IMPACT OF TRADE LIBERALIZATION ON ECONOMIC GROWTH OF PAKISTAN

By

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Candidate of Masters of Philosophy in Economics at the National University of Modern Languages do hereby declare that the thesis (Title) "**IMPACT OF TRADE LIBERALIZATION ON ECONOMIC GROWTH OF PAKISTAN"** is submitted by me in partial fulfillment of M.Phil. Degree, is my original work, and has not been submitted or published earlier. I also solemnly declare that it shall not, in future, be submitted by me for obtaining any other degree from this or any other university or institution.

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DEDICATION

This study is wholeheartedly dedicated to my beloved parents, who have been my source of inspiration and gave me strength when I thought of giving up, who continually provide their moral, spiritual, emotional, and financial support.

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Abstract

In this study the relationship between trade liberalization and economic growth is assessed for Pakistan from the 1980 to 2016. The study estimated three equations: First, the impact of labor force growth and physical capital growth is analyzed on GDP; Second, the labor force growth is effected by trade liberalization, inflation, FDI, government expenditures and human capital; Third, physical capital is affected by the same variables which affect the labor force growth. The estimation is carried out using the Generalized Method of Moment technique (GMM). The results obtained from this study show that trade liberalization does not affect the GDP directly. It works through the channel of labor force growth and physical capital growth. The results of this study also indicate that trade liberalization positively impacted the labor force growth and the physical capital growth and in turn these two variables positively impact the economic growth of the country. The results of the study show that besides trade liberalization, foreign direct investment, human capital and government expenditures are the main contributors in economic growth. The finding recommended that government should make export oriented trade policies and should formulate FDI-led policies and direct the government expenditure to education sector to achieve the objective of higher economic growth.

Key words: Gross domestic product (GDP), trade liberalization/ trade openness (TO), Government expenditure (GE), foreign direct investment (FDI), Human capital (HC), Inflation (INF). Generalized Method of Moment estimation technique (GMM).

JEL Codes classification: E01, F14, H50, F20, I20, E31, C32

Contents

Chapter 1

1.1 Introduction

In the recent few decades world is quickly converting into the global village. In the process of this transformation many factors contributed to the world economy and one of the most significant factors which contributed more to the world economy is trade liberalization. Trade liberalization has contributed more to the development process to the countries of the world, as compare to the other factor who have also contributed to the development process of the countries. It is because, through trade liberalization different countries in the world interact with each other without any hurdle and share their knowledge, skills, technology, goods and services etc. when countries do trade with each other this process increase the availability of choices to the countries, and also increase the efficiency in allocation of countries resources, increase the inflow of new technology and helps to improve the existing technology of the countries which lead to increase the production of more goods and services and ultimately increase overall economic growth of the countries. According to the new explanation of Edward (1993) Trade liberalization is an era, in which all the trade barriers like import tariffs and export subsidies are eliminated and encourage the free flow of goods and services between the partner countries.

Trade liberalization is considered a very important factor which significantly contributed to the economic growth of a country. By looking the gains from trade many international financial institutions like world trade organization (WTO), World Bank (WB) and international monetary fund (IMF) are working to encourage more trade liberalization. These institution motivate countries to open their trade with the rest of the world and achieve the efficiency through the world competition and expand their export sector, to grow the economies more rapidly. Trade liberalization discouraged trade barriers. The more trade barrier a country has, the lower will be their export expansion. But the country like Pakistan, who liberalized its trade gradually after 1988 when the government of Pakistan first time accepted the structural Adjustment program of International monetary fund (IMF). And later, from 1995 to onward the structural Adjustment program policy of IMF gained greater importance and all the agreements of WTO encouraged Pakistan to decrease their imports restrictions and also encouraged to reduce various types of subsidies.

But after the liberalization of trade in Pakistan, they expand their import sector more, instead of expanding the export sector. As a result of this policy Pakistan face trade imbalance. When countries increase their imports and decrease their export in free trade liberalized era, it results as the trade deficit which worsens the economic environment of the countries. If trade liberalization in a country expands their export market and helps to allocate their resources efficiently, then trade openness proves to be beneficial to the country and consequently increase their economic growth and attract more investment from the foreign residents into their country.

On the one hand trade liberalization is considered as a key factor to increase the economic growth but on the other hand it can also inversely effect the economic growth. Like when the countries reduce their tariffs from imports than it reduces the government revenue collection. In developing countries this loss is ranging from 10 percent to 20 percent of the total government revenue. And to fulfill this loss these countries impose other taxes on their citizen which cause a further economic distortion into the country. As agriculture sector is considered as the backbone of the developing countries, so if tariffs are removed from agriculture commodities it can leads to the higher level of unemployment into the economy.

So considering the case of Pakistan, their imports are greater than their exports and currently Pakistan is facing twin deficit. Trade deficit and budget deficit so these things motivate this study to analyze the relationship whether trade liberalization contribute to the economic growth of Pakistan or not.

1.2 Problem statement

Trade openness is considered as the engine of economic growth but from previous many years Pakistan face twin deficit, trade deficit and budget deficit. Many previous studies also investigated this relationship of trade liberalization and economic growth but they found mixed results. Some studies found positive and some studies found negative relationship of trade liberalization with economic growth. This study will investigate the relationship among liberalization of trade and economic growth of Pakistan, that whether liberalization of trade increases the growth rate of economic development of Pakistan or not.

1.3 Previous studies conducted on this topic

There are many studies which have been conducted on this topic at national and international level. Like, keho (2017) investigated the relationship between trade liberalization and economic growth in the case of Cote d'Ivoire. Zhonogo (2017) also analyze the same phenomena in developing counties specifically the evidence from Sub Saharan Africa. Similarly Yeboah, *et al. (2012)* analysis the relationship of trade liberalization and economic growth in African countries, Olufemi (2004) analysis in Nigeria, Sheheen, *et al. (2013)*, Muhammad, *et al.* (2012), Atif, *et al.* (2010), Iqbal, *et al.* (2010), Siddique and Iqbal (2005), examined this relationship in case of Pakistan economy whereas Asiedu (2013) investigated this relationship for Ghana economy and Tan (2012) investigated for Singapore economy. There are many other studies which have been conducted on this topic.

1.4 Significance of the study

This study will offer the view point of current condition prevail in the Pakistan regarding trade openness and its impact on economic growth. And also analyze the current scenario of inflation, FDI, Government expenditure, human capital, physical capital, labor and its effect on the Pakistan economic growth. The combination of the variables which are used in this study with trade liberalization to find out its effect on economic growth is not used before in case of Pakistan according to the best of my knowledge which I have gained by reviewing the literature of different studies which had been conducted on Pakistan economy.

1.5 Delimitations of the Study

Delimitations of the study are as follow

- This study is conducted only on Pakistan economy.
- This study uses the data form time period ranging from 1980 to 2016. The data which is used in the regression analysis are collected from the sources of World development indicator (WDI) and economic survey of Pakistan various issues. There are many factors besides the trade openness which can influence the economic growth of Pakistan.

1.6 Main goals of the study

- Find out the impact of trade openness/liberalizations on economic growth of Pakistan.
- To find out the impact of other explanatory variables (including, inflation, foreign direct investment, physical capital formation, human capital, labor) on economic growth of Pakistan.
- To give the effective policy recommendation in the light of the results obtained from the study.
- Provide the overview of the history of trade liberalization in Pakistan.

1.7 Hypothesis of the study:

The null and alternate hypotheses of the study are given as:

H_0 Liberalization of trade has no considerable effect on economic growth in case of Pakistan

H_1 Liberalization of trade has considerable effect on economic growth in case of Pakistan

1.8 Research Questions:

Research questions that will be addressed in this study include:

- Does trade liberalization has positive implications for economic growth?
- How other independent variables or explanatory variables (which are used in this study) effect the economic growth?

1.9 Organization or compilation of the study:

This thesis or the study is ordered in this way, in which chapter one describes the introduction of the topic and also presents the problem statement of the study, previous studies conducted on this topic, significance or worth of the study, the main objective of the study, and hypothesis which is tested in this study and also the research question of the study are included. Whereas chapter two give details background of trade liberalization in Pakistan decade wise and starts from 1950 to 2010 and onward. Chapter three presents the literature review of existing national and international studies on the topic of trade liberalization. Chapter four comprises the theoretical frame work of the study, estimation technique and different diagnostic tests which are applied on the data. Chapter five presents the estimations results and discussion while chapter number 6 presents the conclusion and policy recommendations which are given on the base of study results.

Chapter 2

Literature review:

2.1 Introduction:

This study examined the effect of trade liberalization on the growth performance of Pakistan economy. There are many studies available which analyzed the same topic on national and international levels. In this chapter many previous studies have been reviewed and analyzed their findings. Many researcher find out the positive association between trade liberalization and economic growth while and many others observed the negative association of trade openness on economic growth through different channels. Some also observed the ambiguous effect of trade liberalization on economic growth. There is no consensus on the effect of trade liberalization on economic growth. Both theoretical and empirical studies examined this phenomena like Romer (1986) and Lucas (1988) in the light of endogenous growth theory explain that investment on human capital and innovation increase the economic growth whereas trade liberalization increase flow of technology and new knowledge which increase innovation into the economy and consequently increase the economic growth. Similarly, Edwards (1998) claimed that increment in economic growth in developing or poor economies does not only depends upon the trade liberalization process but also on its initial stock of knowledge, and its cost of coping the goods which comes from abroad through trade. Edward also stated that if the cost of coping innovative goods is less in developing countries as compare to developed countries, than developing or poor economies grow faster as compare to advanced economies, this process of trade liberalization leads developing countries toward convergence path.

[Levine and Renelt (1992)] and [Rodrigez and Rodrik (1999)] claimed the contradictory of this idea. Levine and Renelt (1992|) suggested that higher degree of trade liberalization into the countries adversely affect the level of domestic investment which cause the reduction in economic growth. Whereas Rodrigez and Rodrik (1999) stated that the positive relationship of trade liberalization and economic growth is not strong because there are some problems in liberalization measures or deficiency of the suitable control variables and also use of inappropriate techniques which are used to measure the impact of trade liberalization.

2.2 Literature review:

2.2.1 Trade liberalization effect economic growth through technology transformation:

There are many empirical studies which focused on the impact of trade liberalization on economic growth. Trade liberalization effect the economic growth through increasing or decreasing the export and import also through technology transformation, knowledge sharing, and foreign direct investment, and there are many other channels through which trade liberalization can affect the economic growth. Technological advancement increase the economic growth as some investigator advocate that trade liberalization increase the technology transformation from developed countries to developing countries which leads to increase the economic growth. Economies who liberalize their trade with advanced economies are able to get the advance technology, which helps to increase the economic growth of that country (Edward 1992).

Fluctuations in the technological improvement obtained outwardly have stable economic growth effects. Trade liberalization play a vital role in the distribution of technology and evolution form high income countries to low income counties. Trade liberalization lead to bring the technological progress, and new skills starts moving from developed countries to developing countries or high income countries to low income counties, which leads to increase the productivity and as a result economic performance of the country increase (Gundlach 2007) , (Ray 1998) and (Coe and Helpman 1995). Also trade liberalization increase the technological progress, and the association between domestic and international technology, also the association between domestic and international skills and knowledge would increase the economy production capacity and brings new innovations into the production process that are expected to rise the economic growth [(Shaw 1992)].

However, researchers give importance to trade liberalization in achieving high level of economic growth by affecting the total factor productivity of the economy. Trade liberalization increase the total factor productivity growth by lowering the tariffs from the final goods and as well as the easy access to the better input goods due to the lower tariff on these inputs, also explain that this positive effect is greater in input competing industries and the industries which have less domestic regulations [Topalova and Khandelwal (2011)], [Ferrira and Rossi (2003)], [Njikam and Cockburn (2011)]. But another empirical study represents the contradictory views that in case of developing economies trade

liberalization inversely affect total factor productivity because developing economies are unable to adopt or replicate the technology that comes through trade liberalization. Also developing economies highly dependent on the foreign manufacturing goods that is the reason behind the negative impact of trade liberalization on total factor productivity growth of the industrial sector, which leads to decrease the economic growth of developing economies (Majeed *et al.* 2010).Though advanced technology, advanced knowledge and efficient resource distribution techniques are more easily attained through trade liberalization era, there are many studies which present the negative relationship of trade liberalization and economic growth. Like the empirical study of Matteis (2004) suggested that trade openness sets the exogenous obstacles to economic growth. This is definitely harmful to new economies, since it contributes to impose their dependency on global demand and it increase their susceptibility to the variations of global market.

But there are some other empirical studies who support the view that trade liberalization successfully increase the economic growth of a country, only by the development of specific policies or by the presences of particular requirements. For international trade liberalization influence to be robust in developing economies, Rodrik (1997) projected the increment of human capital, physical capital, macroeconomic constancy, private sector progress and the rule of law. And further, Abramovitz (1986) and Howitt (2000) supported that developing economies or host economies in trading partners should have an adequately higher level of "social competence" in order to effectively implement technological development in more developed economies. In conclusion, the execution of the knowledge and technology also depends upon the "absorptive capability" of an economy which is determined by the human capital and Research and Development investment. Due to the absence of investment on research and development and investment on human capital is a constraint in the way of less developed economies to get the benefits from advanced technology which comes through the trade liberalization.

Furthermore, A quantitative analysis support that trade liberalization, conferring to the Solow (1957), increase the flow of capital goods and advanced technology from advanced economy to developing economies which expand the industrial activities and increase trade volume in manufacturing products which consequently increase the economic growth [Harrison (1994)]. Whereas, when the role of trade liberalization in leading new technological progresses by more efficient production techniques and the role of the increase in total factor output by contributing to an optimum

allocation of resources are measured, the significance of policies to rise the openness obviously comes out in terms of both attaining integration in world economy and giving a strong and maintainable economic growth. Consequently, as an effect of policies to be applied in this way, the increase in openness particularly in exports will support economic growth via increasing the economic performance of Economies [(Turedi and Berber, 2010), Mercan *et al.* (2013)].

Empirical study of David (1998) suggested that trade liberalization reduce the income gap between trading countries and positively affect the economic growth of that countries. Because trade liberalization increase the flow of knowledge and technology which helps to boost the economic growth or trade liberalization put positive impact on steady-state growth path of trading countries.

Also trade liberalization increases the economic growth by enhancing the efficiencies of human capital. Human capital efficiency increases through the transformation of knowledge and technology. Trade liberalization positively affect the human capital in both developing and developed countries but the effect is significant for the developed countries and insignificant for developing countries because developed countries have well trained human capital. And the benefits of trade liberalization through human capital are not achieved by the developing countries because of their less trained worker or human capital. So developing countries are advised to invest in their human capital to achieve the benefits of trade liberalization [Jadoon *et al*. (2015)].

Trade liberalization increase the economic growth by improving efficiency and through economies returns to scale. Further explained liberalization of trade improves the local technology which helps to produce goods more efficiently which leads to increase the country economic growth [Jin (2000)]. Similarly trade liberalization is a source of technology transformation from one country to another country. Advance technology transformation take place from one country to another country also through the multinational nation firms in home country and their subsidiaries firms from another country. The multinational firms have an advantage to transfer their old technology to their branches or subsidiaries firms in developing economies and advanced technology transfer to their subsidiaries firms in developed economies which helps to increase the economic growth [Manfield and Romeo, (1980), Ramachandran, (1993) and Javorcik (2006)]. It is also stated that the flow of advanced technology form parents firm to their subsidiaries firm increase the value of intellectual property rights in the host economy [Branstetter e*t al. (2006)*].

