

**“Financial Integration and Consumption Volatility:  
Evidence from Pakistan”**



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## DEDICATION

This research work is dedicated to

*My Beloved Parents*

For their prayers, moral support and encouragement that enlightened my way and made it possible for me to reach at this stage.

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<b>Acronyms</b>	
<b>ADF</b>	Augmented Dickey Fuller
<b>ARDL</b>	Auto Regressive Distributed Lag
<b>DF</b>	Dickey Fuller
<b>AREAER</b>	Annual Report on Exchange Arrangements and Exchange Restrictions
<b>ECM</b>	Error Correction Model
<b>EG</b>	Engle & Granger
<b>FDI</b>	Foreign Direct Investment
<b>FPI</b>	Foreign Portfolio Investment
<b>IMF</b>	International Monetary Fund
<b>PP</b>	Phillips Perron
<b>VAR</b>	Vector Auto Regressive
<b>WDI:</b>	World Development Indicators

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## **Abstract**

Financial integration is actually a phenomena that interlinks the financial sectors of global economies. Economic theory suggests that financial integration helps to smooth the volatility of consumption. Pakistan has also gone through the process of financial integration during last three decades. The objective of this research is to investigate the long run and short run relationship between financial integration and consumption volatility. Using time series data from 1975 to 2017 by focusing on financial integration index treating consumption volatility as dependent variable. Through ARDL approach, it investigate the long run and short run relationship. The results of the study confirm the literature findings of the study denoting significant negative relationship between financial integration and consumption volatility. Therefore, economies like Pakistan, it is more important to integrate its financial sector at high level with the rest of the world.

## **Chapter 1**

### **Introduction**

The financial integration has remained the most important topic in the modern history of financial economics. Therefore, the debate of international financial integration caught the attention of the researcher in the literature. Financial integration is in fact a process that interlinks the financial sectors of global economies. This process has been considerably increased since early 1970s; when countries of different parts of world were relaxing restrictions from foreign direct investment, making reforms to deregulate the domestic financial market, making better financial environment and introduction of market oriented modifications (Agenor, 2003). Thus, the important object of this process is to increase investment globally, earn high rate of returns and provide the opportunity to diversify risk.

Furthermore, keeping the backdrops of macroeconomics in view, the underlying objective of this process of integration is to enhance the economic growth. Interestingly, literature finds two major channels, through which financial integration effect economic growth. First, the direct channel in which capital will flow from capital rich countries to those who have shortage of capital to increase the investment and savings at domestic level and potentially decrease the cost of capital (Mody & Murshid, 2005). Second, indirect channel which increases the economic growth by improving macroeconomic stability, better governance and development of domestic institutions and markets ( Prasad et al., 2003).

Importantly, there are several studies that have contradictory views about financial integration and its benefits to the economy. There is extensive literature available. Christian

el al., (2010) argue that financial integraton has positively effect on economic growth. But in contrast empirical studies avaiable that do not confirm the link between finacial integration and economic growth (Edison et al., 2002). Shabbir (2013) reports the evidence from Pakistan that shows financial integration has increase the economic growth. So, it can be concluded that the nexus of financial integration and growth is ambigious. There is still gap exist for furthur research.

Furthermore, there is another, equally important strand of research is available in the literature that discuss impact of financial integration on the macroeconomic volatility specially on output and consumption (Denizer et al., 2000). It has argued in the literature that international financial integration has helped to better allocate the capital and provide the opportunity to diversify risk and smooth the consumption of countries by lending and borrowing against the shocks they face (Obstfeld, 1994). So macroeconomic volatility should be decreased when the degree of financial integration increases. Jermann and Quadrini (2006) shows that financial innovation in financial sector has decreased the volatility of output.

The relationship amid the financial integration and consumption is widely discussed in literature (Buch & Yener, 2010; Denizer et al., 2000; Beck et al., 2018). According to theory, whenever financial integration increases it leads to decrease in volatility of consumption. Buch & Yener (2010) find the evidence that by expanding the degree of financial openness is linked with lower the volatility of consumption. However, some empirical evidence shows volatility of consumption does not decrease (Tekin et al., 2017). Therefore, the relationship between financial integration and macroeconomic volatility is not clear in the empirical literature.

It is argued that, due to no consensus among the researchers, to investigate the finance-consumption nexus is still an open question to discuss in the case of developing economies. Importantly, Pakistan remains a good potential candidate in this regard due to several reasons. Firstly, Pakistan has made a lot of exertions to integrate its financial sector to the rest of the world. Many reforms were taken after the reversionist policies of 1970's and 1980's. On the conditionality of International Monetary Fund (IMF) and World Bank Pakistan has brought many changes in financial sector after 1980's. Pakistan has liberalized its financial market in 1990's by denationalizing banking system, allowing private banks to start operating in Pakistan and making reforms in stock market, where foreign investors were allowed to invest in stock market. There are partial reductions on capital flow means there is no restrictions on capital inflow but there are little restrictions on capital outflow. There were initiatives taken for favorable environment for investment, stress on strengthening the governance, institution of regulation and supervision. The major goals behind these all indicatives taken for financial integration was to switch toward market-based interest rate determination, increase the efficiency and competition in financial sector, eliminating restrictions on capital flows and credit constraint. These reforms have positively affected the economic growth of Pakistan (Munir et al., 2013).

Secondly now new era of financial integration has started when Pakistan became the part of Chinese mega project Belt and Road Initiative (BRI) under the umbrella of China Pakistan Economic Corridor (CPEC) which is connectivity project among the continents. Under CPEC Pakistan received more than 50 billion investment from China in different projects. Now countries from other part of world are also becoming part of China Pakistan

Economic Corridor. Recently Saudi Arabia and United Arab Emirates (UAE) investment of 30 billion dollars is an example.

These agreements of connectivity to the world economies and capital inflows shows that Pakistan has significantly worked on the integration of its financial sector by eliminating restrictions on capital flows. This process of integration not only increased the FDI and Portfolio investment but also provides the opportunity to access to the world capital market to diversify risk, better allocation of capital and smooth the volatility of consumption. Consumption volatility is considered to be the best measure than output. However, instability in consumption is considered as negative effect on economic performance and welfare.

### **1.1 Research Problem**

As noted earlier, process of financial integration has been the most debatable topic among the researcher. It has provided the benefits of diversifying risk and better allocation of the capital. Pakistan has gone through the various process of financial integration since 1990's, which allow the increase in Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), liberalization in institutions and market and removal of restrictions on capital flows that helps to access to international financial market to smooth the volatility of consumption. There is extensive literature available that investigate the role of financial integration. The current study investigates the relationship between financial integration and consumption volatility in case of Pakistan because consumption is consider as an appropriate measure of welfare and its one of the basic goal of any economy to meet the

highest value of welfare. This problem statement generates the following specific research questions.

## **1.2 Research Questions:**

1. Whether there is long run-relationship between financial integration and consumption volatility?
2. How financial integration effect the volatility of consumption in short run?
3. What kind of casualty exists between financial integration and consumption volatility?

## **1.3 Significance of Research**

Many studies available in case of Pakistan that discuss the relationship between financial integration and growth but as per my best knowledge there are very few studies that find the impact of financial integration on consumption volatility. Our study adds up to the previous literature in a way that many studies have discussed the role of financial integration on consumption volatility (Buch & Yener, 2010; Denizer et al., 2000; Beck et al., 2018). There are asymmetric empirical evidences of financial integration on consumption volatility from the different parts of the world. Studies from developing countries do not confirm the smoothness of consumption due to financial integration (Kose et al., 2006; Tekin 2017).

According to best of my knowledge, this study significantly contributes to the empirical literature from the Pakistan. Pakistan has liberalized the financial sector that allow the capital flows to move freely to the world. The finding of research will assist the agents

and policy makers to know the evidence from Pakistan that whether financial integration is helpful in smoothing consumption or not.

#### **1.4 Objectives**

This study pursues the following specific objective to investigate the above-mentioned problem statement:

- 1) To test the long run and short run relationship between financial integration and consumption volatility in the case of Pakistan.

#### **1.5 Organization of the Study**

The rest of the study is organized as follows. The study reviews the literature for our analysis in chapter two. Chapter three describes theoretical background of the study and empirical justification whereas chapter four incorporates our dataset and presents variable construction. In chapter five empirical results of study have been discussed. Chapter six summarizes and concludes along with suggesting some policy recommendation.



## **Chapter 2**

### **Literature Review**

The world economy has been significantly experienced financial globalization since 19th century when countries of different parts of the world were gone towards the capital mobility. The first array of financial integration was early twentieth century before the First World War, and lasted before the great depression of 1930's. During the inter-war period and great depression, capital mobility got reduced. In 1970's, this debate of financial integration has again sparked and integration of world capital market and capital mobility across the world has remarkably took place (Obstfeld & Taylor, 2004; Beck et al., 2018). Along with this, countries of different parts of worlds were relaxing the restrictions on capital flows, liberalizing domestic financial markets and institutions, making better environment and introduction of market-oriented reforms (Agenor, 2003).

#### **2.1 Cost and Benefit of Financial Integration**

Agenor (2003) has discussed the potential benefits and cost associated with financial integration. Benefits due to increase in financial integration is regarded as it provides the opportunity of better allocation of capital internationally for high returns and opportunities for portfolio diversification. It has also discussed in literature that when economies of the world faces adversative shocks, they can decrease the volatility and maintain the potential growth by borrowing from world capital market (Obstfeld, 1994). Furthermore, it has been observed that increase financial integration may significantly escalate threat of volatility and

unexpected reversal of capital movements. As the world has seen during the recent financial crises of Asian crises 1997 and financial crises of 2007-08.

