the most significant area of international business. The researchers have used various tools to determine the change that can occur due to change in factors.

Keyword: Export-Import, inflation, exchange rate, GDP, Anti-dumping, Tariffs, Investment.

Introduction

Foreign trade is an integral part of a country. To be a part of a global world a country needs to trade with other countries. The basic meaning of foreign trade is an exchange of products and services among different countries. It is known by different names like inter-regional trade, external trade or international trade. (Dr. Pramod Botre, 2018). Not all countries can produce all goods that they require. In order to fill that gap trade is necessary. It involves different countries, currencies and exchange rate. Each country has different rules and regulations regarding international trade.

The exchange rate has a very important impact on foreign trade. Exchange rate is when the price of one's country currency is expressed in other country's currency. It has a major impact on export and import. If a country has high level of exports as compared to imports this means that country's demand for good is high and so is for its currency. When the currency demand is high the currency appreciates in value.

Foreign trade is important as it:

- a) Allows proper use of resources of the country
- b) Easy availability of inputs
- c) Surplus production can be exported
- d) Helps at the time of natural calamity

India's trade race back to pre-independent period. Before 1813 India's trade pattern included mostly manufactured goods and primary articles in export and import of metals and luxury products. However, during 19th and 20th century this changed. In this time period the exports included agricultural raw materials and food grains and imports included manufactured goods. (Dr. Shuchi Gupta, 2019)

The trend of India's foreign trade has seen a drastic change in past three decades. However, India's import has increased at a much faster rate as compared to exports which have negatively affected India's balance of trade. The agricultural composition has decreased. On the other hand, import of petroleum and crude products have increased.

India and china

India and China are the two of the rapidly growing economies in the world. China's growth story began in late 1970's on the other hand India started in early 1990's. they followed an almost similar approach when they opened up their economies. Like they both went for exports to developed countries market and for import market they went for developing countries market. (Pillania 2010).

India- China trade relation moved ahead when they entered into trade agreement of Most Favored Nation. In 1992 began the journey of full-fledged trade relations.

The main items of export to China cotton, ores, iron and steel, organic chemicals and plastics. The other potential includes medical equipment salt, rubber, optical marine products and oil seeds. Tourism, biotechnology, financial, education and health sector are also the sector where trade can take place.

The main item that comprises India's import from China are, mineral fuels and oils, cement, organic chemicals, nuclear reactor, electrical boilers, silk. machinery and equipment.

From the above items of import and export we can see that China has more diverse products. And therefore, the reason why India has unfavorable trade balance with China (**Sravanakumar and Muralidhar 2018**)

China was India's second largest trading partner in 2019 and emerged as the largest in first half of FY 20-21. India's export to China except ore and fish have fallen from April 2019 to January 2020. On the contrary, India's import from China has reduced in almost all the commodities. In spite of drop in exports the trade deficit still remains unfavorable in terms of India. (**Amulya Anil, 2020**)

India and USA

Trade between India and US has grown quite quickly over the years. US continues to be one of the largest trading partners of India (**Greene 2006**). In 2019 US was India's third largest goods import supplier (7%) and largest goods export market (17%) share. The major export items comprise of Live animals and animal products, vegetable products, minerals, chemical products, leather and allied items, textiles, footwear, gems and jewelry and engineering goods.

The major imports to US are plastic and rubber, pulp and paper board, gems and jewellery, machinery, transport equipment's and musical instruments. Although with change in US political environment there might be change in India's trade situation with US. (**Ravi Kumar, 2018**)

Exchange rate

The balance of trade influences foreign exchange. This effect is due to supply and demand for foreign exchange. This means that country's account is not zero. This means that either there is more supply or more demand of a country's currency in the world market.

Currency exchange is defined in terms of another currency. This exchange value is defined as relative value. (**Veerangana Singh, 2014**)

The trade affects demand for currency which further influences the relative value of the currency. If a country imports more as compared to exports, it means that there is less demand of its products in turn for its currency. The economics of demand and supply states that when demand is low, price fall, currency value depreciates. In comparison, when country exports more there is high demand of its currency so price increase which in term of currency appreciates the value.

Sometimes developing countries deliberately keep their exchange rate low to increase their exports and decrease their imports. This also helps in maintaining foreign reserve. (**Karmarkar, 2012**).

