ECONOMIC LIBERALIZATION AND ECONOMIC GROWTH: AN EMPIRICAL ANALYSIS OF PAKISTAN

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ABSTRACT

Since late 1980s, Pakistan's policy makers have been following the economic liberalization policies, particularly financial and trade liberalization for attaining sustainable economic growth. Gauging the impact of such policies on Pakistan economic performance is indispensable to pave the way of sustainable economic growth. This study contributes to the existing literature in the case of Pakistan by estimating the impact of financial and trade liberalization on economic growth. Study applied autoregressive distributed lag approach (ARDL) on time series data from 1971 to 2014. Our results indicate that the long run relationship exists and the economic growth model shows that labor force (skill), capital stock, and financial liberalization index are positively related with the economic growth. The financial openness index and trade openness are negatively related to growth. Against this backdrop, study suggests policy makers to promote financial liberalization in banking and stock sector as such liberalization policies are positively linked to economic growth. In the context of negative juxtaposition of capital account liberalization/openness to economic growth, there is need to relook at the capital account liberalization policies. The study also highlights a need to revise import liberalization policy of discouraging the imports of luxury consumer goods and subsidizing the machinery for industry. The control variable of skill labor force is positively linked to economic growth, thus this study suggests that skill labor is playing an important role in the growth process. Presently Pakistan is spending 2.1 % of GDP on education (GOP 2011), which is lower than other regional countries like India, Bangladesh and Nepal. An increase in education expenditures and their effective allocation is vital in order to sustain EG by improving the quality of human capital.

Contribution/Originality: This study contributes to the existing literature in the case of Pakistan by estimating the impact of financial and trade liberalization on economic growth from 1971 to 2014.

1. INTRODUCTION

According to Solomon (1999) since the end of the 1970s nations across the world joined a global movement towards market-oriented economic policies on a global scale. These policies were bound into a set of doctrines, called the 'Washington Consensus', later came to be known as the 'Post-Washington Consensus' (Williamson, 1994). Under the aegis of multilateral agencies like the IMF and the World Bank, the structural adjustment

programs were promoted, aimed at liberalization of the domestic economy from government control (De Haan *et al.*, 2006).

The focus of these policies was to ensure fiscal discipline; prioritize public expenditure; reform tax system; liberalize financial markets, exchange rates, trade, and foreign direct investment; privatization of state enterprises; and deregulation, broadly defined (De Haan *et al.*, 2006). According to the World Bank (2002) it is difficult to assess the impact of the market-oriented policies on the economic growth of the nations. Rodrik (2008) points out that the general philosophy of rigorous economic strategy encompasses allocative efficiency, macroeconomic and financial stability. The allocative efficiency can be achieved through the rule of law, market-based competition, liberalization of trade and foreign direct investment. Macroeconomic and financial stability requires prudent execution of monetary policy to ensure fiscal and current account sustainability.

To measure the degree of market-openness, the economic freedom index is used. The Fraser Institute uses forty-two data points to construct the freedom index and measure economic freedom in five broad areas: (1) size of government: expenditures, taxes, and enterprises; (2) legal structure and security of property rights; (3) access to sound money; (4) freedom to trade internationally; (5) regulation of credit, labour, and business (Gwartney *et al.*, 2014).[1]

The Heritage Institute, on the other hand, developed summary measures of economic freedom by using 10 quantitative and qualitative factors. These are grouped into four broad categories under economic freedom: (1) rule of law (property rights, freedom from corruption); (2) limited government (fiscal freedom, government spending); (3) regulatory efficiency (business freedom, labour freedom, monetary freedom); and (4) open markets (trade freedom, investment freedom, and financial freedom).[2]

According to De Haan *et al.* (2006) if a country has missing observations of some components of economic freedom index (EFI), then the components are aggregated into a summary of EFI. Thus, the component score of missing observation is considered using only partial data. However, if some data are missing on all components of a certain area, then the EFI is created by considering the average of the various areas. Thus the summary EFI represents only those indicators for which data are available. So, the EFI may lack consistency a cross countries (Heckelman and Stroup, 2005). Several empirical studies provide evidence against the aggregation because all the components of the EFI are not positively associated with economic growth (Heckelman and Stroup, 2000). Ayal and Karras (1998) suggest that the eight categories of economic freedom are positively associated with economic growth, while the link between growth and freedom to trade with foreigners is not robust. Using seven[3] categories of economic freedom, Carlsson and Lundström (2002) find the negative association of the size of government and extent trade openness with growth. They also show a positive association of economic structure & markets, freedom to use alternative currencies, legal structure and security of private ownership, freedom of exchange in capital markets with the economic growth.

Based on the Granger causality test Dawson (2003) concludes that only two of the economic freedom categories cause economic growth. The international exchange and freedom to trade with foreigners within the categories of the economic freedom index are negatively associated with economic growth (Bekaert *et al.*, 2005). The relationship between economic freedom and economic growth is complex, which mandates that the issue be scrutinized using different categories of economic freedom. On the other hand asingle indicator of EFI does not

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[1] The economic freedom index measures the degree of market-openness; measured on a scale 0 to 10 using a set of multidimensional indicators – higher values indicating more economic freedom. For the time period 1970 to 2000 the index is available in five-year intervals.

[2] Each of the ten economic freedoms within these categories is graded on a scale of 0 to 100. A country's overall score is derived by averaging these ten economic freedoms, each with equal weight.

[3] The seven categories of economic freedom are: size of government, economic structure and use of markets, monetary policy and price stability, freedom to use alternative currencies, legal structure and security of private ownership, freedom to trade with foreigners, and freedom of exchange in capital markets

reflect the composite economic situation while an aggregated index creates challenges in order to draw policy conclusions (Carlsson and Lundström, 2002). Consequently, it is vital to examine the importance of categories of EFI with respect to growth. The economic freedom covers the different areas as discussed above. So in this thesis we consider only the two components of economic liberalization (a) financial and (b) trade liberalization in order to investigate their impact on economic growth in Pakistan.

Many countries have initiated economic openness by liberalizing financial and trade sectors. India, China, and Malaysia etc., opened their market to foreign investors. The remarkable rates of economic and financial growth recorded in these countries are attributable to their openness. This outcome has drawn considerable attention from researchers and policy makers, and has even led to the emergence of new growth theories. In the 1980s, many developing countries have put into practice the endogenous growth model and started the process of economic liberalization in order to achieve economic growth (EG).

In the 1970s, many developing countries adopted a strategy concentrating, predominantly, on infrastructure on the belief that the latter would engender industrialization and economic development. They focused on construction of roads, bridges, and communication systems, assuming that these would persuade the private sector to invest in productive activity, generate employment and economic growth. Given that the economic structure in most of these countries is fully under the control of the government; bureaucratic red tapes often are a source of inefficiency, interfering with investment decision by the private sector.

Aside infrastructure, developing countries also focused on growth strategies to develop the financial and trade sectors. It is well recognized that the developed financial structure can play central role in economic growth, as can technology. However the latter entails enormous investments which are then funded by the well-established financial system.

This study considers financial liberalization by covering both financial system and capital account liberalization in broad terms. Mckinnon (1973) and Shaw (1973) raised the issue of financial repression in developing economies. They point out that financial liberalization enhances savings which then is smoothly channeled into productive investments leading to economic growth. However, in developing countries negative real interest rate works against saving that leads to low investment levels. It is plausible that market determined interest rates can help to enhance both private savings and investment. In contrast, the Structuralist and the neo-Keynesians posit that financial liberalization moderates economic expansion, and accelerates the speed of price changes (Van Wijnbergen, 1982). Under this view, financial liberalization may cause an increase in interest rates and thus raise manufacturing costs.

The liberalization of capital account or financial openness promotes economic growth by achieving local allocative efficiency. According to Obstfeld (1994) financial openness boosts investment in anticipation of better returns. This is due to efficient sharing of riskier projects. Quinn (1997) shows a positive link between economic growth and liberalization of capital account. Rajan and Zingales (2003) document a positive link between financial openness and factor productivity, the former also promotes better corporate governance.

There are two channels through which capital account liberalization impacts economic growth as described within the neo-classical framework (Bekaert et al., 2011). First, liberalization of capital allows movement of capital from rich countries to poor countries where interest is high. This lowers real interest rates, increases investment and accelerates economic growth. Second, the literature of international finance indicates that liberalized equity markets decrease the equity risk premium from better risk-sharing. The latter combined with foreign participation in local capital markets assures maintenance of steady-state level of GDP (Bekaert et al., 2011).

Motivated by the promises of financial liberalization hypothesis, developing countries adopted financial liberalization process in the 1980s, and many of them reaped enormous benefits. This phenomenon encouraged others to follow suit. On the flip side, the policy caused financial fragility and vulnerability, giving rise to serious

economic/financial crises. The 1997/98 Asian financial crisis was clearly an outcome of improper management or a mismatch of the financing of long-term project and short-term funding.

According to the Structuralist school, IMF policies were at the root of the Asian financial crisis. The IMFs emergency loans were made conditional on deep structural reforms that went far beyond the usual stabilization measures; they included vital changes in labor regulations, corporate governance and the relationship between the government and business. Griffith-Jones *et al.* (2003) find that too quick capital account liberalization, mainly in the developing economies, was a key source of the crisis. For example, Mexico and the Republic of Korea liberalized the capital account rapidly, which appeared to have triggered the financial crises of the 1990's.

That trade liberalization plays important role in economic growth in the developing countries is a topic that is widely discussed in the literature. Trade openness and liberalization have been identified as key elements in academic and policy discourse for several reasons. Firstly, trade liberalization is an important part of the structural adjustment program which has the blessing of by the World Bank (WB) and International Monetary Fund (IMF). Thus, these policies have been adopted in several developing countries including Pakistan.

Secondly, many empirical studies have established the importance of trade openness in economic growth. They found their relevance through the exports-led growth hypothesis and the import-led growth hypothesis (see, (Balassa, 1982; Salvatore and Hatcher, 1991)).

Thirdly, the success stories of flourishing economies in East Asia clearly stand out as a glaring illustration of the role of trade in the transformation. Lastly, the development of endogenous (new) growth theories offers a theoretical basis for empirical investigation on the topic of link between trade liberalization and economic growth.

In contrast, within the neo-classical growth theory, economic growth is exogenously determined by technology. The theory does not recognize the role of interaction, potential or actual, with other nations in long term economic growth. Thus an association between trade liberalization and economic growth does not have a place in the theory. The new growth theories posit that trade openness helps to achieve economic growth by enhancing the scale of spillover (Romer, 1990).

The theoretical literature is broad enough to accommodate different group of models in which trade liberalization can expedite or impede the international economic growth (Rivera-Batiz and Romer, 1991). If trading partners significantly differ in factor endowments, then economic integration increases the global economic growth, even though it is possible for individual countries to suffer a negative influence (Young, 1991; Kind, 2002). The negative relationship between trade openness and economic growth, however, enjoys empirical support (Vamvakidis, 2002; Kim *et al.*, 2011).

Structure of paper - The rest of the paper is organized as follows: Section 2 presents literature review. Section 3 presents theoretical framework, Methodology and the data. Section 4 discusses financial and trade reforms in Pakistan. Section 5 empirical results and discussion. Section 6 conclusion and policy implications.

2. LITERATURE REVIEW

The section reviews the literature under three different sections as follows. Section 2.1 reviews literature on the finance-growth relationship. Section 2.2 presents the literature on the impact of capital account liberalization/openness on economic growth. Section 2.3 reviews the literature on the link between trade and economic growth.

2.1. Review of Literature on the Finance-Growth Relationship

In the literature economists offer different views on the link between finance and economic growth. In the literature of development economics, the issue of finance is not even discussed (Meier *et al.*, 1984). Lucas (1988) dismisses finance as an important factor in economic growth. The idea is, growth leads finance, not the other way

(Robinson, 1952). However, others clearly saw the important role the financial system can play in economic growth (see, e.g. (Gurley and Shaw, 1955; Goldsmith, 1969; Hicks, 1969; Mckinnon, 1973)).

Mckinnon (1973) and Shaw (1973) criticize government policies that impose constraints on financial market, termed as financial repression. These controls on financial market include, but not limited to, ceilings on interest rate, higher reserve requirements and regulate credit policies. These have had an adverse impact on the amount of domestic investment and its efficiency in many developing countries during the 1950s and 1960s. They argue in support of liberalized financial systems in the hope that this would add to efficiency in investment and leads to higher economic growth rates.

Levine (2005) in his survey of finance and growth nexus covers both theoretical and empirical work; demonstrating how the various financial instruments, markets and institutions (individually or collectively) affect economic development. This survey was updated by the Ang (2008). Ang survey includes banking sector, financial markets, and additional financial intermediaries.[4] These institutions are central to the mobilization and intermediation of saving and they help funds to be distributed proficiently to productive sectors.

The previous literature on the relation of finance and growth shows the impact of financial system on economic growth – both direct and those through components of banks and stock markets. The literature is divided in three parts, i.e. cross- country, panel and time series (country case analysis) based analysis.

2.1.1. Cross –Country Evidence of Finance and Growth Nexus

Goldsmith (1969) used data of 35 countries to examine the link between financial sector and economic growth. They offer the first empirical evidence on a positive correlation between finance and growth. However, this study does not control for other factors that influence economic growth. King and Levine (1993) examine the finance and growth relationship by including other factors like physical capital impacting economic growth in the long run. They find that financial development is critical for stimulating the rate of economic growth.

King and Levine (1993) and Levine (1998) emphasize on the bank sector indicator. Later, other studies test the importance of stock markets in the economic growth process. Following the pioneering work of Demirgüç-Kunt and Maksimovic (1998) find positive relationship between stock market and economic growth.

The various studies are taken together the bank and stock market based financial liberalization system and examine their link with growth. Accordingly Levine (2002) uses the data of 48 countries and test the hypothesis whether bank-based or stock market-based financial systems is batter to enhance economic growth. He finds no evidence of long run relationship for either the bank-based or stock market-based view, but the overall level of financial development describes growth variations in the cross-country level. Similar results conclude by the study of Demirgüç-Kunt and Maksimovic (2002) in case of firm data.

