Trade Liberalization and Economic Welfare: A Case of Pakistan

Saima Zia[a], Hina Amir[b], Sana Iftikhar[c*], Kanwal Bilal[d]

[a]Bachelor Student, 2Department of Management Sciences, COMSATS Institute of Information Technology, Lahore, Pakistan

[b]Assistant Professor, 2Department of Management Sciences, COMSATS Institute of Information Technology, Lahore, Pakistan

[c]PhD Scholar, Department of Economics, National College of Business Administration & Economics (NCBA&E), Lahore, Pakistan

[d]Lecturer, Department of Energy Research Center, COMSATS Institute of Information Technology Lahore, Pakistan

[a]Email: saima.zia@gmail.com

[b]Email: hinaamir@ciitlahore.edu.pk

[c]Email: sanaiftikhar_libra@yahoo.com

[d]Email: kanwalbilal@ciitlahore.edu.pk

Abstract

Trade liberalization has now become the main focus of the literature as it is considered as the contributor of economic growth and welfare. The previous literature showed an overall positive impact of trade liberalization on the economy except for few studies; recommend adopting trade liberalizing policies. Whereas in case of developing country like Pakistan, major part of the literature showed positive impact of trade liberalization on the economy. This study examines the impact and relationship of trade liberalization and economic welfare in case of Pakistan.

----

* Corresponding author.

The variables used in the study are; gross domestic product recorded in millions of rupees as a dependent variable, whereas balance of trade is taken as a proxy of trade liberalization as an independent variable along with foreign direct investment, worker's remittances, education and total length of roads recorded in kilometer as control variables. In the past literature, trade openness was used as a proxy of trade liberalization whereas in this study balance of trade is used instead. The data for the analysis has been taken from the state bank of Pakistan from the years 1973-2009. Cointegration techniques in the long-run and short-run have been applied. Granger causality technique for long-run is also used to find the causality in the long-run. The results show that there exists a strong relationship between trade liberalization and economic welfare in the long-run and short-run tested by cointegration technique. There exists a causal relationship between the two variables in the long-run tested by Granger Causality. The results show the negative impact of trade liberalization on economic welfare in case of Pakistan as tested in the cointegration technique. This study suggests that trade liberalizing policies should be adopted to encourage exports and an outward orientation approach should be the focus in making trade policies.

Keywords: trade liberalization; economic welfare; long-run and short-run analysis; Granger Causality.

1. Introduction

The previous study and evidences show that trade liberalization increases resource allocation and improves the efficiency of the economy as trade is liberalized the demand of goods will increase along with international competition which would ultimately increase the income level of the individuals [1]. An economy specializes in the production of goods and services to export more and import the goods it cannot produce domestically. In this way the production and efficiency gap are filled with the country's requirements in terms of goods and services.

But this efficiency comes with a cost to the society. A society has to shift towards its efficient production by forgoing the inefficient one; this resource allocation shifts the employment of the society. Which in turns make many people lose their jobs, the demand for skilled workers increases than the unskilled, poor and low wage groups, [2]. Whereas in case of Pakistan the evidence is clear as the income distribution and income inequality has widened over the years and is still widening.

There has been a lot of evidence from literature about trade liberalization and its influence on the economy and especially in case of developing countries. All in all, the impact of trade liberalization have been pointed out as negative [3], because as trade liberalization increases then demand for imported products increases which are less in price than the domestically produced products. This creates an imbalance between growth of imports and exports, the import growth becomes higher than the export growth. As the demand of imports increases the domestic markets become insecure as low tariff rate make imported products more common in the market. This creates many negative outcomes such as a shift of domestic producers to foreign countries making domestic employees unemployed or a shift from one industry to another for efficient production of goods and services makes people lose their jobs due to lack of skills and knowledge. The impact of trade liberalization varies from countries to countries depending upon their trade policies and their past history in terms of foreign direct

investment and balance in trade and payments.

In this study we analyze the effects of trade liberalization in terms of economic welfare in case of Pakistan. Trade openness has been used as proxy of trade liberalization in the most of the literature, here, balance of trade is indicated is indicating trade liberalization due to its characteristic of volume of trade. There have been many ways to estimate the economic welfare. It can be measured by taking only GDP into account or in different combinations with other variables. For the past years before trade liberalization in Pakistan the export growth was 6.0% in 1972, after trade liberalization in 1991 the export growth was 6.3% in 1997, whereas import growth was 3.63% in 1972 before trade liberalization and after trade liberalization import growth was 4.84% in 1997 [3]. This showed the unsupportive outcome of trade relaxation in terms of tarrifs as import growth was higher than the export growth.

The studies also show some positive outcomes of trade liberalization in case of Pakistan [4-5]. These studies showed that trade liberalization, had a non-negative influence on real GDP, but foreign direct investment had the negative outcome on the real GDP. This study investigates the impact of trade liberalization on Pakistan's economy using balance of trade as proxy of trade liberalization, whereas GDP recorded in millions of rupees, FDI, level of education, worker's remittances and infrastructure as the indicators of welfare.

1.1 Objective of the Study

1. To determine the connection and outcome of trade liberalization and economic welfare in case of Pakistan by taking gross domestic product in millions of rupees as dependent variable and balance of trade as a proxy of trade liberalization as an independent variable along with foreign direct investment, worker's remittances, education and total length of roads in kilometre as control variables.

2. To study the impact of trade liberalization on GDP of Pakistan through balance of trade as a proxy of trade liberalization as an independent variable along with foreign direct investment, worker's remittances, education and total length of roads in kilometre as control variables.

3. To analyze the effects of FDI on the gross domestic product of Pakistan.

4. To investigate the causal relationship of balance trade and FDI on the GDP of Pakistan, by taking gross domestic product in millions of rupees as dependent variable and balance of trade as a proxy of trade liberalization as an independent variable along with foreign direct investment, worker's remittances, education and total length of roads in kilometer as control variables.

1.2 Significance and contribution of the study

The study contributes in the literature by analyzing the relationship between trade liberalization and economic welfare in case of Pakistan. In addition by taking balance of trade as a proxy of trade liberalization this has not been used in the previous studies yet in the best of our knowledge.