There are various factors affecting exchange rate including both macro factors and micro factors like aggregate supply and demand, interest rates, tariffs, foreign investment etc. (**Veerangana Singh, 2014**)

Aim and objective

Through this paper, we determine influencing variables that may be considered by policymakers in their decision making. Our study will focus on the various factors of trade like export-import, inflation, investment, GDP, exchange rate, anti-dumping and tariffs. These factors are studied on 3 countries India, USA and China.

Our ultimate aim is to determine the factors and how they affect the trade and whether the effect is positive or negative.

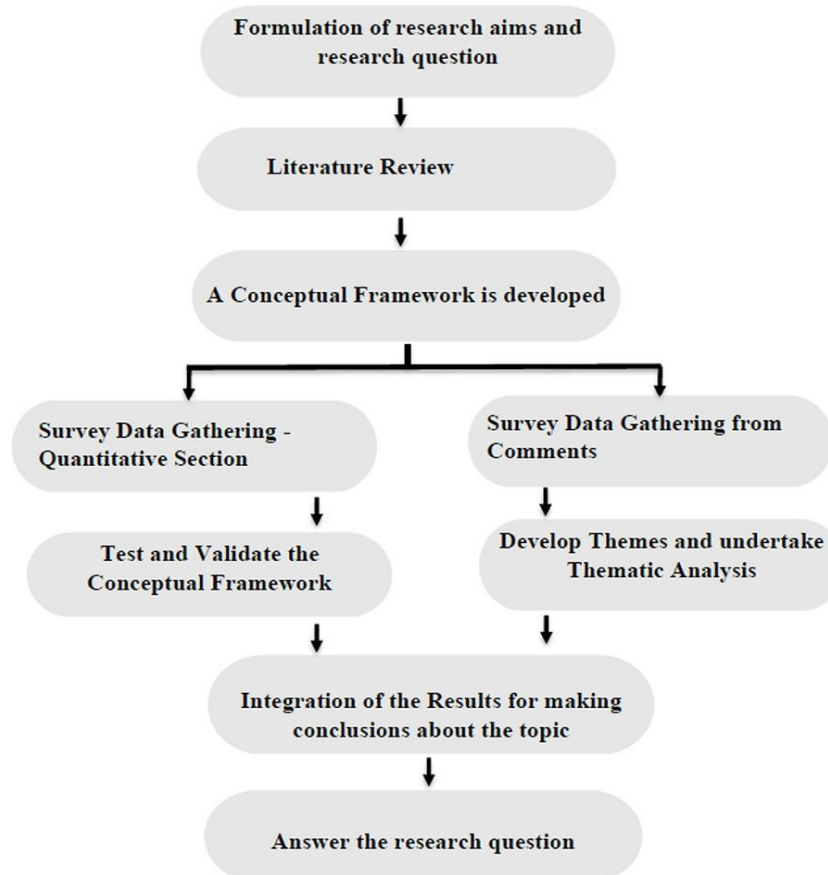
Methodology

After studying the work of various researchers our literature review is divided into four focus areas:

1. The various studies associated with between inflation, economic growth, Export-import, tariffs, anti-dumping, exchange rate and FDI India USA and China
2. The statistical tools used by various authors
3. The empirical study done on inflation, economic growth, Export-import, tariffs, anti-dumping, exchange rate and FDI
4. The past experiences and future implications of trade between India USA and China

In the research was exploratory based. Hence, it includes quantitative and qualitative both. A mixed method research approach was used. This type of technique helps to explain a problem in real world. It also helps us to carry comprehensive and complete analysis. An extensive literature review was done as shown in figure 1.

Figure 1. Overview of the research methodology



Sample

The literature review was conducted of around 2000 papers. ---- papers were incorporated after contemplation and using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) search strategy. The search was conducted during October 2020 to July 2021. The literature review covered from 2000 to 2020. The following databases were used: SCOPUS, Research Gate, Google Scholar, Sage Publication, Academia, Springer. The keyword used were trade, India, USA, China, import-export, inflation, exchange rate, GDP, anti-dumping, tariffs and investment.

The above keywords and mixture were applied to different databases. They were then manually weighed up and the one which were not a part of our research were eliminated. Also, the ones which were repeated were also eliminated.

The keywords were selected after a thorough analysis and discussion with mentors and peers. The thinking was that if the preliminary search did not yield result, then our search will be narrowed down.