International trade increase the flow of technology through import and export like, Imports can increase the flow of advanced inputs which are not available in their domestic markets and used in the production of final goods of that country. The innovation which comes in the production process due to technologically advanced capital goods leads to improve their domestic technology and contribute to the higher economic growth [Helpman and Grossman (1991)]. If Advance technology and knowledge are used in the production process then importer becomes more innovative in the production of goods than the firms which are producing only by using the domestically available sources. Likewise, exporters also learn about the advanced technology and new knowledge through trade liberalization by interacting with well-informed customers. Furthermore, exporters face foreign competition which motivated them to learn about new innovations and improve their technology to compete with the foreign market. If foreign competition promote new innovation and advanced technology adoption than exporters adopt the advanced technology as compare to the firms which are selling entirely to the home market or domestic market. The cross country studies confirmed a positive relationship of trade liberalization and technology adoption [Caselli and Coleman II, (2001), and Comin and Hobijn, (2004)]. Similarly studies confirmed a positive relationship of trade liberalization and research and development investment [Lederman and Maloney (2003)].

Trade liberalization greatly influence the technology adoption process in economies whom absorptive capacity is large, absorptive capacity in sense of skilled labour [Caselli and Coleman II, (2001) and Keller (2004)] and efficient institutions of the countries [Clarke (2001)]. Also many studies provided the evidence that firms adopt new technology through their contact with foreign customers and suppliers [Rhee *et al* (1984), Hobday (1995) Pack and Saggi (1999), and Westphal (2002)].

However, trade liberalization era increase the effectiveness through great competition and better resource allocation, second way to increase the economic growth is that through trade liberalization countries adopt new technology and import capital and intermediate goods which leads to increase the size of the market, and also trade liberalization increase the production capacity of the economy and helps to achieve the economies of scale. Through these channels trade openness increase the economic growth of the country [Din, *et al (*2004)]. Similarly the higher inflow of technology from developed countries to developing countries through the trade liberalization process by keeping the other things constant increase the diffusion process of technology [Baumol *et al.* (1994)]. Clearly advanced

technological absorption and diffusions leads to increase the technical and human skills that finally increase the economic growth in the long run.

Barro and Sala-I-Martin (1995) stated that the countries with more trade liberalization have an excessive ability to absorb more technological development which is generated in the developed economies, and this absorption capability of technological development leads them to accelerate the more economic growth than the economies that have lower degree of trade liberalization.

Trade liberalization positively affect the economic growth through the linkage with technological innovations, means trade improve the technological innovation into the country which further leads to contribute to economic growth of the country [Almeida and Fernandes (2008)].

Openness to trade or trade liberalization is a source of countries to the efficient resource allocation and welfare. Also liberalization of trade increases the competition between domestic firms and foreign firms which helps to achieve the higher output growth and lower prices of goods. Moreover by increasing the competition into the economy and liberalization of trade considered as the source of the arrival of new skill and advanced technology and capital like foreign direct investment that may increase the economic growth [Markusen *et al.* (1995), also Alvarez and Lopez, (2008) and Kemeney, (2007)].

2.2.2 Trade liberalization effect economic growth through physical capital formation:

Waczairg and Welch (2008) analyzed that trade liberalization increase the economic growth by accelerating the physical capital formation. Whereas the study of Anderas and Babula (2008) examined that both capital accumulation and factor productivity increase the economic growth. Not only physical capital formation increases the economic growth. Anderas and Babula also stated that the main cause of economic growth is not capital accumulation. The effect of trade openness on economic growth generally works through productivity growth. In context where growth is determined by innovation, the impact of trade liberalization on economic growth has three aspects. First aspect is that the international trade provides the access to foreign transitional inputs and technologies. These inputs which they can import directly used in the production of those good which they further export. Second international trade also increases the size of domestic market for the production of new products. And the third aspect is that international trade permits for the dispersion of general knowledge, and trading partner share their knowledge which further help to improve the research and development process and modernization. These all three aspect helps to boost the economic growth.

Similarly trade liberalization increase the economic growth through the productivity and capital accumulation channel and also contribute to enhance the investment level into the economy to foster the economic growth. But these outcomes of trade liberalization are not achieved in low income countries because low income countries have weak institutions in the sense of quality and also face distorted government policies due to which they cannot achieve the benefits of trade liberalization [Kim and Lin (2009)]. As trade liberalization is suggested as an important factor to contribute into the economic growth similarly financial liberalization is also considered as an important factor to contribute into the economic growth. Acemoglu and Zilibotti (1997) analyzed that developing or economically backward economies can increase the merging process to meet the developed economics through the liberalization of their capital or financial markets, as capital transfers form capital abundant nations toward less capital abundant or capital scarce nations as a results economic growth increases in long- run. Also trade liberalization impact the economic growth through capital investment and productivity channel [Hall and Jones, *(1999)]*.

By analyzing the relationship of trade liberalization and economic growth Asiedu (2013) stated that in long run trade liberalization provides diversification or help to diversify the economy which helps to rise the economic growth of the country. Asiedu (2013) also stated that increase in physical capital accumulation helps to accelerate the investment level into the economy which results in increase the economic growth of the country.

Whereas Njikam *et al.* (2006) analyzed the factor behind difference in the total factor productivity in Sub Saharan Africa (SSA) countries. Factors which are analyzed are listed as: trade liberalization, physical capital formation, population growth, financial depth and term trade variability. By analyzing the data, Njikam *et al. (2006)* study results shows that trade liberalization is favorable to the Sub Saharan Africa (SSA) countries only when supply condition will improved, like improved transportation and communication infrastructure, to improve supply of electric energy, improve the governance of the country and reduce corruption and provide sufficient education to the labor force. Also the study results demonstrated that physical capital formation is important factor for the total factor productivity and financial sector is also an important factor for total factor productivity in few Sub Saharan African countries. Same case happened with the population growth, it is important for some countries and negative for others.

2.2.3 Trade liberalization effect economic growth through the labour force productivity growth channel:

Openness of trade policy reforms plays a fundamental role to enhance the economic growth in the economy of Pakistan. Like in Pakistan after 1980's, reduction in the tariff rate of manufacturing sector, trade liberalization put positive and significant impact on economic growth. Because after tariff reduction Pakistan started to import raw material and transitional goods into the economy which rise the productivity level of labor and led to enhanced the output level of the economy [Umer (2014)].Also trade liberalization is beneficial or able to increase the economic growth only when there is negligible labor market distortion in the economies. So when countries face huge distortion of labor market like underemployment or unemployment then trade is not the source to increase the country's economic growth. So that economies specific factor are equally important to make decision about the liberalization of trade, that whether country should open its trade to the world or not. [Chang *et al* (2009)].

However to demonstrate the effect of trade liberalization the study conducted by Bhagwati and Srinivasan (2001) stated that trade liberalization initially decreased the employment rate into the country and decrease the real wages of the unskilled worker because trade liberalization brings the greater competition which push out the incompetent firms form the business. But this is temporary effect of trade liberalization. In long run trade liberalization increase the economic growth, and higher economic growth leads to decrease the poverty level from the country.

Also trade liberalization rise the economic growth of the country through the flexible labour market of that country [Busse and Hefeker (2009)]. Many other studies also conducted to analyze this effect like, Trade liberalization did not increase the employment level in the Mexican economy due to the large restriction imposed on the labor market or because to the excessive labor market regulations [Revenga (1997)], while IADB (2004) analyzed the different trade liberalization measures to examine the consequence of trade liberalization on employment level in the Latin American economies. IADB (2004) concluded that the impacts of trade liberalization measure are less on employment while wages are affected more adversely. This effect occurred due to the restrictive regulations on labor market. These results are also supported by the study of Rama (2003) who conducted a study on developing countries, and concluded that trade liberalization have less adverse effect on employment and have more adverse effect on wages. Also [Eichengreen and Iversen, (1999)] demonstrated that trade

liberalization did not increase the economic growth or have minor effect on economic growth of the country where labour market characterize with huge restrictions or have inflexible labor laws. Similarly Hassan (2001) examined the relationship of trade liberalization and economic growth through labor market of manufacturing sector by using the panel data of 48 developing economies. According to Hassan trade liberalization decrease employment level in minor or small amount in the small period of time but in longer time period it increases the employment level as well as economic growth of the country. This effect of trade liberalization occurred through the exchange rate channel. An average tariff rate or reduction in tariff rates shows that the economies who have flexible labor market achieve more economic growth through trade liberalization.

2.2.4 Trade liberalization effect economic growth through export channel:

Trade liberalization affects economic growth through the expansion of export market. The advocate of the export-led growth hypothesis stated that export is key factor to increase economic growth. There have been growing arguments and debates in the Favor of export-led strategy growth: an enlargement of trade will rise productivity through increasing economies of scale in the export sector, productivity will be positively affected through an increase in better allocation of resources which will be driven by specialization and increase in efficiency. This will, in the long run, generate dynamic comparative advantage through reduction in costs for the exporting country Ahmed *et al*. (2011). Another benefit in the export-led strategy is through the process of collaboration with the international markets, there will be dispersion of knowledge through learning-by-doing and a better efficiency in management through efficient management practices which will have a net positive consequence on the other parts of the economy and overall increase economic productivity, export growth will similarly foster capital accumulation and foreign exchange, which will allow import of capital and transitional inputs necessary for the manufacturing of export goods. This is supported by Asafu-Adjaye and Chakraborty (1999) who identified that importation of transitional and capital goods are essential inputs in the production of exports in less industrialized economies Ahmed *et al*. (2011).

Furthermore, according to another study Baldwin and Gu (2004), trade liberalization significantly increase the growth level of export sector of Canadian economy. Through the trade liberalization, exporter increase their export share in world market and increase the overall productivity growth by learning from international competition, and by increase the specialization in production to

achieve economies of scale. It also helps to increase the investment in research and development process which further helps to achieve the objective of higher economic growth [Emery (1967), Balassa (1978), Feder (1983), Fosu (1990)] these studies also supported the export –led growth hypothesis.

Similarly in the context of growth theory, export growth plays an important role in encouraging productivity growth in less developed economies. This is because exports not just rise the efficiency of the export sector, but also expand productivity in non-export zones through positive externalities (Sharma and Dhakal, 1994). Moreover, export expansion increase the economic growth and also put the positive externalities on the non-export sector which helps to increase the economic growth. But this impact of export expansion is different from region to region like it put positive impact on developing region and developed region but put negative impact on less developed region [(Sun and Parikh, 2001)] Also a study conducted on Pakistan economy by Anwar *et al.* (2010) by covering the time period of 1971 to 2008 suggested that trade liberalization increase economic growth of Pakistan by increasing the exports of their cotton industry.

In another study it is stated that trade openness in developing economies caused progresses in their economic performance. The reason behind this has been the exposition that trade openness lessens anti-export bias and makes exports further competitive in world markets (Arslan and Wijnbergen, 1993).While new growth theory advocates that trade liberalization permits producers access to world markets and causes the emerging economies to have access to capital goods and transitional goods for the process of development, which are dangerous. But finally, if the growth engine can be the innovative goods supplier, then trade will play a significant role in economic growth by allowing access to new institutions (Gorji and Alipuryan, 2006).Another quantitative study conducted on Bangladesh economy analyzed the impact of trade liberalization on economic growth revealed that trade liberalization polices certainly helps to boost the export sector of the economy which eventually increase the economic growth [Mani and Afzal (2012)]. Later on, Ali and Abdullah (2015) conducted a study on Pakistan by covering the time period of 1980-2010 and using Vactor Error Correction Model (VECM) and Jonhanson Multivariate approach, suggested that trade liberalization negatively affect the economic growth because of the weak conflict management institution and the absence of quality institutions in the economy. Also this inverse relationship is may be due the exportation of raw material in place of final goods. But the study of Javed *et al*. (2012) presented that trade liberalization increase economic growth by importing the raw material which is used to produce the final goods which further

increase export of a country to the world market. Importation of raw material also increases the employment and output level into the economy.

Similarly trade liberalization increases the productivity by increasing the export, and export increased by the easy access to the input goods which are used to produce the goods which country further export to the world market. Real effective exchange rate of the economy helps to increase the performance of export market which effect the economic growth positively [Babatunde (2009)]. Also Export- promotion increase the flow of foreign direct investment as compare to import substitution, and foreign direct investment (FDI) firms invest more in the countries who are export-oriented counties. The inflow of foreign direct investment leads to increase the innovation, increase the market size of the country, bring the efficiency in production process, generate employment opportunities and increase the research and development (R&D) activities and ultimately increase the economic growth [Balasubramanyam *et al*. (1996)]. Moreover, Sakyi (2015) suggested that connection of FDI and trade liberalization increase economic growth. FDI in export-oriented economies increase the economic growth. Furthermore trade liberalization positively contribute to the export sector and increase the effectiveness of labor and increase the capital stock of countries, the improvement in all these variable increase the economic growth of the country [Dutta and Ahmad (2004)].

Also trade liberalization expands the export sector and expansion of export sector led to use the economy idle human and capital resources which are used to produce more goods and services which further increase the economic growth. Beside the expansion of export sector exchange rate and investment are the significant factor to increase the economic growth. Trade liberalization also provides the foreign exchange which helps to finance the capital goods which industries used for the production of goods. So exchange rate also considered as important factor to positively contribute to the economic growth. Besides these factor many other factor are also helps to increase the economic growth [Iyoha and Okim (2017)].

Later on, Atif (2010) analyzed that trade liberalization and financial liberalization both increases the economic growth in long run as well as in short run. Trade liberalization increase the economic growth of a country by encouraging the exports of the country, and financial liberalization support the financial led growth hypothesis. Financial liberalization increases the economic growth of a country in several ways like: financial markets of the country motivate the small savers to save more, small savers are encouraged by providing the vast range of saving drivers, and as financial development rises the saving

rate it leads to the efficient allocation of capital, furthermore financial development move the credit from low growth sector to high growth sector. Financial development also helps to promote the specialization and technological development in production sector and also encourage the entrepreneurial activities [Ansari (2002)].

One of the study conducted by UNCTAD (2008) to examine the performance of export sector of African economies after opening up their trade with the rest of the world, between the time period of 1980s and 1990s and onward suggested that, after trade liberalization the exports of African economies did not significantly increased and their balance of payment (BOP) had deteriorated. The final conclusion is that those economies remained the producer and exporter of primary good which demands in international market is very flexible or inelastic.

However, by conducting a study on Mexican manufacturing sector, suggested that trade liberalization increase the productivity on sectoral level into the economy. The productivity level of the sector increase through the channel of importing intermediate goods which are used to produce the final goods which Mexico further export to the international market, so increased exports leads to increase the economic growth of manufacturing sector in Mexican economy [Iscan (2007)]. Similarly trade liberalization increase the export of the Mexican economy which leads to increase the investment rate at sectoral level and also helps to boost the labour productivity growth [Iscan (1997)]. But the study of Yotopoulos (1996) stated that long term economic growth is not determined by or predicted by the share of export while it is predicted by the real exchange rate.

Whereas another empirical study demonstrated that by reducing the tariff and non-tariff barriers, economy imports the capital goods, financial services and financial goods as well as technological transformation also take place form industrialized countries to less industrialized countries. And the countries become able to expand its export market and increase the efficiency of their domestic markets. Trade volume also positively contributes in the economic growth of Middle East and North Africa (MENA) countries [(Hozouri (2017)].