1.3 Selection of the Sample in the Study

To find the influence of trade liberalization on welfare, the data used of balance of trade is taken as a proxy of trade liberalization as it includes all the exports and imports representing the overall volume of trade. Trade liberalization or trade openness is the encouragement of exports or free interchange of goods and services produced across borders, balance of trade shows volume of the exports along with imports of an economy. This shows that as trade is liberalized there will be increase in the volume of exports which is recorded on the annual basis taken in the study. The sample of the data of all the variables has been taken from 1973-2009. Balance of trade, gross domestic product, foreign direct investments and worker's remittances have been recorded in millions of dollars, whereas, education is measured by the number of enrollments made in primary level. Length of roads is taken in kilometers.

2. Literature Review

Reference [2] Gave the results from Brazil that when trade liberalizing policies are there in a country then there are effects on the wage rate. The study showed that there were overall positive impact on education after trade liberalization whereas the results were insignificant in case of wages, trade liberalization affected the low wage groups than the higher wage groups. Trade liberalization increased the demand for skilled labor as there was technological advancement, to operate the advanced technological capital more skilled workers were demanded which created wage gap as unskilled workers which were the poor and low wage groups were demanded less.

Reference [5] Determined the relationship between trade liberalization, human capital and economic growth in case of Pakistan. Cointegration and Granger Causality techniques were used during the data from 1972 till 2007. Real gross domestic product was taken as a dependent variable and "trade openness" was taken as the major control variable. The data was taken from economic survey of Pakistan and World Development Indicators. The results showed that there existed a short-run and long-run causal relationship between the trade liberalization, human capital and economic growth.

Reference [4] Studied the impact of trade liberalization on economic growth of Pakistan during the period 1975-2010. Trade openness, gross fixed capital formation, foreign direct investment, inflation and real gross domestic product were the variables used in the study. Johnsen-Cointegration technique, Granger Causality and a long run regression model were used to analyze the impact. The results showed that trade liberalization and gross fixed capital formation had a positive impact on the real gross domestic product, whereas, foreign direct investment and inflation had a negative impact on the real gross domestic product. The study suggested for more economic growth, Pakistan should focus on more trade liberalization and should accumulate more capital assets.

Reference [6] Analyzed that trade liberalization makes a country prosper as its "socio-economic gaps" are filled by unrestricted trade with other countries. Pakistan adopted trade liberalization policies in its 1980's with the same expectation. The effects were empirically analyzed by GDP per capita, income inequality, poverty and employment during 1960-2003. Simultaneous equation model, 2SLS for regression analysis techniques were

used in the study. The results showed that trade liberalization affected employment positively but GDP per capita and income distribution negatively during this time period. The results clearly showed that trade liberalization have not affected poverty in any way. The study suggested that as trade liberalization had not affected all the indicators positively, Pakistan should move towards trade liberalization with great caution. Exports of labor intensive products should be encouraged.

Reference [7] Analyzed the relationship between trade policies and industrial growth during 1973 to 1995 by endogenous growth model. Error correction and cointegration model were applied and a long-run unique relationship was seen among the variables which were; aggregate function of industrial value added and its major determinants of capital stock, the labor force, real exports, import tariff collection rate and secondary education.

Reference [3] Explored the impact of trade liberalization on growth of exports, growth of imports, the balance in trade and the balance in payment. The study was made on developing countries which used trade liberalization for development in 1970's. The variables used were export performance, economic growth, employment, wage inequality and the income distribution, imports, the balance of trade and the current account of the balance of payments. Paneled and cross section data was taken. The results showed that reduction in export and import tariffs had significant impact on growth of exports and imports, with the outcome on growth in imports greater than the export growth. The results also revealed the declension of balance of trade and balance of payments.

The impact of liberalization can differ as the countries have different policies from highly protective policies to very low protective policies. Overall the trade liberalization supported income growth, but negative impact on balance of trade which would have balanced out exports and imports in balance in trade and payments. The author suggested that the advocates of trade liberalization should keep the sequencing of trade liberalization under consideration as it affects a country's overall performance and the utilization of resources.

Reference [8] Researched further the effect of trade liberalization than Paulino and Thirlwall in 2004. They also studied the impact liberalization in trade on the balance of payments with more observations, they investigated that trade liberalization did had negative impacts on the accounts of trade and payments in many countries but the severity was not the same as indicated by Paulino and Thirlwall in their study. The results were sort of mixed showing different impacts of trade liberalization.

Reference [9] Investigated the outcome of foreign assistance and openness in trade on growth of per capita GDP. Time series data for 1971-2000 was used of 23 developing countries. Fixed effect, control set of variable method and Granger Causality tests were used. The results showed that, trade openness was significant in both the estimations and showing that trade openness does affect the per capita GDP growth rate whereas foreign direct investment had insignificant results. Granger Causality test showed that trade openness showed causality on per capita GDP growth rate and there was no causality of GDP with trade openness.

Reference [10] Analyzed the connection between trade openness and growth of the economy. The evidence

presented for the aspects are economic growth, physical capital investment using time series data. The results showed that countries that after trade liberalization, the growth rates of the liberalized countries rose by 1.5% along with capital accumulation and investment which confirmed that trade liberalization helps in development of a country. Trade liberalization did boasted the overall GDP of the countries which adopted trade liberalizing policies, however, the magnitude, gains and benefit from such trade differed from country to country.

According to [11] trade liberalization could translate poverty factor of a developing country and for this purpose what information is required. This study identified channels through which such effects might operate in different categories of institutions. Long–term economic growth and short–term stresses were also analyzed. Welfare increases when the prices of goods produced by household increases. This paper explained the effects of liberalization in trade on goods and services' price. The study evaluated effects of trade reform on markets. Factor prices were affected by trade reforms too. The essence of the study was to analyze the effects on unemployment after increase in labor intensive products. The other angles of the study were: trade reform can also affect tariff revenue. World markets are more stable than domestic markets so risk can be reduce by opening up the economy. But sometimes it will increase because some people prefer riskier activities. The key to reduce poverty is economic growth. The overall growth in the economy would then result in an increase in the incomes of poor people. Moreover, assumptions that liberalized trade path may result in stimulated long-term growth has not been established completely, but it may prove substantial in future.