2.1.2. Panel Studies on Finance and Growth

The researchers examined the finance growth link adding time dimension to cross-sectional data, thereby using dynamic panel estimation methods.

De Gregorio and Guidotti (1995) find that liberalization of financial system through financial development measures impacted economic growth favourably. In the Latin American nations, unregulated financial liberalization and expectation of government bailout have produced a negative effect of finance on economic growth. In addition, several other studies find a positive impact of finance on economic growth (Rousseau and Wachtel, 2000; Beck and Levine, 2004). Some provide the evidence from firm- or industry-level data on the cross country course. For example, Rajan and Zingales (1996) explain that well-developed financial intermediaries and financial markets help to reduce market frictions. Low cost of external finance facilitates firms' expansion and

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[4] The additional financial intermediaries include pension funds and insurance companies, and a large regulatory body.

encourages formation of the new firm. Thus, financial development plays a favourable role in firms' growth and their entry. Financial liberalization affects small and large firms differently, but small firms in developing countries gain from financial liberalization (Laeven, 2003).

Calderón and Liu (2003); Beck and Levine (2004); Christopoulos and Tsionas (2004) and Rioja and Valev (2004) find a positive association between finance and economic growth. They use pooled time series data and cross-sectional data in a panel setting.

2.1.3. Time Series Studies or Country Case Studies on Finance and Growth

A body of empirical literature applied time series approach to examine the finance and growth relationship. Demetriades and Luintel (1997) develop a financial repression index and find that financial repression is negatively related to financial development. They also show that economic growth process is not weakly exogenous with respect to financial development. Costs inflicted by financial repression policies are too real. Ang and McKibbin (2007) found that financial liberalization, eliminates the financial constraint help development of financial sector, and together they positively impact economic development.

Fowowe (2008) develops financial liberalization index for Nigeria and finds that the index[5] relates positively with economic growth in the long run. This positive result is also supported by Owusu and Odhiambo (2014). The interest rate liberalization enhances economic growth through its influence on financial depth in the case of Kenya (Odhiambo, 2009).

Ang (2010) examines the impact of foreign aid on economic development in India, controlling for the degree of financial liberalization. He concludes that such aid had a negative impact on output expansion, although the indirect effect via financial liberalization was positive. He argues that proper liberalization of the financial sector in the host nation is a vital for foreign aid to be effective.

Examining the finance-consumption nexus, Ang (2011a) concludes that financial repression lowers the consumption volatility in India. The results remain robust even after controlling for macroeconomic shocks and volatility. The threshold evidence suggests that financial system becomes sufficiently liberalized in order to reduce consumption volatility.

2.1.4. Literature Review: Finance and Growth in Pakistan

Most studies on Pakistan investigate the role of finance in economic growth through the lenses of causal link between the two series using different proxies of financial development.

Shahbaz *et al.* (2007) find that financial system and economic growth help in expansion of the financial development in Pakistan. Economic growth leads financial development, but on the other hand financial development does not cause economic growth in Pakistan (Tahir, 2008).

Khan and Qayyum (2006) use financial development index to examine the impact of financial liberalization policies on economic growth. They conclude that financial liberalization reforms promote economic growth in the long run. However, the short run response of real deposit rate is very low, suggesting a further acceleration of the financial reform process.

Shaheen *et al.* (2011) explore a long run relationship among economic growth (GDP growth), financial development (FD) and international trade (IT) and causal link. They conclude evidence in favor of a long run association among FD, IT and economic growth. The test shows unidirectional causality links from FD to GDP;

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[5] The financial liberalization index has developed by using seven liberalization indicators i.e. bank denationalisation and restructuring, interest rate liberalization, strengthening of prudential regulation, abolition of directed credit, free entry into banking, capital account liberalisation, and stock market deregulation.

from IT to GDP; and from FD to IT. This study suggests that more steps for financial policies liberalization must be taken and consideration should be specified to long run strategies.

Shahbaz and Mohammad (2014) applied vector error correction model (VECM), granger causality test, and innovative accounting approach (IAA) to test the relationship among exports, financial development and economic growth Pakistan from 1991.q1 to 2009.q4. They conclude economic growth and financial development causes exports growth; and feedback link between financial development and economic growth; and financial development and exports; and exports and economic growth. They recommend export expansion by promoting economic growth and financial sector development in Pakistan.

2.2. Literature Review: Capital Account Liberalization and Economic Growth

The international capital mobility models suggest that perfect market is beneficial for both the borrowers and lenders. Because foreign investment is intertemporal trade, trade between times and trade between nations have surely analogous welfare effects. The issue of capital mobility is same as the case of free trade (Fisher, 1930). According to Sachs (1981) and Frankel and MacArthur (1988) free international movement of capital is like a free trade with welfare effects. Liberalization of capital has some distortionary effects on developing economies. In case there is protection on import-competing industries during the time of capital account liberalization, it is possible that capital may move towards the comparatively disadvantageous industrial sector and produce immiserizing effects (Brecher and Alejandro, 1977).

Moreover, the financial openness can cause exchange rate instability which promotes deterioration in the real sector (Dornbusch, 1976). In the short run free access of foreign capital may lead to "over-borrowing", which is the main cause of the investment boom, and thus short run higher growth (McKinnon and Pill, 1997). As a result, in short-run, gain or no gain, whereas a medium to pain in long-run from capital account liberalization.

Edison *et al.* (2002) find that capital account has been liberalized in the industrial countries; and some of the developing countries are under process of capital liberalization, but a majority of developing countries still retains control on capital flow. This study also finds that the impact of capital account liberalization on economic growth is inconclusive. The mixed results are further supported by Henry (2007).

Quinn (1997) develops openness measure, based on proxies by elimination of limitations to capital account transactions as printed in the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAR). He finds that openness measure is positively related with real GDP growth in the 58 countries from the period of 1960-89. The Quinn openness measure used by Edwards (1999) in 60 countries finds that the Quinn at level and the ΔQuinn variables are positively associated with economic growth.

Rodrik (1998) examines the link between capital account liberalization and economic growth in the industrial and developing countries. He uses binary indicator of capital account liberalization (constructs by the IMF) and some control variables, e.g., initial income per capita, secondary school enrollment, quality of government and regional dummy variables for East Asian, Latin American, and Sub-Saharan Africa. He finds no link between capital account liberalization and economic growth. Capital account liberalization may not determine the long run growth (Lee, 2003).

Bekaert *et al.* (2005) find that equity market liberalizations lead 1% increase in annual real economic growth (on average), and capital account liberalization significantly contributes in future economic growth, however, the major economic growth response arises in countries with high-quality institutions.

Kose *et al.* (2009) provide empirical evidence on the relationship between financial openness and total growth of factor productivity (TFP). The de jure[6] capital account liberalisation is positively linked with the TFP growth.

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[6]The de jure measure of financial liberalization developed by using the indicators as suggested by Quinn (1997).

While the influence of de facto financial openness on growth of TFP is unclear, the FDI and portfolio equity liabilities are positively related with TFP growth, but external debt is negatively with TFP growth.

The literature indicates that some studies use only the de facto indicators of financial openness in the empirical studies. Choong *et al.* (2010) observe the link among FDI, portfolio investment and economic growth in developed and developing countries. They find that FDI is positively linked with economic growth; and portfolio investment positively impacts on economic growth in both countries (developed and developing countries).

Studies follow different approaches first to estimate the impact of capital account liberalization on financial development and then the effect of financial development on growth. Capital account liberalization promotes economic growth by enhancing financial development (Bailliu, 2000). Klein and Olivei (2008) examine the effect of capital account liberalization on financial depth and economic growth in a cross-section of countries over the periods 1986–1995 and 1976–1995. They find that open capital account increases financial depth and greater economic growth over the 20 years sample period. But these findings are mostly for the developed countries included in the sample. Also results indicate that capital account liberalization fails to impact on financial development among developing countries.

The capital account liberalisation and economic growth nexus have also investigated using time series (individual country specific) data. Law and Azman-Saini (2013) investigate the link between capital account liberalization and economic growth in Malaysia uses the de jure and de facto measures of capital liberalization. They find that the de jure indicator of capital account liberalization is negatively related with economic growth, but the opposite is true of the de facto measure. Also, they suggest that the influence of capital account liberalization on economic growth is determined by the stage of financial evolution and the quality of management.

Shahbaz *et al.* (2008) find a positive relationship between capital account liberalization and economic growth in Pakistan. They use the stock market capitalization as a measure of financial development; secondary school enrolment rate for human capital; inflation, and investment as ratio to GDP as control in the model. They suggest further capital account liberalization in Pakistan, but advise creation of sound macroeconomic and a prudent financial environment in the country to minimize the risks caused by such openness. They also use foreign direct investment as an indicator of financial openness, and find positive relationship with economic growth in Pakistan.

2.3. Literature Review: Trade and Economic Growth

In the literature of development economics, free trade has remained the principal actor in the policy debate since the 1950s. The important motivating factor is the General Agreement on Tariffs and Trade (GATT) and the World Trade Organisation (WTO). Trade reforms in developing countries started in the 1980s and the 1990s. The major reforms include the generalization of import measures, removal or reduction of quotas, and reduction in tariff rates.

According to Dean *et al.* (1994) and Patrick (1966) trade liberalization is becoming more 'outward-oriented'. The countries following such trade policies are doing better than those following inward-looking trade (Krueger, 1998). Trade reforms of those countries move towards the neutrality and openness are considered the more outward-oriented countries. A country is considered more liberal or open in trade if the general level of government intervention in trade sector is low. Edwards (1989) provides detail of neutral trade regime that could be achieved by reducing import barriers and introducing export subsidies.

The theoretical literature on the effect of trade on economic growth point to various channels, i.e., increased capital accumulation, factor price equalization and knowledge spillovers and how the impact works. Rivera-Batiz and Romer (1991) identify various channels by which trade impacts economic growth. First, the re-allocation effect on economic growth from trade liberalization/openness can increase the quantity of human capital in the leading industries. Second, the spillover affects the transmission of knowledge across the nations. According to

this approach, trade openness increases flow of technological knowledge across countries and affects long-term economic growth, positively. They maintain that if domestic human capital system cannot cope efficiently with the innovative knowledge generated by trade openness, the latter can have a negative impact on economic growth. Third, competition effect, associated with the issue of imitation – the developed economy innovates, the developing ones imitates (Grossman and Helpman, 1991).

Romer (1994) argues that trade constraints lowers the supply of intermediate goods, affecting productivity in the economy. Also trade liberalization increases the productivity by eliminating the x-inefficiency. Rutherford and Tarr (2002) apply 'Romeresque' model over a more-or-less infinite horizon. They find that decrease in tariff rate from 20% to 10% enhances the underling steady-state growth rate from 2% to 2.6% over the first decade. Over the first five decades the growth rate is 2.2%.

Winters (2004) in his survey, provides a review of literature on trade liberalisation and economic performance. He finds that trade liberalization prompts a temporary increase in economic growth. The study is relevant for its implications for policies like investment and institutions that respond positively to trade liberalisation. In his survey, Santos-Paulino (2005) offers assessment of the link between trade and economic performance. The study critically analyses the trade openness index methodology that develops by different researchers and concludes mix results between trade and economic growth in cross section studies. This study enumerates the impact of trade liberalization on exports, imports and balance of payment. Singh (1997) offers a review of the trade and economic growth nexus with respect to the role of GATT/WTO in the development of free trade. He agrees with the conclusion that trade liberalization leads to gains and recognizes the practical assistances GATT/WTO provides in promoting trade liberalization; but laments that the outcome is not universally obvious.

The literature on empirical studies shows that the number of researchers investigated the effectiveness of trade openness by using the data of cross country, panel and time series individual country analysis. The empirical evidence on trade orientation and growth provides by Little *et al.* (1970) and Belassa (1971). These studies provide the comparative investigation on '*how the structure of protection to intermediate and final goods affected the relative profitability of sectoral value-added*'. These studies calculate the effective rates of protection (ERP) for the individual country level.[7] The main objective of ERP was to capture the level of protection of value-added industry. These studies suggest that developing countries must reduce the protection degree and liberalize industrial sector for foreign competition. The major shortcoming of these studies is that the calculation of the ERP was lacking of time version in the countries of studied.

The degree of liberalization and biased against exports in a country by using the concept of effective exchange rate and quantitative restrictions measures by Krueger (1978) and Bhagwati (1978). The bias measures through the ratio of exchange rate effectively paid by imports to the effectively exchange rate paid by exports. After that they use the idea of premium and bias and determine the five phases in the development of trade systems.

First, the quantitative restrictions on the across-the-board are generally allied with a balance of payments crisis. In the second phase the anti-export bias increases in the control system. The starting of the liberalization/opening process is the third phase, and also a nominal devaluation and reduction in few quantitative limits. In the fourth phase quantitative limits (quotas) replace by tariffs. The economy is fully liberalized in the last phase, and the current account transactions are entirely convertible, and quantitative limits are not functional.

Krueger (1978) finds the positive impact of trade liberalization on economic growth that work through two channels: first the direct effect through dynamic advantages like the efficient investment projects and maximum

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[7] Little, Scitovsky and Scott (1970) include the countries like Argentina, Brazil, Mexico, India, Pakistan, the Philippines and Taiwan. Balassa's investigation includes Chile, Brazil, Mexico, Malaysia, Pakistan, the Philippines and Norway.

capacity utilization. Second through exports the indirect effect, in the liberalized economies exports are increased and as a result higher economic growth.

Balassa (1982) criticizes Krueger's findings on the grounds that the study ignores the protective effects of tariffs. He labels them as outward orientation (eliminates tariffs) and inward orientation (highest anti-export bias) and concluded that exports growth rate increased by lower anti-export bias over the period of 1960-73. The study has some limitations, e.g., the meaning of export incentives described illogically; in the explanation of export performance the role of real exchange rate is absence, the study uses a non-parametric technique, and causal results between export growth and output which are not clear.

