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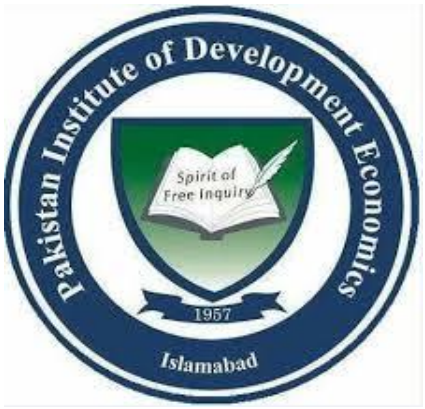

Role of Monetary Policy in Risk Modelling of Conventional and Islamic Banks in Pakistan

By

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A thesis submitted in partial fulfillment for the degree of Master of Science

in the

Faculty of Business Studies

Department of Management Sciences

2020

Pakistan Institute of Development Economics

CERTIFICATE

This is to certify that this thesis entitled: **"Role of Monetary Policy in Risk Modelling of Conventional and Islamic Bank in Pakistan"** submitted by Ms. Saba Rizwan is accepted in its present form by the Department of Business Studies, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Science in Management Sciences**.

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Dedicated to my lovely parents and siblings who love, support, encourage and prayed for me. My teachers, friends and relatives who always helped me to achieve my academic goals.

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Acknowledgements

In the Name of Allah, The Most Gracious, The Most Merciful

I am really grateful to **ALLAH ALMIGHTY** for the divine providence and blessings that showered upon me always and gave me strength to complete this work successfully.

I would like to express special gratitude to my supervisor, **Dr. Farhat Mehmood**, whose contributions, simulating suggestions and encouragement helped me to co-ordinate my thesis work.

Foremost, I would like to express sincere gratitude to **Dr. Arshad Hassan**, a great teacher and mentor. I am indebted to **Dr. Arshad Hassan** for his valuable guidance, encouragement and dedicated support that enabled me to complete my MS Degree Program. It was because of your support and guidance from the beginning that I have done it!

On a personal note, I express my absolute love and obligation to my parents for their enduring a_ection, blessings and moral support. I also express my sincere thanks to my siblings for their support and co-operation.

Finally with immense pleasure and gratitude, I place on record my appreciation to all persons who were helpful to me to complete my dissertation.

Saba Rizwan

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Abstract

This research was aimed to examine the traditional dynamics in conventional and Islamic Banks in Pakistan. It established an empirical measurement of volatility persistence while using the EGARCH (Exponential Generalized Auto-Regressive Conditional Heteroscedasticity) model. The impact of monetary policy on volatility of dual banks is examined through T-GARCH (threshold Generalized Auto Regressive Conditional Heteroscedasticity) model.

There were several interesting findings of the current study. First of all, the volatility showed that the asymmetry of good news have greater impact on the volatility as compared to the bad news. Further, the bad news also impacts on the volatility of conventional banks in contrast to the Islamic banks. Moreover, it was also found that in terms of shock, there is persistent level of volatility in conventional banks as compared to the Islamic banks. Hence, there is more resilient tendencies in Islamic as compared to the conventional banks, but the resilience level is heterogenous and dependent on the sample. So, it can be suggested by applying the industrial rules of Islamic bank, the conventional banks can be regulated effectively. At last, the significant findings were also observed for the effect of monetary policy on the volatility of Islamic and conventional banks being measured from the T GARCH model. It also shows that the interest rate for this is used as the monetary policy and it also effects the volatility of both Islamic and conventional banks.

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Chapter 1

INTRODUCTION

In financial markets volatility is a significant risk factor. Volatility estimation can be mostly useful for investment firms and risk management purposes. The empirical results provide strong evidence that the volatility spillover test highlights a transfer of risk between the Islamic equity market and the conventional equity markets.

Volatility in the prices of the financial assets are always a major concern for both investors and academicians. It is related to financial markets and referred to the rate of change in the prices of stocks and bonds for a definite period of time, which is a common proxy for financial risk (Fakhfekh, et al., 2016). Historically, volatility is measured by calculating the standard deviation of the returns of a security over a given period of time. It has been considered as a weak measure of volatility, because it does not account for the other changing aspects of volatility related to time series, like time varying and conditional heteroscedasticity (Engle, 1982). Evaluating the dynamics of volatility changes is an important challenge for financial markets as it is necessary to investment conclusions, estimating, risk management, and monetary policy.