2.2.5 Trade liberalization effect economic growth through imports channel:

The empirical work done by Battra and Slottje (1993), Leamer (1995) investigated the association of liberalizations of trade and economic growth and also recommended that trade liberalization harm the domestic economy. Because by reducing the tariff from imported goods, it help

to make imported goods more attractive over domestically produced goods. As result local or domestic economies damaged or may suffer loss. While another study suggested that, the imposition of restrictions on import of goods and services gives rise to the prices of import able goods and services as compare to exportable goods and services. So to remove the restriction from import cause the shift of resources from import substitution sector to export oriented goods. This, in response will increase the economic growth as economies adjust their resource according to the comparative advantage [McCulloch, Winters and Cirera, (2001)]. Also trade liberalization spur economic growth of a country when value added industrial goods are taken into account. Also suggested that to strengthen the economy and achieve the high living standard, developing countries must adopt the trade liberalization policies [Ellahi *et al.* (2011)].Whereas, Ali *et al.* (2016) investigated the relationship of trade liberalization and economic growth and suggested that Bangladesh imports exceeded from their exports which created the imbalance of trade and this imbalance leads to the deficit of country's trade. On the other hand Bangladesh value added products positively contribute to the economic growth of the country. Similarly another study also describes the importance of value added product which boosts the economic growth, Sultan (2008) investigated that the growth of import and export is not only the source to increase economic of the country but industrial value added products contributed more than the imports and exports into the economic growth

Furthermore, the work done by Hamad *et al.* (2014) explored the affiliation of trade liberalization and economic growth in the economy of Tanzania in both period of time, pre trade liberalization period and post trade liberalization period but the study revealed that in both time periods trade positively impacted the economic growth but this effect is smaller than pre trade liberalization period. This smaller effect occurred because, after trade liberalization period Tanzania's imports exceeded over Tanzania exports in term of monetary values. So as a result country still faces balance of payment deficit. So to gain the benefits of trade country's needs to move toward export oriented trade.

Shafaeddih (2005) claimed that trade liberalization, "the way it is suggested under the Washington Agreement, trade liberalization is more probably to lead to the damage of the prevailing industries into the country, mainly of those industries that are recently established or at their initial phase of beginning leading to appearance of new ones" this observation of Shafaeddih (2005) helps to give support to the import substitution policies or encourage to rise the inflow of capital goods which are further used to produce the exportable goods.

Moreover, Liberalization of trade leads to increase the imports which may leads to increase the output growth Tahir *et al*. (2002). However Tahir *et al*. (2001) stated that Pakistani imports are consisting of transitional goods like petroleum goods, machinery and chemicals etc. these goods are helpful to increase the output growth. So import growth positively affects the economic growth. Also trade liberalization promotes economic growth in Moroccan economy by increasing the flow of inputs (from trading partner countries to Morocco economy) which are used in the production of goods which further Morocco export to the world market. So liberalization of trade provide the wide range of markets to the Morocco economy to increase their flow of import and those imports leads to increase the export of that economy which further leads to increase the economic growth [Bouoiyour (2013)]. Similarly trade liberalization which is measured through the imports and exports, explained that increased flow of imports bring the competition into the Latin American countries which bring the positive effect on economic growth. Whereas increased export in that countries increase the flow of new knowledge of international practices which increase the productivity level of labor force growth and this further leads to rise the economic growth of that countries [Paus *et al*. (2003)].

2.2.6 Trade liberalization effect economic growth through investment channel:

Some studies observed that trade liberalization effect the economic growth through investment channel. Levine and Renelt (1992) and Baldwin and Seghezza (1996) demonstrated that trade liberalization increase the economic growth of a country only when it increase the investment level. When investment is controlled for, then the trade liberalization did not increase economic growth of the country. Similarly Seghezza (2003) suggested trade liberalization effect the economic growth by putting the impact on investment, and also advocates that trade liberalization increases the investment in all countries whatever the countries are exporting capital intensive goods or countries are capital concentrated in their exports. Whereas Khan and Qayyum (2007) conducted a study on Pakistan economy and analyzed that financial liberalization and trade liberalization increases the economic growth. Financial liberalization increases the ability of financial mediators to increase the supply of fund which leads to boost the investment and economic growth. And trade liberalization increase economic growth through the channel, that market forces allow the resources to move from less productive sectors to more productive sectors and achieve efficiency. And through trade liberalization economies are able to achieve economies of scale which helps to increase the economic growth.

Also the study of Chang *et al.* (2005) recognized that the influence of increased trade openness on economic growth will be greater if the process is reinforced by higher investment in human capital, larger markets and with the accessibility of infrastructure. Similarly according to Dobre (2008) trade liberalization increase the economic growth by improving productivity growth as well as increase competition in domestic markets and by increasing domestic investment.

Furthermore, according to khan and Bashar (2007) by conducted a study on Bangladesh economy, financial liberalization and trade liberalization policies both negatively affect the economic growth because during the time period of 1974 to 2002 the investment climate in Bangladesh was very adverse. Due to this adverse effect financial liberalization reforms were unable to attract the new investment into the economy which put negative impact on economic growth. Whereas trade liberalization also negatively affects economic growth this negative effect occur due to poor or weak supply response of the economy.

2.2.7 Trade liberalization, foreign direct investment (FDI) and economic growth:

Grossman and Helpman (1990), emerging endogenous growth theory, show that trade liberalization and foreign direct investments (FDI) arrivals increase the economic growth. Though, Baldwin *et al* (2001) present an opposing view of endogenous growth effect on economic growth. They show that market opening or liberalization of trade is the sources of international divergence, as a result North industrializes and raises the faster deviating from the South. Whereas, inflow of FDI reduce the economic development of the country, like Asiedu (2013) explains that most of the inflow of FDI go towards the mining creation sector of the country so, in this case foreign direct investment cannot put direct impact on economic growth [Asiedu (2013) and Frimpong and Oteng (2006)].

Later on, Cuadros *et al. (*2004) by analyzing the effect of liberalization of trade as well as financial liberalization on the economic growth suggested that the suitable policies toward FDI and by focus on the complimentary policies helps to grab the fruits of trade liberalization. While Lin (2000) and Lopez (2005) stated that trade liberalization raises the economic growth by improving or augmenting the allocative efficiency and directing of foreign direct investment (FDI).

2.2.8 Trade liberalization affects economic growth through exchange rate channel:

Trade liberalization era cause the large exchange rate devaluation in the economy, which lessen the aggregate supply of input goods by raising the prices level of the goods which are imported and used in the production of domestic goods. As a result, local output level tends to be decreased and local market become fewer competitive [(Adhikary (2011)].Similarly the study of Rodrik (1992) indicate that trade liberalization cause macro-economic inconstancy by increasing the inflation level into the economy, devaluating the exchange rate, and causing the balance of payment crisis. Whereas Levin and Renelt (1992) demonstrate that all growth-related polices (like trade liberalization, macro constancy or stability and fiscal policies and monetary policies, etc.) these are all extremely linked now it might be the bi-directional relationship in the trade liberalization and economic growth: economies with more trade might be found to have higher income, whereas economies who have more income may be efficiently afford the infrastructure that are favorable to trade liberalization, have additional resources to plagued the information exploration costs linked with trade liberalization.

2.2.9 Trade liberalization impact economic growth through regulatory policies:

Trade openness positively affect the growth rate of economic development when regulatory policies of the countries working well. Regulatory policies are considered as very import factor to grab the benefits of international trade. Regulatory policies such as: financial regulatory policy or credit policy, labor and product market regulatory policy. Trade liberalization itself did not be able to increase the economic growth until the regulatory policies of the countries working well. Economies that have better regulatory policies are able to achieve the higher benefits from international trade. Better regulatory policy in the financial sector leads to increase the private sector contribution on domestic and international level. Similarly the efficient labor market provide worker to better working conditions which leads to enhance the output level of the economy and consequently increase the export capacity of the economy [Biwott (2013)].

According to Khan (2007) only real interest rate and physical capital increase the economic growth of Bangladesh. Otherwise financial liberalization, trade liberalization and capital account liberalization put negative impact on economic growth of Bangladesh economy. It may be due to conflicting supply response and absence of reliability of such reform programs. But Trade liberalization

alone did not able to increase the economic growth. The complementary polices are important to take the benefits from trade. The gain from trade often positively affect the economic growth at initial stages, "consequences of trade openness varies from country to country depends upon the different condition and structure of the country and its institutions". The complimentary condition or policies are: investment on the human capital to improve their efficiency, amount of public infrastructure, quality of countries institutions, quality of their supremacy and the labor market flexibility. These things contribute to take advantage from trade liberalization. [Chang, *et al.* (2009)]. Chang *et al.* (2009) also discussed the complementary policies which help to achieve the benefit of trade liberalization. To do investment on human capital and to protect the intellectual property rights of the individual are the examples of complementary policies. Chang *et al.* (2009) suggested that if a country can adopt new technology and be able to hire the capital and labor efficiency then country can grab the full benefits of trade liberalization.

Similarly as trade liberalization is seen as a key factor to speed up the economic growth of a country but the infrastructure is a greater need of trade. The implementation of the better policies toward other sector like improvement in the infrastructure of a country and improvements in the other sector of the economy are very important to gain the full benefits of trade liberalization [stone and strutt (2009)].

2.2.10 Trade liberalization effect economic growth according to the level of development:

Trade liberalization contributes to the economic growth according to the level of development like developed economies are able to get more benefits from trade than developing economies. As the study of Dowrick (2004) revealed that developed economies achieve more benefits from trade liberalization whereas developing economies achieve fewer benefits from trade liberalization. Because developed economies have better and well regulated institution and have skilled human capital and better infrastructure which helps the country to absorb and implement the new technology which comes from trade liberalization process. On the other hand developing economies have lack of all these resources that is why developing economies did not reap the benefits of trade liberalization. Similarly Shafaeddin (2005) conducted a study by choosing three different groups of developing countries as a sample. The first group involved the countries who are newly industrializing while second and third

group consist on those economies that are less industrial base. The study showed that trade liberalization and economic policies put different impact on different economies. But in this sample most of the developing economies showed small or moderate performance and no change in the structure of economic growth the reason is same that developing economies do not have skilled labour, well-regulated institutions etc. Also small or low performance increased the susceptibility of these countries to outside factors.

Moreover, Pakistan is also included in the list of developing economies and the relationship of trade liberalization and economic growth is found negative because Pakistan faces the problem of political instability. The political instability also is a hurdle in way to achieve the benefits of international trade or trade liberalization in term of higher economic growth. If economy is characterized with the trade liberalization and political instability is also prevail in the economy than economy did not achieve the enough benefit from international trade. As Political instability with trade liberalization as important variables to effect the economic growth. Trade liberalization negatively affect the economic growth of Fijian economy due to migration of huge labor force from the country because of bad political situation prevailed in the country. The human capital showed positive relationship with economic growth in Fijian economy (Narayan and Smyth, 2005) whereas trade liberalization promotes economic growth of the countries when they have good institutions of conflict management. Also the complimentary institutions reforms are considered as the key factor to achieve the full fruits of trade liberalization [Stensnes (2006)].

2.2.11 Several other channels through which trade liberalization affect the economic growth:

An empirical study of Lambrechts (2012) explained that trade liberalization increase the economic growth of country by specializing in the production of the commodities or goods in which they have relative advantage. But this positive relationship of trade liberalization and economic growth is conditioned by the political and social stability of the country. If countries have political unrest into the economy then trade liberalization did not increase the economic growth of that country. Whereas according to Redding (1999), trade liberalization negatively correlated with the economic growth when economies specialize in the sector of the economies in which they have relative or comparative disadvantage in term of efficiency growth.

Also Salehezadeh (2002) investigated the impact of trade liberalization with the combination of factor mobility by using the Global trade Analysis project (GTAP) model and find out that due to factor mobility, country resources endowed in efficient manners and reduce the restriction form trade like reduce the tariff and non- tariff barriers from trade moves the production process to the most competitive sector of the economy which increase the economic growth and also trade liberalization process brings the efficient distribution of factor endowment between the sector of production, which brings the higher economic growth into the country.

Bond *et al*. (2005) demonstrated that through trade liberalization size of the markets increases. And through the increased size of the markets trade liberalization allows the economies to get advantage from increasing return to scale and also get advantage from the economies of specialization. Also trade liberalization compel the government to make the policies and then follow these policies to meet the needs of international competition or compel the ruling authorities (like government) to commit the reforms programs under the pressure of foreign competition [Rajan and Zingales (2003)].As a result economic growth increases.

Furthermore, the relationship among trade liberalization and economic growth is implicit through the claim that trade liberalization will bring the efficiency in resource allocation, improve the term of trade and brings change in the real income of factor of production, increase the stock of capital and also increased the purchaser benefit [(Krueger (1998) as well as Bojona (2008)]. These studies did not present the direct channel of trade liberalization through which it effect the economic growth. Whereas Bojona (2008) also argued that no clear effect of trade liberalization on the growth of economic development or on the growth of income is presented in theoretical studies.

Also Bojona *et al.* (2010) examined various static and dynamic models of trade liberalization and in the light of their outcomes, Bojona advocated that trade models only forecast, that liberalization of trade only improve the social welfare, not necessarily improve the economic growth. While Fiestas (2005) examined the nexus of trade openness and economic development or economic growth and concluded that regardless of methodological problems, there is no robust evidence that trade liberalization is destructive for the economic growth.

Furthermore, when the trading countries reduce their tariff line for their partner countries along with the changes in economic growth and effective distance to partner countries, which was the main factor describing for the reversal of the direction of link or relationship among growth and tariff

[Clemens (2001)]. However, Geographical variable are also considered as important factor to gain the benefits from trade. Like the study of Brock and Durlauf (2001) stated that geographical variables can have effect on the growth of the economy which alter the effect of trade liberalization on economic growth.

Moreover, one of the empirically study conducted by Simorangkir (2006) investigated the effect of trade liberalization as well as the effect of financial liberalization on economic growth. By using the structural vector auto regression (SVAR) econometric technique, suggested that trade liberalization in Indonesian economy adversely affect the economic growth because of the low competitiveness of Indonesian goods into the world market and examined, that more financial liberalization push the country to further vulnerable to capital reversal which lead to decrease the economic growth or threaten the economic performance of the country.

Trade liberalization increase economic growth of the country by increasing the competition in domestic market to compete with the world market and increase the productivity of the factor of production and promote the scale efficiency of the economy which increase the economic growth [Kim (2000)]. Similarly trade liberalization increase the economic growth through the Research and development spillover from advanced economies or developed economies to developing economies. The research and development spillover effect increase the total factor productivity of the trading countries [Coe *et al.* (1997)].

Also Chen and Gupta (2006) supported the argument that economies can frequently grow, due to the supposition of increasing returns to scale and claim that international trade liberalization is sources of information spillovers, enlarges output and improves human capital. Similarly, Romer (1990) advocates that trade liberalization offers local manufacturers with a wider variety of capital and transitional goods, expanding the base of creative knowledge and creating faster productivity growth.

2.2.12 Trade liberalization and economic growth ambiguous affects:

The nexus of trade liberalization and economic growth is still controversial. This relationship has been established by [Dava (2012)]. Similarly, Ulasan (2012) stated that trade liberalization and economic growth relationship is not confirmed yet and available literature reviewed on the topic of relationship between trade openness and economic development/growth has not provided the

conclusive and strong evidence. Further, Ulsana stated that theory does not give the significant answer about the nexus of trade liberalization and economic growth.

Conclusion:

By studying the theoretical and empirical literature on the relationship of trade liberalization and economic growth it can be concluded that trade liberalization affect the economic growth through various aspects. And also by reviewing the literature presented above it can be concluded that there are still some gapes in the literature which needs to be discover through different aspect of trade openness or trade liberalization to determine the nexuses of trade openness and economic growth. This study effort to fill the gaps found in the earlier literature with respect to research methodology and variables construction.