The effective rate of protection (ERP) estimate by Heitger (1987) shows that trade distortions are negatively related to growth in the of 47 countries studied. Romer (1989) uses data from 90 developing countries to examine the nexus of trade openness and economic growth.

He finds that trade openness helps to get a wider array of innovations; promotes human capital accumulation and affect economic growth positively, something also found by Villanueva (1994) earlier. Edwards (1992) using two indicators of trade openness: trade intervention and openness in 30 developing countries, finds that openness indicator is associated positively; and trade intervention indicator negatively with economic growth. Based on the results, he concludes that countries that follow trade openness grow faster, as compare to regimes that adopt autarky.

Further, in the case of 41 developing countries Mcnab and Moore (1998) find that a strong outward trade policy increases annual GDP growth (on average) over 3 per cent, while a moderately outward trade policy increases annual GDP growth over 1.6 per cent, and the Granger causality test indicates the bidirectional association between exports and economic growth.

The comprehensive study on the link between trade policy and GDP growth in the case of 57 countries conduct by Wacziarg (2001). He develops an indicator of trade openness which takes the value of zero-one; if economy is closed the value is zero and one for open economy. He concludes positive link between trade openness and GDP growth.

Importantly, Yanikkaya (2003) uses two trade openness measures of first trade volumes (export, import, export plus import) as a percentage of GDP, and second of trade restrictiveness on foreign exchange of bilateral payments and current transactions in the case 120 countries and investigates the impact of trade openness on per capita income growth. His empirical results indicate that trade volume and trade restriction both are positively associated with economic growth. The positive association between trade openness and growth conclude by Söderbom and Teal (2001) in the case 54 countries, Levine (2002) in the case of 23 developed countries, and Greenaway et al. (2002) in the case of 73 countries.

On the other side Sonmez and Sener (2009) find that human capital and tradeopenness effect on growth in both developing and developed countries at different rates. The empirical literature indicates that scholars also investigate the impact of interaction term of human capital and trade openness on economic growth. Recently Soukiazis and Antunes (2012) use the data of 14 EU countries, and conclude that human capital, external trade and their interaction terms significantly effects on economic growth.

The literature shows that various studies have investigated the link between trade and growth by using the time series country specific data.

By using time series data, Ghatak et al. (1995) conclude a stable long run relationship between the trade liberalization, human capital, physical capital and economic growth in case of Turkey by using the cointegration method. The impact of trade openness and foreign technology on economic growth is not stable; whereas influence of education on economic growth is positive and stable in case of Argentina (Beck and Levine, 2004).

The trade openness through export promotion channel and human capital accumulation are endorsed long-run economic growth in the case of Taiwan (Chuang, 2000). This study uses cointegration and error correction model in case of Taiwan by using sample size 1952–1995. On the basis of empirical findings, this study suggests that human capital-based endogenous growth theory, and the export-led growth hypothesis is valid.

Marelli and Signorelli (2011) use the 2SLS, fixed effects, instrumental variable approach in the case of China and India to test the association between economic growth and trade openness. They show the positive impact of trade openness on economic growth. The trade openness positively impacts on economic growth in the case of Brazil, China, India, Russian Federation, and Turkey (Mercan *et al.*, 2013).

Some studies also provide the empirical evidences of the impact of trade liberalization on industrial sector growth. In the case of Bangladesh (Ahmed, 2003) uses an endogenous growth model to examine the association between trade openness and industrial sector growth. He concludes a long run relationship among industrial production, investment and trade openness (export divided by GDP). In the same way the positive relationship between trade openness and industrial sector growth finds by Dutta and Ahmed (2004) in case of Pakistan. Chandran (2009) tests the relationship between the trade openness and manufacturing growth in Malaysia. He finds a positive link between trade openness and manufacturing growth. Also suggests trade openness should be observed as the long term policy advantage for the sector to benefit. Topalova and Khandelwal (2011) conclude that trade liberalization enhances the firm's productivity, and thus productivity leads to the improvement in economic welfare of India.

In the case of 17 developing countries Okuyan *et al.* (2012) explore the connection between trade openness and economic growth by using bounds testing co-integration approach and Toda and Yamamoto causality test. They conclude co-integration link in the six countries case and also positive long run coefficient of the trade openness. The results of causality test show that the evidence of causality finds in eight country case; however the way of causality from trade openness to economic growth in the case of four countries.

In contrast, few theoretical and empirical studies show that trade openness hinders economic growth in the developing countries. Majeed *et al.* (2010) investigate the impact of trade liberalization on total factor productivity (TFP) in the large scale manufacturing from 1971-2007 in the case of Pakistan. They employ the ARDL approach of co-integration and find that trade liberalization is negatively related with the TFP. Kind (2002) merges the new trade theory and endogenous growth models, and argues that there are ambiguous effects of trade liberalization on economic growth among countries due to difference in size of their home markets. Moreover importantly the trade liberalization in low purchasing power countries can reduce the R&D incentive as compared to high purchasing power countries. The study also presents the case of imperfect international knowledge spillovers, and explains that full trade liberalization can negatively cause the rate of economic growth. Further, Dowrick and Golley (2004) state that since 1980s the advantages of trade openness have accumulated generally to the richer economies, by slight profits to the less developed economies.

Kim (2011) uses the data of 61 countries, and finds that greater trade openness is positively related to economic growth and real income in case of developed countries but it is negatively linked to economic growth in case of developing countries.

Eriş and Ulaşan (2013) explore the long run relationship between trade openness and economic growth over the sample period 1960–2000.[8] This study also employs different indicators of trade openness, i.e. current

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[8] In the case of following countries: Algeria, Argentina, Austria, Bangladesh, Belgium, Bolivia, Brazil, Burkina, Cameroon, Canada, Chile, China, Colombia, Congo, Dem. Rep., Congo, Republic of Costa Rica, Cyprus, Denmark, Ecuador, Egypt, Faso, Finland, France, Ghana, Greece, Guatemala, Guyana, India, Indonesia, Iran, Ireland, Italy, Jamaica, Japan, Jordan, Kenya, Madagascar, Malawi, Malaysia, Mexico, Morocco, Netherlands, Nicaragua, Nigeria, Norway, Pakistan, Paraguay, Peru, Philippines, Portugal, Republic of Korea, Senegal, Sierra Leone, Spain, Sri Lanka, Sweden, Switzerland, Syria, Thailand, Trinidad & Tobago, Tunisia, Turkey, United Kingdom, United States, Uruguay, Venezuela, Zambia.

openings, real openness, and the fraction of open years is constructed on the method suggests by Sachs and Warner (1995).[9] They show that there is no indication that trade openness is strongly linked with economic growth in the long run. This study suggests that officials should not follow trade openness augmenting guidelines establishes only for growth objects.

Further, Menyah *et al.* (2014) conclude that financial development and trade liberalization do not seem to have made a significant impact on economic growth in the 21 African countries studied.

2.3.1. Literature Review: Trade and Growth in Pakistan

Based on causality test, Khan *et al.* (1995) find exports stimulate economic growth in Pakistan. Iqbal and Zahid (1998) show that trade openness causes economic growth. They use the exports and imports as a share of GDP as an indicator of trade openness. Din *et al.* (2003) conclude a positive relationship between trade openness and economic growth in the long run. They employ real exports and imports as indicator of trade openness.

In the long run trade openness and financial development reforms play a vital role in promoting economic growth Khan and Qayyum (2006). But, the short run response to real deposit rate and trade policy is low, suggesting the need for accelerating the reform process. Ellahi *et al.* (2011) conclude a positive link between imports and exports and economic growth. Their sample period covers 1980 to 2009. Shahbaz (2012) suggests trade openness stimulates economic growth in the long term in Pakistan; lending support to the growth-led-trade hypothesis.

3. THEORETICAL FRAMEWORK, DATA AND METHODOLOGY

In this section, this study discusses the theoretical framework vis-a-vis the model, data sources and estimation strategy. Section 3.1 describes the theory of financial liberalization in the context of economic growth. Section 3.2 elucidates the theory of trade liberalization and economic growth, section 3.3 develops the models in line with the underlying theories. In section 3.4 we explicate the econometric framework to obtain the results. Finally, section 3.5 describes the sources of data and definition of variables.

3.1. Financial Liberalization and Economic Growth Theory

Schumpeter (1911) confirms that financial development channels play key role in channeling a country's savings to the most innovating entrepreneurs. Later Gerschenkron (1962) points out that a country's financial organization helps to direct financial capital to the most advanced technological sectors. Goldsmith (1969) and Hicks (1969) also highlight the importance of finance in economic growth story. They argue that financial liberalization promotes financial development and expedites economic growth. Thus, better functioning banks and stock markets help to introduce a product and services that positively impact economic growth through saving–investment channels.

Mckinnon (1973) and Shaw (1973) also point to the link between financial development through financial liberalization for economic growth, adding that government control of banking system such as a ceiling on interest rates, higher reserve requirements, and other forms of direct regulation on credit hamper financial development and adversely affect the output.

Levine (1997) and later Ang (2008) identify five areas where financial can be effective in achieving the desired goal. First, efficient financial system increases the allocation of local resources. When it is liberal, it allows lower rates at easier terms; assess investment projects; encourages entrepreneurs to expand their business (Tobin and Brainard, 1963). Financial intermediaries may decrease the costs of management; evaluation of the related risk; and examine investment opportunities. They can help the allocation efficient resource to the high yield sectors

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[9] The method of weighted average of tariff rates, non-tariff barriers and the black market premium.

(Boyd and Prescott, 1986; Greenwood and Jovanovic, 1990).[10] Improved investment quality stimulates economic growth. Second, Allen (1990); Bhattacharya and Pfleiderer (1985) and Ramakrishnan and Thakor (1984) show that financial intermediaries obtain information on firms and sell them to savers. A good financial system helps to mobilize aggregate saving at by households and makes it easily available to the investors.

Third, well-functioning financial system with information of financial contracts, stock markets and intermediaries permit investors to diversify their trading, hedging, and risk sharing for efficient allocation of resources and growth. Gurley and Shaw (1955); Patrick (1966) and Obstfeld (1992) affirm that it is easier for individuals in efficient financial markets to diversify risk and shift portfolio towards projects with higher anticipated returns.

Fourth, reduced business cost can allow specialization and technological innovation (Smith, 1776). The fall in business cost is not a one-time story, rather may happen during financial innovation. According to Gurley and Shaw (1960) financial intermediaries helps to convert primary securities into indirect securities. During the process financial intermediaries also earn some profit by from economies of scale in lending and borrowing.

Last, efficient banking system and well-functioning corporate governance are central to economic growth (Smith, 1776; Wright, 2002). Diamond (1984) shows that costs may fall from sound financial management and managers' performance through company's assets based on stock prices. They lead to better corporate controls, and could have a positive impact on economic growth.

Effects global or domestic financial liberalization on growth are similar (Eichengreen, 2001). In terms of the theory of capital account liberalization, the effect on economic growth is channelled through liberalization of capital controls which permits domestic as well as foreign investors to engage in portfolio diversification, and the financial openness which lowers the cost of equity capital as a decline in the anticipated returns to compensate risk as well as in agency costs (Stulz, 1999; Henry, 2000). The liberalization of capital account generally enhances the effectiveness of the financial system through weeding out inefficient institutions and generates more pressure for a further liberalization of the system (Stulz, 1999; Stiglitz, 2000; Claessens et al., 2001). Such liberalization of could eliminate information asymmetry, reduce hostile selection and moral hazard, and enhance credit.

Henry (2007) argues that capital account liberalization affects economic growth (or other channels) by assisting it in a well-organized international allocation of resources. During liberalization the resources move from capital abundant developed economies to the capital-scarce developing countries. It reduces the cost of capital, boosts investment, stimulates economic growth and improves standard of living permanently (Summers, 2000; Fischer, 2003).

The capital account liberalization can create an opportunity to maximize the return on saving, borrow at the lowest possible rates, and to diversify the country-specific risk of Edison et al. (2004). Klein and Olivei (2008) point out that foreign bank open branches adding to the total banks in the nation. Efficiency and scope of financial sector increases because foreign banks financial introduce new innovation. These gains stimulate financial intermediaries and significantly to the economies of scale and scope.

Some economists argue that finance is not the only factor for economic growth. The economic growth can lead to financial development (Robinson, 1952). Financial markets develop because of economic growth (Lewis, 1955). Physical capital, human capital and technological changes are the only factors that have considerable impact economic growth (Lucas, 1988). These findings suggest that economic growth creates demand for financial services that are met through the financial sector.

Neo-Keynesian and neo-Structuralists argue that financial liberalization is negatively linked to economic growth, pointing out that financial liberalization measures increases interest rate and manufacturing cost and thus impede economic growth; in addition to increasing inflation in the economy (Van Wijnbergen, 1982; Buffie, 1984).

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[10] The role of financial intermediaries is vital. Without this the fixed cost for evaluation by firms, managers would be prohibitively large.

They criticize McKinnon–Shaw framework the neo-structuralists, and claim that by curbing non-institutional markets, it is plausible to gain more efficiently in the intermediation between savers and investors in the developing countries. They add that households have three types of assets, gold, bank deposits, and curb market loans, acting as substitutes. If the bank deposits rate increases than households substitute curb market loans for bank deposits, causing a decrease in the supply of the loanable funds. This decreases investment and lowers economic growth. The neo-structuralists position is: financial liberalization system is of questionable validity in boosting economic growth in the presence of a well-organized curb markets.

Singh (1997) points out that financial liberalization in terms of expansion of stock markets in developed countries hampers development; due to the lack of transparency, informational problem and internationally immature. Some studies also put argument that the financial liberalization also cause of the financial crisis. Demirguc-Kunt and Enrica (2001) explain that the banking crises may be greater in the financially liberalized system since the banks and other intermediaries have extra autonomy to take on risk and financial liberalization is an important aspect that leading to banking sector fragility. According to Arphasil (2001) that the main cause of the East Asian Crisis (1997-98) is capital account liberalization and interest rate deregulation, as financial liberalization leads to a credit boom, frequently short runs borrowing from abroad. Such a boom leads to unbalanced foundation eventually tends to financial fragility or crises.