Our research began with basic search of India's trade with United States and China. And also exchange rate and currency changes and its effect on trade. Gradually we narrowed our search to the factors which affect trade and the sectors which have high share in trade among the three countries. The results were compared so that duplication is avoided. We screened 2000 articles initially. These were narrowed down to 978 as there were articles which did not pertain to our study. After another round of screening the articles were reduced to 443. After repeated elimination they were reduced to ---- articles which were most associated with our results. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flow diagram (Figure 2) provides a logical description of the search results obtained, and how these findings were filtered to derive appropriate articles (Moher et al., 2009). The final set of articles (n = 50) selected for full review met the specified review criteria for determining our propositions.

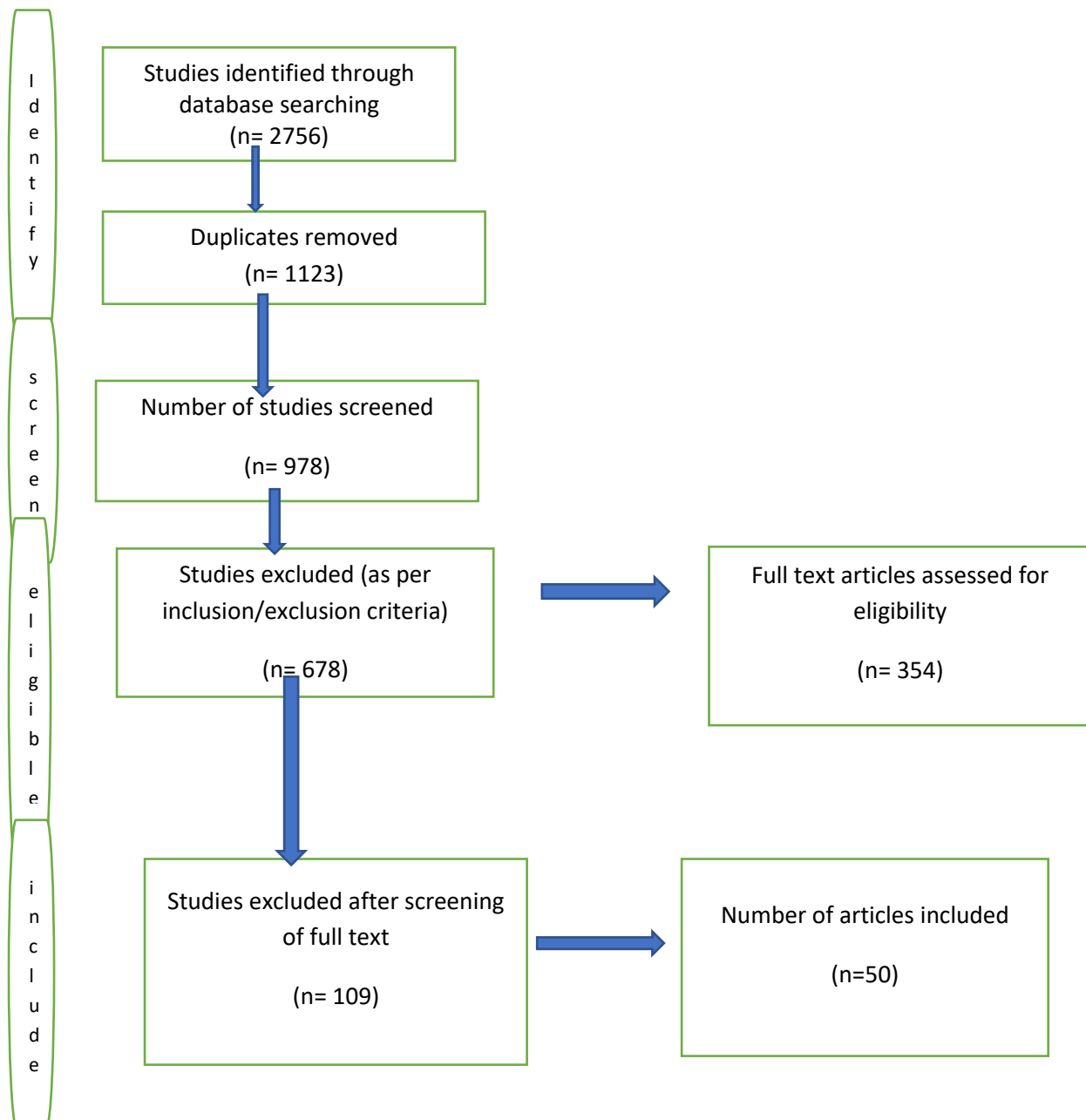


Figure 2. PRISMA flow diagram

Literature review

Literature review acts like a building block for any research activity. To gain knowledge about the research topic a person needs to do extensive study to collect evidence in a particular research area. It creates a firm foundation and can answer the questions which have not been answered yet.