The discussion of financial integration revolves around four main thoughts. Firstly, it has been discussed in the literature that financial integration positively affect the economic growth of economies (Levine, 2003). As integration of financial sectors provides the benefit to access the foreign capital markets, so capital abundant countries can diversify their investment to capital scare countries where the cost of capital is low and they do not have excess income which leads to low level of domestic saving and investment. These capital inflows spur the domestic investment which lead to increase in economic growth (Borensztein et al., 1995).

The second argue about the benefit of financial integration increase the macroeconomic stability by appreciating good polices and penalizing bad policy when capital flows increases (Obstfeld, 1998). Bartolini & Drazen (1997) also argue that financial integration is always a signal from the one country to the World that country wants macroeconomic stability. It shows that financial integration helps to for better allocation of capital that leads to macroeconomic stability.

The third argue about financial integration is that it provides the benefit of access to world financial market that allows to diversify risk and smooth the volatility of consumption. It allows the countries to borrow when they come across to any shocks and lend when they have good time. Financial integration also provides the benefit to share risk, smooth their consumption and increase the welfare (Evans & Hnatkovska, 2006).

The fourth benefit that is discussed about financial integration and its impact on financial stability and efficiency. Augmentation in the degree of integration is in favor that might enhance the depth and breadth of financial system. Integration enriches the efficiency of financial system by lowering the cost associated with it. Whenever the efficiency of financial market increases cost of investment decreases and it leads to increase in economic growth (Baldwin & Forslid, 2000). Furthermore, Caprio & Honohan (1999) reported that whenever financial system develops, it not only stable the financial system of the country that helps to reduces the volatility of capital flows in the country but enhance the banking competition and produce more advance expertise in management of risk.

Along with the benefits of financial integration that have discussed by the researchers in literature, there is cost associated with it. Agenor (2003) summarized these costs associated with financial integration such as misallocation of capital at domestic level, pro-cyclically movement of short-term flows, herding contagion and volatility of capital flows, macroeconomic instability and concentration of capital flows and lack of access.

First argue about the cost of financial integration is that it leads to capital flows misallocation domestically. As financial integration helps to increase the domestic investment and in long run, it also effects the growth. But investment to real estate and non-tradable sector may cause the reduction in the productivity and ability to exports that leads to external imbalances. This disseminate in allocation of capital is due to poor supervision and weak financial system.

Second argue about the cost of financial integration is pro-cyclicality of short-term flows. As it is discussed earlier that developing economies have restricted accessibility to the world capital markets. There is asymmetric accessibility to resources. These countries

can access to the capital market in good time and were restricted when they have bad time. This is the reason that access to capital market is pro-cyclical. Thus, under these circumstances access to world capital market to borrow when an economy faces adverse shock to reduce the volatility of consumption is simply a fiction. This phenomenon of Pro-cyclicality has adverse effect macroeconomic volatility. The intention behind the phenomenon of pro-cyclical behavior is that developing economies often produce primary export goods and face frequent adverse shocks that lead to deterioration of creditworthiness and change in risk perception. Dadush et al., (2000) reported the evidence about creditors risk perception, shocks and their relationship are nonlinear in case of developing countries. Furthermore, asymmetric information may be the reason that lead deteriorate the confidence of foreign investor to withdraw capital that lead economic consequences to developing countries.

The third cost related with integration of financial sector is herding, contagion and volatility of capital flows. Herding behavior is usually defined as how individual decision of capital flows is inclined by large movement of capital. When the financial sector is integrated at advance level it may leads to higher volatility in capital flows movement. This type of situation occurs due to huge reversals of short-term capital flows and it became the cause speculative pressure on local currency. Contagion effects may also result in the volatility of capital flows. It might be the reason of instability in capital flows is due to contagion. Financial contagion took place when an economy face the problem of large capital outflows, due to this, pressure build on domestic currency and investor loss the confidence in the economic prospects due to development elsewhere (Dornbusch et al., 2012).

Fourth cost is financial integration may affect the macroeconomic stability in adverse manners such as quick monetary expansion, capital inflow may affect the domestic spending that cause the inflationary pressures, capital flows towards domestic economy will increase the value real exchange rate that may lead to the widening the current account deficit. Under the fixed exchange rate system, it leads to growing balance of payment deficit that injured confidence and leads to financial instability. But external deficit may lead to currency depreciation under a flexible exchange rate, which lead to readjustment of relative prices and self-adjusting actions of trade movements.

And final argument about integration cost is concentration of capital flows and lack of access. There is enough historical evidences that suggests during to capital flows among the economies there is small number of counties that have took the benefit of integration. Fernandez & Montiel (1996) report that in 1990's economies of small of large, middle-income of Latin America and Asia was focused for capital flows. Movement of capital towards lower income economies were gone down while on the other hand top ten recipient of increased significantly (The World Bank, 2002). Hence, it can be concluded that developing economies may be limited irrespective of how much they are financial integrated.

There is extensive literature available on financial globalization process and its relationship with economic growth, macroeconomic shocks, and macroeconomic volatility. These all relationships of financial integration are discussed in detail in the following paragraphs.

## **2.2 Financial Globalization and Economic Growth**

Financial globalization is a process in which financial markets and institutions around the world allow the countries and agents of firms to access to the world financial markets to invest, to lend and borrow and to perform other transactions. The debate of financial globalization is continuing before the First World War and the great depression of 1930's. During this period of war and depression, it has been noticed the dramatic reversal of capital flows were noticed. It took few decades and in 1970's when Bretton Wood System of fixed exchange system is disassembled, process of capital flows again started. In 1990's, this process of financial globalization became the central topic of discussion of policy makers and researchers (Bordo, 2005; Obstfeld & Taylor, 2004; Calomiris & Neal, 2013).

Initial expectations were that financial integration of markets would boost economic growth of the economies. As discussed earlier that two channels have been discussed in the literature through financial integration would increase the growth of the economies. First is direct channel in which capital will flow from those countries who are capital enrich to those who have shortage of capital. It gives opportunity to foreigners to take advantage and invest in domestic economy expanding their capital to earn high returns and reduce the cost of capital (Mody & Murshid, 2005; Stiglitz, 2000)

Second is indirect channel through which financial integration would increase the economic growth by increasing the macroeconomic stability better governance and development of institutions and markets (Prasad et al., 2003). The relationship between

economic growth and financial globalization is widely documented. However, systematic examination of evidence does not confirm this nexus.

Obstfeld (1994) and Acemoglu et al., (2002) argue that financial integration provides the benefit of risk sharing so it enhances the allocation of capital, specialization in production and economic growth. In neo-classical growth model, financial integration has help the ease of capital flows towards the capital scarce countries that effect the economic growth positively. Christian et al., (2010) and Levine, (2003) reported that finaicial integration improve the liquidity in stock market and foreign banks increase the productivity of domestic financial sytem that helps to spur the economic growth of country.

While on the other hand Rodrik (1998) study is the most famous study that abnegates the relationship between financial integration and growth. There are many other studies that show no robust association between integration and economic growth (Edison et al., 2002; Schularick & Steger, 2010; Ramey & Ramey, 1995). Rincon (2014) argues that finding of studies differs due to different data sets and income of countries. Rodrik et al., (2002) reports from the low-income economies that integration of financial system surge growth of economies.

On the other hand Edison et al., (2002) and Klein (2005) argue that the effect of financial integration eliminated when in growth model, institutional variables are included. It has been discussed that other than financial integration, there are many other channels of financial openness through which economic growth could be increased. But when institutional variables are allowed in regression and nonlinearities on the explanatory variables, in respond to growth rises.

Furthermore there is positive evidence from middle income countries. Mora (2006) find evidence from middle-income countries and shows that capital controls does not reduce the growth while on the other side as expected financial globalization helps to promote growth of economies. Khan et al., (2005) find the empirical evidence in case of Pakistan and report that economic growth in long run is positively affected by financial depth.

So, it can be concluded that theoretically it has been discussed that financial globalization can spur the economic growth through different ways, but in empirical evidences, it is not clear the relation between financial integration and economic growth.

### **2.3 Financial Integration and Macroeconomic Volatility**

During the last few decades financial integration has been the central topic of discussion. In both theoretically and empirically it has been widely discussed the link between international financial integration and macroeconomic volatility. Financial integration is generally understood that it has provided the two potential benefits. First is financial integration considerably improves the better allocation of capital across the globe. Second, financial integration also helps the economies to reduce the volatility of output and consumption by diversifying risk. Most of the empirical studies that discussed the nexus between financial integration and macroeconomic volatility using the general equilibrium model that assumes the world contain only two undistinguishable countries called home and foreign. They both have identical population, firms and model assumes that there is competitive environment. Domestic consumer can hold the wealth in three forms. The model assumes that households have identical preferences. However the general equilibrium



model assumes that goods and labor market clear but it does not incorporate the imperfections of economic systems(Sutherland, 1996; Hagen and Zhang, 2006).

It is expected that financial integration helps to reduce the macroeconomic volatility while on other side Razin & Rose (1992) and Evans & Hnatkovska (2006) argue that financial integration rises macroeconomic volatility such as when economies adopt comparative advantage strategies in production and it makes the economies more vulnerable to shocks. In addition, Eozenou (2008) argued that if a country encourage the production diversification then financial integration in lowers the volatility but if ones goes towards the specialization in production then it leads to surge the volatility.