Wade (2001) claims that, it is hazardous to capital account liberalization when the banks have the slight capability of international markets and non-banks also borrow abroad. It is doubling dangerous when the financial sector is grounded on bank borrowing than equity financed and when exchange rate pegged. Further, the financial openness can lead country's vulnerability to crisis (Kaminsky and Schmukler, 2003).

Minsky (1975) suggests the intervention of central banks and more government spending in order to avoid the cyclical fluctuations in the economy. Further, government intervention such as providing a credit subsidy and a creditor for certain borrowers by Mankiw (1986).[11] The higher frequency of financial crises is associated with the liberalized economies (Stiglitz, 2000).

3.2. Trade Liberalization and Economic Growth Theory

Smith (1776) points out that trade enhance welfare and economic growth from surplus production, division of labor and the level of productivity. Ricardo (1817) argues that countries gain welfare by specializing in the production of those goods in which they have comparative advantages.[12] The static gains based on comparative advantage, i.e. reallocation of resources from one part to another adds to increased specialization. These are trade creation gains which arise in a free trade area; however the gains are once-for-all. The static gains, finish after removing the tariff walls; hence no additional reallocation takes place. In contrast to the dynamic gains from trade liberalization never end, which often shift the entire production possibility frontier of countries outwards, if trade leads to more investment and increases productivity growth. This happens due to economies of scale, learning by doing access to new knowledge from abroad.

The classical school considers resource allocation as static gains of trade liberalization (Dornbusch, 1992). A price-taking developing country will gain in the perfect competition by eliminating tariffs. The consumers are well off their incomes and resources use more efficiently, also may import at a lower price. The trade liberalized countries can import machines from aboard that are not locally produced, thus increase the productivity in leading industries (Andersen and Babula, 2008). In that case the demand of skill labor force increases in the leading industries (Rivera-Batiz and Romer, 1991).

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[11]This government intervention will increase the efficiency of credit allocation.

[12]This theory is based on two assumptions, perfect competition and the full employment of resources.

The new trade theories highlight the role of trade gains in term of efficiency through economies of scale (Helpman and Krugman, 1985). Trade restricted market economies are narrow and face a lack of rivals from other countries of the world, which raises oligopoly and inefficiency. The gains of free trade also come from economies of scale that arise in big markets (Dornbusch, 1992). Sprout and Weaver (1993) explain that trade liberalization by exports promotion contributes to economic growth, such as the free trade gains are generating beneficial externalities, allowing economies of scale to accrue, alleviating foreign exchange constraints and fostering competitive pressures.

Arrow (1962) shows that production experience improves the productivity, and is a way to technological knowledge accumulation, thereby with the accumulation of production experience leads to higher efficiency of production. Romer (1986) points out that learning-by-doing takes place in proportion with capital accumulation. Capital accumulation of each firm is added to a social knowledge pool, from which other firms in the same economy can draw. These are the diminishing return to capital of knowledge that have spilled over influences between firms. Thus, any enhancement in the product of capital (average) from efficiency gains due to trade liberalization may stimulate the per capita income.

3.3. The Models used for Estimation

3.3.1. Liberalization and Economic Growth

This section of thesis sets the systematic background, underline our empirical modeling strategy. To demonstrate, let us consider a simple production function[13] where the total output (Y_t) produced at time t is given by

$$Y_t = A_t^\alpha \, K_t^\beta \, L_t^\delta \qquad\qquad (3.1)$$

Where, A_t represents capital accumulation and total factor productivity,[14] K_t is the physical capital and L_t is the labor force. There are constant returns to scale in K_t and L_t holding A_t unchanged, and increasing returns to A_t, K_t and L_t. In per capita terms, Eq. 3.1 can be rewritten as

$$y_t = A_t^\alpha \, k_t^\beta, \ \ \alpha > 1, 0 < \beta < 1$$

Where $y_t = Y_t/L_t$ and $k_t = K_t/L_t$. Taking logs and differentiating, the growth rate of output per worker in period *t* can be written as follows:

$$\frac{\dot{y}_t}{y_t} = \alpha \frac{\dot{A}_t}{A_t} + \beta \frac{\dot{k}_t}{k_t}$$

Along the balanced growth path, per worker output growth rate is given by:

$$g_y = \frac{\alpha}{1-\alpha} g_A$$

It is clear that capital accumulation and total factor productivity are important drivers for long run economic growth. The contemporary growth theories suggest that financial and trade liberalization will influence total factor productivity and capital accumulation, and thus on economic growth.

Gurley and Shaw (1955) argue that capital accumulation channel, often known as the quantitative channel, is based on the 'debt-accumulation' hypothesis – financial sector's ability to mobilize saving and overcome problem

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[13] The Mckinnon (1973) and Shaw (1973) provide the models of financial liberalization. This study is considering the both financial and trade liberalization, so uses the simple production function instead of Mckinnon and Shaw models.

[14] The two major sources that contribute to economic growth i.e. accumulation of factors of production and productivity growth are postulated by Solow (1956) and Swan (1956) neoclassical growth model.

of efficient fund distribution. Mobilized saving is channeled to productive investment projects, thus boost capital accumulation and economic growth.

The qualitative channel is total factor productivity (TFP) with a focus on the role of innovative financial technologies to reduce informational asymmetries that hamper the organized distribution of resources and the monitoring of investment projects. Tobin and Brainard (1963) show that financial liberalization offers funds at lower rates that encourage entrepreneurs to enlarge their business and evaluate their investment project; thereby the efficient investment enhances productivity. Greenwood and Jovanovic (1990) show that efficient financial system contributes to the selection of good investment projects. Through risk evaluation of various investment opportunities, the choice of the best favourable investment projects can improve the quality of investment, decrease business failures, and increase productivity.

The theories of McKinnon-Shaw challenge the financial repression philosophy and provide a new model of financial liberalization. Their theories suggest that distortions in the financial sectors, such as loans issued at an artificially low interest rate, directed credit allocation and high reserve requirements, would reduce saving, impede capital accumulation and stop efficient resource allocation or quantity and quality of investment. The removal of these restrictions would considerably deepen financial systems and thus expedite economic growth.

Trade liberalization impacts economic growth by capital accumulation and productivity growth.[15] The trade liberalization increases international flows of capital and enhances the speed at which physical capital and human capital are accumulated locally.

Trade liberalization may stimulate productivity growth through efficient and faster technological progress. Andersen and Babula (2008) elucidate that trade liberalization can promote growth rate of productivity through three channels: it provides access to import intermediate inputs or, implicitly, technologies; expands the market size for new products; and enables knowledge diffusion.

First, the trade liberalized countries can import raw material/machines from abroad, and thus boost up productivity of manufacturing sector. Although, the increase in productivity levels of the manufacturing sector is permanent, but it does not transform the innovation of new products. The intermediate inputs can permanently change growth if imports are used for R&D, leading to innovation and thus economic growth.

Second, the expanded market size for new product increases the anticipated profit from R&D that motivates the research and can lead to further invention and economic growth. The last channel through which trade liberalization can impact productivity growth rate is that the foreign diffusion of general knowledge. If trade enables the diffusion of knowledge, we can expect a rise in the productivity in the research sector, more innovation, and economic growth.

Based on the above discussion, A_t contains the impact of financial and trade liberalization on economic growth. Decomposing the A_t, we rewrite equation 3.1 as follows for estimation purpose:

$$Ln(Y_t) = \theta + \beta Ln(K_t) + \delta Ln(L_t) + \alpha Ln(LI_t) + \mu_t \qquad (3.2)$$

Where Y_t, L_t, K_t and LI_t respectively refers to the real GDP, labor force, physical capital, and liberalization indicators (i.e. financial, capital account and trade liberalization indices). The Ln refers to natural logarithms; and θ, β, δ and α represent parameters to be estimated. The μ_t is an error term. The growth in real GDP is employed as a proxy of economic growth. The physical capital is the real per capita capital stock. Following previous studies, we use skilled labor force instead of total labor force, (Romer, 1989; Villanueva, 1994; Rodrik, 1998; Chuang, 2000; Edison *et al.*, 2004; Sonmez and Sener, 2009). We use secondary-school enrollment as a proxy for the labor force.

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[15] Klenow and Rodriguez-Clare (1997) and Hall and Jones (1999) find that capital accumulation is not the primary source of economic growth. Trade liberalization effects on economic growth mainly through productivity channel Frankel and Romer (1999).

3.4. Estimation Strategy

3.4.1. Unit Root and Co-integration

To check for stationarity of the time series, we apply the unit root test. Stationary of time series implies three things. (a) Mean reversion – indicates that a stationary series varies around a constant long run mean. (b) Finite variance of a stationary time series, which shows that the variance is time invariant. (c) A stationary time series has a finite (auto) covariance that depends in the lag, not on the time. This suggests that the theoretical autocorrelation decays fast as the lag length increases.

Regressions run on non-stationary time series produces a spurious result. To avoid such results, it is necessary to check for stationarity using a unit root test. We apply Augmented Dickey Fuller (ADF) unit root test to define the level of integration. The ADF unit root test is based on the following regression.

$$\Delta Y_t = \beta_0 Y_{t-1} + x_t^{'}\delta + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-2} + \dots + \beta_p \Delta Y_{t-p} + \lambda_t \tag{3.3}$$

Where λ_t is pure white noise error term, Y_t is a time series, Δ is the first difference operator, $x_t^{'}$ is an optional exogenous variable, which consists of constant, or constant and trend, β and δ are parameters to be estimated. The null hypothesis of a unit root involves testing $\beta = 0$ against the alternative hypothesis $\beta < 1$ using the conventional test.

Dickey and Fuller (1979) indicate that under the null hypothesis of a unit root does not follow the conventional student's t-distribution. They develop asymptotic outcomes and simulate the critical level for different test and sample sizes. MacKinnon (1996) considers a larger set of simulations than those tabulated by Dickey and Fuller. This thesis uses the MacKinnon critical value in order to find the order of integration by using ADF.

3.4.2. Co-Integration

Since cointegration technique became available in the empirical literature, the tool has become the weapon of choice for estimating of dynamic models involving long run equilibrium relationship.

ARDL Cointegration Approach

There are several co-integration tests available much due to the work of Engle and Granger (1987)[16]; Phillips and Hansen (1990); Johansen (1991;1995) multivariate tests, Gregory and Hansen (1996) (for unknown structural break) ECM test of Banerjee et al. (1998) among others. In recent years the autoregressive distributed lag (ARDL) approaches to co-integration has become popular in empirical investigation.

The key feature of the ARDL approach to co-integration is that it can be used when the regressors are different orders of integration (Pesaran et al., 2001). The approach takes sufficient numbers of lags to capture the data generating process in a general-to-specific modelling context (Laurenceson and Chai, 2003). ARDL co-integration approach easily applies to the small sample. The bounds testing for co-integration is based on estimating a simple Unrestricted Error-Correction Model (UECM) which can be expressed as follows in a tri-variate case – Y, the dependent variable, and X and Z, the independent variables.

$$\Delta Ln(Y_t) = \beta_0 + \beta_1 \sum_{j=1}^{k} \Delta Ln(Y_{t-j}) + \beta_2 \sum_{j=0}^{k} \Delta Ln(X_{t-j}) + \beta_3 \sum_{j=0}^{k} \Delta Z_{t-j} + \varpi_1 Ln(Y_{t-1}) + \varpi_2 Ln(X_{t-1}) + \varpi_3 Ln(Z_{t-1}) + \mu_{1t}$$

$$(3.4)$$

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[16] This is a classical approach to residual based co-integration tests.

The terms with the summation signs in equation (3.4) represent the error correction dynamic while the second part (terms with ϖ) correspond to the long run relationship. The F-test and t-statistic are used for testing a long run relationship. The Narayan (2005) critical values for the bounds are used for F-test. The null hypothesis of no co-integration ($H_0: \varpi_1 = \varpi_2 = \varpi_3 = 0$) is tested against the alternate of co-integration ($H_1: \varpi_1 \neq \varpi_2 \neq \varpi_3 \neq 0$). The asymptotic distribution of this F-statistic is nonstandard, regardless of whether the series are I(0), I(1) or mutually co-integrated. The decision rule for long run relationship is: If the computed F-statistic exceeds the upper bound I(1), then the null hypothesis is rejected, suggesting co-integration among the series. On the other hand, if the computed F-statistic lies below the lower bound I(0), the null hypothesis is sustained, indicating no co-integration among the series (Pesaran *et al.*, 2001). If the test statistic lies between the bounds, the test is inconclusive. The t-statistic is tested through $\varpi_1 = 0$ in Eq. 3.23. If co-integration is found, the following long run model is estimated:

$$Ln(Y_t) = \beta_0 + \sum_{j=1}^{\rho} \beta_{1j} Ln(Y_{t-j}) + \sum_{j=0}^{\rho} \beta_{2j} Ln(X_{t-j}) + \sum_{j=0}^{\rho} \beta_{3j} Ln(Z_{t-j}) + \eta_t$$

The lag order of the ARDL model is chosen by minimizing the Schwarz Bayesian Criterion (SBC). The ARDL specification of the short run dynamics can be derived from error correction model (ECM) of the following form:

$$\Delta Ln(Y_t) = \beta_0 + \sum_{j=1}^{\rho} \beta_{1j} \Delta Ln(Y_{t-j}) + \sum_{j=0}^{\rho} \beta_{2j} \Delta Ln(X_{t-j}) + \sum_{j=0}^{\rho} \beta_{3j} \Delta Ln(Z_{t-j}) + \lambda ECM_{t-1} + \upsilon_t$$

Where ECM_{t-1} is the error correction term, defined as

$$ECM_t = Ln(Y_t) - \beta_0 - \sum_{j=1}^{\rho} \beta_{1j} Ln(Y_{t-j}) - \sum_{j=0}^{\rho} \beta_{2j} Ln(X_{t-j}) - \sum_{j=0}^{\rho} \beta_{3j} Ln(Z_{t-j})$$

All coefficients of the short term equation are related to the short run dynamics of the model converging to equilibrium; and λ representing the speed of adjustment for short run discrepancy, approaching the long run equilibrium.