Literature review can be of various types like narrative or integrative (Baumeister & Leary 1997) systematic reviews and meta-analysis (Liberate et al 2009) or integrative reviews (Tranfield et al 2003)

Our research began with basic search of India's trade with United States and China. And also exchange rate and currency changes and its effect on trade. Gradually we narrowed our search to the factors which affect trade and the sectors which have high share in trade among the three countries.

We studied the various tools used individually and categorized in table according to various tools used by the researchers.

The overall idea of literature review is to study the research gap that can be found and try to fill that gap. This research gap cannot be found unless extensive research is done on previously done research papers.

A researcher then tries to cover one or more than one research gaps with its study.

All these findings were grouped into the first factor which was collectively headed as

Factor 1: Exports and imports

Author (Year)	Main Arguments/Findings	Methodology/empirical settings
Swapan K Bhattacharya Biswa Bhattacharya (2001)	Study show that India has benefitted in short term but it is high in long term.	Use of Gravity Model. Comparison of tariff reduction under different situations.
Arvind Virmani (2004)	Relaxing the barriers to trade may be beneficial for both countries.	Comparison of India's total trade with China
Rajesh K Pilliania (2010)	Bilateral trade will have significant impact on world economy and global trade. Change in economic environment is not considered.	Coefficient of determination for linear regression equation is used. Nonlinear regression analysis R^2 and adjusted R^2 values are determined
Dong Wang (2010)	The two countries have major impact on each other markets. Relation between the two is vital for global economy.	Data collected about the history of trade between the two countries from various government sites compared. Comparison of economic relations.
Salahuddin Ayyub (2012)	Have fixed demand and supply relation for each other. Magnitude of trade for products is expanding because demand for those products is expanding.	Use of CMA, Market concentration and CES Model and product composition.
SK Mohanty (2014)	India may gain from this engagement. Requires restructuring of external policies.	The study looks at sector wise distribution of export potential(India), engagement of China-India in global value chain and approach towards regional trading arrangements. Use of Panel unit root test, kao residual cointegration test
Dan Steinbock (2018)	Although title does have global impact but there is very little information on its impact on India and other countries	Mapping US China trade war, past growth of China and US in terms of technology, labour capital. How the trade tension escalated to trade war. Details on intellectual property rights innovation techniques.
B Sraanakumar Muralidhar(2018)	Described as Giants the trade between the two is increasing year by year	Compared exports and imports between India and China and the commodities exported and imported. Also had a look into investments
Dr. SP Sharma Rohit Singh (2018)	Increase in India's2 import leading to high trade deficit initially which narrowed down a bit later. There might be situation of high volatility due to higher reliance on fewer products.	Intensive cum secondary trade analysis has been conducted. Trade dependence index, rate of import penetration, trade intensity index, Hirschman- herfindel index, grubel llyod index for intra industry trade, trade cost analysis, tariff analysis, non-tariff barriers analysis
Joshua P Meltzer Neena Shenai (2019)	Developing a durable basis is mutually beneficial. There is both cost and benefit for both the countries. Chinese economic model has revealed the limits of the WTO	Analysis of costs and benefits of US trade and investment with China
Dr. Tarasankar Das (2020)	Exports-imports have dipped.	Use of TII, EII and III. Use of Herfindahl-Hirschman Index.