For the countries development Banks play a main role in the monetary markets. Conventional banks provide the major source of financing the operations of the country's firms and business. They are involved in number of operations and have distinct modes of financing which results in different credit risk profile. Islamic banks may have lower credit risk disclosure just because of the religious views of debtors about the Islamic banking system, through prompting reliability also unfavorable nonpayment (Abedifar et al., 2013; Baele et al., 2014).

Introduction

These two industries unavoidably influence one another. Among these impacts, fiscal stuns come in the front line on the grounds that money related approach changes have influence to affect the entire economy, particularly for financial businesses. It is obvious that the money related strategy profoundly influences the Islamic financial framework through its primary apparatus, for example interest rate. In addition, the effect of monetary arrangement may likewise be through the Islamic between bank currency advertise other than the double financial framework. Buerhan, (2016)

With hasty credit hazard taking and banking strategies affirmed as the chief wellsprings of banking volatility and crises, banking organizations and things more likely than not been genuinely censured by different monetary masters and specialists starting late. The last have furthermore featured the need to update and direct reserve and banking in order to all the almost certain control credit, danger the board, and trading, lessen volatility, and give a more good and great banking and monetary structure. (Fakhfekh, et al., 2016).

In budgetary business sectors volatility is a critical danger factor. Resource evaluating models and portfolio designation strategies rely upon its precise assessment. Precision in volatility assessment can be particularly important for hypothesis firms and peril the chief's motivations. In present day times, financial exchanges over the world are confronting significant levels of volatility. Volatility is influenced by mean-inversion of profits, and asymmetry in showcase. The marvels of constancy in volatility show that the group of huge and little moves in the value procedure (Sinha and Agnihotri, 2014). Volatility is supposed to be persevering if the present return stuns have huge impact on the anticipated fluctuation of numerous periods later on. At the point when volatility constancy is in elevation, response of volatility on older market activities are very low, and stuns in volatility vanishes gradually. At the point when volatility

constancy is low, response of volatility on past market activities are a lot of comprehensive, and stuns in volatility vanishes rapidly (Rozga and Arneric, 2009). The autoregressive blending variable measured is the amount at which data shows up at the marketplace; it clarifies the nearness of GARCH impacts in day by day stock value developments.

As there are certain differences between conventional and Islamic banks. According to Girard and Hassan (2008) and Hussein and Omran (2005), Islamic stock files are development and little top arranged, while ordinary stock records are moderately more worth and mid-top centered. Another difference is about Islamic financial system which hoards with precise sharia code. That is why there is a ban on investments in derivative financial instruments in accordance with sharia codes that do not have any underlying transactions that include the forward option, futures and interest rates, as well as public debt (Ferrer et al., 2017). According to Islamic sharia the investment should be permitted in stocks whose firms should not be involve in Haram (prohibited) deeds which includes loaning, making a bet, manufacture of tobacco or alcohol, conventional financial services, entertainment or weaponry. Moreover in sharia based investment there is a prohibition of investment in companies which held high interest bearing debts, trade debt more than their face value or receive interest and other impure income (Rehman, 2010).

While, Islamic money industry and ordinary framework shows adjustments regarding the methods they use and the danger they continues, financial specialists they manage, them two work in similar condition and manage contributors and speculators pretty much comparative. Among this, the monetary stuns come in the front position on the grounds that money related policy change has more effect overall economy, particularly the budgetary businesses (Yungucu and Saiti, 2016).

Introduction

Pakistan is an emerging economy towards growth and during the most recent four decades financial approach has taken the interest in governmental and monetary arrangement creating groups. It is viewed as those banks have a unique job in molding loaning repayments in an economy; this builds the significance of banks for financial arrangement adequacy. The hypothesis for the bank loaning network depends on the fundamental suspicion that fixing or extricating of financial approach essentially impacts the gracefully of bank loaning. Dissecting the effect of interest rate declarations on the presentation of Islamic resources can uncover data about how the components of value development vary among Islamic and traditional resources. This work has use of convenient interest to various accomplices who are incorporated or interested in Islamic budgetary assets. Asset characteristics, for instance, return and volatility, similarly as the segments, by which new information is incorporated into the expense of stock and security assets, are huge consideration for money related pros.