Chapter 3

Historical background of Trade liberalization in Pakistan

3.1 Introduction:

This chapter presents the historical background of trade liberalization in Pakistan followed over the last few decades. The review of trade liberalization regimes surveyed Pakistan through the 1950's, 1960's, 1970's, 1980's, 1990', 2000's and to some extent of 2010 to onward as well defined by [Ali and khan(1998)] and [Chudary and Akthar (2016)]. In 1947 to 1970's Pakistan followed the restrictive trade policies to protect their domestic markets form the foreign rivalry. Because at initial time period Pakistan had some industries and considered as agriculture based economy so Pakistan had protected their industries by imposing the restrictions like tariff and non-tariffs barriers on their imports. But in the start of 1980's Pakistan started to liberalize their trade with the world economy. Pakistan liberalized its trade by reducing the tariffs and non-tariffs duties from import of goods and services and reduces the export duties to promote their export sector. This chapter briefly explain the history of trade liberalization measure taken by the government of Pakistan from the time period of 1950 to 1970 and explain in detail trade liberalization measures taken by Pakistan in 1980's to 2010 onward and shows that how Pakistan economy is converged form restrictive trade policy system to liberalize trade policy system.

3.2 History of trade liberalization in Pakistan decade wise:

3.2.1 1950's:

In the era of 1950 Pakistan adopted the import substitution strategy to protect their domestic markets. In 1952 at the end of Korean war- related commodity boom Pakistan adopted the restrictive trade policies to handle the balance of payment crisis. This restrictive trade policy permitted the economy to sustain a hyped exchange rate which, in response, has been used to grants the arrival of imported inputs into important areas. As described above that since independence Pakistan had very few industries and considered as more agriculture based economy. So the main source of the country's revenue was the export taxes which was levied on agricultural commodities and import duties which was levied on imported industrial commodities. The policies were designed in a way which helps to generate the

maximum advantage to the country. Like domestic producers are encouraged to use the domestically produced raw material which was available on the low prices and after manufacturing final goods sell them into the world market at higher prices. This encouraged the import substitutions strategy and a tax exports. Thus, the decade of 1950 is considered as the most restrictive trade policy era [khan and Ali (1998)].

3.2.2 1960's:

In 1950 Pakistan followed very restrictive trade policy and maintained very high exchange rate system to encourage the import substitution strategy but in the time period of 1960 the government of Pakistan takes initiative to promote export growth. And to achieve the object of high export growth they take some important measures to increase the export sector growth. Like they presented the export bonus scheme which was result in floating exchange rate system and this system favors industrial export. Furthermore, the industries who are export promoting, were given special incentives, like they are given the special access to the foreign exchange. Also the liberalization of imports was under taken. To liberalization of trade they introduced automatic renewal of import licensing scheme for the manufacturing raw material and consumer goods. On the basis of previous performance in export sector firms are selected for the automatic renewal of import license. Those firms who had best performance in export sector are given the facility of automatic renewal of license as compare to the firm who performed less efficiently in the export sector. Another trade liberalization policy has been under taken by the government during the decade of 1960's under the new trade liberalization policy; the free list of imported goods was introduced.

3.2.3 1970's:

In 1970's Pakistani government takes three most important measures of trade liberalization to increase export or reduce anti-export bias. The measures of trade liberalization were listed as: currency devaluation, export bonus scheme was abolished and stopped the restrictive licensing scheme. In the era of 1960 as Pakistan followed the fixed exchange rate system, this system encouraged the import substitution strategy into the country due to the overvaluation of the currency. The export bonus scheme was introduce to reimburse exporter of industrial goods from this overvaluation. But in 1972, 57% devaluation of the currency was accompanied by the abolition of the export bonus scheme. The key objective of the abolition of the export bonus scheme was to introduce uniform exchange rate system

for the promotion of exports. Third important measure which was taken by the government of Pakistan in 1970's was the termination of import licensing. Also the sixth import lists were reduced to two lists means a list of commodities which might come into the economy without obligation of any kind of restriction. After adoption of these measures Pakistan moved their export from protected market of Bangladesh to the world market which enhanced the export of industrial sector of Pakistan economy at the compound growth rate of 26% annually. Beside all these measure of trade liberalization, still overall trade policies and industrial policies of Pakistan stayed biased against the export in the time period of 1970's.

3.2.4 1980's:

In the decade of 1980's Pakistan had taken major step toward the liberalization of trade polices reforms. In this era Pakistan reduced anti- export bias in trade regime. Also they took significant step in the reduction of non-tariff restriction on import and adopted a negative import system. These steps are considered as the major improvement in the trade regime of this era. During the 1980 Pakistan imports regime reached its peak restrictive point, because about 41 % domestically produced value added goods are restricted by import bans, and 22 % other goods are restricted by other type of imports restrictions. In the period of 1986, 29 % of value added goods are restricted by import bans and 3.7% of other goods band by the various type of import restrictions. This reduction of import restrictions are achieved by taking the step towards liberalization of trade. In addition, in the year of 1980 to 1983 about 100 commodities, majority of the goods were consisting on raw material and capital goods, these all were added to free list, or import restrictions were removed from those hundred commodities. But in July 1983 Pakistan moved from positive to negative list system. The negative list system clearly defines the banned and controlled imports. Heavily dependence on import restriction states that Pakistan wants to protect its import competing industries. But the decade of 1980 considered as important time period in the history of Pakistan for the liberalization of trade, because the number of import restrictions changes were applied in the time period of 1980. Like

1. The setting of appropriate amount of tariff for the newly liberalized goods
2. Apply 5 % surcharges on the import of all goods.
3. Remove tariffs on the imports of some non-competition equipment and from the inputs which were used in engineering industry.

4. In the year of 1987 most of the tariff slabs were decreased from 17 percent to 10 percent. Also introduce a uniform tax rate which was 12.5 % across all the commodities
5. Also the maximum tariff rate was decreased from 225% to 125 %.
6. These changes collectively decrease the country wise average tariff by 8% point in the time period of 1987 to 1988.
7. And in the time span of 1989- 1990 this country wise average tariff rate was also decreased by 64%.
8. Another major contribution of the government of Pakistan in trade liberalization reforms the era of 1980's was the movement of exchange rate like switched from fixed exchange rate system to flexible exchange rate system. As a result of converging form fixed exchange rate to flexible exchange rate system the rupee value decreased or depreciated by 38.5 percent with an average depreciation of 7.7 percent per annum.
9. Custom duties from all the goods and services were reduced from 13 percent to 5 percent.

The government of Pakistan also gave importance to the exploration of export sector and introduced some positive measure by introducing the new trade Policy in 1987. The positive steps which were taken for the betterment of exports sector are following.

1. They opened the export of rice and cotton to the private sector of the economy.
2. They opened the import of raw material and transitional goods of export producers
3. They established a special credit wing to facilitate the exporter at the state bank of Pakistan.
4. They provided foreign exchange to facilitate and promote the export of goods into the foreign market.

3.2.5 1990's:

After making so many changes in the trade liberalization policies in the decade of 1980's still Pakistan trade regime favored the import substitution. Pakistan cares the import substitution rather than export biased industries. But at the end of 1980 the Government of Pakistan realized that import substitution strategy did not contribute to the development of the country because they did not compete in the foreign markets and also caused anti- export bias in the distribution of resources and raises the inefficiency. After this government has taken some important steps to the further liberalization of trade and extend the export sector to gain the benefits from trade liberalization. The important steps which

government was taken are: All the non-tariff barriers were converted into tariffs, also maximum tariffs was decreased from 225 % to 45 % in the year of 1997-1998. The government furthermore, converted the previous para tariffs into the statuary tariffs. Government also made struggle for the appropriate tariff structure into the country. All the commodities were easily importable except for some commodities which were restricted due to the religion, health and security issues. The ruled government in the period of 1988 pursed a tariff reforms program that aim was to decrease the anti-export bias, after the success of this program the ruling government of 1993 presented an inclusive document on the tariff reforms: The tariff reform committee gave the number of tariff reform agendas to reduce the tariffs. This committee presented different ways to setting the maximum tariff rate, the first way which was presented that, to lessen export bias against tariff and setting the tariff rate of 35% on maximum products but setting 50 % on the chemical and engineering products. These tariffs rates must be applied in six blocks of 10, 15, 20, 25, 35, 45 and 50. The second way which was presented to set the tariff rate was as follow: set the tariff rate of 50 % for all the goods excluding the automobile whose duty rate was 256%. The committee of tariff reforms suggested that:

1. All the Para tariffs, Iqra surcharges and the flood assistance surcharges are combined with the statutory tariff rates.
2. 80% of tariff was prevailed in the economy at that time, which was suggested to be reduced in the six layers of ad valorem tax by using the two alternate ways which was given by the tariff reforms committee.
3. Removed the entire tariff from export oriented production of goods in the time period of 1994 to 1995. The government opted for a maximum tariffs rate i.e. from 80% to 50% and was still intended to reduce the tariff rate at 35 % in coming two years.
4. Also the committee suggested that all existing tariff will be reduced gradually in the period of next three years.
5. Reduced the custom duty rates with the specific range of 30 percent to 10 percent. 10 percent was specified for the raw material whereas 20 percent specified for the intermediate goods and 30 percent for final consumer goods.
6. Committee also suggested that government must impose zero percent tariff rate on the importation of raw material and intermediate goods which would be used in the production of exportable goods.

7. Connecting income tax allowance on export salary to the value-added or final content of exports
8. The introduction added measure in the distribution of textile export quotas as well as the performance measures in the distribution of textile export quotas and in the historically performance criteria too.

Government made some additional changes into the implementation of tariff reforms during the time of 1993 to 1996. The tariff rate was reduced from 80% to 65%. In 1994 to 1995 two para tariff was combined to statutory tariff and the third one which was the flood assistance was eliminated. Import surcharges were also eliminated. In the time period of 1996-1997 government imposed 5% withholding income tax on imports. They increased the sales tax from 15% to 18 %.

3.2.6 2000's:

In 21st century Pakistan continuously followed the trade liberalization policies. And to achieve the purpose of liberalization of trade government followed the different policies like tariff rationalization policy which presented the lower level of tariff and non-tariff restrictions and exchange rate system which was determined by the market forces. From 2000-2003 Pakistan government adopted further policies which enhanced the trade liberalization activities and decreased the cost of doing business in the country, these policies also worked for the stabilization of macro-economic framework in the county like, stabilizing interest rate and exchange rate and the rate of inflation. They also adopted the policy to encourage the export sector and have made the advancement in the services sector because this is an essential component of the trade policy of any economy.

To enhance the trade liberalization activities into the country Pakistan signed different free trade agreement with different countries. Like on 6 January 2004 Pakistan signed the Agreement with South Asian free Trade Area or south Asian free trade agreement (SAFTA). The member countries of (SAFTA) are Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. SAFTA was created in the 12th annual meeting of South Asian Association of Regional Corporation (SAARC) in 2004. Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka accepted the charter of (SAARC) to accelerate the economic growth in member counties.

In 2004 Pakistan signed a trade agreement with Iran named as Preferential Trade Agreement. This agreement was approved by the cabinet of both countries on May 2005 and was implemented on 1 September 2006. This agreement offered the concession on 338 tariff lines to Iran from Pakistan and

concession was given on 309 tariff lines to Pakistan from Islamic republic of Iran. Under this agreement preferences given by both countries to each other were covered about 18 percent of the Most Favored Nation (MFN) tariff of both economies.

Another free trade agreement Pakistan had signed with Sri Lanka, which was started in June 2005. The purpose of this agreement was to provide access of both countries exporter to the markets of each other by offering the tariff concessions. Under this agreement Sri Lanka enjoyed the duty free market access on the production of 206 goods in the market of Pakistan. While Pakistan enjoyed free duty market access of 102 goods in the market of Sri Lanka.

Also Pakistan signed Early Harvest programme agreement with Malaysia for the free trade agreement. This agreement was signed by both countries in 2005 in Kuala Lumpur. This agreement was operational in 2006. This agreement provided the both countries concession on their import and gave easy access to the markets of each other. Pakistan signed the same agreement, Early Harvest programme agreement with china. Basically this agreement was signed by the both countries in 5th April 2005 but started or operational form 1st January 2006. Both countries provide tariff concession on the commodities of their interest. They gave this concession for the period of next two years. Besides this, both countries under the early harvest agreement also provided the market for their exports at the edge of preferences in relation to most favored nation (MFN) duty rate. Through this agreement both countries can get benefits of concessionary duty form other countries too.

Another preferential Free Trade Agreement was signed between the Pakistan and Malaysia in year 2007. Pakistan implemented this agreement timely to secure its export market in Malaysia and developed the economic and trade connection with Malaysia. Furthermore, preferential trade agreement was signed between the Pakistan and Mauritius in July 2007. Framework Agreement on trade was contracted with Pakistan and Mercosur countries. These agreements were signed to promote the trade relationship with different countries. In spite of all these agreements, Pakistan took several other steps to increase their trade relations with the rest of the world. [WWW.css.FORUM]

3.2.7 2010's:

To promote free trade of goods and services Pakistan singed many other free trade agreements to promote their trade activities. Like in 2010 Pakistan singed the free trade agreement with Afghanistan named as Pakistan – Afghanistan transit trade agreement. This agreement provided the facility of duty

free movement of goods between these two counties [Wikipedia]. Later on, Pakistan signed another trade agreement with Indonesia in 2012 named as preferential trade agreement (PTA). Under this agreement both counties gave favor to each other by providing the easy access into their markets. Indonesia provided its domestic market access to the Pakistan on 216 tariff line, whereas Pakistan provided its domestic market access to the Indonesia on 287 tariff lines these accesses was given on preferential rates. But this agreement is not properly implemented yet.

Beside these agreements Pakistan intended to sign free trade agreement with European Union (EU) to get benefit of free trade. Because EU is a largest market for Pakistani export and imports.

In 2010 Pakistan's current account was observed in surplus. The current account surplus was possible by rising the inflow of remittance and healthy growth in exports due to the positive terms of trade shock that dominated the robust growth in import of goods and services and exchange rate. The trade policy adopted by Pakistan in the time period 2010 was aimed to help the export sector through export oriented textile and leather sector of the economy. The growth rate of exports significantly increased in this era from all sector of the economy but the major portion came from the textile sector and food sector of economy.

And in 2015 the total share of trade (which was measure through import plus export to GDP ratio) was observed 25.61 percent in which the total exports contributed by 8.72 percent while the contribution of imports was 16.89 percent. Notwithstanding, the huge reduction in trade restrictions the growth rate of export was observed as -7.20 percent in the year 2015 as compared to the growth rate of 21.50 percent in 2001. While the growth rate of import was observed 0.29 percent in 2015 as compared to 17.46 percent in year 2001. These imbalances in export and imports cause the deficit in Pakistan balance of trade [Chudary and Akthar (2016)].

Chapter 4

Data and Methodology

4.1 Introduction

By reviewing the literature in chapter two the study founds the mixed results of the effect of trade openness/liberalization on economic growth of a country at national and also at international level studies. Some studies found positive and some other founds negative correlation among the liberalization of trade and economic growth. So this study uses different combination of variable and different econometric technique to examine the effects of trade liberalization on the growth rate of Pakistan economy. The variable trade liberalization is measure through import plus export to gross domestic product (GDP) ratio. The other variables which are used with trade liberalization to effect the economic growth are foreign direct investment, inflation, government expenditure, secondary school enrollment ratio which is used as the proxy of human capital, labor and capital.