Factor 2: Exchange rate

Author (Year)	Main Arguments/Findings	Methodology/empirical settings
Faridul Islam Aviral Kumar Tiwari Muhammad Shahbaz (2008)	Confirm long term relations and there is positive effect. Support J curve relationship. In short run depreciation may hurt.	Use of Bicker dike- Robinson- Metzler (BRM) Model. Use of ARDL bonds to test approach for long run and IRF and VDM.
Harendra Behera Vathsala Narasimhan K.N. Murty (2008)	RBI can lower the change in foreign exchange market.	Use of GARCH Model, Unit Root Test and ARCH effect.
Sandip Somany (2012)	Currencies of many emerging economies have seen depreciation during 2011 financial crisis. Rupee is expected to remain volatile in coming future in lieu of economic developments	Study of trends in exchange rate across BRICS countries, Rupee trade projector versus trade volume, Rupee versus capital flows in India
P. Srinivasan M. Kalavani (2012)	Change in exchange rate have negative impact on real exports both in short term and long term.	Use of ARDL bounds testing procedure
Sidheshwar Panda, Ranjan Kumar Mohanty (2012)	There is one cointegrating relationship.	Use of rolling Standard Deviation. Johnson cointegration technique implemented.
Anita Mirchandani (2014)	Indian rupee has shown high volatility. Rupee is expected remain highly volatile in the current scenario	Research is based on secondary data. The relationship between exchange rate and macroeconomic variable such as Interest rate, FDI, GDP, Inflation, External debt have been analysed with statical tool; correlation
Anubha Dhasmana (2017)	Impact is nonlinear in the level of exchange rate volatility. Foreign equity reduces the negative impact	Empirical specification is based on model of profit maximizing imperfect competition firm. Author also used Euler's Equation
Haider, Salman and Adil, Masudul Hasan (2017)	Results show that there is insignificant impact of exchange rate volatility. Real GDP is found to be positive	Four major commodities engineering goods, cotton yards and fabrics, chemical and allied products and leather are selected. Five major trading partners USA, UK Germany, Italy and Hong Kong. Estimated the model with pooled OLS, fixed effect and random effect technique of estimating panel data model.
Sheetal Maurya (2017)	Different variables have different affect.	Use of regression and correlation.

Factor 3: Economic growth / GDP

Author (Year)	Main Arguments/Findings	Methodology/empirical settings
C Fred Bergsten (2015)	The new reforms would enable India to confidently opening up its new markets.	New trade policy can increase return on domestic reforms. How other countries have successfully pursued strategies linking external and internal reform
Sheetal Maurya(2017)	Money supply CAD and inflation differential aren't statistically significant determinants of exchange rate. Exchange rate has positive impact on both export and import.	Study is concentrated on two models. Model 1 factors which affect exchange rate. Second model is effect of exchange rate variation on economic growth. Research tools used are regression and correlation.

Pooja Mishra Jaya Gupta(2017)	A relatively high inflation lowers the competitiveness of exports reducing the flow of dollars into India against Indian Rupee.	Secondary data has been collected. Dependent variable is exchange rate of USD-INR. Time series data, test for unit root was done by applying Augmented Dickey Fuller Test. The series was checked for cointegration by Johannsen cointegration test. Vector error correction model was developed.
Dr. VB Khandare(2017)	The correlation between exchange rate and GDP is positive but not significant. Exchange rate and interest rate have negative but no significant impact on economic growth	The data was analyzed using correlation and regression analysis
Dr. Purnima Mishra, Ankita Tiwari (2017)	There is high correlation between export, import and GDP	Use of correlation, regression and ratio of GDP's export and import.
Dipika Sahu (2018)	Results show that bilateral trade between the two could not contribute significantly to India's GDP growth during the period studied.	Use of simple regression to examine the link between variables export and GDP: and import and GDP.

Factor 4: Investment

Author (Year)	Main Arguments/Findings	Methodology/empirical settings
Swaran Singh (2005)	Observed that India's contribution in China's total trade has expanded. Skilled manpower is going to be an asset.	Comparison of India china bilateral trade, FDI, Institutional arrangements. Study of economic versus strategic priorities
Pravakar Sahoo, Ashwini and Geethanjali Nataraj (2012)	Signing of CEPA, free movement of people under H1-B visa, investors to economic relations on next level	Data collected and compared along with various graphs and tables. Barriers of trade
Dr. VB Khandare (2016)	During the time period FDI has increased in both the countries. Exchange rate is highly correlated to FDI in India.	Use of correlation and simple regression.
Ministry of commerce of People Republic of China (2017)	Both past and present looks promising.	Analysis of various sectors like investment, growth, capital technology and employment.
Yoon Jung Choi Jungho Baek (2017)	There is positive impact of FDI on productivity which can improve further.	Use of CVAR.
Meera Shankar (2019)	Focus will be more on increasing foreign investment in future.	Impact of policies on various industries despite political changes in the country study the impact of agriculture on GDP

Factor 5: Anti-dumping

Author (Year)	Main Arguments/Findings	Methodology/empirical settings
Aradhna Aggarwal (2011)	Imposition of Anti-dumping restrain trade and raises import prices.	Use of panel regression to quantify the effect on import volumes, values and prices.
Nakgyoon Choi (2017)	WTO members have limited the overuse of anti-dumping measures.	Use of Hazard model to show rise in market share.