Reference [11] Studied Jorden's trade liberalization using gravity model on time series data. The effects of various trade agreements such as FTAs and WTO agreements were analysed to cheque the overall volume of trade, the results showed that such agreements made no huge impact on Jorden's volume of trade in terms of volume of exports. The author concludes that opening up for more trade can increase competitiveness and spill over effects on the other sectors which can be harmful for the Jorden economy. The government should not agree and sign every agreement to increase and boost the economy in the short run.

Reference [12] Analysed that trade liberalization is an essential process and how regionalism effects trade liberalization in common markets i.e. that how common markets vary with time. Devereux model was used to see how this impact varies. The study concluded that newly formed common markets increase tariffs declination after their formation.

Reference [13] Studied the trade liberalization after war in specific countries and the outcome of liberalization in trade. The study explained that "the findings suggest a strong link between the timing of trade reform and income convergence among countries". The connection between trade and income has been studied. The study was focused on European Economic Community (EEC).

Reference [14] Studied that, political views and individualistic attitudes are important for the citizen support for trade liberalization, they studied this effect in 6 industrialized democracies. Regression model was used to find the relationship between the public relations and trade liberalization. Primary education, gender and income were found important in reshaping individualistic attitudes towards trade liberalization. Whereas other factors such as mobilization and geographic orientation were also found empirically important. The conclusion was

found that political predictors for trade support were found weaker that economic indicators.

Reference [15] investigated the agglomeration of productive industrialized firms through an econometric model, they studied that the highly productive industrialized firms agglomerate in order to reduce their cost. The results of their study show that after the agglomeration of the productive firms, economic development is promoted in that particular region. This economic development and agglomeration is promoted by trade liberalization. "Trade liberalization promotes regional economic development" is the conclusion their study.

Reference [16] Tested a connection between FDI and growth in the economies of Pakistan and Turkey during 1975-2004. Engle Cointegration and Granger Causality tests were used along with long-run regression model. The results were concluded that GDP causes FDI to occur in case of Pakistan and in case of Turkey, both GDP and FDI cause each other to occur, means there is unidirectional causality in case of Pakistan and there is a strong bi-causality in case of Turkey.

Reference [17] Investigated the relationship between trade liberalization and economic growth, by analyzing two equilibriums explaining the tariff imposition after trade specialization. One was tariff war equilibrium, in which trade tariffs were high and growth rates were low. The second one was trade liberalization equilibrium, in which trade tariffs were low and growth rates were high. A question for further research is left that in the diverse world if a country wants to have a comparative advantage in a particular good then new goods will be required to specialize in it, and for this comparative advantage in new goods high tariffs will be imposed. The question is that what consequences and conditions will be met to achieve this comparative advantage.

Reference [18] Gave the guidelines to make policy in trade liberalization case. He indicated that, it is sometimes appropriate to devalue a country's currency as in case of trade liberalization and an import competing industry when trade is liberalized then a country's overall price level of goods increases i.e. inflation occurs and the overall wage rate in the country decreases. But, monetary policy should be stable and consistent in this case with exchange rate policy as both restrictive measures and a non-restrictive measures would encourage recession and devaluation of the currency respectively in the future. Trade liberalization can distort a country's position in the short run and for this, the fiscal policy of a country should remain unchanged as the already existing budget deficit of a country would create more deficits if fiscal policy is not restrained. Wage and credit policy should be expansionary as import competing product would reduce the domestic wage level, on this case wage should be facilitating to help the overall prevailing low wage rate and unemployment level, and to provide enough investments to finance the prevailing expenditures of the economy. And government policy should try to reduce balance of payment deficits which would create the image of liberal trade economy.

Reference [19] studied a relationship between economic orientation and economic performance has been empirically analyzed. The study has been made on multiple countries and their volume of exports, the data sources made in the study are World Bank, Balassa, UNCTAD, Krueger, Jerry Behrman and Kuang Suk Kim. Regression analyses technique and endogenous growth model have been used, where in regression analysis, GDP is taken as dependent variable and trade (exports) has been taken as independent variable. The study has been successful in some cases such as Korea and Chile. The study recommends that an "outward orientation"

approach is successful i.e. the greater the exports, the more developed the country will be, however the trade structure will depend on the size and the resources of the country, the author analyzed that a developed country will export less than a developing country in proportion.

The author recommends more research on the outward orientation approach that how this technique can affect the economy and demands more econometric evidence. This shows that if a country exports more then it will be more successful in the long run. This assumption can be assumed to be true if free trade is there with no politics. Whereas, if a country is successful without more exports then the reason for its success are not just the policy recommendations but the products it is exporting are also the case of importance. A developed nation for example is exporting expensive technology has less volume of exports as compared to underdeveloped countries exporting mostly the agrarian products. The volume of exports of the developing and under developed countries will be higher; however the gains from the trade will be low as compared to the developed countries due resource availability and cheaper products. In such cases different policies or agreements might be helpful to make the progress to become a developed nation.

Reference [20] Analysed that, foreign direct investment has been growing over the time which had resulted in trade openness, development, technological advancement, DE monopolization, development of infrastructure, lowering tariffs and private contributions towards the growing economies. The paper was written in 2004, during that time Pakistan was not the major receiver of the foreign direct investment, but it was a great attractor of FDI as it had market oriented policies at that time. The present contribution of this paper supports "Bhagwati" hypothesis that foreign direct investment will have the greater impact on the economy if exports oriented policy is encouraged than an import substitution policy. Foreign direct investment have different effects in export oriented and import oriented economies, it has greater and positive effects in the export oriented economies as it generates more employments and it has more positive spill-over effects over the economy. Foreign direct investment can increase human capital by investing in human capital by education and training of skills which will amplify the effects of development. The author suggests that Pakistan can develop by attracting more foreign direct investment and by putting it into use along with export oriented policy.