3.5. The Data Sources and the Definition of Variables

This study employs annual time series data from 1971-2014, from different sources. Most of the data are taken from the World Bank online database, World Development Indicators (URL: http://data.worldbank.org/). The remaining data are obtained from the State Bank of Pakistan and Pakistan Economic Survey.

In compilation of data is based on the latest publication of the sources noted above. In some cases when data on series are not available directly, proxies have been used by standard transformation methods as discussed in 3.5.1 and 3.5.2.

3.5.1. Capital Stocks

The World Bank database has been used to calculate the capital stock series. This study uses the Hall and Jones (1999) formula to estimate the initial capital stock in Pakistan. The formula is as follows:

$$K_0 = \frac{GFK_0}{\delta + g_{GFK}}$$

Where, K_0 represents the initial capital stock; and GFK_0 the gross fixed capital formation in the initial period, g_{GFK} shows the rate of growth in the fixed capital formation[17], and δ the depreciation. This study assumes a 5%

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[17]The average growth rate by the sample.

depreciation per annum. The initial gross fixed capital formation data are taken from WDI of the World Bank, which stands at US$1435.112 million, the following equation is used to compute the capital stock series.

$$K_t=(1-\delta)K_{t-1}+GFK_t$$

3.5.2. Real Deposit Rate

The real deposit rate (RDR) shows the rates of return on deposits[18] minus expected inflation π_t^*. The π_t^* is not directly observed, so we use the adaptive expectations model to describe the formation of expectations, proposed by Cagan (1956). We assume that economic agents form expectations based on the past experience; and learning from their errors. The model $\pi_t^*-\pi_{t-1}^* = \gamma(\pi_t-\pi_{t-1}^*)$ suggests that the expectations are reviewed every period by a fraction γ of the difference between inflation rate today (π_t) and its expectation during the previous period π_{t-1}^*. This study assumes $\gamma=1$, such that the current inflation rate is same as the expected inflation rate. For inflation rate we use the GDP deflator. The real interest rate is defined as follows:

$$RDR_t=\text{Rate of Return on Deposit}_t - \text{inflation rate}_t$$

3.5.3. Real Interest Rate

The real interest rate (RIR) is the user cost of capital; and the lending interest rate adjusted for inflation (as used by the GDP deflator).

3.5.4. Financial Indicators

The detail of the construction of the financial liberalization index is offered in section 4. The capital account liberalization index is taken from the Chinn and Ito, available at URL: http://web.pdx.edu/~ito/Chinn-Ito_website.htm . The de facto indicator of financial openness uses total stock of assets and liabilities as constructed by Lane and Milesi-Ferretti (2007).

3.5.5. Trade Indicators

The identify the trade liberalization date (de jure) we apply the procedure by Wacziarg and Welch (2008) and the trade openness variable is constructed by taking the ratio of exports plus imports to GDP.

3.5.6. Private Income

We add private consumption and private saving to find aggregate private income, but adjust by the GDP deflator to convert into real terms. To obtain the real per capita private income, we divide it by population.

3.5.7. Skill Labor Force

Secondary school enrollment has been used as of indicator of skilled labor force. The data come from various issues published in the Pakistan Economic Survey over the years.

3.5.8. Old Age Dependency (OAG)

This data is taken from the World Bank, world development indicators. We define the OAG is as follows: Age dependency ratio, old, is the ratio of older dependents--people older than 64--to the working-age population--those ages 15-64. Data shows the proportion of dependents per 100 working-age population.

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[18] The weighted average rates of return on total deposits.

4. ECONOMIC LIBERALIZATION REFORMS IN PAKISTAN

In this section, this study presents financial and trade reforms separately. Beginning 1980's Pakistan chose to implement liberalization policies to increase efficiency of financial markets; create conditions for market-based more effective monetary and credit policies; strengthen capital and market-based financial institutions for proper allocation of local resources; achieve economies of scale and enhances the competitiveness among local produces to enable them to compete in the international market.

Section 4.1 describes financial reforms; section 4.2 outlines the trade liberalization policies, and section 4.3 presents financial and trade indicators in Pakistan.

Financial Liberalization Reforms in Pakistan

In this sub-section we present reforms in the financial sector– the liberalization of banking, stock market and capital account. In retrospect, the damage inflicted on the financial sector due to repression policies of the 1970s and 1980s devastated the Pakistan economy. The extent was so serious that the government was left with few options other than adopting the reforms recommendations by the World Bank and the International Monetary Fund (IMF) in an effort to revitalize sector.

To help the process, the World Bank initially provided a loan of $150 million in 1989 followed by additional $200 million in 1997 under the Financial Sector Adjustment Loan (FSAL). In 1995, another loan of $ 216 million was granted under Financial Sector Deepening and Intermediation Project (FSDIP). In addition a further loan of $300 million came from the World Bank in 2001, for Financial Structure Restructuring and Privatization Project (FSRPP). The support included both financial and technical aspects (Hanif, 2003).

Banking Sector Reforms

The Act of 1974for nationalizing commercial banks was modified to improve the efficiency of the banking sector. Amendments to the Act in 1991 allowed privatization of commercial banks. During 1991-93, the Muslim Commercial Bank (MCB) and the Allied Bank Limited were partially privatized and their supervision was transferred to the private sector. In 1997 the Habib Credit & Exchange Bank (HCEB) were privatized.

The half-privatized commercial banks were completely privatized in 1997. The United Bank Limited (UBL), Investment Corporation of Pakistan (ICP) and Industrial Development Bank of Pakistan (IDBP) were presented for privatization in 2002, and 2003 respectively. The 23.5% share of the National Bank of Pakistan (NBP) in 2004-05 was successfully floated through the Stock Market (Janjua, 2004; Khan and Khan, 2007).

Currently, the state owned banking industry has reduced its investment advances, assets, and similar items significantly as compared to 1990 level. In 1990, state has owned 90% of the banking assets. In contrast, today private banks own over 70 percent of the banking assets (SBP, 2013).

To ensure competition and improve efficiency within the sector, the government allowed foreign banks to open their branches. In 1991 ten new commercial banks were approved for operation; and eleven more addedunder Pakistani ownership. In 1995, restriction was imposed to rein in mushroom growth (Janjua, 2004). Between 1997 and 2001, foreign bank branches were fully liberalized.

This, allowed private banks to gain market shares. The system of credit rationing was eliminated from 1992, and substituted by a relatively flexible control through the fixing of Credit Deposit Ratio (CDR) in each quarter; but eliminated on September 30, 1995.

In March 1995 interest rate was liberalized by eliminating limits on maximum lending rates of banks and NBFIs.[19] Along with it a minimum lending rates were also eliminated on July 26, 1997. The limit on task-based financing was eliminated in October 1995. This empowered banks and financial institutions to set their rates the

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[19] For trade related mode of financing.

market would bear. Further liberalization included, allowing banks and other financial institutions to set their own deposit rates. All these helped banks to make higher profit vs. the era of financial repression (Hanif, 2003).

In February 1994, the State Bank of Pakistan (SBP), the central bank, was made more autonomous by promulgating ordinances (1997). The aim was to amend the State Bank of Pakistan Act 1956, Banking Companies Ordinance 1962 and Banks Nationalization Act 1974 which allowed the State Bank to conduct an independent monetary policy, regulate the banking sector, and limit government borrowing from the Central Bank. The core and non-core functions of SBP were separated in 1999-2000.

These changes helped the SBP to play its role in the areas of conduct of monetary policy; supervise the financial sector; manage foreign exchange and other payment system. However, the SBP responsibility was left to the retail banking and treasury functions (Hanif, 2003).

In 1994 the State Bank of Pakistan (SBP) introduced Prudential Regulation in order to maintain its supremacy and credit classification. This includes several features of commercial bank operation. In 2002 SBP announced specific Prudent Regulations for microfinance institutions (MFIs) which are different from commercial banksby nature and activities. In 2004 additional Prudent Regulations on banking process were issued to cover corporate/commercial banking, small and medium enterprises, financial and consumer financing agencies. The rules &regulations of non-bank financial institutions (NBFIs) changed in 2003, to include leasing, investment banks, housing finance companies, discount houses and venture capital companies.

In January 2000, in response to rising demand for microfinance the strategies were modified to accelerate the process of microfinance sector development.[20] In this context, Finance Bill was presented, which comprised alterations in the description of the poor, improvement in the controls of the SBP in the removal of the Board of Directors (BODs), yielding consent and permitting extra funds in marketable securities.

In 2000 further amendments were made in the Insurance Act 1958 offering distinct guidelines; and published through auspices of the Ministry of Commerce (MOC) in 2002. The amendments were introduced to make the laws compliant with the Islamic codes.

The MOC published instructions and guidelines for the formation of Takaful insurance in 2005. Due to the rising need for agricultural credit in 2005 the SBP designed Prudent Regulation for agri-financing which allowed banks to present new financial schemes for agricultural sector. They are credited for input purchase, machinery, equipment, livestock and support cooperative farming. Prudent Regulations were implemented by the SBP in 2009 to support financing of consumers, small and medium enterprises and commercial/corporate banking.

In 1996 the financial system was on the verge of collapse with about a third of banking assets stuck in the form of non-performing loans (NPLs). The loan default cases remained unsettled due to the unproductive judicial structure. In 1997 the banking courts were established to enforce the new loan recovery laws and apply motivational schemes for recovering loan from debtors.[21] According to the section 36(1) of the SBP Act, 1956, it is mandatory for all scheduled banks to preserve a balance-return fee with the SBP, to the extent of an amount that is equivalent to 5% of their demand and time deposit liabilities.

In order to efficiently regulate monetary policy, scheme for open market operations was presented, and debt management reforms announced.

The objectives were to decrease the segmentation in the government debt market, explain the implications of cost of increasing long run government debt, launch a rate of return on market based structure for government securities, and cover the way for application of monetary policy by instruments of secondary monetary regulator. In January 1992 the bearer tools such as five years Foreign Currency Bearer Certificates (FCBCs) and US Dollar Bearer Certificates (DBCs), etc. were introduced to mobilize foreign exchange.

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[20]The Ministry of Finance and the SBP have worked under the support of the Asian Development Bank (ADB).

[21] The SBP introduced two different incentive schemes to provide an opportunity to loan defaulters to pay their overhead and regularize the remaining amounts.

Stock Market Reforms

The stock market is a critical part of the economy in mobilizing domestic financial resources and fostering a dynamic investment climate. Of the three stock exchanges in Pakistan (Karachi, Lahore and Islamabad), Karachi Stock Exchange (KSE), created in 1947, dominates all others. The Lahore Stock Exchange (LSE) and the Islamabad Stock Exchange (ISE) were set up in 1974 and 1997 respectively. In 2002 the KSE was judged the best performer by the 'Business Week' the US news magazine. To improve the efficiency, the following steps were taken by the policy makers. KSE 100 index came into being in November 1991.

To enable electronic transfer of stocks, Central Depository Company (CDC) of Pakistan Limited was set up in 1997 partnership with International Finance Corporation (IFC), Citibank, other leading commercial banks and development finance institutions (DFIs).

The Securities and Exchange Commission of Pakistan was formed in 1991 when KSE got connected to foreign investors via Reuters. A general manager of the KSE was hired. The CDC registers and conserves the transfer of securities in the form of an electronic book-entry. The exchange in future agreements began in 2003. From August 2005, the Security and Exchange Corporation of Pakistan (SECP) started to phase out trade by replacing it with a facility called Continuous Funding System (CFS) by encouraging investors to use futures trading.

Capital Account Liberalization

In accordance with Article XIV of the Article of Agreement of the IMF, Pakistan imposed various controls on payments and transfers for current international transactions for a long time. As part of liberalization of the financial sector in 1991, the Pak Rupee (currency) was made convertible in July 1994 under the IMF Article VIII. The foreign Pakistani citizens were allowed to open and preserve foreign currency accounts with banks in Pakistan on the same basis as non-residents. These foreign currency accounts were exempted from wealth and income taxes and no questions was asked about the source of income.

In 1996-97 the Special Convertible Rupee Account (SCRA) was opened and allowed inward portfolio investment without prior approval if the transactions take place through SCRA (Haque, 2011). These accounts facilitated foreign investors to investment in listed securities on stock exchange. In 1998 the dual exchange rate system was accepted. This was changed in 1999 by a market established exchange rate structure which set a narrow band. In July 21, 2000 finally the unofficial cap on the exchange rate was removed.

Now in Pakistan current account is fully convertible, while capital account is partially liberalized. There are no limits on FDI inflow; but outflow needs SBP's prior consent and full explanations. Likewise, there are no constraints on portfolio inflow if they are received through Special Convertible Rupee Account (SCRA). Conversely, portfolio investment in a foreign country is not permitted. The foreign currency lending in a foreign country is totally restricted, but foreign currency borrowing from abroad is permitted based on defining terms and conditions and registration of loan with SBP authorized dealer.

Trade Liberalization

The import quotas on non-capital goods were removed and restrictions on imports have been eased towards a comprehensive tariff reform beginning in June 1987. The number of tariff rate was reduced from 17% to 10%, an equal 12.5% sales tax was replaced by previous rate that varies across goods and maximum tariff rate decreased from 225% to 125%. The maximum tariff rate on imports levied 25% in 2005. Import substitution policies, created earlier, had an anti-export bias in the allocation of resources which added to inefficiency. So, import substitution was replaced by export promotion.

In order to enhance the level of foreign direct investment, if not all, most economic sectors were opened providing for 100% foreign ownership. The main aims of the reforms were to achieve self-reliance, strengthen the industrial base, root out inefficiency, enhance the exports and contain trade deficit.

4.1. Financial and Trade Indicators in the Case of Pakistan

According to the existing literature, there are two measures –de jure and de facto –to develop financial and trade liberalization indicators. The former refers to the date of liberalization, and the latter to the actual flow and stock of capital. We use both measures to examine the impact of liberalization of financial and trade sectors.

Construction of Financial Liberalization Index

Researchers developed financial indicators like financial liberalization index[22] using de jure method, and other proxies to estimate the de facto impact of financial openness. We consider domestic financial- and external account liberalization separately.