Furthermore this chapter comprises on different section like section 4.2 presents the theoretical background of the study which provide the link of the variables which are used in this study. Section 4.3 presents the information about data and its sources and section 4.4 describe the definition of the variables which are being used in the study. Section 4.5 presents the estimation technique which is employed on the data to obtain regression results. Section 4.6 presents the unit root test which is used to check stationary level of the variables. Section 4.7 presents the different diagnostic tests which are used to check the reliability of the data utilized in the study. And section 4.8 contains the conclusion of the chapter.

4.2 Theoretical Framework of the study:

Classical economist presented different theories of trade like the theory of mercantilist, comparative advantage theory of trade and absolute advantage theory of trade. According to the Mercantilist theory of trade, country should increase their exports and try to reduce their imports. Because more export are beneficial to the economy rather than more imports. Higher exports are source of the accumulation of precious metal and according to mercantilist, the economy is considered as wealthy economy if they have large stock of precious metals. More exports are the main source of gold and precious metal accumulations [Githanga (2015)].

The Export led growth theory hypothesis is follower of Mercantilist theory of trade because the export led growth theory advocated that country can get benefit from international trade by increasing it exports to the world market. They considered that export is an engine to accelerate the economic growth of a country [Githanga (2015)].

After mercantilist theory of trade, Adam Smith (1776) gives the theory of absolute advantage. In absolute advantage theory Adam Smith stated that countries can get the benefit from international trade by producing the goods in which they have absolute advantage or country should specialize in the production of those goods which they can produce at lower cost of production. According to the absolute advantage theory a country should produce those goods in which they incur lower cost of production and import those goods which they produce costly in their domestic economy relative to the other countries. Adam Smith stated that mercantilist theory is zero- sum game theory means only one country can get the benefit from trade but through the absolute advantage theory both nations can obtain the benefit of international trade [Githanga (2015)].

After presenting the absolute advantage theory a problem arises that if a country has comparative advantage in the production of both commodities then how country can get the benefit from international trade. To overcome this issue David Ricardo (1817) gives the theory of comparative advantage. According to the comparative advantage theory if a country can produce both goods efficiently or have absolute advantage in the production of both goods than still international trade or trade openness gives the benefits of trade to both countries. Like Githanga (2015) stated that to gain from trade liberalization, countries should make specialization in the production of those commodities in which they relative advantage as compare the commodities in which they have less relative or comparative advantage. And then they should start trade which the rest of the world..

The Heckscher (1919) Ohlin (1933) Model described that country can achieve benefits from trade liberalization by specializing in the production of those goods which are produced by using the country abundant resource and then export it to other countries, and import the goods which are produced by using the scars resources of the economy [Chudary and Akhtar (2016)].

Similarly the endogenous growth theory presented by Romer (1986) and locus (1988) stated that investment in innovation and human capital increase the economic growth of country. And international trade or trade openness is big source of flow of new technology; knowledge sharing and

resource allocation which helps to increase new innovation into the economy and consequently economic growth will increase [Umar (2014)]. The study of Chuang (2000) investigated that trade liberalization raises the competition into the production of goods and services which an economy is producing; this competition pushes the new innovation, greater resource distribution and improves the productivity and technology of the economy which lead to increase the economic growth of the country.

Beside all the theories of international trade which describe the impact of trade liberalization on economic growth there are some other important variable which effect the economic growth like labor, physical capital, human capital, inflation, foreign direct investment, government expenditure etc. like according to Endogenous growth theory of Romer (1991) and the neo-classical theory of growth explain that physical capital accumulation is positively correlated with the productivity level which further increase the economic growth. And according to Keynesian economics, the government expenditures are positively correlated with economic growth, conversely it is stated that government expenditures may also have negative correlation with economic growth. Barro (1999) discovered that, in most of the developing economies, any increase in government expenditure leads to decrease the economic growth of those countries because of the crowding out effect. Therefore government expenditure is an important function of economic growth.

According to the neo-classical model of growth or endogenous growth model, foreign direct investment positively correlated with economic growth. According to neo-classical model foreign direct investment increase economic growth by increasing the investment level into the economy and endogenous growth model considered that long run growth can be achieved through the technology progress and offer a framework through which FDI rises the economic growth. FDI rise the economic growth through technological spill over and knowledge transformation [Nair-Reichert (2001)].Foreign direct investment is also an important variable to effect the economic growth.

Many of studies have been carried out to find the relationship of inflation and economic growth of the country and showed the inverse relationship of inflation and economic growth focusing the case of Pakistan like, study of [Chudary and Akthar (2016)] and [Ayyoub *et al*. (2011)]. Negative relationship can be justified as: According to supply side theory of classical economics inflation negatively affect the economic growth. Like high inflation rate increase the consumption expenditure which leads to decrease the saving and investment level into the economy, also high inflation rate

increase the cost of production because due to high inflation factor of production become expensive which results the reduction in investment level and hence reduce the productivity level of the economy. Therefore economic growth is also a function of inflation.

To empirical examine the relationship of trade liberalization and economic growth the Cobb-Douglas production function with the constant return to scale is used where dependent variable is economic growth and independent variable are technology, labor force and physical capital.

$$Y_t = A\, K_t^{\alpha}\, L_t^{\beta} \quad \text{..... (1)} \qquad \text{Where } \alpha+\beta = 1$$

Yt represents the gross domestic product of country which is used as the proxy of economic growth with the given period of time t. whereas A represents the technology, K_t represents the physical capital at time t, and Lt represents the labor force at time t. α and β shows the output elasticity of labor and capital.

To run the regression on equation (1) logarithmic transformation of the equation is needed because the logarithmic transformation of the equation is commonly used the in the regression analysis. Logarithmic transformation make equation linear and linear equations allow estimation of the coefficient values and analysis of the hypothesis on return to scale.

In order to make the logarithmic transformation of equation (1) natural log is taking on the both side of the equation (1).

$$\text{Ln } Y = \text{Ln } A + \alpha \text{ Ln } K + \beta \text{ Ln } L \quad \text{..... (2)}$$

Observing that at above equation GDP(Y), technology (A), Physical capital (K), and labor (L), are change over time and to account for the development or growth process. To make equation (2) differential, we take the derivative with respect to time of the equation.

So the time derivative of log linear equation is taken:

$$(1/Y)\, dY/dt = (1/A)\, dA/dt + \alpha\, (1/K)\, dK/dt + \beta\, (1/L)\, dL/dt \quad \text{..... (3)}$$

We can also write the equation (3) into the following form:

$$\dot{Y}/Y = \dot{A}/A + \alpha\, \acute{K}/K + \beta\, \acute{L}/L \quad \text{..... (4)}$$

In above equation ˚ above all the variables represents the instantaneous change with the time. Y represents the economic growth or gross domestic product (GDP) of the county, L represents the growth rate of labor inputs into the economy and K shows the growth rate of physical capital into the economy in the time period of t. This study uses the production function with the restriction of constant return to scale. Different kinds of returns to scale are defined here like, increase, decreasing and constant returns to scale. The increasing return to scale demonstrates that one unit increase in inputs leads to increase the output more than one unit while decreasing returns to scale shows that one unit increase in inputs leads to decrease the output more than one unit. Whereas, constant returns to scale explains that if input increase by one unit in production process output will also increase by one unit and if input increase by two units output will also increase by two unit and so on. So the imposition of the restriction of constant returns to scale is only mean to measure the Alpha (α) and Beta (β), and efficiently evading the problem of Multi-collinearity in estimation. But the imposition of this restriction of constant return to scale on production function is without confirming it econometrically unsatisfactory. That is why; the study uses the Wald test to measure the exact value of the parameters which are used in the equation based on the sample estimates.

Equation (4) indicate that output of the economy (Ẏ/Y) or economic growth is equal to growth rate of growth rate of technology (represented by Ȧ/A in equation), growth rate of physical capital (represented by Ḱ/K) and also the growth rate of labour (represented by Ĺ/L). As Solow (1957) described that total output is effected by labour and capital by keeping the technology constant. But here labor and physical capital are also effected by other variables. So as this study is carried out to investigate the relationship among trade openness and economic growth, to achieve this objective, trade liberalization and all other independent variable which are inflation , foreign direct investment, government expenditure and human capital effect the labour as well as the physical capital and then labour and capital both effect the economic growth of Pakistan. These all independent variables like foreign direct investment, inflation, trade liberalization, government expenditure and human capital are used as instrumental variables to determine the effect of trade liberalization on economic growth of Pakistan. These instrument variables are used for labor force growth variable and physical capital growth variables. Instrumental variables are those variables which represents the condition of the economy the above mentioned variables are instrument variables.

$\acute{L}/L = \alpha_0 + \alpha_1 fdi + \alpha_2 inf + \alpha_3 TO + \alpha_4 GE + \alpha_5 HC + \mu$ …… (5)

$\acute{K}/K = \alpha_0 + \beta_1 fdi + \beta_2 inf + \beta_3 TO + \beta_4 GE + \beta_5 HC + G\text{Ɔ}$…….. (6)

In equation (5) growth rate of labour force depends on foreign direct investment, inflation, trade liberalization, Government expenditure, Human capital and error term. Moreover $\alpha_0$in equation (5) estimates the effect of exogenous component of labour force productivity which is mainly point to the exogenous technological development. Whereas coefficient of other variables like

α_1 measures that if 1 percent change occur in foreign direct investment (FDI) then how much it will affect the growth rate of labor force.

α_2 measures that if 1 percent change occur in inflation (INF) then how much it will affect the growth rate of labor force growth

α_3 measures that if 1 percent change occur in trade openness (TO) then how much it will affect the growth rate of labor force

α_4 measures that if 1 percent change occur in government expenditure (GX) then how much it will affect the growth labor force.

α_5 measures that if 1 percent change occur in human capital (HC) then how much it will affect the growth rate of labor force.

μ is used to capture the random productivity shocks in labour force growth.

Equation (6) estimate the impact of foreign direct investment (FDI), Inflation (INF), trade openness (TO), Government Expenditure (GE) and Human capital (HC) on growth rate of physical capital.

α_0 measures the exogenous growth occurs in the per worker physical capital that cannot be attributed to any of the variable which is included in the equation.

β_1 measures that if 1 percent change occur in foreign direct investment (FDI) then how much it will affect the growth rate of per worker physical capital.

β_2 measures that if 1 percent change occur in inflation (INF) then how much it will affect the growth rate of per worker physical capital.

β_3 measures that if 1 percent change occur in trade openness (TO) then how much it will affect the growth rate of per worker physical capital.

β_4 measures that if 1 percent change occur in government expenditure (GX) then how much it will affect the growth rate of per worker physical capital.

β_5 measures that if 1 percent change occur in human capital (HC) then how much it will affect the growth rate of per worker physical capital.

Ɛ is used to capture the random productivity shock in growth rate of per worker physical capital.

So these three model finally determine the impact of trade liberalization on economic growth of Pakistan.

The final model of this study is represented by equation (1) to equation (6).

4.3 Data and its sources

This study is analyzing the time series data from 1980 to 2016. The data which is being used in this study is secondary in nature. Data is collected from different sources like Economic Survey of Pakistan various issues, and the World Bank Indicator. The study uses different variable to access the nexus of trade liberalization and economic growth. Dependent variable of this study is economic growth, and it is measured by using the proxy which is of Gross Domestic Product in current US dollar, and independent variables are: labour, physical capital, human capital, trade openness, and inflation, Foreign Direct Investment, and Government expenditures. Trade openness is measured through the import plus export to GDP ratio while human capital is measured by using the proxy of secondary school enrollment ratio. Government expenditure represents the size of the Government. The data of all variables are taken into current US dollar form except secondary schools enrollment ratio. Data source of individual variable is presented in a table 4.1

Table 4.1

Variables Name	Abbreviation	Data source
Gross Domestic product	GDP	Data collected from World development indicator (WDI).
Labour	L	Data Collected from Economic survey of Pakistan (various Issues).
Physical Capital	K	Data Collected from Economic survey of Pakistan (various Issues).
Foreign direct Investment	FDI	Data collected from World development indicator (WDI).
Inflation	INF	Data collected from World development indicator (WDI).
Trade Openness: (import plus export)/GDP	TO	Data Collected from Economic survey of Pakistan (various Issues).
Government expenditure	GX	Data Collected from Economic survey of Pakistan (various Issues).
Human capital	HC	Data collected from World development indicator (WDI),

Source: constructed by author based on data collection sources.

4.4 selection of the variables:

4.4.1 Gross Domestic Product (GDP):

Gross domestic product (GDP) is calculated as the monetary value of all the goods and services which is produced in a country's boundaries within the period of one year. GDP has some components through which it can be calculated. The components are listed as: Privative consumption or spending, Government expenditure, private investment and net export. The monetary values of these entire components are considered as the GDP of a country. The formula to calculate the country's GDP is:

GDP= C + I + G + [X-M]

Export – Import [X-M] represents the net export of the country.

4.4.2 Labour Force:

Labour force comprises the number of people employed in any sector of the economy and those who are seeking for the job into the economy. Or people who are producing goods and services and those who are willing to supply their labor to produce goods and services into economy with the given period of time. According to the World Bank definition of labour force, all the people at the age of 15 years and above who are willing to provide their labour to produce the goods and services into the economy within the specified period of time. People who are employed and the people who are unemployed but searching for the job as well as the people who are first time job seeker are included in the labour force; however people who work voluntarily and family worker, and the students are usually not included in labour force. It is also stated that some countries do not include people of armed force into the labour force, and due to the seasonal change, size of the labour force changed during the year.

Labour force = employed labor + unemployed labor

4.4.3 Physical capital:

Physical capital is a collection of man made goods which helps in the production of many other goods. Physical capital is referred as the one of the component of production function. Physical capital also described as the improvement in the land resources and addition to the fixed assets of the economy also the addition or changes in the inventory stock. Fixed assets included construction of new roads and purchases of new machinery, construction of schools, hospital, offices, industries etc. Inventories are

described as the stock of goods which the firm held to meet their temporary or unanticipated variations in the production process World development indicator (WDI).

4.4.4 Foreign direct Investment (FDI):

Foreign direct investment is defined as the net investment comes from abroad. Like a person live in one country, and invest in another country. Foreign direct investments take place when a person or firms in one country start their business in foreign country. But the foreign direct investment is different from the indirect investment, indirect investment like portfolio investment, wherein foreign investors, invest in equities registered on the nation's stock exchange. Open economies with skilled labor and better resource allocation are able to attract more foreign direct investment rather than closed economies.

4.4.5 Inflation (INF):

Inflation is explained as the consistent increase in the general price level of the goods and services. And consequently the buying power of the domestic currency falls. Inflation is measured by consumer price index (CPI) and World Bank defines that "Consumer Price Index (CPI) reflects the yearly percentage change in the cost to the average consumers of obtaining a basket of goods and services that may be static or altered at specified period of time, such as annually".

The formula which is used to calculate the consumer price index is given below.

"Consumer price index = [current period price of the basket goods / base period price of goods of the basket] * 100."

4.4.6 Government expenditure:

Government expenditure comprises on the consumption of goods and services which cannot provided by the private sector to the public sector. Government purchases these goods and provide to the public free of cost. Public investment and public consumption are included in government expenditure. Government spends on nation's infrastructure, defense, health and welfare benefits. Like government gives subsidies to the producers to establish their businesses and gives different type of tax rebates, also perform the activity of transfer payment like pensions and other social benefits. Government spending on military is not included in Government expenditures because these are considered as the part of government capital formation.