Since the developing economies in the past experienced higher volatility. These economies always have low level of human and physical capital. Theoretically they expect much gains from this process of financial integration. Kose et al., (2003) reported that in the past few decades, on average, economies that are more financially integrated gains than those economies which are less financially integrated. Well financially integrated economies standard of living improves and their per capita income is also increased than less integrated. Their results indicate that during the decade of 1990's output growth volatility reduced as compared to the previous decades. In addition, volatility of consumption increase when financial integration increase but up to certain point. Aghion et al., (1999) suggest that sudden increase in capital flows toward the developing countries could be cause of boom bust in economies. Prasad et al., (2003) discover the best restricted provision of the conventional understanding that globalization leads to an increase in the degree of synchronization of business cycles and reported that financial integration rises global

spillover of macroeconomic fluctuations. Yadav et al., (2018) empirically investigate the effect of financial integration on macroeconomic volatility from developed and emerging economies of Asia. They have reported that macroeconomic volatilities of per capita output and consumption growth reduced in advanced economies as compared to developing economies. Denizer et al., (2000) have reported that more financial developed sectors give opportunity to decrease the volatility of output, investment and consumption. There is no noteworthy relationship between integration of financial sector and volatility of output growth. Mirdala et al., (2015) study the nexus between financial integration and output fluctuations in both developing and developed economies. Their findings show that the volatility of output growth rates decreased over the time period, financial integration leads to fluctuations in output.

There is still lack of consent on the importance of financial integration in macroeconomic stability. It is argued that traditional models of market imperfections suggest the development of financial system often leads to assimilate the unwanted macroeconomic shocks. However, it shows that well-organized financial systems let the agents to smooth consumption that are due to income fluctuations (Bernanke & Gertler, 1986; Greenwald & Stiglitz, 1988).

The current empirical work is powerless to establish a clear association between financial integration and macroeconomic volatility. Several studies are in favor and show that this process of integration leads to lower the volatility however, some studies significant prove that degree of openness leads to increase the macroeconomic volatility (Easterly & Stiglitz, 2000).

## **2.4 Consumption Volatility**

Along with other macroeconomic volatility like output and income, consumption volatility is equally important measure that are used for household welfare. There are two most important theories of consumption that are discussed in the literature. First one is Life Cycles theory that is proposed by Ando & Modigliani (1963) which observes that pattern of consumption is depend on the current resources available to individuals. They contend that at the beginning of life, individuals make resources from their livelihoods and in later part of their lives, they utilize these profits. While the second theory is presented by Friedman (1957), he expresses that individuals consumption depend upon the future expected income. If the prevailing income is higher than future income, then individual will go for savings. It is argued that individual reduces the volatility of consumption by savings, borrowing or public assistance programs. Romer (2001) finds the drawback of these theories and argued that they suppose, there are well functioning financial markets, but it may not be true in case of developing economies. Moreover, there are many studies available that discuss the factors which leads to higher the consumption volatility. Kurosaki et al., (2011) finds the evidence from Pakistan and shows that individual consumption was reduced due to susceptibility of income shocks. Most of the studies show that income shocks are completely converted into consumption shocks which leads to volatility in consumption of household.

## **2.5 Financial Integration and Consumption Volatility**

From macroeconomic stability point of view, consumption is stated to be relatively better measure of well-being than output. Therefore, instabilities in volatility of consumption is considered as adverse effect on welfare of society. Capital flows across the countries have

surge and restrictions on capital were relaxed during the past few decades in the world economies. Standard macroeconomic models predict that financial integration unambiguously give the opportunity to smooth the volatility of consumption by diversifying risk (Lewis, 1996; Obstfeld & Rogoff, 1996). Theoretically relationship of consumption volatility and integration is well documented. Whenever the financial integration increases it reduces the volatility of consumption. But the empirical studies show that nexus between financial integration and consumption volatility is mixed. Some studies show that with increase degree of financial integration has helped to decrease the volatility of consumption. Sutherland (1996) has used general equilibrium model of two-countries that shows increasing financial market integration provides more opportunities of risk diversification and reduces the volatility consumption. However, Mendoza & Assaf (1994) report that due to financial integration response in consumption volatility is not very significant. Buch & Yener (2010) find the evidence from the G12 countries that openness of financial sector is associated with lower the consumption instability. Bekaert et al., (2002) find that equity market liberalization lowers the consumption growth volatility. Levchenko (2005) reveals the truth that the agents take benefits who have access to international markets in financial openness than those who do not have access, they loss welfare and experience the increase in volatility of consumption. Boucekine et al., (2016) shows that increase in financial integration leads to reduction in consumption in short run that leads to loss of welfare. Easterly et al., (2000) suggest that increase in degree of financial integration helps to smooth the volatility during shocks and shows that countries with greater volatility lead to interrupt economic activity. Ang (2011) has established long run association between determinants of

consumption and its volatility. The results show that there is the strong effect of regressionist policies on lower the consumption volatility in India.

In developing economies results are not supportive, the impact of financial integration in on consumption volatility got reduced with improved economic and institutional conditions in developing economies (Mirdala et al., 2015). Tekin (2017) has studied the effect of financial integration in Latin America and reported that with increase in financial integration, consumption volatility does not alleviate. The nexus of consumption volatility and integration is non-linear and increase in financial integration cause the instability in volatility of consumption but only up to a level in developing countries (Prasad et al., 2003). Studies show that “threshold effect” also effect the relationship between financial integration and macroeconomic volatility. There are evidences that better national governance, human capital, corruption and country size etc. are associated with lower volatilities and enhance the benefits of financial integration (Prasad et al., 2003).

Financial remoteness is also discussed in the empirical literature that effect the volatility. Rose & Spiegel (2008) use financial remoteness is an indicator of financial integration and reported that countries located far from international financial activity system, experience more volatility in growth and consumption. Blanchard & Simon (2001) argue that removing restrictions on credit may give the opportunity and ability to borrow and lend and smooth the consumption when volatility is high. While on the other side, Bacchetta & Caminal (2000) reported that constraints on credit do not always increase the volatility of macroeconomic but it may reduce the output fluctuations depends upon the

nature of shock. Hence, in empirically literature it is not clear whether financial sector reforms and deepening help to decrease the volatility of consumption.

## **2.6 Financial Integration and Macroeconomic Shocks**

As it is noted earlier, financial globalization become the one the most debatable topic during few years. The integration process of financial system has significantly increased. In macroeconomic research, financial integration has very importance because in open economies theories degree of financial integration play important role in generation of shocks. In most of the research studies degree of financial integration is treated as exogenous and constant in analysis of determinants of business cycles. Fleming (1962), Mundell (1963) and Dornbusch (1976) reported government spending shock has less adverse effect on real output in flexible exchange rate regime than the monetary policy shock during high degree of integration.

Sutherland (1996) and Senay (1998) has used the sticky price model to explain that when financial integration increases, volatility of real output should increase due to monetary shocks. While on the other side, due to fiscal policy shock, higher the degree of financial integration decreases the short run output volatility. So, until the present empirical literature does not find significant link between financial integration and business fluctuation.

## **2.7 Financial Integration in Pakistan**

Integration of financial sector has remarkably heave up during last few decades. As world economies have integrated through investment trade and macroeconomic policies, Pakistan has also made big efforts to integrate it economy to the rest of the world.

Understanding the consequences of repressionist policies in 1970's and 80's and realizing weakness in financial sector, Pakistan has introduced the reforms in financial sector on the conditionality of IMF and World Bank in late 1980's. These recommendations include the denationalization of industries, imports liberalization and exports expansion schemes. This process of liberalization started during the 6<sup>th</sup> five-year plan. These liberalization steps include liberalizing of banking activities and rationalization of interest rate structure. In 1990's, commercial banks were denationalized and private banks were allowed to start operations in Pakistan. Pakistan has also adopted deregulation in money market as in 1992, government adopted credit/deposit ratios against the credit ceilings that give permission to commercial banks to range credit up to 30 percent of rupee and foreign currency deposits.

This process of liberalization has affected financial sector. Depositors could open their foreign currency accounts in commercial banks. In 1991, foreign investors could invest in Pakistan Stock Market (PSX) that has increased the market capitalization led the speculative investment to over 200 per cent.

These reforms have positive impact on economy. The major goals behind these all indicatives taken for financial integration was to switch toward to market-based interest rate determination, enhance the efficiency and competition in financial sector, eliminating restrictions on capital flows and credit constraint. It has been argued that financial liberalization policies increase the efficiency in the production process and positively influence economic growth. There is great discussion about the nexus of financial integration and economic growth. Empirically studies in case of Pakistan shows that financial liberalization has positively effect on economic growth (Munir et al., 2013).

Shabbir (2013) has examined both internal and external elements that has affected the process of financial liberalization in Pakistan. The positive impact of financial liberalization effect on economic growth was reported and it can be further deepening. Afzal (2007) has also reported the evidence about how globalization of economies affects the growth. Results of study shows that there is no short run impact of financial integration on economic growth.

Pakistan has also relaxed the restriction on capital mobility, allowed the foreign investor for FDI and foreign FPI and access to world capital market. A well-connected financial market helps to allocate capital across different countries for high returns and it also provide the opportunity of to diversify risk. Integration of financial market by reducing restrictions on capital flows allow the country to spur the growth and reduce the macroeconomic volatility. It helps to improve living standards in country.

So, it can be summarized that financial integration has been the most important and debatable topic during few years. Different terms have been used in the literature for financial integration. Relationship of financial integration with different variables have been discussed in the literature. Initial expectation was that financial integration will increase the economic growth of countries through different channels. There is extensive literature available that empirically discussed this nexus between financial integration and economic growth across different countries of the world. In some studies, financial integration spurs the economic growth while in some these studies it does not affect the economic growth of countries. There are studies available in case of Pakistan which reported that financial



integration has significantly increased the economic growth of Pakistan. There is still gap available for the researcher to discuss this relationship.