First, Bandiera *et al.* (2000) utilize various financial institutional reforms and regulations like interest rate deregulation, pro-competition measures, reserve requirements, directed credit, bank ownership, prudential regulations, stock market reform and international financial liberalization to construct financial liberalization index. Following Bandieraet al., approach, Laeven (2003) created financial liberalization index for thirteen developing countries[23] by using interest rate deregulation, reduction of entry barriers, reserve requirements, removal of credit controls, privatization of state banks and strengthening of prudential regulation.

Nair (2004) used six indicators of financial liberalization in India to develop financial liberalization index. The indicators were: interest rate liberalization, reduction in reserve requirements, pro-competition measures, increased prudential regulation, stock market development and international financial liberalization.

Following Bandiera *et al.* (2000) the Laeven (2003) and Nair (2004) indices usebinary (0, 1) variables where 1 refers to financial liberalization and 0 financial repressions. In recent times many countries have chosen to move away from financial restrictions (Edison and Warnock, 2003).

Using categories of liberalization as fully repressed, partially repressed, partially liberalized, and fully liberalized, Abiad and Mody (2005) constructed financial liberalization index for 35 countries.[24] For Nepal, Shrestha and Chowdhury (2007) use eight components of financial liberalization to develop a financial indicator. They are: interest rate liberalization, removal of entry barriers, reduction in reserve requirements, easing credit controls, introduction of Prudential Regulations, stock market reform, privatization of state-owned banks and external account liberalization.

Ahmed (2007) constructed financial liberalization for Botswana. He used interest rate liberalization, exchange rate liberalization, reduction in reserve requirement, authorization of new and privatization of existing banks and securities markets as indicators of financial reforms. Abiad, components of financial liberalization i.e. credit controls and reserve requirements, aggregate credit ceilings, interest rate liberalization, banking sector entry, capital account transactions, privatization in the financial sector, securities markets and banking sector supervision. They used data from 90 countries that included Pakistan. Ang (2011b) used this data base to construct a financial liberalization index for 22 OECD and Non-OECD countries.

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[22]The literature indicates (table 4.1) that various researchers developed a financial liberalization by using the reforms of banking sector, stock market and capital account liberalization.

[23] The list of countries, i.e. Argentina, Brazil, Chile, India, Indonesia, Malaysia, Mexico, Pakistan, Peru, Philippines, Rep. Korea, Taiwan, Thailand.

[24] They cover six different features of liberalization, with credit controls, interest rate controls, entry barriers, regulations, financial privatization, and international liberalization.

As noted earlier, we consider domestic and external financial liberalization separately. For Pakistan, we develop domestic financial liberalization using 6 items: credit controls, interest rate controls, entry barriers/pro-competition measures, banking sector supervision, privatization of financial institutions and security markets. In addition to each dimension, a score of 0, 1, 2 or 3 is assigned, to indicate the states, identified as fully repressed, partially repressed, partially liberalized, and fully liberalized, respectively.

The aggregation of these six components is used to obtain an overall measure of domestic financial liberalization. We use data and codes from of Abiad *et al.* (2010) over the period 1973-2005. The data predating 1973 and post 2005 are extended, as appropriate, using the information from various issues of financial sector assessment, and financial stability review from the State Bank of Pakistan.

Table-4.1. Summary of Review of Literature on Financial Liberalization Index

Author(s)	Country	Method	Type	Financial Liberalization Indicator
Bandiera *et al.* (2000)	Chile, Ghana, Indonesia, Malaysia Korea, Mexico, Turkey, Zimbabwe	Principal component method	Binary (Take value 0-1) 0 : For financial repression (Govt control) 1 : For correspond to the years after a particular financial reform is introduced	1. Interest rate deregulation 2. Pro-competition measures 3. Reserve requirements 4. Directed credit 5. Bank ownership 6. Prudential regulations 7. Stock market reform 8. International financial liberalization
Achy (2001)	Egypt, Jordan, Morocco, Tunisia, Turkey	Principal component method	Binary (Take value 0-1) 0 : For financial repression (Govt control) 1 : For correspond to the years after a particular financial reform is introduced	1. Interest rate liberalization 2. Reduction of reserve requirements 3. Reduction of direct credit to priority sectors 4. Bank ownership (more privatization) 5. Pro-competition policies 6. Prudential regulation 7. Development of securities Markets 8. International financial liberalization
Laeven (2003)	Argentina, Brazil, Chile, India, Indonesia ,Malaysia ,Mexico, Pakistan , Peru ,Philippines , Rep. Korea, Taiwan, Thailand	Sum of the individual components	Binary (Take value 0-1) 0 : For financial repression (Govt control) 1 : For correspond to the years after a particular financial reform is introduced	1. Interest rates 2. Entry barriers 3. Reserve requirements 4. Credit controls 5. Privatization 6. Prudential reg.
Nair (2004)	India	Principal component method	Binary (Take value 0-1) 0 : For financial repression (Govt control) 1 : For correspond to the years after a particular financial reform is introduced	1. Interest rate liberalization, 2. Reduction in reserve requirements, 3. Pro-competition measures, increased 4. Prudential regulation, 5. Stock market development 6. International financial.
Abiad and Mody (2005)	35 countries	Sum of the individual components	0 : Fully repressed 1: Partially repressed 2: Partially liberalized 3: Fully liberalized	1. Credit controls 2. Interest ratecontrols 3. Entry barriers 4. Regulations 5. Financial privatization 6. International liberalization
Shrestha and Chowdhury (2007)	Nepal	Principal component method	1 : For fully liberalization 0.50: If the liberalization is completed in two phases, then 0.5 is assigned for the first phase. If liberalization is completed in three phase, then the number given as follows: first phase is 0.33, the second	1. Interest rate liberalization 2. Removal of entry barriers 3. Reduction in reserve requirements 4. Easing credit controls 5. Introduction of prudential regulations

			phase is 0.66 and 1 for the last phase	6. 7. 8.	Stock market reform Privatization of state-owned banks External account liberalization
Ahmed (2007)	Botswana	Principal component method	Binary (Take value 0-1) 0: For financial repression (Government control) 1: For correspond to the years after a particular financial reform is introduced	1. 2. 3. 4. 5. 6.	Interest rate liberalization Exchange rate liberalization Reduction in reserve requirement Authorization of new banks Privatization of banks Securities markets
Fowowe (2008)	Nigeria	Sum of the individual components	Binary (Take value 0-1) 0: For financial repression (Government control) 1: For correspond to the years after a particular financial reform is introduced	1. 2. 3. 4. 5. 6. 7.	Bank denationalization and restructuring, Interest rate liberalization, Strengthening of prudential regulation, Abolition of direct credit, Free entry into banking, Capital account liberalization, Stock market deregulation
Abiad et al. (2010)	91 countries	Sum of the individual components	0: Fully repressed 1: Partially repressed 2: Partially liberalized 3: Fully liberalized	1. 2. 3. 4. 5. 6. 7. 8.	Credit controls and reserve requirements Aggregate credit ceilings Interest rate liberalization Banking sector entry Capital account transactions Privatization in the financial sector Securities markets Banking sector supervision
Ang (2011b)	22 OECD and non OECD countries	Sum of the individual components	0: Fully repressed 1: Partially repressed 2: Partially liberalized 3: Fully liberalized	1. 2. 3. 4. 5. 6. 7.	Credit controls and reserve requirements Interest rate restraint Entry barriers in the banking sector Prudential regulations and supervision Privatization in the financial sector Restrictions on international capital flows Securities market policy
Owusu and Odhiambo (2014)	Nigeria	Principal component method	1 : For fully liberalization 0.50: If the liberalization is completed in two phases, then 0.5 is assigned for the first phase. If liberalization is completed in three phase, then the number given as follows: first phase is 0.33, the second phase is 0.66 and 1 for the last phase	1. 2. 3. 4. 5. 6. 7. 8.	Interest rate liberalization, Removal of entry barriers, Reduction in reserve requirements, Easing credit controls Introduction of Prudential Regulations, Stock market reform, Privatization of state-owned banks External account liberalization

4.2. Capital Account Liberalization

Eichengreen (2001) points to the difficulties in measuring capital account liberalization. Most measures are qualitative and rules-based, but some go beyond an on/off classification, capture the strength with which restrictions are imposed (Edison *et al.*, 2004). While attempts have been made in the literature to define the degree and intensity of capital account restrictions, such attempts failed to fully capture the challenges reflected by real-world capital restrictions (Chinn and Ito, 2006).

Chinn and Ito (2006) identify some drawbacks in the conventional methods used in capital account restrictions. First, conventional methods of quantifying financial openness (or capital account restrictions) fail to justify for the intensity of financial openness. The most of the measures use binary variables that are based on a set of on/off clarification, called, indicator of multiple exchange rates (k1); the restrictions on current account (k2); restrictions on capital account transactions (k3); and requirement to surrender of export proceeds (k4). These variables are established based on the IMF's categorical listing described in Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER).The classification method was changed to allow further disaggregation in1996, reflecting the complication of capital controls policies.

Second, IMF-based variables are too aggregated to show the complexity of actual financial openness or capital account restrictions. The capital account restrictions vary subject to the path of capital flows (i.e., in- or outflows) in line with the direction of financial transactions. This problem improves only marginally in the AREAER under the new disaggregation of the k3 category into 13 subsets. Using this disaggregation, Johnston and Tamirisa (1998) created capital account restrictions time series after 1996, which is not sufficiently long. Later, Miniane (2004) constructed capital account openness index using the Johnston and Tamirisa (1998) method and extended the series to 1983 for 34 countries.

An overall measure of intensity of capital controls based on qualitative coding, from 0 to 14 ranges was developed by Quinn (1997). The qualitative information bounds in the several issues of AREAER relating to k2 and k3, augmented by information about whether the OECD and European Union countries in question has moved into international contracts with international organizations. The most comprehensive index of capital account liberalization developed by Chinn and Ito (2002) including Pakistan. They updated data on capital account liberalization for 182 countries over the period of 1970-2013 in May 2015.

This study uses the Chinn and Ito de jure capital account openness index, which is based on the capital openness on the first standardized principal component of the k_1 to k_4 binary variables. The variable takes a value of 1 when the capital controls are not present. For capital transactions controls k_3 the authors use the share of a five year window. Therefore, t is proportion of five years covering year t and the earlier four years that the capital account was open:

$$SHAREk_{3,t} = \left[\frac{k_{3,t} + k_{3,t-1} + k_{3,t-2} + k_{3,t-3} + k_{3,t-4}}{5} \right]$$

$KAOPEN_t$ = the first standardized principal component of $k_{1,t}$, $k_{2,t}$, $SHAREk_{3,t}$, and $k_{4,t}$.

The main advantage of the KAOPEN index is that it is measured the intensity of capital controls, to the extent that the intensity is connected with the presence of other limitations on universal transactions (Chinn and Ito, 2006).

4.3. Financial Openness (De Facto)

In order to estimate the de facto impact of financial openness on macroeconomic variables, authors have used various proxies of financial openness. Table 4.2 lists that Kar (1983); Zebib and Muoghalu (1997); Aizenman (2004); Gutiérrez (2007); Choong *et al.* (2010); Spatafora and Luca (2012) and Law and Azman-Saini (2013) have usedthe sum of net inflows-outflows of foreign direct investment as a percentage of GDP as a financial openness indicator.

Further few studies, like Choong *et al.* (2010) and Law and Azman-Saini (2013) have used portfolio investment flows (% of GDP), that covers transactions in equity securities and debt securities as an indicator of financial openness. The external debt issued (% of GDP),as an indicator of financial openness used by Jenkins (1998); Achy (2001); Acosta and Loza (2005); Gutiérrez (2007); Haroon and Nasr (2011) and Spatafora and Luca (2012).

Table-4.2. Literature on Financial Openness Indicators

Author (Year)	Country	Indicators of Financial Openness
Kar (1983)	Brazil	Gross capital inflow Gross capital outflow
Zebib and Muoghalu (1997)	Developing Countries	Net inflow
Jenkins (1998)	Zimbabwe	External debt to GDP
Achy (2001)	Egypt, Jordan, Morocco, Tunisia, Turkey	External debt/GDP
Aizenman (2004)	All countries (subject to data availability)	Financial openness measures (gross private capital in-flows + gross private outflows)*100/GDP
Acosta and Loza (2005)	Argentina	External debt (% GDP)
Salahuddin *et al.* (2009)	Albania, Algeria, Bangladesh, Chad, Egypt, Ethiopia, Indonesia, Iran, Jordan, Malaysia, Mali, Mauritania, Morocco, Niger, Oman, Pakistan, Saudi Arabia, Senegal, Syria, Tunisia and Turkey	Ratio of total debt service to GNI
Gutiérrez (2007)	Latin America	FDI net inflows External debt, total (DOD, current US$)
Frimpong and Marbuah (2010)	Ghana	External debt/GDP
Choong *et al.* (2010)	Developed and Developing Counties	FDI Portfolio investment
Haroon and Nasr (2011)	Pakistan	Total amount of debt servicing
Lim and Kim (2011)	23 Developing countries	Sum of the gross stocks of foreign assets and liabilities as a share of GDP
Spatafora and Luca (2012)		Net equity inflows (percent of GDP) Net debt inflows (percent of GDP) Net bond inflows (percent of GDP)
Law and Azman-Saini (2013)	Malaysia	FDI inflows Portfolio inflows
(Naghavi and Lau, 2014)	27 Emerging markets	Sum of equity in- and outflows as a share of GDP: annual capital flows
Saadaoui (2015)		Gross foreign assets as sum of foreign assets and liabilities

In this study, we use the de facto measure of financial openness following Lane and Milesi-Ferretti (2007) grounded in the total stock of foreign assets and liabilities.

4.4. Construction of Trade Liberalization Index

We recognize that several indicators of trade liberalization have been in the literature.

