CHAPTER - I
INTRODUCTION

The integration of countries into the world economy is often regarded as an important determinant of differences in income and growth across countries. Economic theory has identified the well-known channels through which trade can have an effect on growth. More specifically, trade is believed to promote the efficient allocation of resources, allow a country to realize economies of scale and scope, facilitate the diffusion of knowledge, foster technological progress, and encourage competition both in domestic and international markets that leads to an optimization of the production processes and to the development of new products.

In particular for less-developed countries, trade patterns and changes in those patterns over time are closely associated with the transfer of technology. Also, openness to trade introduces the possibility of an international product cycle, as the production of certain products previously produced by advanced economies migrates to less-developed countries. This process of “product migration” is accompanied by an increase in the trade volumes of less developed countries and a diffusion of more advanced production technologies, which expands the technology available to less-advanced countries.

The effect of trade policy on income and growth is more controversial. On the one hand, lowering trade barriers is likely to foster international trade by reducing transaction costs, which in turn can enhance economic growth rates. Likewise, it can be argued that developing countries or emerging market economies that are more open to the rest of the world have a greater ability to absorb technologies developed in more advanced nations.

The empirical literature has analyzed both the impact of trade policies and trade volume on economic growth extensively. Rodríguez
and Rodrik (2001) argue that both effects are related as a matter of course but pose conceptually distinct questions and have quantitatively (or even qualitatively) different outcomes. Trade policies can be seen as responses to market imperfections or as mechanisms of rent seeking. Trade restrictions induced by such policies have a different impact on trade volumes than other constraints due to transport costs or shifts in consumer preferences. The main challenge of empirically analyzing the effect of trade policy has been to find adequate measures of trade restrictions and trade policy. The employed measures range from (weighted) average tariff rates, the extent of non-tariff barriers or price-distortion indexes to more complex composed indicators that include a detailed classification of countries with respect to their degree of openness. Similar to the impact of trade policy on growth rates, the empirical evidence for the trade volume is ambiguous too, as the methodologies used as well as the robustness of the results have been challenged (Rodríguez and Rodrik 2001, Rodríguez 2007).

Australia and India achieved remarkable economic growth through the process of trade-reforms and may be viewed as Miracle. Both of these economies had a number of similarities between them need to acquire a better standard of living through means of economic growth as well as to acquire the capability to self-support a flourishing economy.

The Indian economy is one of the fastest growing economy and is the tenth-largest in the world in terms of its GDP and the third-largest by purchasing power parity (PPP). The country is one of the G-20 major economies, a member of BRICS and a developing economy that is among the top 20 global traders according to the WTO. India was the 19th largest merchandise and the 6th largest services exporter in the world in 2013; it imported a total of $616. 7 billion worth of and 7th largest services importer. Since reforms in 1991, India’s growth rate has been of 8.94 percent per annum during the later period of economic reforms
during (2003-04 to 2009-10), India's economic growth slowed to 4.7% for the 2013–14 fiscal year, in contrast to higher economic growth rates in 2000s. The emergence of India as one of the fastest growing economy in the World during the 1990s was attributed to the rapid growth of its services sector, which grew at an annual average rate. Foreign direct investment in India has also accelerated in recent years due to the adoption of various reforms.

On the other hand Australia also has a highly open, market based and capital intensive economy which is currently enjoying a prolonged economic expansion. The strong performance of the Australian economy in recent years has been underpinned by a series of deep and wide ranging economic reforms undertaken since the early 1980s.

The economy of Australia is one of the largest capitalist economies in the world with a GDP of US$1.5 trillion as of 2013 and the 17th-largest measured by PPP-adjusted GDP. The Australian economy is dominated by its service sector, comprising 68% of GDP. Australia is a member of the APEC, G20, OECD and WTO. The country has also entered into free trade agreements with ASEAN, Chile, New Zealand, Japan and the United States. The ANZCERTA agreement with New Zealand has greatly increased integration with the New Zealand economy and in 2011 there was a plan to form an Australasian Single Economic Market by 2015.

Since the reform process in India (1991) and Australia (1980); the two economies have made significant economic progress in the field of energy, trade, education and defence. The two economies are different in various ways and similar in others. Such similarities and divergences may provide avenues for economic interactions and cooperation.

1.1 NEED OF THE STUDY

India and Australia have several commonalities, which serve as a foundation for closer cooperation and multi-faceted interaction, on lines
similar to what India has developed with other Western countries. Both are strong, vibrant, secular and multicultural democracies.