Monetary shocks, specifically the difference in interest rate, have immediate or roundabout consequences for Islamic banks. These effects appear as two significant dangers, in particular, interest rate hazard and resource obligation befuddles issue. From a bank's perspective, interest rate hazard can be characterized comprehensively as the effect of an interest rate change on a bank's benefits, incomes and total assets. Be that as it may, in a customary framework, since banks are middle people among contributors and borrowers and gain their salary generally banks are from interest, gap or spread between the two intrinsically presented to interest rate chance. At the point when interest rates move in the regular frameworks, deposits rates must move inside the Islamic financial framework. This is inescapable on the grounds that without relating changes in Islamic bank store rates, rate differentials will win prompting simple exchange opportunity. At the end of the day, when the expense of assets changes to ordinary

banks, the expense of assets to Islamic banks should likewise change. Consequently, the effect of interest rate change might be aberrant on Islamic banks yet the results would be comparable with ordinary banks. Buerhan, (2016).

The investors who seek to minimize risk should be aware of the interest rates' changes. The volatilities in interest rates lead the stock markets to volatile too. This finding implies that to stabilize the stock markets in the country, the policy-makers should control the stability of the interest rate, as one of the monetary instruments. This is the widely accepted empirical evidence on the failure of Islamic financial institution to be really Islamic in their operation. For example, Chong and Liu (2009), Khan (2010), Azmat et al. (2015), Yusof (2008) found that the Islamic banking is not totally free from interest. The latest finding by Majeed and Zainab (2017) also found that the Islamic banking in Pakistan has failed to be run totally based on the Islamic principles, which is riba-free. (Shabbir,2018)

Islamic account or Shari'ah biddable money has a place with the more extensive group of socially subject speculations and wants passive consent with sharia law (Shari'ah). Islamic and conventional resources are influenced in any case by rate of interest because of Islamic stock files and Islamic securities (sukuk) square measure organized per the particular qualities of sharia law. On account of the disallowance of interest or usury (riba) underneath sharia law, Islamic stock files bar companies that either pay or get goliath measures of interest (through cash property or influence), though Islamic securities (sukuk) square measure upheld cash courses of action like benefit and-misfortune sharing (e.g., organization) or renting standards to dodge interest. (Akhtar et al., 2017). An abrupt augmentation which is interest free, is attached with a drop in all protection returns; anyway, this impact is smaller for Islamic protections (especially for employer protections and amidst tightening impacts of the economic gadget). Further,

concerning volatility, a stunning hobby fee addition is hooked up with higher volatility of all safety returns at the assertion day, notwithstanding the way that volatility by means of then decreases on the next day. The 2 effects on bond volatility are greater diminutive for Islamic bonds relative with standard bonds. On the grounds that Islamic protections are tons less touchy to alarming modifications in hobby costs, they may be a steadier employer comparable with ordinary securities.

Financial exchange volatility has an extraordinary interest for both policy creators and market members others are more worried about the impact of volatility on securities exchange. Over the last two decades the stock market has extended not only in conventional sector but also developed new investments tools for Islamic markets in the developing countries. There are three factors that are the cause of risk and have less volatility for Islamic banks. Right off the bat, forbidding interest in sections that are not obliging with the Sharia board (for instance alcohol, pork, etc.) could be seen as wellspring of danger since it suggests more extraordinary improvement open entryways for Islamic banks appeared differently in relation to customary banks. Second, the denial of advance expenses reduces monetary resources, which infers additional objectives and limitations that may extend the opportunity of liquidation and breakdown for Islamic banks. Third, the extended number of withdrew and dynamic classes of monetary instruments for Islamic banks can be a wellspring of significant worth unusualness, especially if the two players (examiner and financial specialist) partner in a hilter kilter structure with less clearness (Fakhfekf et al., 2016).

Recently, most researchers have made researches on Islamic financing due to the rapid growth of investments in Islamic financial markets. According to sharia based investment, there is a prohibition of investment in activities like lending, gambling, production of tobacco or

alcohol, conventional financial services, entertainment or weaponry. Further, firms which charged high interest bearing debts, trade debt more than their face value or receive interest and other impure income are also prohibited in Islamic financial markets (Rehman, 2010). Islamic account depends on the rule of benefit and-misfortune sharing in an asset based framework. The Islamic securities exchange is the one of the regions of Islamic fund that has gotten more consideration throughout the most recent couple of years. (Ferrer et al., 2017). There is widespread observation that Sharia-based speculations may offer Islamic financial resources a specific shield against the expanding danger and instability in universal financial markets.