Pooja Verma, Shahid Ahmed (2019)	Developing countries has employed more anti-dumping measures.	Use of trend analysis
Stephen and Selvam (2019)	Legal paradigm and drags are involved in anti-dumping measures. It has impacted import intensive countries more as compared to export intensive countries.	Examines legal and procedural paradigm, whether anti-dumping laws have been included in foreign trade laws of countries.

Factor 6: Inflation

Author (Year)	Main Arguments/Findings	Methodology/empirical settings
Akash Malhotra , Mayank Maloo (2017)	All variables have effect on change in Food prices.	Use of BST (Machine Learning Approach)
Chandrashekar Raghutla Thokala Sampath Arjun Vadivel (2019)	Positive relation between stock price and output; negative between inflation and output	Use of FAMA Hypothesis.
Megha Chhabra Qamar Alam (2020)	There is positive relationship between inflation and trade openness.	Use of Autoregressive Distributed Lag Model to test co-integration.
Biswajit Maitra Tafajul Hossain (2020)	Money growth, interest rate, exchange rate have significant impact on wholesale and consumer price inflation.	Use of reduced form of Vector Autoregression Model.
Pami dua, Deepika Goel (2021)	Excessive inflation in food and fuel effects household inflation.	Use of Cointegration approach and Granger cause.

Factor 7: Tariffs

Author (Year)	Main Arguments/Findings	Methodology/empirical settings
Subramaniam (2008)	Development in enforcement can lower the response of evasion to tariffs.	Use of evasion elasticity.
Alessandrini, Michele Fattouh, Bassam Ferrarini, Benno Scaramozzino, Pasquale (2011)	Trade liberalization has helped India to improve its comparative advantage in some industries.	Assess the effect of trade liberalization and comparative advantage indicators.
Bown, Chad P. Tovar, Patricia(2011)	Reduced tariffs through anti-dumping in face of political-economic pressure.	Use of Grossman and Helpman model. Estimated the data from 1991-1992 and 2000- 2002.

Mishra and Chaudhary (2020)	In short run it will positively effect India but in long run increase of tariff will have negatively impact.	Use of VEC Model tariff hike on Indian exports using REER CPI and REER PPI.
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Results

Tools used by various researchers

- a) **Regression:** It is a measure of relation between one variable and corresponding values of other variables. The known variables are known as independent variable and the other is known as dependent variable. The most common form of regression is linear regression in which one finds the line that most closely fit the data

$$y_i = \beta_0 + \beta_1 x_i + \beta_2 x_i^2 + \varepsilon_i, i = 1, \dots, n.$$

Sethi(2016) studied china's trade with India and applied regression analysis using following equation.

$$\text{TRADE}_{ijt} = \beta_0 + \beta_1 \text{Lngdp}_{ijt} + \beta_2 \text{Lnpci}_{ijt} + \beta_3 \ln(\text{DIST}_{ij}) + \beta_4 (\text{CONT}) + \beta_5 (\text{COMLANG}) + \beta_6 (\text{COMCOL}) + u_{ijt} + \varepsilon_{ijt}$$

Another by Maram(2012) studies capital account and RBI intervention using regression analysis used following equation.

$$\text{USDINR} = C + X_1 \text{IRD} + X_2 \text{FP} + X_3 \text{IFD} + X_4 \text{CACI} + X_5 \text{CAPACI} + X_6 \text{FxTo} + X_7 \text{RMS} + X_8 \text{RBINI} + X_9 \text{FR} + X_{10} \text{RIIP} + U_t$$

where

USDINR = Exchange rate of USD/INR

U_t = Error term

C = Constant

X_1, \dots, X_{10} = Partial regression coefficients

- b) **Gravity model:** It helps in prediction of bilateral trade flows. This is built on different economic sizes and the distance between units.

$$F_{ij} = G \cdot \frac{M_i M_j}{D_{ij}}.$$

In this formula G is a constant

F stands for trade flow

D stands for distance

M stands for economic dimensions of the countries that are being measured.