Along with this, in literature it is also discuss the effect of financial integration on macroeconomic volatility. The relationship of financial integration and macroeconomic volatility is also ambiguous. As noted earlier that financial integration has help the countries to allocate their capital globally for production diversification and for high returns. It has also provided the opportunity to diversify risk and earn high where there is high risk. According to theoretical literature macroeconomic volatility should decline as financial integration increases. In many developed countries financial integration has decreased the volatility (Denizer et al., 2000). While in developing countries it increases the volatility. It is also reported that volatility increase up to a threshold then it started decreases (Prasad et al., 2003). There might be some other problem in these countries due to volatility does not decreases like less developed financial system, political instability, governance etc. There is also literature available about consumption volatility that shows that due to financial integration consumption volatility decreases (Buch & Yener, 2010). While from other countries it does not support this argument that volatility of consumption decreases. But it is still debatable because the empirical findings contradict. There is still gap exist for further research to test empirically whether the nexus between financial integration and consumption volatility is long run or short run.

It is also discussed that due to financial integration may lead to business fluctuation due macroeconomic shocks. Studies shows that due to financial integration monetary shocks lead to more fluctuations in output rather than government shocks decreases the fluctuations.



## Chapter 3

### Theoretical Framework and Estimation Methodology

As financial integration is defined as the process that interlinks the financial sectors of economies across the globe. This process of financial integration has remarkably accelerated during the past few years. Denizer et al., (2000) has discussed three strands about financial integration that are discussed in literature. The first strand is about development of financial sectors. Literature suggests that a well-developed financial system has the capability to absorb the shock and reduce the macroeconomic volatility. Initially it is discussed only theoretically but now some studies have discussed it empirically. The nexus of financial development and output volatility is widely discussed in the empirical literature but now it focuses on investment and consumption volatility.

Jermann & Quadrini (2006) has developed a model in which they show that in generation of economic fluctuations financial factors play an important role. Innovations in financial markets lead to lower the fluctuations in output. Aghion et al., (1999) has developed a macroeconomic model in which financial market imperfections are shown and financial sector is not well integrated, there are deficiencies in financial sectors and individuals have not had the opportunities to take benefits from opportunities of investments. They reported that economies with less developed financial sectors face more volatility. Their growth rate is also not at a very fast pace. While on the other hand the economies where financial sector is developed and well-functioning, they face stable growth and fluctuations are due to only external shocks. It is also argued that less developed financial sector is the only reason which leads to more fluctuations in volatilities. Tenreyro &

Koren (2007) find that there are some reasons that leads to more volatility in less developed financial countries. They have decomposed volatility and show that how it is related to different stages of development. The results of study show that as country with productive structure move to less volatile sector. With the development, macroeconomic shocks related to country specific fall and covariance between country specific and sector specific does not change. There is also link established between financial development and volatility by (Acemoglu & Zilibotti, 1997). This study highlights the importance of diversification. The results show that diversification is not possible when projects are indivisible and development is at early stage but as the development goes hand and hand the possibilities of diversification becomes available and volatility of investment is contracted.

Loayza et al., (2007) argue that macroeconomic volatility is reflection of under developed financial system. They found that high variability is due to external shocks, rigidities and less developed institutions in developing countries and this volatility has direct impact on welfare. It is also said that more open economies may be the reason of volatility. Aghion et al., (2004) finds that in open economies where financial development is not very high or financial development is at intermediate level, it causes the volatility.

Second strand that is discussed in literature is due to financial imperfections, the asymmetric information leads to fluctuations in macroeconomic volatilities. There is extensive evidence available in this regard. Greerwald et al., (1988) has used dynamic model and reported that asymmetric information aggravate the volatility of output. Acemoglu (1995) argues that asymmetric information leads to more volatility in unemployment. In empirical literature, the direct role of financial development on macroeconomic volatility has not been discussed. Empirical evidence on micro level has

helpful in finding effect of asymmetric information on real volatility. Gertler & Gilchrist (1991) has reported that monetary policy effect both small and large firms but effect on small firms is higher on small than large firms.

In literature, Kakes & Sturm (2002) also reports similar findings that monetary tightening policies effect more to smaller banks than to larger banks. On international level, when there are hinders on borrowing, firms of the country does not hedge against shocks, knowing the negative effect of these macroeconomic shocks (Caballero & Krishnamurthy, 2000). Degree of asymmetric information varies from different countries. It may be low in more developed financial system and high in less developed financial system. So, it can be concluded that negative relationship between volatility and financial development in presence of asymmetric of information propagates the business fluctuations.

And third strand that is most important point and related to our research work and widely discuss in both theoretical and empirical. It is the development of financial sector and its long run macroeconomic performance. Many studies like Gertler (1988) shows that the cost of availing information has gone down. And due to development of financial intermediaries which has help to remove the asymmetric of information, mending in governance and lead to better allocation of resources. By doing this, development of financial system has help to foster the faster the growth of economies. Gregorio & Guidotti (1995) have argued that financial development has affected the growth in the long run but they argue that main transmission to financial development is efficiency. Mayer (2001) has reported that economies with more advance financial sector develop faster while on the other side economies with weaker financial sector with dependence on external financing

grow slowly. Demirguc & Maksimovic (1998) has find the strong legal and financial institution are link with the growth. Ramey & Ramey (1995) has argue that growth of countries are slower whose volatilities are higher. Fatas (2000a, 2000b) has proved that whenever business cycle remain more persistent growth rate is higher. Furthermore, Greenwood & Smith (1995) has argued that financial institutions not only improve the risk management and provide liquidity and channel funds to productive sectors.

So, it can be concluded that the existing literature find different ways in which finance can affect the macroeconomic fluctuations. Firstly, when financial sector developed it not only increase the productivity of financial system but also allows the economy to absorb shocks more easily. It also helps on both micro and macro level to diversify risk and reduce the macroeconomic volatility. The role of financial intermediaries to improve risk management. And last is that financial development may be the degree of information asymmetries which may themselves leads to increased volatility. Literature of financial development focus only two points. One is the flow of credit that flow towards the investors and second is the finance and growth and shows that due to financial intermediaries help to manage risk and facilitate to smooth the consumption.

The recent development in financial sector not only has positive effect but it also led to economic instability. One of damaging consequence of output shock is consumption instability which has negatively affect the welfare. Robes (2003) has argue that consumption instability has harmful consequences for accumulation of both human and physical capital.

It has been widely discussed the volatility of macroeconomic and its determinants. It is argued that trade openness is one of the key determinant of volatility (Rodrik, 1998).

Recently trade has remarkably increased across the countries that leads to increase in economic growth. So, here it is important to study about the link between macroeconomic volatility and trade openness. Bejan (2006) has examined how trade openness effect volatility. The results of study shows that the more open international trade leads to more sectoral volatility. Razin & Rose (1992) has examine the relationship between free goods and capital mobility and business cycles (consumption volatility and investment volatility). Restriction on free mobility of goods (capital flows) has strong theoretical implication for consumption volatility. This reduction of restrictions not only provide the opportunity investment, but it also provides the opportunity to diversify productivity shocks. Hence free capital mobility is associated with more volatility in investment and smoother the volatility of consumption.

Foreign exchange shocks may be one the determinant that effect the consumption volatility. Consumer purchasing power depends on the prices of goods and services. An (2006) find that inflation effect the purchasing power of individual. Fluctuations in exchange rate may affect the value of currency. When exchange rate increases, the value of currency decreases and vice versa. Inflation is relevant in determining the exchange rate. Exchange rate may lead the increase in inflation rate and prices of goods in home as well as foreign increases (Ben and Alass, 1998). Combes & Ebeke (2011) argue that remittances from foreign countries lead to stability in consumption volatility.

It has also been discussed that macroeconomic shocks can also affect the volatility. In literature it is discussed that whether financial integration has led greater volatility or not. But it is still not clear. Dornbusch (1976) model of dynamic exchange rate suggests inverse

effect of financial integration. Due to monetary shock exchange rate overshoot that lead to destabilization in the economy. Sutherland (1996) using inter temporal model of general equilibrium in which restrictions on financial sector are eliminated shows the effect of different shocks on volatility when financial integration increases. The study shows that when there is monetary shock occur volatility of consumption decreases because financial integration provides the opportunity of smoothing the consumption. When there is perfect capital mobility and labor supply shock occur short term volatility of consumption increases. Buch & Yener (2010) find in their paper the effect of monetary and fiscal shocks on volatility of consumption. The results are insignificant in most of countries. The nexus of between consumption volatility and financial integration remains unchanged due to these shocks.

Economic development may be one of the elements that effect consumption volatility. During the past few decades when financial integration increased, access to world financial market has increased so it has affected the economic growth of countries. Cecchetti et al., (2006) find the evidence that due to recent modernization experienced by the world that leads to stable growth and smoother consumption volatility. Financial development has help to access the credit market by allowing the household to smooth the consumption.

So, in the above paragraphs it has been discussed the different variables that effect the consumption volatility along with the financial integration. All these variables may be written in the form of equation as follow.

$$v_c = \alpha_0 + \alpha_1 FI_t + \alpha_2 TO_t + \alpha_3 MS_t + \alpha_4 GR_t + \alpha_5 FX_t + \mu_t \quad (1)$$



$\nu_c$ = Volatility of Consumption, FI = Financial integration, **TO** =Trade Openness, **MS**= Macroeconomic shocks, **GR**= Growth Rate, **FX**= Foreign Exchange shocks and  $\mu_t$  is the error term.