4.4.7 Import:

Basically the word import is originated from the word port, since products or goods are often shipped through boat to the foreign countries. Imports are those goods are services which countries cannot be able to produce at home country, so they can import it from other counties. Or it can be the reason that counties cost of production are very high to produce certain goods in their home country as compare to the other countries, that is why they import it from foreign countries where these goods produced at cheap rate.

4.4.8 Export:

Exports are opposite to imports. Exports are said to be the goods and services which are manufactured in one country and then sent to the other countries or we can say that bought by residents of the other countries. According to the World Bank definition of export, the goods and services includes all transactions among citizens of a country and the rest of counties in the world concerning a shifting of possession from citizen to non- citizen or residents to non-resident of general products, net exports of goods and services.

4.4.9 Human capital:

Human capital includes knowledge, skills, education, and attributes and capabilities which influence the productive capacity of the labors. Secondary school enrollment ratio is taken as proxy of human capital in this study. Secondary education is started with completion of basic education which is given at the primary level. On the level of secondary education more skills and knowledge are given to the human by offering more subject or skill oriented knowledge by hiring the more specialized instructors to make the labors more efficient.

4.5 Generalized Method of Moment (GMM) Estimation Technique:

The study uses time series data from time span 1980 to 2016 to evaluate the effect of trade openness on the growth rate of economic development of Pakistan. Number of studies has been applied ordinary least square (OLS) estimation method to investigate the consequence of trade liberalization on economic development or on economic growth. But the endogeniety problem among the trade liberalization and economic growth leads to the rejection of the use of OLS estimation technique because in the presence of endogeniety the OLS estimation technique generates biased results of the

regression analysis. So to deal with the problem of endogeniety and over-identification of simultaneous equation, the instrumental variables IV technique is used. To tackle the problem of endogeniety and over-identified equation the Two Stage Least Square (TSLS) technique can also be used which is special type of Instrumental Variable (IV) technique. This technique is unable to generate reliable results of the regression analysis. After this, Three Stage Least Square (3SLS) techniques is also used to remove the problem of endogeniety and simultaneity. But this technique is applied in the presence of system equation to solve the endogeniety problem. Generalized Least Square (GLS) which was first time described by Alexander Aitken in (1934) is another econometric technique which is applied to remove the endogeniety problem but this technique has some extra assumptions to apply. After all these techniques Generalized Method of moment (GMM) is another technique which is used to handle the problem of endogeniety and over-identified equation. This technique is an extended form of instrumental variables (IV). Most of the studies uses this technique in panel data but first time Hansen (1982) presented the GMM estimation technique in time series data analysis. Hansen revealed that Generalized Method of moment is comparatively beneficial for time series analysis. In time series models serial correlation of errors are very important factor to affect the results. The problem of serial correlation of errors increases the possibilities to apply generalized method of Moment (GMM) technique. GMM is an extend form of Instrumental Variables (IV), it also account the problem of Heteroscedasticity, simultaneity bias among exogenous variables, dependent and residual measurement. GMM is able to obtain the consistent outcome even in the existence of auto correlation and Heteroscedasticity problem. On the basis of these characteristics, GMM technique is considered a batter technique than 2SLS, 3SLS and GLS. Also the main advantage of using Generalized Method of Moment over the instrumental variables is clear: if the problem of Heteroscedasticity is present in the model then the GMM estimator are efficient than the estimator of Instrumental variables. And if Heteroscedasticity problem is not present in the model than the estimator of GMM is not worsen than the estimators of instrumental variables. Additional benefits of GMM are that it reports the skewness and kurtosis as well. Skewness and kurtosis referred to the normal distribution of the variables which are used in this study. Normally distribution means symmetric distribution and has a bell shaped. It means bell shape with heights leading to a skewness of one and a tail-thickness leads to the kurtosis of three. If skewness and kurtosis are not nearby zero and three then the distribution is not normal and

vice versa. After this Augmented Dickey Fuller (ADF) test is used to test the stationary level of the variables.

4.6 Unit root test:

It had been revealed in many econometric studies (like Granger, 1986, Engle and Granger, 1987) that maximum macroeconomic time series data are not stationary. This suggests that most Ordinary Least Squares (OLS) regressions that are run at level might not be reliable. Given this information, testing for stationery (unit root) of the variables by Augmented Dickey-Fuller (ADF) and/or by Philip-Peron (PP) tests, becomes very important. Both tests have analogous methodology and results, but the main difference is that the second test takes into knowledge time series properties in the existence of possible structural variation (Idowu, 2005).

Augmented Dickey Fuller (ADF) is applied to test the stationary level of the variables. Mean to check that all the variables have unit root or not and If the data is non- stationary, non- stationary means that the time series data does not vary around its mean value, and have not shown any trend of convergence toward mean or average value. The P value is used to check the presence of unit root of the data. If the P value or probability value is greater than 0.05 at 1 % , 5 % and 10% it means there is unit root problem so by taking first difference and second difference of the data this problem can be solved.

Augmented Dickey Fuller (ADF) is extended version of Dickey Fuller (DF) test. Dickey fuller test has the following regression equations.

Yt is Pure Random Walk Model $\Delta Yt = \Omega Yt\text{-}1 + u_t$

Random Walk with drift $\Delta Y_t = \alpha + \Omega Yt\text{-}1 + u_t$

Random Walk with drift and trend $\Delta Y_t = \alpha + \lambda_t t + \Omega Yt\text{-}1 + u_t$

Hypothesis of these models are

Null Hypothesis H0: $\Omega = 0$ there is no unit root

Alternate Hypothesis H1: $\Omega < 0$ there is unit root

The decision of rejection and acceptance of null hypothesis is based on calculated value of the DF test. If the calculated value of DF is greater than tabulated value or critical values than null hypothesis will

be rejected. For each earlier models of the Dickey fuller test critical value is different. Error term is considered as uncorrelated in Dickey Fuller (DF) test but if the error term is connected then both Dickey and Fuller established another test called as Augmented Dickey Fuller (ADF) test. The ADF test allows including lag length and trend in the model to make the data stationary. Lag length is very important in augmented dickey fuller test. If lag length k is very small then the error of the model are still correlated which biased result of test statistics whereas if the lag length is too large then it reduce the power of the test. So lag length criteria is very important because the selection of appropriate lag length solves the above mentioned problem. Akaike Information Criterion (AIC) is best option to choose the appropriate lag length criteria. Augmented Dickey Fuller test is conducted by enhancing the three equations as.

$$\Delta Y_t = \alpha + \beta t + \Omega Y t\text{-}1 + \psi_1 \Delta Y t\text{-}1 + \ldots\ldots\ldots + \psi_{p\text{-}1} \Delta Y t\text{-}p\text{+}1 + u_t$$

In above equation error term (u_t) is white noise. White noise means errors and normally, identically, independently distributed. Also the equation represents random walk model with drift and trend. Where α represents in the equation as a constant and β represents or shows the coefficient of time trend in equation. By putting the restriction $\alpha = 0$ and $\beta = 0$ the model will become random walk. If restriction put only on β like $\beta = 0$ the model with be random walk with drift.

4.7 Diagnostic tests:

There is some test which is used to check the reliability of the data. Also use to check the fitness of good of the model. Some diagnostic tests are applied before running the regression like descriptive statistics; correlation matrix and some are applied after running the regression like Wald test and Hause-man test, Normality test, R square and adjusted R square. Besides all these test one more test the Wald test is used in this study to check the restriction of constant returns to scale for the model.

4.7.1 Descriptive statistics

Descriptive statistics is first step to analyze the sample of the data. It describes all the features of the data which is being collected. It is a type of summary statics of the data. It can represent the summary of sample data as well as the whole population data. It tells the mean median mode, standard deviation, skewness and many other measures of the data.

4.7.2 Correlation Matrix

Correlation matrix is used to describe the degree of association between variables. The value of correlation coefficient must lies between the ranges of -1 to +1. Higher the number of correlation coefficient shows the higher level of association between two variables.

4.7.3 R^2 the coefficient of determination:

The value of R^2 tells the degree of variation in dependent variable due to variation of explanatory variables. If the value of R^2 is high it means there is large variation in dependent variable due to independent variable and vice versa. If the value of R^2 is high in the given model it shows that the variable which we are chosen to capture the impact of trade liberalization are efficient variables. The R^2 is estimated through this formula.

R^2 = ESS / TSS = 1 – RSS / TSS

ESS = explained sum of square

TSS = total sum of square

RSS = residual sum of square

4.7.4 Adjusted R^2

Adjusted R^2 also measure the variation in dependent variable caused by the variation in independent variables. But adjusted R^2 is adjusted by degree of freedom which is associated by residual or error sum of square. As independent variables are increases in the model adjusted R^2 also increase but this increment is less than the increment in R^2. Value of adjusted R^2 can be negative but the value of R^2 will never be negative.

4.7.5 Wald test:

Wald test is used to check the validity of the restriction which is imposed on the model. Like in present model of the study the restrictions of constant returns to scale is imposed so after applying the Wald test study will confirm that whether constant returns to scale is present in this model or not.

Hypothesis of the test:

Null Hypothesis	H0: There is a constant returns to scale
Alternate Hypothesis	H1: There is no constant returns to scale

4.7.6 Durban Watson test:

Durban Watson test is applied to find out the auto correlation among the variables in the model. But this test only used for Auto regressive one AR (1) process. So LM serial correlation test is also used to check the auto correlation among the variables in the model. It removes the drawbacks of Durban Watson test. Hypostasis of the test is as follow.

Null Hypothesis	H0: There is no auto correlation
Alternate Hypothesis	H1: There is auto correlation

4.7.7 Normality Test:

Normality test is used to check the normality of the residuals used in the model, it means it checks whether residuals of the model are normally distributed or not normally distributed. It also checks that all the data lies in defined range of normal distribution means 3 kurtosis and 0 skew ness or not. Value of Jarque – Bera is used to make the decision about acceptance or rejection of null hypothesis regarding normal distribution.

Null Hypothesis	H0: Data is not normally distributed
Alternate Hypothesis	H1: Data is normally distributed

4.7.8 Hause-man specification test:

House- man specification test is used to detect the endogeneity problem in the regression analysis. This test is also called Durbin-Wu-Housman test. Endogeneity problem arises when independent variable of the model are correlated with the error term. In the presences of endogeneity, the Ordinary Least Square (OLS) estimation technique generates biased result. Because one of the assumption of OLS is that there is no auto- correlation among the independent variables and error term, cov (x, u) = 0. When this assumption is violated cov (x, u) $\neq 0$ it means endogeniety problem present in the model. And presences of endogeniety in the model cause the failure of OLS. So this test is applied to find the issue of endogeniety in the given model.

Hypothesis of the test is presented as:

Null hypothesis H0 = No issue of endogeniety in the given model

Alternate hypothesis H1 = Issue of endogeniety in the model is present

4.8 Summary:

This chapter comprises the introduction of the chapter, theoretical frame work of the study where different theories related to trade are presented, and these theories explains the links of trade liberalization and economic growth, also theoretical model of the study is presented which is presented by Solow (1957). With trade liberalization some other instrumental variables are also used. Generalized Method of Moment (GMM) estimation technique is used to analyze model and different diagnostic test is also applied to check the data reliability of the model. And also Wald test is applied to confirm the restriction of constant returns to scale on Cobb – Douglas production function.

Chapter 5

5. Estimation and results:

This section provides the empirical evidence on the relationship of trade openness and economic development or economic growth specifically for the Pakistan economy. These results are obtained through the regression analysis.

5.1 Descriptive statics of the data:

The first step in the estimation process is to describe the data set. The data is described through descriptive statistics. Descriptive statistics is used to describe the key features of the collected data quantitatively. In descriptive statistics mean and median presents the measure of distribution of data or used as the measure of central tendency of the data. Minimum and maximum standard deviation critical value and skewness value represents the measure of variability of the data. Descriptive statistics of Pakistan is represented in table below.

Table 5.1

Descriptive statistics

Variable	Observations	Mean value	Median value	Standard deviation	Minimum	Maximum	Skewness
LGDP	37	4.49	5.50	0.75	1.20	18.6	0.34
LGFC	37	23.29	23.14	0.69	22.19	24.48	0.27
LLABOR	37	3.68	3.65	0.28	3.24	4.14	0.14
LFDI	37	20.02	20.09	1.31	17.19	22.44	-0.13
LGX	37	22.82	22.63	0.70	21.58	24.23	0.41
LHC	37	2.84	2.89	0.78	1.66	3.84	-0.09
LINF	37	2.08	2.12	0.56	0.59	3.21	-0.37
LTRADE	37	23.40	23.15	0.70	22.46	24.56	0.54

Source: calculations done by author based on the given data by using the software E-view 9

This analysis is conducted by using the time series data on annual basis. Each variable which is used in this analysis has 37 observations. The first variable which is analyzed here is Gross Domestic Product (GDP) with 37 observations and the mean value of GDP is 4.49 percent with the maximum value of

18.60 percent and the minimum value is 1.20 percent. The value of standard deviation for GDP is 0.75 percent. The value of standard deviation tells the range of dispersion of the data around its mean value. Small value of standard deviation (SD) indicates the lower variations of data around its mean value whereas the higher value shows the opposite results. Here the estimated value of SD shows that data is dispersed from its mean value by 0.75 percent which is considered as highly dispersed data. This variation of the data indicates that Gross Domestic product is increased over the time may due to different government policies which are adopted to increase the economic growth.

The gross fixed capital formation has mean value of 23.29 percent with maximum value of 26.37percent and minimum value of 22.19percent while the value of standard deviation of the gross fixed capital formation is 0.69percent it means that the value of gross fixed capital formation is dispersed from its mean value by 0.69 percent. This value of standard deviation indicated that the high variation is found in the gross fixed capital it may be obtained due to the different trade liberalization policies of the economy and different investment plan from government as well as from private investors.

Similarly labor has the mean value of 3.68percent with maximum value of 4.14 percent and minimum value of3.24 percent it shows that the data is rages from 3.24 percent to 4.14 percent. The standard deviation value for labor is 0.28 percent. The dispersion of the data of labor is small around its means value it means data of labor is remain stable during the selected time span.

Human capital which is estimated by using the proxy of secondary school enrollment ratio indicate that the data range is from 3.84 percent to 1.66 percent with the mean value 2.84 percent and standard deviation of human capital is 0.78 percent. Here the greater value of standard deviation indicates that a huge gap is found in the educational achievement among the people of Pakistan.

The mean of inflation which is obtained by the descriptive static analysis is 2.08 percent whereas the minimum value of inflation is 0.59percent while the maximum value of inflation is 3.21 percent. The standard deviation value of inflation indicates that inflation deviates from its mean value by 56 percent. The high volatility of inflation indicate that inflation remain highly volatile during the selected period of time this volatility occur may be due to the demand and supply side factor of the economy which are effecting inflation.

The descriptive statistics of trade liberalization indicate that the mean value of trade is 23.40 percent while minimum value is 22.46 percent and the maximum value is 24.56 percent, whereas the value of

standard deviation is 0.70 percent. The value of standard deviation is also very high. This variation may be occurring due to the changes of trade policies and exchange rate variation and due to the technological changes into the economy etc.

The mean value of government expenditure is 22.82 percent with 37 observations and the maximum value of government expenditure is 24.23 percent while minimum value is 21.58 percent. The value of standard deviation is 0.70 percent which indicates the high variation of the data from its means value. Political, institutional and governance variables influence the government expenditure and also the corruption is significant factor which affects the government expenditures of developing country and linguistic fractionalization is also a factor which negatively affects government expenditure [Shonchoy (2010)]. The standard deviation of government expenditure are highly volatile, may be all above mentioned factors are responsible for this high volatility.