A paper by Bhattacharya (2001) used gravity model to compare static analysis of tariff reduction. He used the following equation:

$$X_{ij} = \alpha [(\text{GDP}_i * \text{GDP}_j) \beta_1 / (\text{Dist}_{ij}) \beta_2]$$

Where X_{ij} is bilateral trade between countries i and j.

Taking logarithms of the gravity model equation, one would get the linear form of the model i.e.

$$(X_{ij}) = \alpha + \beta_1 \text{Log} (\text{GDP}_i * \text{GDP}_j) - \beta_2 \text{Log} (\text{Distance})$$

- c) **Constant Market Share Analysis:** It is a technique for decomposing the growth in a country's exports into components that corresponds to holding its market share constant.

$$q^t \equiv \sum q_p^t = \sum s_p^t Q_p^t$$

or alternatively:

$$s^t = \sum s_p^t Q_p^t$$

where

q^t = aggregate exports of the focus country

q_p^t = exports of the p-th commodity of the focus country

Q_p^t = world exports of the p-th commodity

s^t = aggregate exports share of the focus country in total world exports

$s_p^t = q_p^t / Q_p^t$, share of the p-th commodity of the focus country in the p-th commodity of world exports

A paper by Ayyub (2012) used Constant Market Share Analysis to find demand and supply relations.

$$x = m + s (1 + m)$$

Where,

x = export growth

m = market expansion effect

$s (1+m)$ = competitive effect

s = market share growth

sm = interaction effect

$$x/t = m/t + s/t (1+m)$$

d) Unit Root Test: This tests whether a time series variable is non-stationary and possesses a unit root. The null hypothesis is either stationarity, trend stationarity or explosive root.

In general, the approach to unit root testing implicitly assumes that the time series to be tested can be written as,

$$y_t = D_t + z_t + \varepsilon_t$$

where,

- D_t is the deterministic component (trend, seasonal component, etc.)
- z_t is the stochastic component.
- ε_t is the stationary error process.

The task of the test is to determine whether the stochastic component contains a unit root or is stationary

e) GARCH Model: also known as Generalised Autoregressive Conditionally Heteroscedastic Model. It is used to provide volatility measures for heteroscedastic time series data.

$$y_t = x_t' b + \epsilon_t$$

$$\sigma_t^2 = \omega + \alpha_1 \epsilon_{t-1}^2 + \cdots + \alpha_q \epsilon_{t-q}^2 + \beta_1 \sigma_{t-1}^2 + \cdots + \beta_p \sigma_{t-p}^2 = \omega + \sum_{i=1}^q \alpha_i \epsilon_{t-i}^2 + \sum_{i=1}^p \beta_i \sigma_{t-i}^2$$

A paper by Narasimhan (2006) studied RBI intervention on exchange rate using GARCH model. He used the following equations.

$$\begin{aligned} \text{Return}_t &= a_0 + a_1 \text{Inv}_t + a_2 \text{FII}_t + a_3 \text{IntD}_t + a_4 \text{InflD}_t + a_5 \text{IDInv}_t + a_6 \text{Dum}_t + \epsilon_t \\ H_t &= b_0 + b_1 \text{Inv}_t + b_2 \text{FII}_t + b_3 \text{IntD}_t + b_4 \text{InflD}_t + b_5 \text{IDInv}_t + b_6 \text{Dum}_t + \alpha \epsilon_t + \beta h_{t-1} \end{aligned}$$

Conclusion and findings

Trade has been and will always be a major factor for considering economic growth of a country. With the current scenario countries are dependent on trade not only to meet its requirements but also supply its excess products.

We studied various factors which affect trade.

In terms of export-import trade has increased between the two Asian giants the balance of payment is in favor of China. USA and India have favorable terms of trade; India is one of the prominent members of USA trade partners.

Exchange rate volatility has negative impact on India's export. But we also found that with the help of RBI intervention exchange rate volatility can be reduced.

There are various factors like inflation, money supply, exchange rate and interest rates that can impact GDP positively and negatively

Although as compared to past investment in India has increased significantly but the focus is on to increase more of investment to help the economy grow further.

Anti-dumping laws have inversely affected imports due to rise in import prices.

Money supply, trade openness, exchange rate interest rate has a significant impact on India's wholesale and consumer price inflation.

Imposition of tariffs can help in short and medium run but it will have a negative impact at global level in long run

Although the factors have been studied individually but there is very little study on all the factors combined. Our research aims to reduce this gap.

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