4.4.1. Krueger (1978) and Bhagwati (1978) Liberalization and Bias

Krueger (1978) and Bhagwati (1978) measure trade orientation through the structure of protection and the implied bias against exports. They define the concept of liberalization and bias by using the idea of quantitative restrictions (QR) and effective exchange rates (EER). The level of trade regime bias (B) at time tis measured by the

ratio of the effective exchange rate paid by importers (EERM) to the effective exchange rate paid by exporters (EERX).

$$B_t = \frac{EER_M}{EER_X} = \frac{E_M\,(1+t+n+PR)}{E_X\,(1+s+r)} \qquad (4.1)$$

Further, the effective exchanges for imports is defined as follows

$$EM(1 + t + n + PR)$$

Where, E_M, t, n and PR refer to the nominal exchange rate applied to imports, effective import tariff (average), import charges (other), and related premium in the presence of import licences (PR). Likewise,

$$EX(1 + s + r)$$

Where, E_X refers to the nominal effective exchange rate on exports, s is the exports subsidies and r is the incentives to exports. If B > 1 shows that import-substitution policy is followed by the country. The trade regime neutral if B = 1. Lastly, the country is involved in an export promotion policy if B < 1. Balassa (1982) pointed out that the Krueger ignored the tariffs protection effect, and the quantitative restrictions, which if considered van produce a stronger bias against exports.

4.4.2. Leamer (1988) Openness Index

Leamer (1988) used the trade intensity ratio (TIR), measured by the ratio of overall trade surplus/deficit to GDP or GNP. He outlines the model and describes the trade at the three-digit SITC (Standard International Trade Classification, Revision 2) disaggregation level; and points the calculated residuals of the model to trade barriers, then developed the trade intensity imports (*M*) from exports (*X*) at the three-digit SITC level of disaggregation measured by the following formulation:

$$TR^* = \frac{\sum_i |\,X_i\text{-}M_i|}{GNP} \qquad (4.2)$$

The set of commodity categories refers as $\sum_i$ in eq. 4.2. The commodities are probable to be either imported or exported but not both, at the each lowest level of combination. Leamer (1988) study also estimates the intra-industry trade measure as follows:

$$IIT = \left[\frac{\sum_i(|\,X_i|+|M_i|)}{\sum_i |\,X_i - M_i|}\right] - 1 = \left[\frac{TIR^*}{TIR}\right] - 1 \qquad (4.3)$$

Eq. 4.3 shows the difference between trade surplus (TIR*) and total trade (TIR) and if IIT is equal to zero, then no intra-industry trade exist at present level of disaggregation. Santos-Paulino (2005) criticised Leamer model arguing that he did not forecast the possible arrays of trade under a trade liberalized environments; and the assumption that world's average level of protection will be adopted by each country is implausible.

4.4.3. Dollar (1992) Distortion Index

Dollar (1992) created two distinct indices, viz., the real exchange rate (RER) distortion index; and an RER variability index to measure the outward-orientation. The method is inadequate because it does not consider export duties, taxes, tariffs, export subsidies and other realistic non-tariff barriers (Santos-Paulino, 2005).

4.4.4. Sachs and Warner (1995) Openness Index

The Sachs and Warner (S-W) openness index takes values [0, 1]; 0, for a closed economy; and 1, if it satisfies at least one of the following conditions:

- Non-tariff barriers cover 40 per cent or more of trade.
- Average tariff rates are 40 per cent or more.
- A black-market exchange rate that has depreciated on average by 20 percent or more relative to the official exchange, during the 1970s and 1980s.

- The country follows a socialistic controlled economic system.
- The country has a state monopoly for major exports.

Sachs and Warner (1995) established a liberalization date of country using the above five criteria. The trade liberalization datesto 2001 was extended by Wacziarg and Welch (2008) for a sample of 141 countries that includes Pakistan.

4.4.5. The Heritage Foundation Index of Economic Freedom

A separate de jure measure of trade freedom is constructed every year by the Heritage Foundation, since 1995, as discussed by the survey study of Santos-Paulino (2005).[25] The index takes the value from zero to 100. It measures government obstruction to free flow of goods and services by imposing tariff and non-tariff barriers. For example, a country may achieve the maximum score of 100, if it scores 0in trade-weighted average tariff rates, and also in non-tariff barriers.

We follow Wacziarg and Welch (2008) de jure trade liberalization date for Pakistan.It may be noted that the trade freedom index from the Heritage Foundation is available from 1995-2013;whileour sample covers 1971-2013. Due to this limitation, we rely on the Wacziarg and Welch approach for the date of trade liberalization. For Pakistan the year of trade liberalization is considered to be 2001.

4.4.6. De Facto Indicator of Trade Openness

For the de facto measures of trade openness, (see table 4.3) the most popular proxy is trade volume (imports plus exports) as a share of GDP. The de facto measure is an outcome of the interaction between market forces and the implementation of prevailing regulations. Wacziarg and Welch (2008) show that some countries do not have a huge trade flow while they are comparatively open to foreign trade on a de jure basis. On the other hand, de facto level of trade openness is quite high even the countries follow trade restrictions but less effective in actual implementation.

Table-4.3. Literature on de facto trade openness indicator

Author (Year)	Country	Indicators of Trade openness Index
Acosta and Loza (2005)	Argentina	Exports + Imports (% GDP)
Haroon and Nasr (2011)	Pakistan	Indirect taxes
Mercan *et al.* (2013)	Brazil, China, India, Russian Federation, and Turkey	Export + Import/ GDP

5. RESULTS AND DISCUSSION

One of the basic assumptions of classical linear regression models is the stationarity of the series – mean, variance, and covariance – each independent of time. However, in empirical exercise, it is prudent to check for the order of integration of each series for a possible long run equilibrium relationship, known as co-integration. This study employs the ADF unit tests in order to examine the order of integration. The null hypothesis to be tested is: the time series is non-stationary.

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[25] Since 1995, the Heritage Foundation is constructing the Economic Freedom Index (EFI) on annual basis for around world level. The ten catorgies of freedom cover by the EFI, one of which is trade openness.

Table-5.1. ADF Unit Root Test Results

Variables	Level			1st Difference		
	Constant	*Constant, Linear Trend*	*None**	*Constant*	*Constant, Linear Trend*	*None*
$Ln(Y)$	−1.648	−0.490	4.520	-5.071^a	-5.646^a	-1.6765^c
$Ln(PC)$	−0.578	-1.851	2.645	-4.941^a	-4.861^a	-2.775^a
$Ln(K)$	−1.833	−2.095	2.329	-3.876^a	-4.084^b	-2.983^a
$Ln(L)$	0.125	−2.436	2.441	-5.569^a	-5.681^a	-4.421^a
$Ln(PPI)$	−1.465	1.366	0.228	-4.601^a	-5.258^a	-4.653^a
RDR	−2.408	−2.360	−0.768	-5.822^a	-5.891^a	-5.827^a
RIR	-1.237	-0.987	-1.246	-12.187^a	-12.415^a	-12.308^a
$Ln(I)$	−1.803	−2.416	1.300	-5.143^a	-5.492^a	-4.624^a
$Ln(PI)$	−1.803	−2.416	1.300	-5.143^a	-5.492^a	-4.624^a
OAD	−1.415	−0.809	−0.078	-2.589^c	-3.089^c	-2.366^b
$Ln(PRS)$	−0.212	−2.802	2.885	-5.135^a	-5.171^a	-4.016^a
$Ln(PS)$	−1.197	−2.197	0.454	-6.907^a	-5.824^a	-2.350^b
Ln(IR)	−2.226	−2.637	0.307	-7.496^a	-7.512^a	-7.514^a
Ln(BD)	−2.349	−2.747	−0.695	-8.058^a	-7.942^a	-8.157^a
Ln(K_Open)	-9.061^a	-8.837^a	-3.586^a	-	-	-
Ln(FO)	−2.367	−2.291	−0.271	-5.474^a	-5.385^a	-5.548^a
$Ln(TO)$	-1.871	-1.697	0.121	-4.083^a	-4.315^a	-4.134^a
$Ln(FLI)$	-0.758	-2.697	-0.866	-5.261^a	-5.308^a	-5.287^a

* Without constant and trend.
Note: Ln refers to natural logarithm, Y to real economic growth, PC to capita real private income,K to real capital stock, L to skill labor force, PPI to per capita real private income, RDR to real deposit rate, RIR to real interest rate, I to real private investment, PRS to real private saving, OAD to old age dependency, PS to real public savings, PI to real public investment, FO to financial openness, TO to trade openness , BD to budget deficit, IR to international reserve (IR), K_Open to capital account liberalization, and FLI to financial liberalization index.
a: indicates 1% level of significance.
b: indicates 5% level of significance.
c: indicates 10% level of significance.

Table 5.1 reports the ADF unit root test results for the series real economic growth (Y), real per capital GDP (PC), real capital stock (K), skill labor force (L), per capita real private income (PPI), real deposit rate (RDR), real interest rate (RIR), real private investment (I), real private savings (PRS), old age dependency (OAD), real public savings (PS), real public investment (PI), budget deficit (BD), international reserve (IR), financial openness (FO), trade openness (TO), and financial liberalization index (FLI); each is non-stationary at levels, except the de jure capital account openness index (K-Open). After first differencing, each series turns stationary regardless of the inclusion of trend and/or intercept. Thus, all variables exhibit I(1) property, expect capital account liberalization.

5.1. Impact of Liberalization of Financial and Trade Sector on Economic Growth

The impact of liberalization of finance and trade sectors on economic growth (EG) has drawn much research attention after the emergence of new growth theories. In 1980s, many developing countries have put into practice the endogenous growth theory model initiating the process of liberalization as a vehicle for EG. However, empirical evidence on the results of such liberalizations is inconclusive. Pakistan has gone great length to achieve a sustainable EG by liberalizing her financial and trade sectors from the 1980's. This present research is motivated by the academic curiosity to examine the impact of the strategy on the economy of Pakistan. The study considers both financial and trade sector reforms.[26]

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[26]The main objectives of these reforms were to improve the efficiency of financial markets, to formulate the market-based and relatively more efficient monetary and credit policies, and lastly to strengthen the capital and market-based financial institutions.

While some previous studies have shown that reforms in financial and trade sectors in a country can lead to EG, their poor management can lead to disastrous crisis. For example, Diamond and Dybvig (1983) argue that the bankoperates within the traditional model cause real economic loss. Singh (1997) points out that financial liberalization in terms of expansion of stock markets in developed countries hampers development. Rodriguez and Rodrik (1999) in their survey find little evidence in support of a claim that reforms like reduced tariff rate and removal of non-tariff barriers to trade has strong link, if any, with economic progress.

This study applies the following model of economic growth (outlined in section 3. 3.1).

$$Ln(Y_t) = \theta + \beta Ln(K_t) + \delta Ln(L_t) + \alpha Ln(LI_t) + \mu_t$$

Where Y_t, L_t, K_t and LI_t respectively refer to the real GDP, skilled labor force, real capital stock, and liberalization indicators (i.e. financial liberalization index, capital account liberalization index, financial openness, trade openness, and trade liberalization). The Ln stands for natural logarithms, and θ, β, and δ the slope coefficients of respective variables. The term μ_t refers to the error correction term.

We implement the ARDL bounds testing approach to co-integration, proposed by Pesaran et al. (2001) to explore a long run equilibrium relationship among the variables defined above. The short run dynamics are estimated by using the ARDL based error correction model.

Table-5.2. Critical Values for ARDL Modeling Approach

K = 3	0.10		0.05		0.01	
	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$
F_V	3.740	4.780	4.450	5.560	6.05	7.458
F_{III}	2.893	3.983	3.535	4.733	4.983	6.423
t_V	-3.13	-3.84	-3.41	-4.16	-3.96	-4.73
t_{III}	-2.57	-3.46	-2.86	-3.78	-3.43	-4.37

Notes: k is number of regressors, FV represents the F-statistic of the model with unrestricted intercept and trend, FIII represents the F-statistic of the model with unrestricted intercept and no trend. The t_V and t_{III} are the t ratios for testing ϖ_1 in equation (3.4) is respectively with and without deterministic linear trend.
Source: Narayan (2005) for F-statistics and Pesaran et al. (2001) for t-statistic.

The bound critical values for F-statistics, presented in table 5.2, are from Narayan (2005) which better suits small samples. We present bound testing results for a long run relationship using five different models, in table 5.

In model, we assume that economic growth is determined by real capital stock, skilled labor force and the state of financial liberalization, measured by the index. In model 2, economic growth is determined by real capital stock, skilled labor force, and capital account liberalization. In the models 3 to 5, real capital stock and skilled labor force are present in all 5 models. However, the variables: trade liberalization, trade openness, and financial openness appear as determinants, sequentially in each of the models 3-5, only one at a time, respectively. The long run models are estimated under two scenarios, as suggested by Pesaran et al. (2001): F_{III} represents the F-statistic of the model with unrestricted intercept and no trend, and F_V represents the F-statistic of the model with unrestricted intercept and restricted trend (Pesaran et al., 2001). The bound test results presented in table 5.3 confirm long run relationship in the all models (1 - 5) from the scenarios (F_{III}, F_V, t_{IIII}, t_v). Table 5.4 shows the long run coefficients that estimated by using the ARDL approach. The results of long run coefficients show that skill labor force and real capital stock are positively related with real economic growth. A 1% increase in human capital (skill labor force) increases real economic growth 0.513 to 1.008%. The one percentage increase in real capital stock enhances economic growth 0.441 to 0.619%. All results are interpreted as on an average and ceteris paribus. The de jure financial liberalization index is positively linked with economic growth in the long run. This finding corroborates those of Shrestha and Chowdhury (2007) for Nepal, Ahmed (2007) for Botswana, Babajide Fowowe (2008); Owusu and Odhiambo (2014) for Nigeria. A 1% increase in domestic financial liberalization increases real economic growth

by 0.034%. This conforms to prediction by Mckinnon (1973) and Shaw (1973) but contravenes that of Robinson (1952); Lewis (1955) and Lucas (1988). They argue that finance is not the main driver of economic growth. Of financial liberalization index, out of six indicators, five refer to financial liberalization in banking sector, which permits entry of new banks or open new branch in remote areas of Pakistan. The expectation is that these banks will channel funds in the productive sectors, and promote economic growth. Based on our results, it appears that further liberalization in banking and stock market sector will be beneficial to the economy of Pakistan.