### **3.1 Estimation Methodology**

Time series is sequence of well-defined numeric data set that is measured in different time periods. It is used for analyzing the series of data and extract the statistical characteristics of data. Using the time series data first of all stationarity of series is checked before analyzing. In stationary series disturbance occurs due to any shock. These shocks in stationary series are temporary in nature and in long run disturbance in series eliminated and series return towards the long run mean. While non-stationary series has the permanent component and its mean of this series and variance depend upon time. The natural steps after checking the stationarity in time series are to choose the structure of lags and find the co-integration among the variables.

First of all, unit root of series is checked. There are different formal tests used for checking unit root. These tests are as follows:

### **3.2 Unit Root Test**

If change in variable is completely dependent on error term then the series have the problem of unit root. Dickey & Fuller (1979,1981) has proposed the formal test for unit root. Considered the following equation in which consumption volatility has been taken for checking the stationarity which is our dependent variable. The rest of our variables in our model are following the same process for stationarity.

$$v_{c_t} = B_0 v_{c_{t-1}} + \mu_t \quad (1)$$

Where  $v_{c_t}$  is the consumption volatility over the time.

Dickey-Fuller test for unit root is follows as:

$$\Delta v_{c_t} = (B_0 - 1)v_{c_{t-1}} + \mu_t \quad (2)$$

Or

$$\Delta v_{c_t} = \gamma v_{c_{t-1}} + \mu_t \quad (3)$$

Where  $\gamma = (B_0 - 1)$  Null hypothesis is that there is unit root in series,  $H_0: \gamma = 0$ . While the alternative hypothesis is that there is not unit root in series,  $H_a = \gamma < 0$  shows that there is no unit root.

Dickey-Fuller has augmented the lags of dependent variable as independent variable to remove the problem of autocorrelation. They proposed the name of this test as Augmented Dickey-Fuller test.

$$\Delta v_{c_t} = \gamma v_{c_{t-1}} + \sum_{l=1}^p B_l \Delta v_{c_{t-l}} + \mu_t \quad (4)$$

Both tests Dickey-Fuller and Augmented Dickey-Fuller follow the Mackinnon (1991) tabulated critical values.

### 3.3 The Philips-Perron (PP) Test:

There is another test mostly used for unit root in financial time series analysis is developed by Phillips and Perron (1988). Phillips Perron test different from the ADF test is how it is deal with the problem of with serial correlation and heteroskedasticity

in the errors. In both DF and ADF tests it is supposed that error terms are not correlated and their variance is constant. Phillips and Perron test modify the t-statistics. This is non parametric test and fix the problem by t-statistics and correcting the standard errors. The equation of PP test is as follows.

$$\Delta v_{ct-1} = \alpha_0 + \gamma v_{ct-1} + \mu_t \quad (5)$$

It also follows the Mackinnon tabulated values for critical values.

### **3.4 Lag Structure**

After checking stationarity of series, in next step is selection of lags. Restricted VAR is usually used to calculate the number of lags for the model. Lags length is selected where values of Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC) are minimum.

### **3.5 Cointegration**

In time series analysis there is certain possibility of spurious relationship. For example, suppose that there are two variables financial integration and consumption volatility. If both are non-stationary series are run through standard OLS, it shows higher value of R square and t-statistics even though there is no theoretically relationship between financial integration and consumption volatility. This shows that the relationship is spurious. But if both of our variables are stationary at integrated order one I(1) and there exist linear combination of these variables is integrated order zero I(0) then variables financial integration and consumption volatility is cointegrated. There is formal test used in financial econometrics for testing the cointegration among variables. These are as follows:

### **3.6 Engle-Granger approach**

Engle & Granger (1987) has formalized the first formal cointegration test. They have proposed the two steps procedure for testing the cointegration. First step required is to check stationarity and order of integration of variables. The ADF and PP tests can be applied to check the integrated order. If both variables have same order of integration (usually variables are first order integrated  $I(1)$  in economics) then proceed toward the second step. The second step of test is to run OLS regression and obtain the residuals and checked level of integration if it is  $I(0)$  then variables are cointegrated or there exist long run association between financial integration and consumption volatility. There are some drawbacks of EG method. If order of integration is not same, then it does not work or if there is mistake in first step it will give wrong results in next step and whole procedure is not correct. The most common misconception about EG is that it is Bivariate model. It can be used for many variables but the short coming of this method is that it can only specify one co-integrated vector. For more than one variable it can tell us about the long run relationship but cannot specify the variables in which relationship exists.

### **3.7 The Johansen Juselius Cointegration**

The tests that are based on residuals may produce to contradictory results when there more the two variables of  $I(d)$  are under discussion. And ARDL approach for cointegration is also not applied when there are multiple long run relationships. Johansen & Juselius (1990) has proposed a method for cointegration when order of integration is same. It is multivariate analysis method that lead to determination of cointegration vectors in model. It is extension

of single equation error correction model to multivariate one. The equation of Johansen Juselius equation is as follows:

$$\Delta z_t = \mu_t + \theta D_t + \sum_{i=1}^{k-1} \Gamma_i \Delta z_{t-i} + \Pi z_{t-1} + \varepsilon_t \quad (6)$$

Where  $\mu$  is the deterministic component and denotes intercept (no trend) in VAR (Vector Auto Regressive). The matrix  $\Pi$  is the long-run co-integrating matrix, which provides the information related to long run relationships among variables that are co-integrated. Basically, the idea of co-integration theory is that the results after running the regressions with non-stationary variables can turn out to be spurious and misleading while taking the difference of the variables can become the reason for the loss of long-run information. That's why, these issues can be resolved by integrating short run dynamics with long run co-integrating vector. The  $\Pi$  matrix can be replaced by  $\Pi = \alpha\beta$  where  $\beta$  is long-run matrix which contains coefficients and  $\alpha$  is the speed of adjustment towards equilibrium, which consists on the equilibrium error correction term. The expectations about the sign of the error correction coefficient is that it has a negative sign. The term  $\Gamma$  represents the short-run relationships among the coefficients of VAR or in other words, the short run relationships among variables of the model are explained by the short run coefficients.  $K$  indicates the optimal lag length of VAR model. In addition to this, the rank of the matrix  $\Pi$  explains the existence of co-integration relationships.

### **3.8 Error Correction Model (ECM)**

As earlier detail discussion has been made about the cointegration that shows long run relationship among variables. After the developing of Engle-Granger, ECM has been widely

used to capture both long run and short run relationship. If both variables, consumption volatility and financial integration are integrated order first and  $\mu_t$  is integrated order zero then:

$$\Delta v_c = a_0 + b_1 \Delta FI - \pi \hat{\mu}_{t-1} + e_t \quad (7)$$

In the above equation  $b_1$  shows the short run association between financial integration and consumption volatility. While  $\pi$  shows the adjustment effect or shows how much of the disequilibrium is being corrected.

### 3.9 Autoregressive Distributed Lag

When variables are not integrated of same order or when one variable is integrated order one and other is integrated order zero but not integrated order two then cointegration tests like EG and JJ test fails to find cointegration. To solve this problem Pesaran et al., (2001) and Pesaran & shin (1995) suggest the Autoregressive distributed lag (ARDL) model or bound test to find the cointegration among the variables. It has various advantages over other methodologies.

$$\Delta v_c = \alpha_0 + \sum_{i=1}^p \alpha_i v_{c_{t-i}} + \sum_{j=1}^{q_1} \beta_j \gamma_{1_{t-j}} + \sum_{k=1}^{q_2} \gamma_k \gamma_{2_{t-k}} + \delta_0 v_{c_{t-1}} + \delta_1 \gamma_{t-1} + \delta_1 \gamma_{t-1}^2 + e_t \quad (8)$$

The null hypothesis of test is  $\delta_0 = \delta_1 = \delta_2 = 0$  means that there is no long run relationship among the variables. While the alternative hypothesis is  $\delta_0 \neq \delta_1 \neq \delta_2 \neq 0$  its means that there is long run long run relationship among the variables. It follows the F-test value. If the calculated value is less than I(0) then there is no long run relation among variables. But there is cointegration among variables if calculated values are greater than

I(1). There is no conclusion if values lies between I(0) and I(1). After finding the cointegration among variables, long run and short run dynamics are tested through ECM.

## **Chapter 4:**

### **Variable Construction and Data**

There are many variables in the literature that have been discussed and used to capture the financial integration in various studies of research. Here in this chapter firstly, variables are described with theoretical justification that are going to be used in our analysis. Secondly, shed on light on data description. A framework has been developed to analyze the variables in our model using time series data.

The nexus between financial integration and consumption volatility is widely documented in the literature but findings are not in symmetric sequence across the different parts of the world. Different part of the world finds diverse results. Nonetheless, this study focus on developing economy (Pakistan) to find the link between consumption volatility and financial integration.

Although many studies in the international finance literature have empirically analyzed the integration of financial sector and consumption volatility, however, developing countries has gain considerably attention in recent decades. Therefore, to test empirically, time span from 1976 to 2017 to affectively identify the impact in last decades. This study uses the model that Denizer et al., (2000) has used in his research study.

#### **4.1 Dependent Variable:**

It has extensively documented in the literature that integration provides the benefits of better allocation of capital and diversification of risk. Keeping in view the theoretical



background as financial integration increases volatility of consumption should decrease. Consumption volatility is our dependent variable. There are different methods that have been used in empirical studies for consumption volatility. To measure the volatility of consumption, this study uses the Buch & Yener (2010) method that is a 5-year rolling window of consumption. For the robustness absolute median deviation is also used to check the volatility of consumption.