Similarly the descriptive statistics of foreign direct investment shows that the means value of 37 observations is 20.02 percent and data rages from 22.44 percent to 17.19 percent. Data is dispersed from its mean value by the amount of 1.31 percent. It indicate that data of foreign direct investment is highly dispersed, this may be due to the different policies adopted by the country's government regarding foreign direct investment and may be other factors like social and political factors can be responsible for this variation in foreign direct investment (FDI).

5.2 Correlation Matrix

Correlation matrix describes the correlation among all variables. The coefficient of correlation is always lies from -1 to +1. It tell the degree of association of two variables and the sing of the coefficients describes the direction of association or direction of relationship between two variables. If correlation between two variables is exceeded from 80 percent then it can be described that these variables are highly correlated. The matrix of correlation is constructed here to find the degree of relationship with all the variables which are used in this study. Results are presented in table 5.2.

Table 5.2 correlation Matrix

variable	LGDP	LGFC	LLABOR	LFDI	LINF	LHC	LGX	LTRADE
LGDP	1							
LGFC	0.99	1						
LLABOR	0.99	0.98	1					
LFDI	0.85	0.88	0.87	1				
LINF	0.01	0.04	0	0.16	1			
LHC	0.96	0.96	0.98	0.91	0.02	1		
LGX	0.97	0.97	0.95	0.82	0	0.9	1	
LTRADE	0.98	0.99	0.96	0.84	0.04	0.93	0.97	1

Source: calculations done by author based on the given data by using the software E-view 9

Given the correlation matrix revealed that except inflation all the variables which are used in this study are highly correlated. Gross Domestic Product (LGDP) and gross fixed capital formation (LGFC) are highly correlated, the degree of association between these variable is 99 percent whereas gross domestic product (LGDP) and labor force growth (LLABOR) are also highly correlated results describes that these two variables are 99 percent correlated with each other. While gross fixed capital formation (LGFC) and labor force growth (LLABOR) are also having high correlation coefficient which is 98 percent, 98 percent correlation is present in these two variables. Most of the variables have correlation rages from 80 to 99 percent which indicated high level of association between variables. The only variable is this model which indicates the low level of correlation or association with other variables is inflation. Like there is only 1 percent correlation exist among inflation (LINF) and gross domestic product (LGDP), while the degree of association between inflation (LINF) and gross fixed capital formation (LGFC) is only 4 percent. Correlation between inflation (LINF) and labor (LLabor) is 0 percent. The correlation between inflation (LINF) and foreign direct investment (LFDI) is only 16 percent which is also considered as the minor level of association between these two variables. While the correlation between inflation (LINF) and human capital (LHC) is only two percent. The correlation coefficient of Government expenditure (LGX) and inflation (LINF) shows the zero percent correlation which indicates that these tow variables do not have any association between them. Trade (LTRADE) and inflation (LINF) have correlation coefficient of 0.04 it means these two variables have 4 percent level of association among them. All the variables have positive association with each other.

5.3 Augmented dickey fuller test (ADF):

To analyze the properties of time series data and to avoid the risk of spurious regression results the augmented dickey fuller test is applied in this study to check the stationary level of all the variables one by one. To check whether the variables are stationary at level or become stationary at level one by taking the first difference of the variables. The results of Augmented Dickey Fuller test are presented in table 5.3.

Table 5.3

	level		first difference		
variable	Intercept	Without trend	Intercept	without trend	level of integration
LGDP	0.56	-1.56	-5.70*	-5.91*	I(1)
LGFC	-0.14	-1.99	-5.44*	-5.43*	I(1)
LLABOR	0.02	-2.41	-7.21*	-7.11*	I(1)
LINF	-3.70*	-3.59**	……..	……	I(0)
LFDI	-1.50	-1.95	-5.38*	-5.30*	I(1)
LHC	-0.81	-1.29	-6.55*	-6.57*	I(1)
LGX	0.004	-1.19	-5.26*	-5.25*	I(1)
LTRADE	-0.16	-1.75	-5.53*	-5.50*	I(1)

Source: calculations done by author based on the given data by using the software E-view 9.* indicates that variable become stationary at 1% and **indicates that variable become stationary at 5%.

Table 5.3 represents the outcomes of ADF test. These outcomes signifying that all the variables of the model are non-stationary because the calculated value or P-value of the test is larger than the critical values at 1 percent, 5 percent and 10 percent level of significance and we know that if the P values are exceeded over critical values, we do not able to reject the null hypothesis that time series data is non-stationary. So to make the data stationary the study takes the first difference of the variables. In present study variables, GDP which is in log form (LGDP), gross fixed capital formation in log form (LGFC), labor force in log form (LLABOR), foreign direct investment in log form (LFDI), human capital in log form (LHC), government expenditure in log form (LGX), and trade is also in log form (LTRADE) become stationary at first difference while the variable log of inflation (LINF) become stationary at level. The test is conducted on level and first difference, with intercept and with intercept and trend. The variables LGDP, LGFC, LLABOR, LHC, LGX, LTRADE and LFDI are stationary at first

difference with intercept and with intercept and trend. The variable LINF is stationary at level with intercept and with trend and intercept.

After applying augmented dickey fuller test the next step is move toward the regression analysis, which is going to be done through Generalized Method of Moment econometric technique.

5.4 Diagnostic tests and Generalized Method of Moment (GMM) estimation and results discussion:

5.4.1 Wald test:

To impose the restriction of constant returns to scale on Cobb-Douglas production function without testing is econometrically unsatisfactory. So the study tests the restriction of constant returns to scale by conducted the Wald test. This test tells us that which nature of return to scale is present in the model, nature of returns to scale means that it indicates whether there is constant returns to scale, increasing returns to scale or decreasing returns to scale.

The estimation results of Wald test is presented in table 5.4.1 which is given below.

Table 5.4.1

Test Statistic	Value	Degree of freedom	Prob.
Chi-square	609.2164	1	0.0000

Source: calculations done by author based on the given data by using E-view 9.

The results reported in table 5.4.1 shows that on the basis of obtained P value we are unable to reject the null hypothesis which tells that there are no constant returns to scale in the model. It means that the response of change in inputs is not proportional to the change in output. The study estimates the coefficient in both ways by imposing restriction of constant returns to scale and without imposing restriction of constant returns to scale.

5.4.2 Diagnostic tests for first equation:

Some test which are used to apply on the data before main estimation are presented here, Normality test, Jarque Bera test, Hause-man test, and the value of J statics. The results are shown in the table 5.4.2.

Table 5.4.2

diagnostic tests			
J-statistic	**Normality test**	**Hause-man test**	**Durban Watson test**
9.19	2.20	6.61	
0.99	0.33	0.03	0.56

Source: constructed by author on the basis of given data by using software E-views 9.

The probability value of j statistic is used to check the validity of the instruments of the model. High probability value of J statistics permits to accept the null hypothesis which is constructed as "over identifying limitations are fulfilled and the instruments are applicable". For taking of the null hypothesis the probability value of J statistics should be higher than the value of 0.05 percent. And according to obtained results which are presented in above table the P value of J statics is 0.99 which indicate that we can accept the null hypothesis that instruments are valid that are used in the model.

Similarly normality test is analyzed through the probability value of Jarque – Berra. If the probability value of Jarque – Berra is larger than 0.05 percent we can reject the null hypothesis that errors are not normally distributed. In above table the probability value of Jarque – Berra is 0.33 percent which indicates that null hypothesis is rejected and concluded that error are normally distributed.

However the rejection and acceptance of null hypothesis for Hause – man test is based on P value of the test. The P value of Hause – man test is 0.03 which is less than 0.1 so the basis of P value which obtained through the test it indicates that null hypothesis is rejected. It means the endogeneity problem is present in the model. The obtained value of Durban Watson test also indicates that reject the null hypothesis that there is no auto correlation present in the model.

5.4.3. Diagnostic tests for second equation:

The results of diagnostic tests for table two are presented in table 5.4.3.

Table 5.4.3

diagnostic tests			
J-statistic	Normality test	Hause - man test	Durban Watson test
2.18	0.29	3.60	
0.33	0.86	0.05	1.97

Source: calculations done by author based on the given data by using E-view 9

Results presented in above mentioned table number 5.4.3 shows the probability value of J stats is 0.33percent which exceeds the probability value of 0.05 percent. The value of j stats suggests that not to reject the null hypothesis which means instruments used in equation three are also valid. The probability value of normality test indicates that null hypothesis is rejected in this equation, and confirms that errors are normally distributed in the equation. The endogeneity problem is also present in the model which is confirmed through the value of Hause – man specification test.

5.4.4 Diagnostic tests for third equation:

The results of diagnostic tests for table two are presented in table 5.4.4.

Table 5.4.4.

Diagnostic tests			
J-statistic	**Normality test**	**Hause - man test**	**Durban Watson test**
2.12	5.49	3.72	
0.14	0.06	0.05	1.64

Source: calculations done by author based on the given data by using the software E-view 9.

The Probability value of J statistic is 0.14 it is larger than 0.05 percent so it point that the null hypothesis is accepted that instruments which are used in this model is valid. This value confirms the validity of instruments that are used in the equation. Similarly the probability value of normality test or probability value of Jarque – Berra test is 0.06 which is also greater than 0.05 and on the basis of this value we reject the null hypothesis that errors are not normally distributed. However the probability value of

Hause – man test or endogeniety test confirms the presence of endogeniety in the model because obtained value is 0.05 and it is lower than 0.1 so null hypothesis is discarded here.

5.4.5 GMM results discussion

5.4.5.1 Estimation results of Cobb- Douglas production function (first equation). (Without constraint of constant return to scale (CRS)):

This study first estimated the Cobb-Douglas production function with the restriction of constant returns to scale after examining the model with this restriction then examine the same model without restriction of constant returns to scale. So first the study estimated the first equation (Cobb-Douglas production function) without restriction of constant returns to scale. In this equation dependent variable is gross domestic product (GDP) and independent variables are Labor growth and physical capital growth. Then study estimates the second equation where dependent variable is labor force growth and independent variables are trade liberalization, inflation, government expenditure, foreign direct investment, and secondary school enrollment ratio which is used as the proxy of human capital. Then estimates third equation where physical capital is dependent variables and independent variable are trade liberalization, inflation, government expenditure, foreign direct investment, and secondary school enrollment ratio. These three equations are estimated by using the Generalized Method of Moment technique. The results of the first equation are presented in table 5.4.5.1.

Table 5.4.5.1

Variables	**Coefficient**	**t value**	**Prob.**
intercept	6.76	12.26*	0.0000
capital	0.58	15.76*	0.0000
labour	1.23	14.09*	0.0000
R^2	0.99		
Adjusted R^2	0.99		

Source: calculations done by author based on the given data by using the software E-view 9.***** indicates that variable are significant at 1%.

The results of table 5.4.5.1 indicate that capital like machinery and improvement in infrastructure significantly increase the economic growth of the Pakistan. The coefficient of physical capital shows that if capital increase by one percent it leads to increase economic growth by 0.58 percent. And the results demonstrate that labor inputs like skills, knowledge and management positively contribute into the economic growth. These results are parallel to the economic theory that skills, knowledge and efficient management are greater source to increase the economic growth. The variable labour force is statistically important or significant at 1 percent. Also the findings of labour force growth shows that if labor force growth increase by one percent it will leads to increase economic growth by around 1.23 percent. The value of R^2 indicated that 99 percent variation accrued in dependent variable (which is in this case is gross domestic product) is caused by independent variables (capital and labour) keeping the other things constant. The results of the study show the accordance with the endogenous growth theory of Romer (1986) and Locus (1988) which indicate that physical capital and improved or efficient human capital increase the economic growth because efficient human capital increase the productivity of labor force which leads to increase the economic growth. These results are also matched with the study of khan (2007), Anderesn and Babula (2008) and Keho (2017) these studies also represents the positive relationship of physical capital, labor and economic growth.

5.4.5.2 Results of Cobb-Douglas production function (first equation). (With the constraint of Constant returns to scale):

The same equation is estimated with the restriction of constant returns to scale. Here the dependent variable is Gross Domestic Product and independent variable is growth rate of physical capital. The model is estimated through Generalized Method of Moment technique and estimated result of the equation is presented in table 5.4.5.2

Table 5.4.5.2

variable	Coefficient	t value	Prob.
intercept	-1.43	-3.062*	0.0005
capital	1.16	56.48*	0.0000
R^2	0.98		
Adjusted R^2	0.98		

Source: calculations done by author based on the given data by using the software E-view 9.***** indicates that variable are significant at 1%.

Results shown in table 5.4.5.2 indicates that growth rate of capital is significant at 1 percent confidence level and has positive correlation with economic growth of Pakistan. The coefficient of growth rate of capital indicates that if physical capital increase by one percent it leads to increase the economic growth by 1.16 percent by keeping other things constant. The value of R^2 indicates that 98 percent variation in dependent variable is caused by independent variable which is growth rate of physical capital in this equation. The higher t value in this table represents that variable growth rate of capital is highly significant and on the basis of this value we can reject the null hypothesis that physical capital growth did increase the economic growth.

5.4.5.3 Estimation results of second equation (with and without constraint of constant returns to scale).

The equation two of this study estimates the consequences of trade openness on the economic growth focusing the case of Pakistan by using the channel of labor force growth. In equation two, dependent variable is labor force growth as well as independent variables are trade liberalization, foreign direct investment (FDI), inflation (INF), secondary schools enrollment ratio is utilize which is used as the proxy of Human capital, and government expenditure (GX) these all variables put different impact on growth rate of labor force growth. The regression results of model two by using the Generalized Method of Moment technique are presented in table 5.4.5.3.

Table 5.4.5.3

	without restriction of constant returns to scale			with restriction of constant returns to scale		
Variable	**Coefficient**	**t value**	**prob.**	**Coefficient**	**t value**	**prob.**
Intercept	0.51	4.00*	0.0001	0.48	5.05*	0.0000
foreign direct investment	-0.05	-25.68*	0.0000	-0.05	-16.84*	0.0000
government expenditure	0.14	15.34*	0.0000	0.14	12.13*	0.0000
human capital	0.32	45.97*	0.0000	0.32	45.40*	0.0000
inflation	0.02	6.91*	0.0000	0.02	4.82*	0.0000
trade	0.01	0.43	0.6658	0.0008	0.05	0.9583
R2			0.99			
adjusted R2			0.99			

Source: calculations done by author based on the given data by using the software E-view 9.***** indicates that variable are significant at 1%.