The nexus of capital account liberalization and economic growth is (+/-), but statistically insignificant with, while the de facto financial openness is negatively related to growth. Edison et al. (2002) and Klein and Olivei (2008) also found a negative impact of financial openness indicators on economic growth.

A 1% increase in financial openness reduces economic growth by 0.201%. The negative impact of de facto financial openness on economic growth is credited to a host of factors. Generally a country's international assets and liabilities are anticipated to be of similar size of order. But, in Pakistan case on average assets have less than one third of its foreign liabilities, therefore indicating its net investment position as strongly negative. An additional vital aspect of Pakistan' foreign investment position is that total assets relative to GDP have remained stagnant in the range of 6 to 15 percent during the sample period. While liabilities to GDP increased from last few years, if we disaggregate total liabilities into foreign loans and FDI, it is shown that foreign loans account for almost 86.07 percent of total liabilities while FDI inflow in contrast account only for 10.6 percent of total liabilities. This poor performance of Pakistan's foreign investment position points to the fact that a huge amount of debt liabilities shows the dependence of our economy on external sources.[27] The long run results also show that trade liberalization is statistically insignificant related with economic growth, but a de facto indicator of trade openness is negatively linked with economic growth. The trade openness negative associated with economic growth. The one percent increases in trade openness causes to decline economic growth by 0.024 percent. This result against the theoretical statement of Lucas (1988) and Romer (1990) and earlier empirical findings of Chuang (2000); Dutta and Ahmed (2004); Okuyan et al. (2012). Equal to empirical studies of Kind (2002) and Kim et al. (2011) that conclude the negative impact of trade openness on economic growth in the case of developing countries. The Grossman and Helpman (1991) and Young (1991) stated that trade openness causes economic growth through a channel of efficient allocation of resources and the spillover effect of technology. The imports of capital goods as an important channel for foreign technology and knowledge flow into the domestic economy. But in the case of Pakistan, the negative coefficient is due the higher percentage of imports of consumer good (60%) as compared to the capital goods (40%). After the trade liberalization the import increases much faster as compared to the exports.

The table 5.5 confers the results short run coefficients of ARDL based error correction model. The results indicate that capital stock and labor force are positively related with economic growth in the short run according to theory. The financial openness equally to the long run is negatively linked with economic growth in the short run. The de jure trade liberalization index is negatively associated with economic growth in the short run as compare to long run results it is insignificant. The negative effect of trade liberalization explains by Romer (1990) it is negatively linked with economic growth if the local resources of the country are unable to effectively use the technology generated by the trade liberalization. The financial liberalization index and capital account liberalization are statistically insignificant, but the financial liberalization index coefficient is positive and statistically significant. The zero impact of capital account liberalization is due the less inflow of foreign direct investment as explained above in the long run results. According to theory the capital account liberalization allows foreign to invest in the real sector of the host country. This is the weak channel in the Pakistan, so the impact of capital account liberalization on economic growth is statistically insignificant.

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[27] A number of studies in case of Pakistan have concluded that the debt has negatively affecting the growth rate. Malik, Hayat and Hayat (2010), Ahmed and Shakur (2011).

According to the expectations the coefficient of error correction term is negatively and statistically significant, which indicate the adjustment from back to long run equilibrium value. The coefficient of error correction term shows that in the range of 0.042 to 0.287 adjustment take place on yearly basis.

Table-5.3. Bound test Results of Economic Growth Models

Model	Without Deterministic Trends		With Deterministic Trends		Decision
	F_{III}	t_{III}	F_V	t_V	H_0
Model − 1: (Y, L, K, FLI)	2.617^c	$−1.217^c$	4.835^a	$−3.927^a$	**Rejected**
Model − 2: (Y, L, K, K_Openness)	1.959^c	$−1.669^c$	5.273^a	$−4.455^a$	**Rejected**
Model − 3: (Y, L, K, FO)	2.821^c	$−1.412^c$	5.835^a	$−3.887^a$	**Rejected**
Model − 4: (Y, L, K, TLI)	4.074^a	$−1.158^c$	5.299^a	$−2.531^c$	**Rejected**
Model − 4: (Y, L, K, TO)	1.853^c	$−1.716^c$	6.279^a	$−3.304^b$	Rejected

Note: H_0 indicates no co-integration. The optimum lag is selected by using the Schwarz Bayesian criterion. Lag is number of lags, F_{III} represents the F-statistic of the model with unrestricted intercept and no trend. F_V represents the F-statistic of the model with unrestricted intercept and trend. The t_V and t_{III} are the t ratios for testing ϖ_1 in equation (3.4) is respectively with and without deterministic linear trend.
'c' indicates that the statistic lies below the 0.10 lower bound
'b' that it falls within the 0.10 bounds.
'a' that it lies above the 0.10 upper bound.

Table-5.4. Long Run Coefficients of Economic Growth Model

		(1)	(2)	(3)	(4)	(5)
	Intercept	2.434^a	2.294^a	5.449^a	1.905^a	5.383^a
	Ln(K)	0.617^a	0.609^a	0.441^a	0.619^a	0.571^a
	Ln(L)	0.915^a	0.988^a	0.513^a	0.914^a	1.008^a
de jure						
	Ln(FLI)	0.034^b	-	-	-	-
	Ln(TLI)	-	$−0.022$	-	-	-
	Ln(K_Opennes)	-	-	0.002	-	-
de facto						
	Ln(FO)	-	-	-	$−0.201^c$	-
	Ln(TO)	-	-	-	-	$−0.024^b$

Note: Ln shows the sign of natural logarithm, Y stands for real economic growth, K stands for real capital stock, L stands for skill labor force, FLI stands for financial liberalization index (FLI), TLI stands for trade liberalization index, K_Openness stands for capital account liberalization index, FO stands for financial openness index, TO stands for trade openness (TO).
a; indicate 1% level of significance.
b indicate 5% level of significance.
c indicate 10% level of significance.

Table-5.5. Short Run Coefficients of Economic Growth Model

		(1)	(2)	(3)	(4)	(5)
	Intercept	0.022^a	0.0003	$−0.001$	**0.004**	$−0.002$
	$\Delta(LnK)$	0.109^b	0.137^a	0.141^a	0.155^a	0.162^a
	$\Delta(LnL)$	0.125^c	0.044	0.144^a	0.108^a	0.106^a
de jure						
	$\Delta(LnFLI)$	0.0007	-		-	-
	LnTLI	-	$−0.029^c$		-	-
	$\Delta(LnK\_Openness)$	-		0.0015	-	-
de facto						
	$\Delta(LnFOI)$	-	-	-	$−0.074^a$	-
	$\Delta(LnTO)$	-	-	-	-	0.015
	ECM(−1)	$−0.212^a$	$−0.042^a$	$−0.067^b$	$−0.134^a$	$−0.287^a$
	R − squared	0.635	0.556	0.591	0.666	0.613

Note: Ln shows the sign of natural logarithm, Y stands for real economic growth, K stands for real capital stock, L stands for skill labor force, FLI stands for financial liberalization index (FLI), TLI stands for trade liberalization index, K_Openness stands for capital account liberalization index, FOI stands for financial openness index, TO stands for trade openness (TO).
a; indicate 1% level of significance.
b indicate 5% level of significance.
c indicate 10% level of significance.

6. CONCLUSION AND POLICY IMPLICATIONS

6.1. Conclusion

This study has examined the influence of economic liberalization (financial and trade) on economic growth for Pakistan's economy by using annual data from 1971-2014 for empirical analysis our contribution to the existing literature is exploring the impact of economic liberalization indicators (de jure and de facto) on economic growth.

This study employs ADF in order to determine the level of integration, while the auto regressive distributed lag (ARDL) co-integration approach is used to check for long run association among the variables. Since a long run relationship exists, the next step was to estimate long run and short coefficients. The autoregressive distributed lag approach to co-integration used in the study has the following advantages over other co-integration methods. First, it can be used irrespective of whether the variables are purely I(0), I(1) or mutually co-integrated. Second, a dynamic error correction model is derived by a simple linear alteration. And finally, all the variables are assumed to be endogenous.

The unit root test results indicate that all the variables are integrated of order one or I (1) except capital account liberalization. The ARDL results indicate that a long run relationship exists and the estimates of the economic growth model show that human capital, real capital stock and financial liberalization index (banking and stock market) are positively related with economic growth. Our results also indicate that the de facto financial openness index and trade openness are negatively associated with economic growth. The negative impact of financial liberalization on economic growth corroborates Dornbusch (1976); Edison *et al.* (2002) and Klein and Olivei (2008). We find that a one percent increase in financial openness index impedes long run economic growth on average by 0.201 percent. The negative impact of de facto financial openness on economic growth is credited to a host of factors. Generally a country's international assets and liabilities are anticipated to be of similar size of order. But in Pakistan average assets are less than one third of our foreign liabilities, indicating a strongly negative net investment position. Another vital aspect of Pakistan's foreign investment position is that total assets relative to GDP has remained stagnant in the range of 6 to 15 percent during the sample period, while liabilities to GDP increased during the last few years. If we disaggregate total liabilities into foreign loans and FDI, we find that foreign loans account for almost 86.07 percent of total liabilities, while FDI inflows account for only 10.6 percent of total liabilities. The poor performance of Pakistan's foreign investment position points to the dependence of our economy on external sources. The negative coefficient may also be attributed to vulnerability of the economy to shocks as a result of the big bang approach to openness rather than the incremental approach, without the safeguard and derogatory clauses emphasized by Jones *et al.* (2003) and Singh and Weisse (2003).

The long run results also show that the de facto indicator of trade openness is negatively linked with economic growth, corroborating Kind (2002) and Kim (2011) who report negative impact of trade openness on economic growth for developing countries. Grossman and Helpman (1991); and Young (1991) stated that trade openness causes economic growth through efficient allocation of resources and the spillover effects of technology emanating from import of capital goods embodying foreign technology and knowledge. But in Pakistan, the negative coefficient may be attributed to the higher percentage of imports of consumer goods (60%) as compared with capital goods (40%). Since imports increased much faster as compared with exports after trade liberalization, the great volume of consumer goods did not cause the kind of spillover effects propounded by the theory.

6.2. Policy Implication

- This study finds that the financial liberalization index (i.e. banking and stock market liberalization) is impacting positively on economic growth, private savings and investment in Pakistan. This is understandable as liberalization in the banking sector, makes banking services available to wider areas enabling people to use banking services and deposit money in banks rather than hoard it, which can be used productively if channelized through the banking sector, as is borne out by the positive coefficient on

financial liberalization index in the investment equation. This study suggests more liberalization in banking and stock market, so that banks spread their branches far and wide in remote areas in order to mobilize savings and channelize them towards productive investment opportunities.

- Our results indicate that capital account and trade liberalization are negatively (statistically insignificant) related with economic growth, private savings and investment, suggesting that these liberalization policies are counter-productive in Pakistan. There is, therefore, need for further research that explores how these policies can have a positive impact on economic growth.

- Skilled labor force has a positive impact on economic growth, indicating that human capital is playing an important role in the growth process. Presently Pakistan is spending 2.1% of its GDP on education (GOP 2011) which is much lower than other regional countries like India, Bangladesh and Nepal. Increase in expenditure on education and its effective allocation is vital in order to sustain economic growth by enhancing human capital.

6.3. Direction for Further Research

In the light of our findings, this study suggests further research should concentrate on formulating an economic liberalization model that is consistent with economic growth and stability. Such a model should take into consideration those aspects of reforms that are adversely impacting on savings, investment and growth in Pakistan. Is the adverse impact on account of poor governance or is it on account of the adoption of the 'Big Bang' approach rather than the incremental approach discussed in Hanke (1987) and emphasized by Jones *et al.* (2003) and Singh and Weisse (2003)? Further research on these issues will help to identify factors that are negatively impacting on growth in Pakistan.

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Appendix

Table-1. A Diagnostic Test of Economic Growth Model

	Test Statistics	LM Version	F Version
Model-1			
	A:Serial Correlation	CHSQ(1)= 2.297[0.13]	F = 1.967[0.17]
	B:Functional Form	CHSQ(1)= 1.396[0.23]	F = 1.169[0.28]
	C:Normality	CHSQ(1)= 0.784[0.67]	Not applicable
	D:Heteroscedasticity	CHSQ(1)= 1.478[0.22]	F = 1.459[0.23]
Model-2			
	A:Serial Correlation	CHSQ(1)= 0.548[0.45]	F = 0.436[0.51]
	B:Functional Form	CHSQ(1)= 0.135[0.71]	F = 0.106[0.74]
	C:Normality	CHSQ(1)= 1.066[0.58]	Not applicable
	D:Heteroscedasticity	CHSQ(1)= 0.883[0.34]	F = 0.859[0.36]
Model-3			
	A:Serial Correlation	CHSQ(1)= 2.011[0.158]	F = 1.012[.27]
	B:Functional Form	CHSQ(1)= 1.797[0.18]	F =1.521[0.22]
	C:Normality	CHSQ(1)= 0.999[0.61]	Not applicable
	D:Heteroscedasticity	CHSQ(1)= 0.829[0.36]	F = 0.806[0.37]
Model-4			
	A:Serial Correlation	CHSQ(1)= 0.524[0.46]	F = 0.414[0.52]
	B:Functional Form	CHSQ(1)= 0.054[0.81]	F = 0.042[0.83]
	C:Normality	CHSQ(1)= 0.437[0.81]	Not applicable
	D:Heteroscedasticity	CHSQ(1)= 0.141[0.71]	F = 0.135[0.71]
Model-5			
	A:Serial Correlation	CHSQ(1)= 0.421[0.39]	F = 1.627[0.18]
	B:Functional Form	CHSQ(1)= 1.261[0.26]	F = 1.078[0.31]
	C:Normality	CHSQ(1)= 1.137[0.56]	Not applicable
	D:Heteroscedasticity	CHSQ(1)= 0.157[0.69]	F = 0.151[0.71]