Reference [21] Analyzed that trade liberalization increases global competition and lowers domestic prices, trade liberalization does increase the economic efficiency, but the author favors the trade liberalization by questioning against the literature proposing the negative impacts of trade liberalization. The author does indicate the negative outcomes of the trade liberalization however trade can increase the economic efficiency if there are proper lawsuits made to protect and license an industry in which case will protect the domestic industry and there would be no invasion of foreign industries beyond a threshold.

Reference [22] investigated that, if proper policy interventions and measures are taken into account then trade liberalization, economic growth and poverty reduction can be harnessed easily. The study uses the statistics and empirical evidence from the literature. The author suggests that in case of Pakistan, if policies that are effective enough along reduction in current expenditures for development can reduce the current tariff rates along with reduction in poverty significantly. Gains from trade liberalization can be reaped fully if expenditures on development and trade liberalization are properly met and put to effective use.

Reference [23] Contributes in analysing the impact of trade liberalization on food commodities i.e. wheat rice and maze, a project initiated to analyse the effects of trade liberalization in many countries. Taxes and import of negative items have been reduced significantly and the share of agricultural products in GDP has also reduced. Welfare analysis and regression analyses was used to see the impact of trade liberalization on maize, rice and wheat. The study showed that "the government should promote the growth-for-export policy among the rice growers, since it will help to improve the quality of rice and increase the export of rice from Pakistan".

Reference [24] Empirically investigated the relationship between trade openness and economic growth of Pakistan, openness to GDP was used as a proxy of trade liberalization, ADF and short-run error correction models were used. The results showed that there exists a long-run causal relationship between the two variables and no short-run relationship between the variables due to business cycle impacts which over dominate relationship in the short-run.

3. Methodology

3.1 Sample Selection

To find the outcome of trade liberalization on welfare, the statistics of balance of trade is taken as a proxy of trade liberalization as it includes all the exports and imports representing the overall volume of trade. Trade liberalization or trade openness is the encouragement of exports or free exchange of goods and services produced across countries, balance of trade shows the volume of the exports and imports of an economy. This shows that as trade is liberalized there will be growth in the volume of exports which is recorded on the annual basis taken in the study. The sample of the data of all the variables has been taken from 1973-2009. Balance of trade, gross domestic product, foreign direct investments and worker's remittances have been recorded in millions of dollars, whereas, education is measured by the number of enrollments made in primary level. Length of roads is taken in kilometers.

3.2 Data Sources

The sample of the data is selected from 1973-2009. All the data of the variables has been taken from the handbook of statistics by state bank of Pakistan, except for the gross domestic product recorded in millions of rupees, which is taken from the State Bank of Pakistan.

3.3 Description of the Model

In order to estimate the relationship between trade liberalization and economic welfare, all the variables have been taken at their annual rates, gross domestic product in millions is taken as the dependent variable in the study.

$$Y\ (GDP\_MRS) = \text{ß}_\circ + \text{ß}_1\ (BOT_t) + \text{ß}_2\ (FDI_t) + \text{ß}_3\ (WR_t) + \text{ß}_4\ (EDU_t) + \text{ß}_5\ (KM_t) + \text{Ɛ}_t$$

The statistics used in the model have been recorded annually, so, log of the model has been taken as:

$\text{Ln (GDP\_MRS)} = \beta_{\circ} + \beta_1 \ln(BOT_t) + \beta_2 \ln(FDI_t) + \beta_3 \ln(WR_t) + \beta_4 \ln(EDU_t) + \beta_5 \ln(KM_t) + \varepsilon_t$

Where;

Ln = Natural logarithm

Ln (GDP_MRS) = Gross domestic product recorded in millions of rupees as a proxy of economic welfare.

Ln (BOT) = Balance of trade as a proxy of trade liberalization.

Ln (FDI) = Foreign direct investment as a proxy of economic welfare.

Ln (WR) = Worker's remittance as a proxy of economic welfare.

Ln (EDU) = Education as a proxy of economic welfare with primary .education level.

Ln (KM) = Total kilometers of roads as a proxy of infrastructure representing economic welfare.

$\beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5$ represent parameters are calculated for each control variable.

ε_t = residuals.

- β_1 is the elasticity of gross domestic product recorded in millions of rupees with respect to balance of trade. It measures the percentage change in GDP, for one unit change in balance of trade, keep everything unchanged.
- β_2 is the elasticity of gross domestic product recorded in millions of rupees with respect to foreign direct investment. It measures the percentage change in GDP, for one unit change in foreign direct investment keeping everything unchanged.
- β_3 is the elasticity of gross domestic product recorded in millions of rupees with respect to worker's remittance. It measures the percentage change in GDP, for one unit change in worker's remittance keeping everything unchanged.
- β_4 is the elasticity for gross domestic product recorded in millions of rupees with respect to education level at primary stage as input. It measures the percentage change in GDP, for one unit change in education level at primary stage as input, keeping everything unchanged.
- β_5 is the elasticity for gross domestic product recorded in millions of rupees with respect to total length of roads recorded in kilometers as input. It measures the percentage change in GDP, for one unit change in total length of roads recorded in kilometers as input, keeping everything unchanged.

The sum $(\beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5)$ gives information about returns to scale. If sum $(\beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5) = 1$ then there are constant returns to scale. This means that by increasing by double amount it will double the output and by tripling the inputs will triple the output and so on.

If sum $(\beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5) > 1$ then there exists increasing returns to scale. This means that by increasing the

inputs by more than the double amount will increase the output by more than the double amount.

If sum of ($ß_1 + ß_2 + ß_3 + ß_4 + ß_5 < 1$), then there are decreasing returns to scale. This means that by doubling the inputs will increase the output by less than the double amount.

3.4 Hypothesis

H_o = Trade liberalization has a positive impact on the economic welfare of Pakistan.

H_1 = Trade liberalization has a negative impact on the economic welfare of Pakistan.

3.5 Description of the Variables

This section gives detail about the variables used for trade liberalization and economic welfare. Since the study aims to find the impact of trade liberalization on economic welfare and the relationship between the two, so, gross domestic product recorded in millions of rupees is taken as a dependent variable and balance of payment, foreign direct investment and worker's remittance, level of education and total length of kilometers are taken as independent variables in Cobb-Douglas production function. Narrative picture of the all variables is given below.