Australia supports India’s candidature in an expanded UN Security Council. Both India and Australia are members of the G20, Commonwealth, IORA, ASEAN Regional Forum, Asia Pacific Partnership on Climate and Clean Development, and have participated in the East Asia Summits. Both countries have also been cooperating as members of the Five Interested Parties (FIP) in the WTO context. Australia is an important player in APEC and supports India’s membership of the organisation.

Australia’s trade in goods and services with India was A$ 16.50 (US$17.68) billion in 2012-13 with Indian exports of goods amounting to A$ 3.38 (US$3.59) billion. Australia’s exports of goods to India were A$ 13.27 (US$14.09) billion.

All the major Indian IT companies have a presence in Australia and are rapidly growing. These include Infosys; Satyam Mahindra; TCS; HCL; Polaris Software Lab Ltd; Birlasoft; NIIT; ICICI Infotech; Wipro; Mahindra-British Telecom Ltd among others. Satyam Mahindra has the largest product development centre outside India in Melbourne.

There is an Indian community of nearly 295,000 (persons born in India) in Australia which is contributing to the Australian economy in their role as teachers, doctors, accountants, engineers and researchers. India is the third largest source of immigrants for Australia.

The Australia-India Council (AIC) was established by the Australian Government in May 1992 to broaden and deepen Australia-India relations through contacts and exchanges in a range of fields which promote mutual awareness and understanding.

The India-Australia Joint Ministerial Commission was established
in 1989 and has held thirteen meetings to date, the last one in Canberra on 12 May 2011.

The Indian delegation for the JMC was led by Shri Anand Sharma, Minister for Commerce & Industry. At the conclusion of the JMC, the two sides agreed to commence negotiations for a Comprehensive Economic Cooperation Agreement (CECA), which has now begun.

India and Australia also announced formal launching of the CEO Forum with Mr. Navin Jindal, MP as co-chair on the Indian side and Mr. Lindsay Fox as co-chair on the Australian side.

India and Australia sealed the long-awaited nuclear energy deal on September 2014 even as Australian Prime Minister Tony Abbott said he wanted first-rank relations with India.

1.2 OBJECTIVES OF THE STUDY:-

The main objective of the study is to analyse the role of trade reforms and economic growth in India and Australia; and to assess the impact of trade reforms on the GDP, employment and income distribution etc. on the two economies.

SUB-OBJECTIVES:-

1. To examine the process of trade liberalisation in India and Australia.
2. To analyse the speed and sequencing of reforms in two countries.
3. To analyse and compare the trade performance of the two countries since the introduction of economic reforms.
4. To analyse the structural changes in composition and directional pattern of trade in India and Australia since trade reforms in both the countries.
5. To undertake a comparative study of pre-reform period and post reform period regarding the impact of trade reforms on economic growth in India and Australia.
1.3 METHODOLOGY:-

The method of analysis has been mainly “Descriptive Analytic”. We have applied simple and multiple regression analysis for annual absolute time series data from 1970-71 to 2011-12. However, in addition to this, other relevant econometrics techniques have also been applied.

(I) TREND ANALYSIS:-

The trend analysis has been carried out by using the regression equation:-

\[ Y = b_0 + b_1 t + U \]

That is, to regress \( Y \) on time itself, where time is measured chronologically. Such a model is called appropriately, the linear trend model and the time variable ‘t’ is known as the trend time variable. If the slope coefficient in the preceding model is positive, there is an upward trend in \( Y \), whereas if it is negative, there is a downward trend in \( Y \).

(II) GROWTH ANALYSIS:-

In order to calculate the growth rate the following regression equation has been used:-

\[ \ln Y = b_0 + b_1 t + U \]

The above model is like any other linear regression model in that parameters \( b_0 \) and \( b_1 \) are linear. The only difference is that the dependent variable is the logarithm of \( Y \) and the independent variable or explanatory variable is ‘time’, which will take values of 1, 2, 3 etc. The above model is also called a semi-log model because only one variable (in this case the dependent variable) appears in Logarithmic form. In a semi-log model the slope co-efficient measures the proportional or relative change in \( Y \) for a given absolute change in the explanatory variable. If we multiply this relative change by 100, we get instantaneous growth rate.
INSTANTANEOUS VERSUS COMPOUND GROWTH RATE:-

\[ b_1 = \text{the estimate of } B_1 = \ln(1 + r) \]

Therefore, \[ \text{Antilog } (b_1) = (1 + r) \]

Which means that

\[ r = \text{Antilog } (b_1) - 1 \]

And since \( r \) is the compound rate of growth, once we have obtained \( b_1 \) (the slope coefficient) we can easily estimate the compound rate of growth of \( Y \) by using the following formula:-

\[ \text{Compound Rate of Growth} = (\text{Antilog } b_1 - 1) \times 100 \]

The instantaneous growth rate measures the growth rate at a point of time whereas compound growth rate measures the growth rate over a period of time.