## **4.2 Independent Variables**

The independent variables of the study are discussed in the following sub-headings.

### **4.2.1 Financial Integration**

In this research study, the main independent variable in the model is financial integration. There are different measures both qualitative and quantitative that are used in literature for assessing the degree of integration. In this study, the proxy used for financial integration is developed by Fernandez et al., (2015). It is also a qualitative approach based on IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) which presents the rules and regulations on international transactions. This index is compiled with the help of three columns. The first catalogue contains the sub-category of assets. The asset category contains the information of inflows and outflows controls on assets which include bond, equity, money market, derivatives, collective investment, financial credit, direct investment, guarantees securities, commercial credit and real estate. The second column contains the YES (restriction is placed) and NO (there is no restriction) and the third contains the narrative information. By constructing reports, first of all the second and third columns are filled by using the given criteria. If there is no narrative information given, then it relies on the second

column which include 1 for YES and 0 for NO. If narrative information available, then IMF coded the third column with *n.a.* or *n.r.* The code *n.a.* is used when there is no apt information available at the time of publication of report. The entry *n.r.* is used when IMF is provided when an item or category is not regulated. Furthermore, this column of narrative information contains another entry that is *d.n.e.* that represent that does not exist when there is no information available. Any approval, permission, authorization, registration or notification is counted as control. Any quantity restriction on investment is also considered as control. Restrictions due to political or national security are not considered as controls on capital. In this research study, indices that are used for the proxy of financial integration are overall financial integration, financial integration inflow, financial integration outflow, equity inflow, equity market outflow and commercial credit restriction index.

#### **4.2.2 Control Variables**

There are other variables on our regressor side that may not constant over time and can affect the volatility of consumption. Trade openness can also affect the volatility of consumption. To measure the trade openness, many studies has used the ratio of exports+imports/GDP (Denizer et al., (2000); Giovanni & Levchenko (2007)). In this research study measure for trade openness is used the percentage of trade to GDP is used.

There is vast literature available that discussed the effect of macroeconomic shocks on volatility due to financial integration. The economies become vulnerable to shocks due to financial integration and it can also affect the volatility of consumption. So, this study has incorporated macroeconomic shocks in the model to find the effect on consumption volatility. Denizer et al., (2000) has used the standard deviation of inflation to capture the

effect of monetary shock. This research study is also using the inflation rate to capture the effect fiscal shock and interest rate to capture the effect of monetary shocks.

Foreign exchange shocks is also a determinant that may lead to effect the volatility of consumption so, to measuring foreign exchange shock, exchange rate is used as proxy of foreign exchange shocks.

### **4.3 Data Source**

In order to investigate the relationship between financial integration and consumption volatility, data has been extracted from mainly two databases, World Development indicator (WDI) and State Bank of Pakistan (SBP). At first, data source of dependent variable household consumption is discussed which is collected from WDI and time span is from 1975 to 2017.

Meanwhile, as far as independent variables are concerned, data of financial integration is collected from IMF Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) because it is the most appropriate measure that is used to capture the restrictions on capital flows. To measure the effect of foreign exchange shocks, monetary shocks and fiscal deficit, data has been extracted from State Bank of Pakistan. Data of macroeconomic shocks including fiscal shock, growth rate and trade openness is used from WDI because it has provided more complete data set since 1970's.

## Chapter 5

### Empirically Results

After detail discussion of variables and data sources in previous chapter. In this chapter, empirical results of models that have been constructed in previous chapter is discussed. Firstly, the descriptive statistics of our variables are discussed, secondly unit root of all variables are explained. And in the last section, empirically results of our models both in long run and short run is discussed.

#### 5.1 Summary Statistics

Table 5.1 is the summary of descriptive statistics of variables that are used in this study. Table shows the mean, median, maximum, minimum, standard deviation, skewness, and kurtosis and probability value. The table below is easy to understand. It contains the mean of variables which describes the average of values of variables. Likewise, median tells about the central observation after arranging the data. The column of maximum and minimum values shows the highest and lowest observations of data set. However, the deviation from mean in data is described by standard deviation. To know normality of the series, further look forward to kurtosis and skewness. Positive skewness reflect that the series lies at right of its mean value, while negative means series lies on left of mean value. Moreover, Peakness of series is represented by kurtosis. The series taken can either be leptokurtosis, mesokurtosis or platykurtosis. While the probability values show the Jarque-Bera test probability. The rule of thumb is that if probability values are greater than 5% then the null hypothesis of normality of data cannot be rejected. The results shows that from 1975 to

2017, the average consumption volatility of Pakistan is 12.03 with a maximum 13.418 observation recorded in the period of 2017 and minimum of 10.977 in 1975 while the standard deviation show that there is 0.746 variation from the mean value. The value of skewness is 0.067 which is nearer to 0 while there is problem of Mesokurtic in the data which denotes the flatteners of curve and probability of Jarqua Bera is accepted.

The descriptive summary statistics of financial Integration in terms of overall integration shows that during the study time period the overall financial integration on average remained 0.623 which denotes that on average Pakistan financial sector remained liberalized during the study period. The maximum liberalization been recorded in 2017 when the overall financial integration was recorded 0.779 while minimum was in 2005, when it was 0.450. The data features shows no problem of skewness but there is mesokurtic problem while Jerqua Bera statistics is rejected at 10%. The remaining all variables of the study also shows the salient features of average performance with minimum and maximum occurrence with no data problem like skewness, kurtosis and Normality.

<b>Variables</b>	<b>Mean</b>	<b>Median</b>	<b>Max.</b>	<b>Mini.</b>	<b>Std. Dev.</b>	<b>Skew.</b>	<b>Kurt.</b>	<b>Prob.</b>
<i>Consumption Volatility</i>	12.203	12.188	13.418	10.977	0.746	0.067	1.785	0.266
<i>Overall Financial Integration</i>	0.632	0.675	0.779	0.450	0.112	-0.379	1.582	0.098
<i>Financial integration Inflow</i>	0.534	0.500	1.169	-0.101	0.382	0.021	1.778	0.262
<i>Financial Integration Outflow</i>	0.910	0.935	1.017	0.801	0.072	-0.268	1.631	0.144
<i>Equity Inflow</i>	0.684	0.578	1.236	0.1315	0.344	0.012	1.519	0.141
<i>Equity Outflow</i>	-0.231	0	1.205	-1.668	0.878	0.137	1.915	0.326
<i>Credit Constraints</i>	0.880	1	1.396	0.364	0.336	-0.191	1.524	0.125
<i>Trade Openness</i>	33.195	33.333	38.909	25.306	3.322	-0.511	2.816	0.379
<i>GDP Growth</i>	4.914	4.846	10.215	1.014	2.044	0.249	2.758	0.759
<i>External Debt</i>	10.404	10.478	9.759	0.313	-0.304	2.095	2.128	0.345
<i>Interest Rate</i>	11.661	11.201	15.64	7.28	1.864	-0.032	2.664	0.901
<i>Inflation Rate</i>	8.4380	7.8442	20.904	2.5293	4.159	0.997	4.292	0.006
<i>Exchange Rate</i>	44.881	36.078	104.84	9.9	32.117	0.548	1.965	0.13049
<i>Fiscal Balance</i>	- 313864 .8	- 118762. 5	-12480	- 183386 4	46060 2.5	-1.851	5.335	0

## 5.2 Unit Root

In time series analysis stationarity of series must be checked before finding the cointegration among variables. It is confirmed that no variable is stationary on integrated order two I(2) to avoid the problem of spurious results. Augmented Dickey-Fuller (ADF) test have applied to find the stationarity of variables. Table 5.2 shows the stationarity of variables on both at integrated order zero I(0) and on integrated order one I(1) and probability values in parentheses. The values in the table shows that consumption volatility, overall financial integration, financial integration inflows, financial integration outflow, equity inflow, equity outflow, external debt, exchange rate and fiscal balance are not

stationary at level but they are stationary at integrated order one. While three variables, GDP growth, interest rate and inflation rate are stationary at level.

<b>Variable at I(0)</b>	<b>ADF</b>	<b>Lag Length</b>	<b>Variables at I(1)</b>	<b>ADF</b>	<b>Lag Length</b>
<i>Consumption Volatility</i>	-0.223 (0.927)	0	$\Delta$ <i>Consumption Volatility</i>	-5.394 (0.000)	0
<i>Overall Financial Integration</i>	-1.729 (0.409)	0	$\Delta$ <i>Overall financial Integration</i>	-5.801 (0.000)	0
<i>Financial Integration Outflow</i>	-1.077 (0.715)	2	$\Delta$ <i>Financial integration Outflow</i>	-6.196 (0.000)	1
<i>Financial Integration Inflow</i>	-0.445 (0.891)	0	$\Delta$ <i>Financial integration Inflow</i>	-7.199 (0.000)	0
<i>Equity Inflow</i>	-0.778 (0.814)	0	$\Delta$ <i>Equity Inflow</i>	-6.563 (0.000)	0
<i>Equity Outflow</i>	-0.588 (0.862)	0	$\Delta$ <i>Equity Outflow</i>	-6.699 (0.000)	0
<i>External Debt</i>	-1.087 (0.711)	2	$\Delta$ <i>External Debt</i>	-4.521 (0.000)	1
<i>Exchange Rate</i>	1.719 (0.999)	0	$\Delta$ <i>Exchange Rate</i>	-4.570 (0.000)	0
<i>Fiscal Balance</i>	3.623 (1.000)	9	$\Delta$ <i>Fiscal Balance</i>	-5.222 (0.000)	6
<i>GDP Growth</i>	-4.171 (0.002)	0	$\Delta$ <i>GDP Growth</i>	--	--
<i>Inflation Rate</i>	-5.112 (0.000)	6	$\Delta$ <i>Inflation</i>	--	--
<i>Interest Rate</i>	-3.313 (0.021)	3	$\Delta$ <i>Interest Rate</i>	--	--

### 5.3 Cointegration Test

In order to find cointegration among the variables, ARDL test has been applied. ARDL is useful to find the long run relationship among the variables when order of integration of variable are not same. But when variables are integrated at order two, ARDL cannot be applicable. The null hypothesis of ARDL test is that there is no long run

relationship among variables while alternative hypothesis is that there is long run relationship among variables.