3.5.1 Dependent Variable

There is only one dependent variable used in the model; gross domestic product which is recorded in millions of rupees is taken as a dependent variable which is used as a proxy of economic welfare. Chuhdhary and his colleagues (2010) used GDP as a control variable including such practices have become standard in literature, GDP has now become a scale variable that measures greater variability in growth rates in different economies. In this study, gross domestic product is taken in millions of rupees which shows the monetary value of all goods and services produced domestically in a specified time period to represent the overall performance of the economy.

3.5.2 Independent Variables

There are five independent variables used in the model, which are explained as follows:

3.5.2.1 Balance of Trade

In order to find the impact of trade liberalization on welfare, the data of balance of trade is taken as a proxy of trade liberalization as it includes all the exports and imports representing the overall volume of trade. Trade liberalization or trade openness is the encouragement of exports or free exchange of goods and services produced across countries, balance of trade shows the volume of the exports and imports of an economy. This shows that as trade is liberalized there will be growth in the volume of exports which is recorded on the annual basis taken in the study.

3.5.2.2 Foreign Direct Investment

Foreign direct investment is used to show the overall investment in the economy by the foreign countries. Foreign direct investment and level of investment shows the circulation of money to finance the developmental projects by other countries. According to International Monetary Fund, foreign direct investment is "investment made to acquire lasting or long-term interest in enterprises operating outside of the economy of the investor". Foreign direct investment is taken by the countries for the development and growth of the country, so that a country may be efficient or at least specialize in a good or a product to have comparative advantage than other countries and gain more from trade. If trade is liberalized then there are lesser chances of a country to have foreign direct investment and specialize at a greater rate, because in this way a foreign country will not have the ownership in the domestic country and the domestic country's markets and products will be protected by the international competition creating shift of the domestic resources out of the country. To achieve this a country should have a surplus, balance or a small deficit in its balance trade and balance of payments. A surplus in domestic exports will then increase the economic welfare.

3.5.2.3 Worker's Remittances

Worker's remittance which is the money sent home by the residents of a country living in foreign country is taken to represent the flow of money and investment without the tariff rates, this means that if trade is liberalized then there will be free flow of worker's remittances in the home country which would be a great investment for it. An increase in investment would then help the country to export more.

3.5.2.4 Education

Level of education taken in the study is the literacy rate at primary level which is representative of the enrolment level at the primary stage. In developing countries like Pakistan, the investment in education is kept at the least priority, there are lesser chances of a poor to educate himself at higher or secondary level. The basic measure is taken at its primary level as internationally a literate person is the one who knows how to read and write and has knowledge in a specific area of field. In Pakistan, primary level education is till class 5, until this grade a person knows how to read and write and have some basic knowledge regarding science, arts or any other vocational skill. A higher literacy rate will develop the economy and increase its living standard which would ultimately increase the economic welfare.

3.5.2.5 Total Length of Roads

Infrastructure is as important to a country for development like any other variable taken to measure development. Infrastructure represents the facilities provided to the public for mass organization for the economic growth and development. There are many variables representing infrastructure, here in this study, total kilometres of roads over the years have been taken at an annual rate. The most basic infrastructure any country can have is the roads by which mass transportation can be transported within a country.

It is taken in the study rather than the total length of rail tracks as in case of Pakistan, the total length of roads

have increased over the time and more investments are made for making roads than railway tracks. Railway used to be the efficient mode of transportation, but over the years, train system deteriorated, which caused reduction of transportation of goods through railway tracks. The length of railway tracks increased over the time very slowly until 1981, after that the total length instead of increasing remained constant until 1997, after that the total length of the railway tracks started to reduce.

4. Results and Discussion

This section discusses the statistical analyses of the model presented previously, the hypothesis is verified through the model to find the relationship between trade liberalization and economic welfare.

4.1 Empirical Analysis

Structure of the analysis is as follows:

➢ Augmented-Dickey Fuller test (ADF test).
➢ Vector Auto Regressive test (VAR test).
➢ Co-integration test

i. Long-run
ii. Short run

➢ Granger Causality.

First, stationarity of all the variables is tested, which should at equal level.

In order to find the connection between trade liberalization and economic welfare, following model is being used:

$$Ln (GDP\_MRS) = \beta_{\circ} + \beta_1 \ln (BOT_t) + \beta_2 \ln (FDI_t) + \beta_3 \ln (WR_t) + \beta_4 \ln (EDU_t) + \beta_5 \ln (KM_t) + \varepsilon_t$$

4.2 Augmented Dickey Fuller Test

To find out the long run relationship between the dependent and independent variables, the first step is to check whether time series is univariate or not. Unit root test is used to check the order of stationarity. To test the unit root, most widely used test is Augmented Dickey Fuller (ADF) test. Results of table reveal that all the indicators are stationary at 1st difference. So, the null hypothesis for non-stationarity at 1st level of difference is rejected as it is assumed in null hypothesis of unit root for 1st level of difference that all variables are not stationer at 1st level of difference.

Therefore all variables are I (1). When all variables are I (1) the most appropriate technique for the analysis is cointegration.

The Augmented Dickey Fuller test is shown in the following table:

Table 4.1: Results of ADF test

	At level			At 1st difference		
Variables	**C**	**C&T**	**None**	**C**	**C&T**	**None**
GDP (MRS)	2.4536	1.6276	2.4967	3.0970	-0.6175	-3.0026
	(1.0000)	(1.0000)	(0.9955)	(0.9992)	(0.8537)	(0.1491)
BOT	-2.3792	-3.5575	-0.4839	-1.8221	-2.2722	-1.6296
	(0.1153)	(0.0500)	(0.4988)	(0.3638)	(0.4369)	(0.0964)
FDI	-3.5335	-4.6171	-3.0780	-4.5389	-7.7581	-4.4543
	(0.0128)	(0.0039)	(0.0031)	(0.0009)	(0.0000)	(0.0001)
WR	0.2889	-0.5053	0.9146	-3.2315	-3.5924	-2.8033
	(0.9739)	(0.9778)	(0.8982)	(0.0264)	(0.0451)	(0.0064)
EDU	1.0433	-3.8637	3.2689	-3.4223	-3.4762	-4.3318
	(0.9961)	(0.0267)	(0.9995)	(0.0180)	(0.0604)	(0.0001)
KM	-1.6147	-1.5552	0.1098	-1.5503	-2.6758	-0.9539
	(0.4643)	(0.7895)	(0.7106)	(0.4964)	(0.2520)	(0.2969)

4.3 Vector Auto Regressive (VAR)

Before applying cointegration test, VAR test is used to analyze the order at which cointegration test will be applied. All the variables are taken in their log form to use them in VAR analysis. AIC criteria is used to determine the lag length of the model.