(III) DUMMY VARIABLE APPROACH:-

When we use a regression model involving time series data, it may happen that there is a structural change in the relationship between dependent and independent variables. Sometimes the structural change may be due to external force. We have therefore, included dummy variable in the regression equation both in intercept and slope form. The equation can be written as:-

\[ Y = b_0 + b_1 D + b_2 X + b_3 (D \cdot X) + U \]  

(1)

Where,

\( Y \) = Dependent variable

\( X \) = Independent variable

\( D \) = Dummy variable

\( H_0 \):- \( b_0=b_1=b_2=b_3=0 \)

\( H_1 \):- \( b_0=b_1=b_2=b_3 \neq 0 \)
D= 1 (For Post-Reform Period )
D=0 (Otherwise i. e., for Pre-Reform Period )

(Implication of regression equation (1), assuming E(U) = 0, we obtain :-)

\[ E(\ln Y/ D=0, X) = b_0 + b_2 X \] (2)
\[ E(\ln Y/ D=1, X) = b_0 + b_1 + b_2 X + b_3 X \]
\[ = (b_0 + b_1) + (b_2 + b_3) X \] (3)

Which are respectively the mean functions for the pre-reform and post-reform period. Thus, from the single regression (1), we can obtain the two sub periods regression easily, again showing the flexibility of dummy variable technique.

**Regression Equation for**

**Pre-Reform Period**

\[ b_0 + b_2 X \]

**Regression Equation for**

**Post-Reform Period**

\[ (b_0 + b_1) + (b_2 + b_3) X \]

The introduction of Dummy Variable D in the additive form enabled us to distinguish between the intercepts of two periods and the introduction of Dummy variable D in the interactive or multiplicative form (D Multiplied by the explanatory variable) enables us to differentiate between the intercepts of the two periods i.e. pre-reform period and post-reform period. From the differential intercept dummy and slope dummy, we can point out the source of difference.

**(IV) REVEALED COMPARATIVE ADVANTAGE**

The revealed Comparative Advantage is an index used in international economics for calculating the relative advantage or
disadvantage of a country in certain goods or services as evidenced by trade flows. The Revealed Comparative Advantage index can be defined as a share of specific industry in world total exports/imports of this specific industry as a fraction of the share of country’s total exports/imports in total world exports/imports and can be calculated as:

$$RCA_{ij} = \frac{X_{ij}}{X_{it}} / \frac{X_{wj}}{X_{wt}}$$

Where

- $X_{ij}$ = country’s export/import in specific industry $j$
- $X_{it}$ = country’s i total exports/imports
- $X_{wj}$ = world’s total export/import of specific industry $j$
- $X_{wt}$ = world’s total exports/imports

$RCA > 1$ shows that the countries have the comparative advantage in that specific commodity and vice versa.

(V) UNIT ROOT TEST

Use of univariate characteristics shows that whether the variables are stationary or nonstationary. If the variables are non-stationary their order of integration is tested. The Dickey-Fuller test estimated three different forms that is, under three different null hypothesis.

Y is a random walk: $\Delta Y_t = \delta Y_{t-1} + u_t \ (1)$

Y is a random walk with drift: $\Delta Y_t = \beta_1 + \delta Y_{t-1} + u_t \ (2)$

Y is a random walk with drift: $\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + u_t \ (3)$

Around a stochastic trend:

Where $t$ is the time or trend variable. In each case, the null hypothesis is that $\delta = 0$; that is, there is a unit root—the time series is nonstationary. The alternative hypothesis is that $\delta$ is less than zero; that is, the time series is stationary. If the null hypothesis is rejected, it means that $Y_t$ is a stationary time series with zero mean in the case of (1), that $Y_t$ is stationary with a non zero mean in the case of (2), and $Y_t$ is stationary around a deterministic trend in (3).
In conducting the DF test as in equation (1)(2) or (3), it was assumed that the error term $u_t$ was uncorrelated. But in case the $u_t$ are correlated Dickey and Fuller have developed a test, known as the Augmented Dickey-Fuller (ADF) test. This test is conducted by “augmenting” the preceding three equations by adding the lagged values of the dependent variable $\Delta Y_t$. This paper uses the Augmented Dickey-Fuller (ADF) statistic to test the stationarity or non-stationarity of the variables and their order of integration. The ADF test consist of estimating the following regression:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad (4)$$

Where $\varepsilon_t$ is a pure white noise error term and where $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2}), \Delta Y_{t-2} = (Y_{t-2} - Y_{t-3}),$ etc. The number of lagged difference terms to include is often determined empirically, the idea being to include enough terms so that the error term in (4) is serially uncorrelated. In ADF we still test whether $\delta=0$ and the ADF test follows the same asymptotic distribution as the DF statistic, so the same critical values can be used.