The results shown in table 5.4.5.3 on one hand indicated that without imposing the restriction of constant returns to scale the variables effecting the economic growth by following way. Foreign direct investment negatively impacted the economic growth by negatively affecting the productivity of labour force growth into the economy whereas the coefficient of FDI is statistically significant at 1 % level. Also shows that one percent increase in foreign direct investment leads to decrease the productivity of labor force by 0.05 percent. Foreign direct investment increases the economic growth of the countries that have more absorptive capacity, large markets and also skilled labor force. But in case of Pakistan, Pakistan did not have skilled labour force which can lead to decrease the benefits achieved from foreign direct investment or we can say that due to unskilled labour force, foreign direct investment decrease the economic growth of Pakistan. Another reason of this decline is that the investment comes in Pakistan is capital intensive and the economy of Pakistan is labor intensive economy that is why increase in foreign direct investment leads to decrease the labor force growth with in return decreases the economic growth. These results are contradictory to the economic theory because endogenous growth theory of human capital explains that foreign direct investment put positive impact on economic growth of the country. The political instability is also a hurdle in the way to getting the benefits from

foreign direct investment. Due to political instability foreign direct investment cannot flow into the country which causes the reduction in economic growth of the country. Now moving toward government expenditures, the government expenditure are statistically significant at 1 percent level and has positive relationship with economic growth by increase the productivity of labor force growth. The coefficient of government expenditure indicated that if government expenditure increase by one percent it leads to increase the productivity of labor force growth by 0.14 percent. Also human capital is significant at one percent and indicates that if human capital increased by one percent it will increase the labour force growth by 0.32 percent. Study results also show that inflation significantly contribute into the economic growth through the channel of labour force growth. According to the estimated results, inflation also becomes significant at 1 percent level. Whereas it indicates that one percent increase in inflation bring the change of 0.02 percent in labor force growth. When inflation increases in an economy producer incentives increases they start hiring more labor to produce more goods which increases the productivity of labor force growth and as a result labor force growth increases the economic growth. Also the estimated coefficient of trade liberalization shows insignificant but positive effect of trade openness on economic growth of the country by positively influencing the productivity of labour force growth. These results are matched with the study of Iscan (1997) and [Paus *et al*. (2003)]. The results show that the value of R^2 is 0.99 percent which indicates that keeping the other things constant 99 percent variation in labor force growth is caused by the independent variables which are foreign direct investment, inflation, government expenditure, human capital and trade liberalization and then labor force growth effect the economic growth.

Similarly this table also presented the results of the same equation with the constraint of constant returns to scale. And the coefficient of the variables demonstrated that the t value of foreign direct investment is significant at 1 percent level and negatively associated with economic growth by effecting labour growth. It indicates that one percent rise in FDI lessen economic growth by 0.05 percent and on the basis of t value or p value we are able to reject the null hypothesis that foreign direct investment did not impacted the economic growth by the channel of labour force growth.. The higher t value of every variable which is used in this analysis leads to reject the null hypothesis. The variable government expenditures in this equation show significant and positive relationship with labor force growth. One percent increase in government expenditure spur the productivity of labor force growth by 0.14 percent. The significance level of government expenditures is 1 percent.

Human capital also shows positive relationship with the productivity of labor force growth, and increase in the productivity of labor force growth enhance the economic growth of Pakistan. Coefficient of human capital shows one percent increase in human capital cause to grow productivity of labor force growth by 0.32 percent. The level of significance of human capital is 1 percent.

While the relationship of inflation and labor force growth is found to be positive. Inflation is significant at one percent it means one percent increase in inflation will boost the productivity of labor force growth by 0.02 percent.

Trade liberalization insignificantly but positively affects the labor force growth which leads to raise the economic growth. The insignificant coefficient of trade shows that trade is necessary condition but not a sufficient condition to spur the economic growth of Pakistan via effecting labour force growth. The negative coefficient indicates that one percent rise in trade openness/liberalization rise the labor force growth by the level of 0.008 percent. R^2demonstrates that 99 percent deviation occurs in explanatory variables is because of the variations of independent variables which are used in the model.

5.4.5.4 Estimation results of third equation (with and without constraint of constant returns to scale).

The third equation of the study estimates the effect of trade openness on economic growth of Pakistan economy by effecting the physical capital growth. So to analyze this impact foreign direct investment, inflation, government expenditure, human capital and trade liberalization are taken as independent variable while physical capital growth is taken as dependent variable in the model. The regression results of model three by using the Generalized Method of Moment econometric technique are presented in table 5.4.5.4.

Table 5.4.5.4

	without restriction of constant returns to scale			with restriction of constant returns to scale		
Variable	**Coefficient**	**t value**	**prob.**	**Coefficient**	**t value**	**prob.**
Intercept	6.95	13.04*	0.0000	6.71	12.43*	0.0000
foreign direct investment	0.04	2.95*	0.0040	0.05	5.02*	0.0000
government expenditure	0.09	1.56	0.1219	0.1	1.5	0.1361
human capital	0.26	7.01*	0.0000	0.24	7.06*	0.0000
inflation	-0.03	-1.58	0.1175	-0.04	-2.40*	0.0182
trade	0.53	7.20*	0.0000	0.54	7.15*	0.0000
R2			0.98			
adjusted R2			0.98			

Source: calculations done by author based on the given data by using the software E-view 9.***** indicates that variable are significant at 1%.

This table shows the results of both equation, without restriction of constant returns to scale and with restriction of constant returns to scale. The coefficients of the equation of without restriction of constant returns to scale indicated that foreign direct investment has positive and significant effect on physical capital growth. It indicates that if one percent increase in foreign direct investment it will leads to increase the physical capital growth by 0.04 percent. Foreign direct investment enhances the investment level into the country which will enhance the physical capital formation, and physical capital formation further enhances the economic growth of the country. These results are in line with the endogenous growth theory or new growth theory and also these results matched with the previous studies results like Vehapi *et al.* (2015), Ram and Zhang, (2002) and Younus *et al*. (2014).China Pakistan Economic Corridor (CPEC) is a current example of foreign direct investment which increases the investment rate and further helps to accelerate the capital formation in Pakistan and lead to boost the economic growth of Pakistan. The next independent variable, government expenditure (GX) has insignificant but positive impact on physical capital formation which leads to increase the economic growth of the Pakistan. The empirical findings indicate that one percent increase in government expenditure keeping the other

things constant it will leads to increase the physical capital formation by 0.09 percent in Pakistan. If government spends money on developmental project of the country it will increase capital growth and also increase the productivity of capital by doing such types of investment will ultimately help to increase the economic growth of the country. These findings are matched with the study of Osabuohien (2007). Whereas the variable human capital (HC) is positively and significantly contributes to the physical capital growth which leads to increase the economic growth. The coefficient of human capital indicates that if human capital increases by one percent by keeping the other things constant it will increase the physical capital growth by 0.26 percent also the human capital become significant at 1% level. The reason of positive relationship is may be that skilled and efficient human capital of the country, use the existing physical capital of that country efficiently and also contributes to accelerate the growth of physical capital by using their improved skills and advance knowledge which will helps to boost the economic growth. These results are matched with the study of Iyoha and Okim (2017) and Narayan and Smyth (2005). Also these results are supported by economic theory named as endogenous growth theory. The theory explained that investment in human capital increase the economic growth of country.

The results of inflation show that there is insignificant and negative relationship between physical capital growth and inflation which leads to decrease the economic growth. When inflation raises in an economy the purchasing power of the nation decrease, and when purchasing power decreases, the nation cannot be able to invest or cannot be able to purchase the physical capital which results the reduction in physical capital growth. Also high inflation means the prices of goods and services high and when prices become high producer stop purchasing the physical capital goods and as a result it lead to decline the physical capital growth and further economic growth will decline because to this phenomena The same case is happening with Pakistan because inflation is highly volatile phenomena in Pakistan which reduces the purchasing power of the people so people cannot invest on the physical capital which negatively impact the economic growth. These results are in line with the study of Villavicencio and Mignon (2011).

While results of trade liberalization shows the positive and significant relationship with physical capital which resultantly increase the economic growth of the country. The coefficient of trade liberalization becomes significant at 1 percent level. The positive impact of trade liberalization indicates that trade increase the flow of technological spill over which induce the local manufacturer to higher advanced

level of machinery and equipment also trade liberalization increase the flow of new innovations, increase the flow of new knowledge and increase the investment on research and development activities, enhance the specialization process, furthermore trade liberalization leads to increase the competition in domestic market which increase the efficiency of domestic markets, these all things motivate to increase the physical capital growth which will positively contribute to the economic growth of the country.

The value of R^2 which is obtained through the estimation of the equation is very high which indicates that other things remain unchanged 98 percent variation in dependent variable is caused by the independent variables of the equation. The results are supported by economic theories of trade and also supported by the empirical studies of khan and Qayyum (2007), Edward (1992), Hozouri (2017), Waczairg and Welch (2008), and Chen and Gupta (2006) etc.

Now the coefficient of the equation which is estimated by imposing the restriction of constant returns to scale indicated that foreign direct investment is positively correlated with growth rate of physical capital which further effect the economic growth positively. The estimated coefficient of foreign direct investment indicates that if foreign direct investment increase by one percent it brings the positive change of 0.05% in physical capital growth it means it indirectly helps to increase economic growth of the country. Whereas government expenditures are insignificant but positively correlated with physical capital growth. It indicates that one percent increase in government expenditure leads to increase the physical capital growth by 0.1 percent. Human capital is significant at 1 percent level and one percent increase in human capital leads to boost physical capital growth by 0.24 percent.

While inflation is also become significant at 1 percent but shows negative relationship with economic growth by negatively effecting the physical capital growth. The coefficient of inflation represents that one percent increase in inflation leads to decrease the physical capital growth by 0.04 percent which consequently decrease the economic growth.

Trade liberalization indicates the positive relationship with economic growth by effecting the capital growth. Trade become significant at one percent level and shows that one percent increase in trade liberalization bring increase of 0.54 percent in physical capital growth and then physical capital growth increases the economic growth.

The value of R2 is very high which indicated that 98 percent variation in dependent variable is explained by the independent variables which are used in this study.

5.5 Summary:

This chapter comprises on the estimation of three equations and interpretation of results which are obtained through regression analysis. The model of the study is comprises on three equations and these equations are estimated twice. Firstly these equation are estimated without imposing the restriction of constant returns to scale and secondly these equation are estimated with imposing the restriction of the constant returns to scale. Generalized Method of Moment technique is used to estimate the model. However, the results of the study shows that trade liberalization is positively correlated with physical capital growth and with labor force productivity growth, and these both variable further have positively relationship with economic growth. Whereas other explanatory variables like inflation and FDI shows negative relationship with economic growth. This effect also comes though negatively effecting the labor force growth and physical capital growth. Remaining all variables of the model is positively affecting the economic growth. The restriction of constant returns to scale is checked through Wald test. The results of Wald test confirms that there is no constant returns to scale. Increase or decreasing returns to scale is present which are shown by the sign of coefficient in the model.

Chapter 6

Conclusion and Policy recommendation:

This dissertation analyzed the effect of trade liberalization by covering the time period of 1980 to 2016 by focusing the case of Pakistan. This study divided into to six chapters: introduction, literature review of existing studies, and decade wise history of trade liberalization in Pakistan, Methodology, estimation, results discussion and conclusion and policy recommendation. The model of the study have three equation and these three equations are estimated simultaneously. So to avoid the endogeniety problem form the model this study uses the Generalized Method of Moment (GMM) technique. Because the betas estimated by using GMM are considered efficient estimator even in the presence of endogeniety problem.

Key findings of the study:

The model of the study consist of three equations. In first equation dependent variable is gross domestic product while independent variables are physical capital growth and labour force productivity growth. Physical capital growth and labor force productivity growth are also effected by many other variables. So in second and third equation those variables are taken which effect the physical capital growth and labor force growth. In second equation explanatory variable is gross fixed capital formation and independent variables are inflation, FDI, human capital, as well as government expenditure and trade liberalization. However in equation three, the explanatory variable is labor force growth while independent variables are inflation, FDI, government expenditure, and trade liberalization. Both model of this study are estimated by two times. First time the model is estimated without imposing the restrictions of constant return to scale while second time model is estimated by imposing the restrictions of constant returns to scale.

The estimation results of first equation where dependent variable is Gross Domestic Product and independent variable are labor force growth and physical capital growth and also estimated with the restrictions of constant returns to scale indicate that labor and capital growth are important variables to influence the economic growth. According to estimated results labor force growth and physical capital growth both have positive and significant effect on economic growth of Pakistan. It indicates that if government and private investor invest on the accumulation of physical capital it will leads to increase

the economic growth of a country like Pakistan. Also to work for the betterment of labor force growth will also increase the gross domestic product significantly.

The results of second equation in which physical capital formation is an explanatory variable and the list of independent variables are inflation, foreign direct investment (FDI), human capital (which is measured by using the proxy of secondary school enrollment ratio), government expenditure, and trade liberalization. The results of this equation indicates that government expenditure, foreign direct investment, human capital, and trade positively affect the physical capital growth while inflation negatively affect the physical capital growth. Trade liberalization positively correlated with physical capital growth according to estimated results. This result suggested that trade liberalization increase the flow of capital goods from developed countries to developing countries and increase the flow of technological spillover also increase competition in domestic economy which leads to enhance the growth rate of physical capital and then physical capital growth positively contribute to the economic growth of Pakistan. Foreign direct investment also has the potential to increase the investment level into the economy which helps to increase the physical capital growth and then physical capital growth accelerates economic growth of the country. higher inflation reduce the purchasing power of the people so they become unable to invest on physical capital or their saving become insufficient to invest on different developmental project, this cycle negatively affect the physical capital growth and further physical capital growth decrease the economic growth of the country. Investment on education at secondary school level help to produce skilled labor which contribute to enhance the physical capital growth by utilizing their efficient skills and this further contribute to increase the economic growth.

The estimation results of equation three (where explanatory variable is labor force growth as well as independent variables are foreign direct investment (FDI), inflation, government expenditure, human capital and trade liberalization and estimated without the restriction of constant returns to scale) presents that government expenditure, human capital, and inflation are positively associated with the economic growth of the country through effecting the labor force growth According to the results trade liberalization also has positive correlation with labor force growth but this positive relationship is insignificant. The only variable which shows the negative effect on labor force growth is foreign direct investment. This study suggested that one of the possibilities of negative relationship of foreign direct investment is political instability and Pakistan is facing political instability from last few years. Also

when country have low capacity to absorb the foreign direct investment than it also cause the negative impact on economic growth by negatively effecting labor force growth.

Estimation results of the model which is estimated by putting the restriction of constant returns to scale, in first equation physical capital positively affect economics growth of Pakistan. In second equation all independent variables (which are government expenditure, foreign direct investment, human capital and trade liberalization) except inflation, all variables positively affect physical capital growth and then it leads to increase economic growth of the country. While only inflation is a factor which negatively affects the physical capital growth and it further reduce the economic growth of Pakistan. In third equation only foreign direct investment put negative impact on labour force and remaining all variable is shown positively correlated with labour force growth and hence it increase economic growth of the country.

The study also conducted Wald test to confirm the restriction of constant returns to scale. But the results of Wald test indicate that there is no constant returns to scale. Also the study conducted many diagnostic tests to check the reliability of data as well as reliability of the model.

Policy recommendations:

- According to the study results trade liberalization proves to be a positive contributing factor into the economic growth these results match with the findings of Solow and Sawan (1956). So there is need to ensure that policies are initiated and implemented with needed speed in order to increase the economic growth through the channel of trade liberalization.
- Government expenditure put significant and positive impact on economic growth, so government should ensure that final current consumption expenditures are properly managed in a manner that it will raise the nation's production capacity.
- Human capital in Pakistan is positively related with economic growth. This indicates that human capital is playing important role in the growth process. Presently Pakistan is spending 2.4 % of GDP on education in FY 2018. Which is much below than other regional countries like India, Bangladesh and Nepal. An increase of the expenditures on education sector is vital in order to sustain economic growth by enhancing human capital.
- The results of the study shows that inflation increase the economic growth by putting the impact on labor force growth. But on the other hand inflation negatively affect the economic growth

through physical capital formation. The later effect is greater than the former effect so it is recommended that government should tried to bring the inflation level low (single digit) in the country so it will increase the economic growth because physical capital is a major positive contributing factor to economic growth. And government should also make appropriate policies regarding the factors which cause high inflation like energy crises, money supply, exchange rate volatility and poor agriculture production to foster the economic growth.

- To gain the benefit from foreign direct investment it is needed to enhance the physical capital because the investments which comes in Pakistan are capital intensive investments.

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