Table 4.2: Vector Auto regressive (VAR)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2139.251	NA	2.32e+44	119.1806	119.4445	119.2727
1	-1860.730	448.7287*	3.36e+38*	105.7072*	107.5547*	106.3520*

(*) Lag length order

LR: Modified sequence at 5% level.

FPE: Error predicted finally

AIC: Akaike Information Criterion

SC: Schwarz Information Criterion

HQ: Hannan-Quinn information criterion.

4.4 Johansen Co-integration

Next step is determining the number of cointegrating vectors. Trace statistics suggests that in the null hypothesis there is no cointegration vector. Hypothesis is rejected at 1%, whereas other null hypotheses about the absence of more than one co-integrating vector is also rejected which implies that there is more than one co-integrating vector in the equation. Trace test indicates 6 co-integration equations at 0.05 level. Furthermore, the finding of more than one co-integrating vector is also backed up by the conclusions of maximum Eigen value test. Maximum Eigen values test also indicated 6 co-integrating equations at 5% level.

The results are shown as follows in the table:

Table 4.3: Cointegration test

Hypothesis	Trace statistics	Maximum Eigen value
R= 0	193.8044*	68.99381*
R≤ 1	124.8106*	47.45804*
R≤ 2	77.35260*	38.30715*
R≤ 3	39.04545*	22.61917*
R≤ 4	16.42628*	10.78015
R≤ 5	5.646126*	5.646126*

4.4.1 Long run Regression Analysis

The effect of trade liberalization on economic welfare, five control variables; balance of trade, total length of kilometer of roads, education (literacy rate at primary stage), worker's remittances and foreign direct investment whereas, GDP in millions of rupees is taken as the dependent variable in Cobb-Douglas production function. The regression equation and results are presented as follows:

Regression equation:

$$\ln(GDP\_MRS) = \beta_{\circ} + \beta_1 \ln(BOT)_t + \beta_2 \ln(KM)_t + \beta_3 \ln(EDU)_t + \beta_4 \ln(WR)_t + \beta_5 \ln(FDI)_t + \varepsilon_t$$

After the calculation of cointegration, the new model becomes:

$$\ln(GDP\_MRS) = -387379.8 - 57.97(BOT) + 22.411(FDI) + 123.88(W.r.) + 89.44(EDU) + 10.19(Km) + \varepsilon_t$$

Table 4.4 shows the regression test on the next page, which shows the name of the variables, values of coefficients, standard errors, and t-statistics and probability values in 1st, 2nd, 3rd and 4th column respectively.

Values of R-square, adjusted R-square, probability of F-statistics and Durbin Watson statistics are given in the table. With regards to balance of trade which is used as a proxy of trade liberalization, results illustrate a negative relation with gross domestic product of Pakistan in the long-run.

The result is theoretically logical and econometrically significant (significant at 1% significance level) except for FDI (foreign direct investment). Foreign direct investment is insignificant in the long-run this shows that foreign direct investment has no relationship with GDP in the long-run.

Balance of trade show that more trade liberalization in case of Pakistan will cause negative growth in terms of gross domestic product when taken in millions of rupees. The results of the table are shown on the next page.

Specifically the result implies that one unit increase in balance of trade would decrease gross domestic product by 57.97532 units. Whereas, one unit change in foreign direct investment causes 22.411 changes in GDP i.e. GDP increases by 22.411 units. An effect of other variables on gross domestic product is positive as indicated by the signs of the coefficients.

One unit increase in worker's remittance will increase GDP by 123.88 units and by one unit change in enrolments at primary stage in education will change GDP by 89.44 units and lastly, one unit change in total length of roads in kilometers will change GDP by 10.19 units.

The lower part of the table represents that overall the model is good fit as the statistics off the F-test is 992.5777 and F-test probability is 0.0000.

The value of R-square is 0.993792, this means that 99.3% of independent variables are explaining the dependent variable.

Adding up all the elasticity's of GDP in the model we came up with 187.951 which shows that the function exhibits increasing returns to scale.

This shows that doubling the independent variables which are balance of trade, foreign direct investment, worker's remittance, education and total length of roads in kilometer will more than double GDP recorded in millions of rupees.

Table 4.4: Long run analysis

Dependent variable: GDP_MRS			
Variables	**Coefficient**	**Std. Error**	**T-Statistics**
Constant	-387379.8*	64900.49	-5.968828
Ln(BOT)	-57.97532*	10.59906	-5.469852
Ln(FDI)	22.41107	31.82602	0.704175
Ln(WR)	123.8829*	25.84934	4.792498
Ln(EDU)	89.44322*	30.95948	2.889041
Ln(KM)	10.19169*	1.811545	5.625968
R²	0.993792	**Adjusted R- squared**	0.992791
F- Statistics	992.5777	**Prob. Value (F-Statistics)**	0.0000
Durbin- Watson stat	1.174603	**S.D. dependent var**	1472864

4.4.2 Error Correction Model

After a temporary shock in the short-run, the speed with adjustment occurs is in the long-run equilibrium is

shown by error correction model. Following model is used to check short run cointegration:

$$\Delta(GDP\_MRS) = \beta_\circ + \beta_1 \Delta(BOT)_t + \beta_2 \Delta(KM)_t + \beta_3 \Delta(EDU)_t + \beta_4 \Delta(WR)_t + \beta_5 \Delta(FDI)_t + ECM(-1) + \varepsilon_t$$

The table (on the next page) shows that calculated lagged error correction term is positive and is significant at 0.05 significance level, suggesting that error correction is happening in the model.