(VI) **Granger Causality Test**

The Granger causality test was developed by Granger (1969) and, according to him, a variable (in this case exports) is said to Granger cause another variable (GDP) if past and present values of exports help to predict GDP. To test whether exports Granger cause GDP, this paper applies the causality test developed by Granger (1969). A simple Granger causality test involving three variables, exports and GDP, imports and GDP and exports and imports written as:

$$\text{GDP}_t = \sum_{i=1}^{m} \alpha_i \text{GDP}_{t-i} + \sum_{j=1}^{m} \beta_j \text{Export}_{t-j} + u_{1t} \quad (1)$$
\[ \text{Export}_t = \sum_{i=1}^{m} \lambda_i \text{GDP}_{t-i} + \sum_{j=1}^{m} \delta_j \text{Export}_{t-j} + u_{2t} \quad (2) \]

The null hypotheses to be tested are:

- \( H_1: \lambda_i = 0, j=1, \ldots, p \), which means GDP do not cause exports
- \( H_1: \beta_j = 0, j=1, \ldots, p \), which means exports do not cause GDP

\[ \text{GDP}_t = \sum_{i=1}^{m} \alpha_i \text{GDP}_{t-i} + \sum_{j=1}^{m} \beta_j \text{Import}_{t-j} + u_{1t} \quad (3) \]

\[ \text{Import}_t = \sum_{i=1}^{m} \lambda_i \text{GDP}_{t-i} + \sum_{j=1}^{m} \delta_j \text{Import}_{t-j} + u_{2t} \quad (4) \]

The null hypotheses to be tested are:

- \( H_1: \lambda_i = 0, j=1, \ldots, p \), which means GDP do not cause imports
- \( H_1: \beta_j = 0, j=1, \ldots, p \), which means imports do not cause GDP

\[ \text{Export}_t = \sum_{i=1}^{m} \alpha_i \text{Export}_{t-i} + \sum_{j=1}^{m} \beta_j \text{Import}_{t-j} + u_{1t} \quad (5) \]

\[ \text{Import}_t = \sum_{i=1}^{m} \lambda_i \text{Export}_{t-i} + \sum_{j=1}^{m} \delta_j \text{Import}_{t-j} + u_{2t} \quad (6) \]

The null hypotheses to be tested are:

- \( H_1: \lambda_i = 0, j=1, \ldots, p \), which means exports do not cause imports
- \( H_1: \beta_j = 0, j=1, \ldots, p \), which means imports do not cause exports

If none of the hypothesis is rejected, it means that exports do not Granger cause GDP and GDP also does not Granger cause exports. It indicates that the two variables are independent of each other. If the first
hypothesis is rejected, it shows that exports Granger causes GDP.

Rejection of the second hypothesis means that the causality runs from GDP to exports. If all hypotheses are rejected, there is bi-directional causality between exports and GDP. The Granger test uses F statistics if the computed F value exceeds the critical F value at the chosen level of significance, we reject the null hypothesis.

1.4 SOURCES OF DATA:-

This study depends upon secondary data. However, collecting the necessary information together benefits greatly the various sources such as:- International Financial Statistics Yearbook (various issues), Handbook of Statistics on Indian Economy (various issues), International Yearbook of trade and Statistics, Australia economic review, Journal of Australian political economy, Australian economic papers, RBI bulletin, World Investment Reports, UN Com Trade Statistics (various issues), SIA Newsletter (various issues) etc.

1.5 LIMITATIONS:-

1. The study is open to all limitations of the ordinary least square (OLS) method, which are discussed in any standard book of Econometrics.

2. Determining the regression equations, we take the imports and exports as the dependent variable and time as independent variable.

3. The computation involves serial correlation.

1.6 CHAPTER PLAN OF THE STUDY:-

The present study has been divided into seven chapters, the brief analysis of which is as follows:-

Chapter-I- deals with the Introduction i. e. need for the study, objectives of the study, methodology, sources of data etc.

Chapter-II- in this chapter we have discussed theoretical and empirical contributions related with trade reforms and growth at
international level as well as in reference to India and Australia.

Chapter-III- analyse the order, speed and sequencing of reforms in India and Australia.

Chapter-IV- gives a detailed analysis of Direction of trade of India And Australia pre and post reform period. (1970-2012).

Chapter-V- gives a detailed analyses of Composition of trade in India and Australia from (1970-2012 ).

Chapter-VI- discusses the impact of trade reforms on the economic Growth of India and Australia.

Chapter-VII- deals with the main conclusions, and policy Implications emerging from the study.