Table 5.3 shows the results of ARDL bound test for the existence of long run relationship. It contains the F-statistics values of eight models at lag 1, lag 2 and at lag 3. The null hypothesis of bound test is that there is no long run relationship while alternative hypothesis is that there is long run relationship among variables. The value of upper bound at 1% is 5.23. All F critical values at first, second and third lags of all eight models are greater than 1% which concludes that the null hypothesis of no long run relationship among variables is rejected and accept the alternative hypothesis that there is long run relationship among variables.

<b>Table No 5.3: Bound Test for the Existence of a Long Relationship</b>			
	<b>F-Statistics</b>		
	<b>Lags 1</b>	<b>Lag 2</b>	<b>Lag 3</b>
<i>Model 1</i>	18.684	12.987	10.087
<i>Model 2</i>	13.404	12.672	9.101
<i>Model 3</i>	16.189	12.980	9.822
<i>Model 4</i>	10.334	9.143	8.817
<i>Model 5</i>	10.391	9.707	8.692
<i>Model 6</i>	14.516	12.019	8.460
<i>Model 7</i>	13.954	12.062	10.749
<i>Model 8</i>	10.4553	9.5730	7.6212
<b>Note:</b> The upper bound of critical value of Pesaran et al. (2001) is 5.23 at 1 percent of level of significance. The higher calculated value show that the rejection of no cointegration null hypothesis.			



## 5.4 Long Run Estimates

As mentioned above that financial integration has been the most debatable topic since few decades. The countries of different parts of the world has remarkably eliminated the restrictions on capital flows, liberalized domestic financial markets and institutions and made better environment for investment. This process of integration has helped to access the international financial market to smooth the volatility of consumption borrowing and lending.

Table 5.4 shows empirically long run relationships between consumption volatility and financial integration along with the other control variables including trade openness, external debt, GDP growth, foreign exchange shocks, both fiscal and monetary shocks and fiscal balance. Table contains the eight models that shows the impact of financial integration in presence of other variable discussed above, on consumption volatility. In the first model, impact of overall integration is included. The negative coefficient of overall financial integration shows that when on average degree of integration increases the volatility of consumption decreases. Our results are align with the study of Buch & Yener (2010) who also find that financial integration leads to lower the volatility of consumption. When restrictions on capital flows are eliminated under the process of financial integration, consumer access to the world financial market increases and they can borrow and lend internationally. When consumers face any shock, they can mitigate the effect of shock by borrowing from international financial market to smooth the volatility of consumption.

Second coefficient Trade openness also has negative sign which shows that more openness of trade leads to decrease the volatility of consumption. Theoretically when trade

openness increases, it means that elimination of restrictions on exports and imports of goods and services which increases the specialization in production based on comparative advantage that increases the returns from trade. It also provides the opportunity to diversify production across the countries that help to avoid from the country specific shocks and smooth the volatility of consumption. Kose et al., (2006) have found the similar findings such as impact of trade openness and financial integration on volatility and output. The coefficient of GDP growth contains negative sign which shows that on average increase in GDP growth also leads to decrease in consumption volatility. Our results are aligned with the results of Martin and Rogers (2002) who find that GDP growth leads to negative effect the volatility because due to economic growth, permanent income of household increases that helps the household to smooth the volatility of consumption.

In addition, macroeconomic shocks including fiscal and monetary policy positively affect the consumption. The positive sign of inflation shows that when on average increase in inflation rate, it leads to increase in volatility of consumption. Our this argument that inflation is positively link with consumption volatility is similar with the empirical studies of Wu & Rapallo (1997), Denizer et al., (2000) and Wolf (2004). When inflation rate increase it affects the purchasing power of consumers that leads to decrease in consumption of household which become the cause of increase in the volatility. Positive sign of interest rate shows that when on average interest rate increases it leads to increase the volatility of consumption. Because when interest rate increases cost of borrowing against any shock to smooth the volatility of consumption increases and it leads to surge in volatility of consumption.

When on average exchange rate appreciates it leads to increase in volatility. Our results has similarity with Denizer et al., (2000) which shows the external shock effect on macroeconomic volatility. When exchange rate increase it shows that depreciation of local currency due to macroeconomic instability of country, politically instability and foreign exchange shocks which causes the capital outflows from the country that leads to increase the volatility of consumption. External debt has positively affected the consumption volatility which shows that on average when external debt of country increases it leads to increase the volatility of consumption. Cato & Kapur (2006) has reported the similar results by arguing that when external debt of developing countries is increased, the risk of default of these countries increase and they face the restrictions from lenders. These hurdles make the agents unable to borrow internationally to smooth the volatility of consumption. Fiscal balances signs are positive which shows that increase in fiscal deficit also leads to increase in volatility of consumption. Theoretically, when government increases the expenditure, in response to inflation rate increase that leads to reduction in purchasing power of household and that affect the volatility of consumption.

In model two and three, financial integration inflow and financial integration outflows are taken as independent variable respectively. Results show that financial integration inflows and financial integration outflows both lead to decrease the volatility of consumption. Model four and five include the equity market integration both equity inflow and equity outflow respectively and show that both has helped the volatility of consumption. These findings of equity market liberalization and consumption volatility are similar with the empirical research of Bekaert et al., (2002). Furthermore, in model six restrictions on

commercial constraints are including to investigate the impact on consumption volatility. The results of model show that elimination of restrictions on commercial credit helps to reduce the volatility of consumption. Mendicino (2007) also find the empirical evidence and shows that elimination of restriction on credit helps to lower the volatility. Model seven includes all variables of pervious model in single model and reports that financial integration has help to decrease in volatility of consumption. Pakistan took many steps in 1991 under the process of financial integration by liberalizing stock market and financial institutions. To capture the effect of post liberalization, dummy of financial liberalization is used in model eight to analyze the effect of post liberalization. The coefficient of financial liberalization has negative sign which shows that due to financial liberalization consumption volatility has decreased.

Subsequently, in this study to check the time series properties like diagnostic and functional forms tests are applied to check the normality in the data series, existence of serial correlation and problem of Heteroskedasticity in econometric model. It is concluded that, the rest of results obtained from all eight models shows that data is normally distributed, no problem of serial correlation and Heteroskedasticity in models.

<b>Table No. 5.4: Impact of Financial Integration on Consumption Volatility: Long Run Estimates</b>								
<b>Dependent variable is consumption volatility</b>								
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>	<b>Model 7</b>	<b>Model 8</b>
<b><i>Financial Integration Overall</i></b>	-0.3983***	--	--	--	--	--	-0.3292**	-0.2910***
	(0.1315)	--	--	--	--	--	(0.1627)	(0.1017)
<b><i>Financial Integration Inflow</i></b>	--	-0.4708***	--	--	--	--	-0.4620***	--
	--	(0.1429)	--	--	--	--	(0.1650)	--
<b><i>Financial Integration Outflow</i></b>	--	--	-0.4451***	--	--	--	-0.4713***	--
	--	--	(0.1172)	--	--	--	(0.1461)	--
<b><i>Equity Inflow</i></b>	--	--	--	-0.2068***	--	--	-0.5055***	--
	--	--	--	(0.0633)	--	--	(0.2002)	--
<b><i>Equity Outflow</i></b>	--	--	--	--	-0.2238***	--	-0.2511**	--
	--	--	--	--	(0.0593)	--	(0.1156)	--
<b><i>Commercial Credit Restriction</i></b>	--	--	--	--	--	-0.2507***	-0.4604***	--
	--	--	--	--	--	(0.0727)	(0.0348)	--
<b><i>Trade Openness</i></b>	-0.7963***	-0.5221**	-0.2052	-0.3725***	-0.3092***	-0.6244***	-0.5836***	-0.7106***
	(0.2879)	(0.2531)	(0.1823)	(0.1211)	(0.0874)	(0.2281)	(0.1803)	(0.0917)
<b><i>External Debt</i></b>	0.5116***	0.6770**	0.4822***	0.6335**	0.7381**	0.3579***	0.7924***	0.8014***
	(0.1805)	(0.2885)	(0.1492)	(0.2674)	(0.3601)	(0.1054)	(0.1652)	(0.1761)
<b><i>GDP growth</i></b>	-0.1791**	-0.2478***	-0.7370***	-0.2907*	-0.5131***	-0.3826***	-0.1573***	-0.1317***
	(0.0771)	(0.0776)	(0.2000)	(0.1684)	(0.1570)	(0.0461)	(0.0474)	(0.0608)
<b><i>Exchange Rate</i></b>	0.1318***	0.3148*	0.2888**	0.7948***	0.1750*	0.5830**	0.6716**	0.4017***
	(0.0357)	(0.1871)	(0.1317)	(0.2041)	(0.1061)	(0.1467)	(0.2758)	(0.1132)
<b><i>Inflation Rate</i></b>	0.3155**	0.2630	0.6173***	0.4896*	0.9229**	0.6967**	0.8709**	0.7102***
	(0.1566)	(0.1719)	(0.2469)	(0.2460)	(0.3599)	(0.2376)	(0.3863)	(0.1635)
<b><i>Fiscal Balance</i></b>	0.2269**	0.4241***	0.6988*	0.7059***	0.9443***	0.5125**	0.8284***	0.6703**
	(0.1115)	(0.1579)	(0.4364)	(0.2503)	(0.1387)	(0.2891)	(0.1891)	(0.1497)
<b><i>Interest Rate</i></b>	0.3556***	0.1322***	0.2410**	0.7846**	0.2610*	0.9849***	0.1064	0.0971**