The value of Feedback coefficient (Error Correction term) is 0.426082 suggesting that approximately 42% of disequilibrium in previous year is corrected in the current year. Other variables such as balance of trade, worker's remittance, education and total length of roads in kilometers are significant at 1% probability value which shows that these indicators are significantly impacting GDP.

Foreign direct investment is found none affecting in the long-run in this study which is still insignificant in the short-run.

This shows that foreign direct investment has no role in the development, growth and welfare of Pakistan according to this study.

The results and table are represented on the next page.

4.5. Direction of Causality in the Long-Run

Granger Causality test is applied on the variables to test the direction of causality among the variables. For this we have examined the direction of causality only in the long-run.

The results are shown in the following table. The probability values shows the direction of causality. The probability values show the bi-directional and unidirectional causality between the variables.

This analysis just shows the impact of independent variables on the dependent variable and ignores the cause and effect of the variables like the direction of the causal relationship among the variables. All of this is performed in the Granger Causality approach.

The table shows that, the variables do cause each other in the long-run, the causation of the variables is explained as follows, those variables which do not cause each other are not explained as the hypothesis is not accepted in the long-run at any significance level i.e. 1%, 5% and 10%:

- **In case of GDP_MRS and BOT**

The results show that there exists a bidirectional causal relationship between GDP_MRS and BOT in the long-run as the hypothesis is significant at 5% and 10% significance level.

- **In case of FDI and GDP_MRS**

The results show that there is a unidirectional causal relationship between FDI and GDP in the long-run as the hypothesis is significant at 5% significance level.

- **In case of total length of roads of kilometer and GDP_MRS**

The results show that there exists a long-run bidirectional causal relationship between length of roads recorded in kilometer and GDP_MRS as the results are significant at 1% and 5% significance level.

- **In case of FDI and BOT**

The results show that there exists a long-run unidirectional causal relationship between the two variables as the hypothesis is accepted at 1% significance level.

- **In case of WR and BOT**

The results show that there exists a long-run bidirectional causal relationship between the two variables as the hypotheses are accepted at 1% and 5% significance level.

- **In case of BOT and EDU**

The results show that there exists a long-run unidirectional causal relationship between the two variables as the hypothesis is accepted at 10% significance level.

- **In case of WR and FDI**

The results show that there exists a long-run unidirectional causal relationship between the two variables as the hypothesis is accepted at 5% significance level.

- **In case of EDU and FDI**

The results show that there exists a long-run unidirectional causal relationship between the variables in the long-run as the hypothesis is accepted at 10% significance level.

- **In case of total length of roads in kilometer and FDI**

The results show that there exists a long-run unidirectional causal relationship between the two variables as the hypothesis is accepted at 5% significance level.

- **In case of total length of roads in kilometer and EDU**

The results show that there exists a long-run bi-directional causal relationship between the two variables as both of the hypotheses are accepted at 1% and 5% significance level.

Table 4.5: Error Correction Model (ECM)

Dependent variable = ln (GDP_MRS)			
Variable	**Coefficient**	**Std. Error**	**T-statistics**
Constant	-440309.4*	65522.94	-6.7199
Δ(BOT$_t$)	-59.82086*	9.965008	-6.0030
Δ(FDI$_t$)	3.606727	30.84074	0.1169
Δ(WR$_t$)	135.2761*	24.74628	5.4665
Δ(EDU$_t$)	87.78379*	29.43706	2.9820
Δ(KM$_t$)	10.49737*	1.732622	6.0586
ECM$_{t-1}$	0.426082**	0.195838	2.1756
R²	0.994653	**Mean dependent var**	2930722
F-statistics	899.0557	**Probability value (F-statistics)**	0.0000
Durbin-Watson statistic	1.807638	**S.D. dependent VAR**	1457852

Table 4.6: Granger causality test

Null Hypothesis	Lags	F-statistics	Probability
BOT does not Granger Cause GDP_MRS		4.90093**	0.0339
GDP_MRS does not Granger Cause BOT	1		
		3.73104***	0.0620
FDI does not Granger Cause GDP_MRS		6.46752**	0.0159
GDP_MRS does not Granger Cause FDI	1		
		1.73093	0.1974
WR does not Granger Cause GDP_MRS		39.1712	5.E-07
GDP_MRS does not Granger Cause WR	1		
		2.29464	0.1393
EDU does not Granger Cause GDP_MRS		1.98858	0.1678
GDP_MRS does not Granger Cause EDU	1		
		2.66093	0.1123
KM does not Granger Cause GDP_MRS		18.9084*	0.0001
GDP_MRS does not Granger Cause KM	1		
		4.18193**	0.0489

FDI does not Granger Cause BOT		63.2774	4.E-09
	1		
BOT does not Granger Cause FDI		16.7769*	0.0003
WR does not Granger Cause BOT		7.94172*	0.0081
	1		
BOT does not Granger Cause WR		5.59531**	0.0240
EDU does not Granger Cause BOT		3.34064***	0.0766
	1		
BOT does not Granger Cause EDU		0.25139	0.6194
KM does not Granger Cause BOT		1.42829	0.2406
	1		
BOT does not Granger Cause KM		1.77689	0.1917
WR does not Granger Cause FDI		0.05633	0.8139
	1		
FDI does not Granger Cause WR		5.07081**	0.0311
EDU does not Granger Cause FDI		3.59764***	0.0666
	1		
FDI does not Granger Cause EDU		0.19286	0.6634
KM does not Granger Cause FDI		2.26364	0.1420
	1		
FDI does not Granger Cause KM		5.44815**	0.0258
EDU does not Granger Cause WR		1.21565	0.2782
	1		
WR does not Granger Cause EDU		0.36148	0.5518
KM does not Granger Cause WR		0.69884	0.4092
	1		

WR does not Granger Cause KM		0.80409	0.3764
KM does not Granger Cause EDU	1	6.71984**	0.0141
EDU does not Granger Cause KM		10.0595*	0.0033

5. Conclusion

Trade liberalization is now considered as a major contributor of economic welfare. The study in the literature shows that trade liberalization has different outcomes on the economic growth, development and welfare. The major part of the literature shows the positive outcomes of trade liberalization on the economy [4, 5, 6, 7, 10, 11, 12, 15, 24]. There studies showed that trade liberalization had a positive impact on the economy and it should be encouraged. Among these studies [4, 5, 6, 7] showed positive impact of trade liberalization in case of Pakistan. Few of the studies showed the negative impact in case of Pakistan [3, 8, 11, 13]. These studies showed that the overall impact on the economy in terms of income and employment, trade liberalization have a negative impact and the countries should be precautious when selecting trade liberalizing policies. Whereas, some studies also showed mixed impact of Trade liberalization and cautioned the countries to adopt outward oriented trade policies to gain maximum from trade liberalization especially in case of Pakistan [22and 23].