	(0.1333)	(0.0438)	(0.1074)	(0.3583)	(0.1490)	(0.1661)	(0.1234)	(0.0301)
<b>Financial Liberalization</b>	--	--	--	--	--	--	--	-0.1107**
								(0.0417)
<b>Constant</b>	0.9989***	0.5963***	0.4280**	0.1394**	0.6548	0.1570	0.2830**	0.2107*
	(0.1072)	(0.1581)	(0.1790)	(0.0663)	(0.6352)	(0.1906)	(0.0729)	(0.1107)
<b>Diagnostic</b>								
<b>Normality</b>	0.8715	0.6445	0.5043	0.3124	0.7497	0.1670	0.8078	0.6170
<b>Serial Correlation</b>	0.6510	0.9686	0.3556	0.9603	0.5699	0.9355	0.8136	0.5130
<b>Heteroscedasticity</b>	0.1219	0.9163	0.8462	0.7199	0.3274	0.7327	0.4061	0.8114
<b>Functional Form</b>	0.5519	0.7953	0.6519	0.2309	0.8888	0.6805	0.5555	0.7129
<i>Note: The Standard Errors are in Parentheses. *, ** and *** show 10 percent, 5 percent and 1 percent level of significance respectively</i>								

## 5.5 Short Run Estimates

Table 5.5 shows the short run cointegration among the variables. Table contain the results of eight different models and diagnostics tests. Model 1 shows that overall financial integration has negative sign which shows that on average when financial integration increases, it reduces the volatility of consumption. Coefficients of both trade openness and GDP growth are negative which shows that when on average increase in trade openness and GDP growth it leads to lower the volatility of consumption in short run. External debt, fiscal balance, inflation, interest rate and exchange rate lead to increase the short run volatility of consumption.

In other models, equity market integration, commercial credit controls and overall all integration measures are used. The results of all models show that integration leads to reduction in consumption volatility. In model eight dummy of financial integration is used to capture the effect of post liberalization which shows that due to post liberalization process volatility of consumption decreases. Table 5.5 contain the values of ECM for all eight models which are negative. This negative values of ECM show that speed of adjustment of short run model to long run. The table shows that the values Error correction term varies between -0.10 to -0.18 in all models. In the first model when overall financial integration is used to measure the integration, the value of ECM is -0.17 which shows that after any shock, every year it will adjust 17% from short run to long run model.

Different diagnostics tests has been applied on models. The value of R-square shows that our models are well explained. Values of Durbin-Watson statistics shows that null hypothesis cannot be rejected which assume that there is no serial correlation in the models.

Stability of models are check through the CUSUM and CUSUMSQ which shows that our models are stable.



<b>Table No. 5.5: Impact of Financial Integration on Consumption Volatility: Short Run Estimates</b>								
<b>Dependent variable is consumption volatility</b>								
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>	<b>Model 7</b>	<b>Model 8</b>
<i>ΔFinancial Integration Overall</i>	-0.3766*** (0.1498)	--	--	--	--	--	-0.6584** (0.3634)	-0.3167** (0.1273)
<i>ΔFinancial Integration Inflow</i>	--	-0.5412* (0.2918)	--	--	--	--	-0.6505*** (0.1426)	--
<i>ΔFinancial Integration Outflow</i>	--	--	-0.7746*** (0.2081)	--	--	--	-0.7604*** (0.1772)	--
<i>ΔEquity Inflow</i>	--	--	--	-0.6778*** (0.1085)	--	--	0.1046 (0.4666)	--
<i>ΔEquity Outflow</i>	--	--	--	--	-0.1584*** (0.0547)	--	-0.5088 (0.3252)	--
<i>ΔCommercial Credit Restriction</i>	--	--	--	--	--	-0.5961*** (0.0262)	-0.5487** (0.1624)	--
<i>ΔTrade Openness</i>	-0.1781* (0.1008)	-0.8958* (0.4005)	-0.3337*** (0.0650)	-0.7725*** (0.0907)	-0.7377*** (0.2278)	-0.7799* (0.4011)	-0.7339*** (0.1640)	-0.1680** (0.0991)
<i>ΔExternal Debt</i>	0.7145*** (0.2239)	0.4878*** (0.0720)	0.6100 (0.5456)	0.9325*** (0.2463)	0.4562** (0.1900)	0.4157*** (0.1375)	0.1493* (0.0746)	0.6117*** (0.1407)
<i>ΔGDP growth</i>	-0.0812*** (0.0289)	-0.9381*** (0.2277)	-0.5927** (0.2122)	0.1619 (0.2628)	-0.7340*** (0.1367)	-0.3120** (0.1080)	-0.1326 (0.0985)	-0.0791*** (0.0213)
<i>ΔExchange Rate</i>	0.5077 (0.3406)	0.2145* (0.1049)	0.5468** (0.2634)	0.4718 (0.4799)	0.5613** (0.2717)	0.5106** (0.2838)	0.6960** (0.3249)	0.4011*** (0.1031)
<i>ΔInflation Rate</i>	0.6296*** (0.1196)	0.5013** (0.2044)	0.7791*** (0.2757)	0.6507** (0.2487)	0.8125*** (0.1747)	0.9756*** (0.2767)	0.2360* (0.1268)	0.5702** (0.1701)
<i>ΔFiscal Balance</i>	0.6186*** (0.1465)	0.4903** (0.1888)	0.4492* (0.2414)	0.5784** (0.2546)	0.2091*** (0.0598)	0.5140*** (0.1758)	0.3798** (0.2872)	0.3701** (0.1301)
<i>ΔInterest Rate</i>	0.0230	0.2117*	0.9495**	0.8446***	0.6433***	0.2520*	0.5248*	0.0291**

	(0.0248)	(0.1049)	(0.4401)	(0.2154)	(0.2116)	(0.1089)	(0.2883)	(0.0077)
<i>ΔFinancial liberalization</i>	--	--	--	--	--	--	--	-0.0907**
	--	--	--	--	--	--	--	(0.0317)
<i>Constant</i>	0.4870*	0.1026	0.3598**	0.8211***	0.8336	0.8572	0.6572	0.4211**
	(0.2003)	(0.1033)	(0.1562)	(0.2751)	(0.7812)	(0.5170)	(0.2599)	(0.1220)
<i>ECM</i>	-0.1702*	-0.1510*	-0.1825*	-0.1209***	-0.1036***	-0.1455**	-0.1266***	-0.1012***
	(0.0944)	(0.0811)	(0.1054)	(0.0200)	(0.0288)	(0.0610)	(0.0356)	(0.0031)
<b>Diagnostic</b>								
R-Squared	0.5233	0.3825	0.3564	0.7747	0.8858	0.5871	0.4963	0.4811
F-Stats	7.6206	8.5938	7.6936	7.9256	10.4919	8.2593	10.6266	10.6612
Durbin Watson Stats	1.8422	1.7143	1.6570	1.7669	1.7152	1.7433	1.8712	1.7812
<b>CUSUM</b>	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable
<b>CUSUMSQ</b>	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Note: The Standard Errors are in Parentheses. *, ** and *** show 10 percent, 5 percent and 1 percent level of significance respectively								

## Chapter 6

### Conclusion

The process of integration has increased since 1990's. In the literature, it is widely discussed the impact of financial integration on consumption volatility. In theoretical literature, it is discussed that when the degree of financial integration increases, it helps to reduce the volatility of consumption. There extensive empirical literature available that reports different results from different parts of the world. In developed countries financial integration has help to reduce the volatility of consumption (Buch & Yener, 2010) while in developing countries it does not decrease the volatility (Prasad et al., 2003). This research study has found the evidence in case of Pakistan because Pakistan has remarkably work in integrating its financial sector to the rest of the world since 1990's. In this empirical study, annually time series data have been used from 1975 to 2017. By using the Auto Regressive distributed Model and Bound test for cointegration, it has been found the long run relation between financial integration and consumption volatility in case of Pakistan. Furthermore, short run results are also accordance with long run results. Error Correction Model (ECM) has confirmed that there also exists short run relationship. The sign of Error Correction Term (ECT) is negative which confirms the long run adjustment of relationship between financial integration and consumption volatility.

In the end, different diagnostic tests have applied which include serial correlation, Heteroskedasticity, Normality tests and functional form to confirm the consistency of results that are estimated through Auto Regressive Distributed lag.

## **6.1 Policy Recommendation**

The finding of the study shows that the initiatives taken by Pakistan to integrate its financial sector during the past few decades to the globe has helped to reduce the volatility of consumption. On the basis of findings of the study the Government is suggested to promote financial integration to reduce consumption volatility. The following policy recommendation is forwarded to attract the attention of policy makers to promote financial integration in the economy.

- More integrated financial system can help to promote the economic growth, reduction of macroeconomic volatility.
- When financial integration deepens it helps to stabilize the economic system.
- Financial integration not only helps to access to the world capital market for better allocation of capital and diversification of risk internationally but it also allows the agents to borrow internationally when they come across an adverse shock. Therefore, integrating the financial market globally can be fruitful for absorbing shocks.

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