The study adds information to the studies of trade liberalization and welfare of Pakistan's economy. In addition this research also extended the literature by taking balance of trade as a proxy of trade liberalization in combination to gross domestic product recorded in millions of rupees, foreign direct investment, worker's remittances, education at primary stage and total length of roads in kilometre. In the literature, balance of trade has not been taken as a proxy of trade liberalization yet to the best of our knowledge. All the tests used in this study show that there exists a strong relationship between trade liberalization and economic welfare of Pakistan in the long-run and short-run (R^2 in long-run: 0.993792 and R^2 in short-run: 0.994653).

The results show that trade liberalization has a negative impact on welfare of Pakistan from the years 1973-2009, as the signs of the coefficient of Balance of trade in long-run and short-run cointegration (in long-run BOT was estimated: -57.97532 and in short-run, BOT was estimated: -59.82086) both of the estimations were accepted at 1% significance level. The study also reveals that there exists a bi-directional causality between balance of trade and GDP in the long-run. The study is in favour of the literature recommending that trade liberalizing policies should be adopted with great caution [22] as domestic spill over effects of these policies are not very much helpful to the economy in the long-run [6], it may help to boast the economy in the short-run [11], but more focus and attention is demanded by the economy as Pakistan's economy is now making its image in the international market.

References

[1] Winters, L. Alan. "Trade liberalisation and poverty: what are the links?" The World Economy 25.9 (2002): 1339-1367.

[2] Arbache, Jorge Saba, Andy Dickerson, and Francis Green. "Trade Liberalisation and Wages in Developing Countries*." The Economic Journal 114.493 (2004): F73-F96.

[3] Santos-Paulino, Amelia, and Anthony P. Thirlwall. "The impact of trade liberalisation on exports, imports and the balance of payments of developing countries." The Economic Journal 114.493 (2004): F50-F72.

[4] Shaheen, Salma, et al. "Impact of trade liberalization on economic growth in Pakistan." Interdisciplinary Journal of Contemporary Research in Business 5.5 (2013).

[5] Chaudhry, Imran Sharif, Ali Malik, and Muhammad Zahir Faridi. "Exploring the causality relationship between trade liberalization, human capital and economic growth: Empirical evidence from Pakistan." Journal of Economics and International Finance 2.8 (2010): 175-182.

[6] Yasmin, Bushra, and Zainab Jehan. "Trade liberalization and economic development: evidence from Pakistan." (2006).

[7] Dutta, Dilip, and Nasiruddin Ahmed. "Trade liberalization and industrial growth in Pakistan: a cointegration analysis." Applied Economics 36.13 (2004): 1421-1429.

[8] Ju, Jiandong, Yi Wu, and Li Zeng. "The impact of trade liberalization on the trade balance in developing countries." IMF Staff Papers 57.2 (2010): 427-449.

[9] Naveed, Amjad, and Ghulam Shabbir. "Trade Openness, FDI and Economic Growth: A Panel Study." Pakistan Economic and Social Review (2006): 137-154.

[10] Wacziarg, Romain, and Karen Horn Welch. "Trade liberalization and growth: New evidence." The World Bank Economic Review 22.2 (2008): 187-231.

[11] Busse, Matthias, and Steffen Gröning. "Assessing the impact of trade liberalization: The case of Jordan." Available at SSRN 1738210 (2011).

[12] Hadjiyiannis, Costas. "Common markets and trade liberalization." Canadian Journal of Economics/Revue canadienne d'économique 37.2 (2004): 484-508.

[13] Ben-David, Dan. "Equalizing exchange: Trade liberalization and income convergence." The Quarterly Journal of Economics (1993): 653-679.

[14] Kaltenthaler, Karl C., Ronald D. Gelleny, and Stephen J. Ceccoli. "Explaining citizen support for trade liberalization." International Studies Quarterly 48.4 (2004): 829-852.

[15] Saito, Hisamitsu, Munisamy Gopinath, and JunJie Wu. "Heterogeneous firms, trade liberalization and agglomeration." Canadian Journal of Economics/Revue canadienne d'économique 44.2 (2011): 541-560.

[16] Ozturk, Ilhan, and Huseyin Kalyoncu. "Foreign direct investment and growth: An empiricial investigation based on cross-country comparison." (2007): 75-82.

[17] Devereux, Michael B. "Growth, specialization, and trade liberalization." International Economic Review (1997): 565-585.

[18] Mussa, Michael. "Macroeconomic policy and trade liberalization: some guidelines." The World Bank Research Observer 2.1 (1987): 61-77.

[19] Edwards, Sebastian. "Openness, trade liberalization, and growth in developing countries." Journal of economic Literature (1993): 1358-1393.

[20] Atique, Zeshan, et al. "The Impact of FDI on Economic Growth under Foreign Trade Regimes: A Case Study of Pakistan [with Comments]." The Pakistan Development Review (2004): 707-718.

[21] Globerman, Steven. "Trade liberalization and competitive behavior: A note assessing the evidence and the public policy implications." Journal of Policy Analysis and Management 9.1 (1990): 80-88.

[22] ishrathusain.iba.edu.pk/speeches/Oct2007/Trade_Liberalization.doc

[23] Akhtar, Muhammad Ramzan. Effects of trade liberalization on agriculture in Pakistan: commodity aspects. No. 32697. 1999.

[24] Din, Musleh-UD, Ejaz Ghani, and Omer Siddique. "Openness and economic growth in Pakistan." The Pakistan Development Review (2003): 795-807.