1.1 Problem Statement

Past examinations are led to explore the volatility elements for customary and Islamic banks in various time spans. The overall money related emergency of 2008–2009 set off the universe of account into noteworthy confusion lead to in significant volatility excess and change for stocks, securities, monetary standards, products, and subordinates (Shiller, 2008). This makes the volatility framing issue exceptionally noteworthy. The emergency began from USA and spread to the remainder of the world because of budgetary uneven characters. Since 2007, overabundance volatility is by all accounts versatile, and volatility persistence should be inspected to survey the engendering of stuns and the accompanying emergency and monetary downturn that totally influenced whole money related frameworks.

This paper is useful to quantify volatility persistence, regardless of whether Islamic banks are stronger than regular banks if there should arose an occurrence of Pakistan and furthermore

analyzes which contrasts among Islamic and traditional resources are the effect of interest rate on stock and security returns and their volatility.

1.2 Research Questions

- How do monetary policy influence the stock returns volatility of the Islamic and conventional banks in Pakistan?
- How the asymmetric news effect the stock returns volatility of conventional banks?
- Does the asymmetric news effect the stock returns volatility of Islamic banks?
- Whether the size of shocks effect stock returns volatility of Islamic and conventional banks?
- Is the volatility more persistent in conventional banks as compared to Islamic banks?

1.3 Research Objectives

- To provide insight about the role of monetary policy in explaining the stock returns volatility of conventional banks and Islamic banks.
- To explore that the volatility is additional persistent in conventional banks or Islamic banks
- To study the effect of asymmetric news on the stock returns volatility of conventional banks and Islamic banks
- To analyze that size of shock effects the stock returns volatility of Islamic & conventional banks.

1.4 Significance of Study

As it can be seen that there is rapid advancement in the Islamic banking, so in the field of finance the focal point of research attempt to take a look at the endurance of volatility among Islamic and conventional banks inside the context of Pakistan. This examine is useful for investors, economic policy makers, regulators in their funding choices, comprising their portfolio provision and chance management plans and academia. Traders can specific effective strategies towards volatilities of conventional and Islamic inventory markets. Investors would able to manipulate powerful portfolios in the decided on nations of our take a look at to decorate their investment inventory returns. For economic policy makers, they help to apprehend approximately the records of returns and volatility of Islamic and traditional stock market. For academia cause that is additionally beneficial to the analysts to have knowledge approximately the instability in Islamic financial trade files and increase writing within the subject of this studies domain.

1.5 Research Gap

The Islamic banks on the basis of applying Sharia board rules are considered to be less risky in comparison to the conventional banks. With the existing empirical evidences, there is paucity of studies on the Islamic finance. Hence, the literature present already conclude the findings which are dependent on the sample and have variation in the time period. So, we can conclusively draw an idea that Islamic and conventional bank's exposure in the market are different and there is ambiguity in their risk role which need to be investigated thoroughly. This study is designed to bridge this gap by quantifying the volatility persistence to assess the impact of asymmetric news on the Islamic and conventional banks and it also tends to explore whether the Islamic banks

have more resilient tendencies as compared to the conventional banks in Pakistan. The study undermine contributes towards upbringing the fact the conventional bank final markets are area of interest only. The characterization of price dynamics in the Islamic financial markets allows the individuals to follow the uncertainty and to work on the interest rate surprise. Further, the financial system perspective is also of great importance in addition to promoting the effective and progressive financial markets for the policy making and regulation.

1.6 Organization of Study

This study contains three segments. First is Introduction, which clarifies the essential ideas of the study, objectives, and research based questions, background of and significance of study. The second area is about Literature Review, in which this investigates this by checking on past examinations. Furthermore, in the third segment which is Research Methodology, about the factors name, information assortment techniques and strategy.

Chapter 2

LITERATURE REVIEW

International financial markets have encouraged specific and official investors to find new borders & ports to defend their investments. The Islamic banking business has grown rapidly since the early 2000s.

Islamic finances are not profound as those that achieve socially consistent indexes. Stunning records of Muslims are unsafe notwithstanding their ordinary accomplices will be acknowledged because of the nonappearance of sugars (Albaity and Ahmad, 2008). Besides, these chronicles might be extra unique accomplices to ordinariness, with related media associations embracing monetary channel measures and connected additional money (Hussein and Omran 2005). A significant monetary writing was included by breaking down the Muslims' exhibition to ask whether Muslims or extra lists were less productive than the standard rates (Hussein, 2004, Hakim and Rashidian, 2002).

Additionally, Islamic finance has been prolonged to money market accomplishments, as well as fund management and portfolio management. Islamic primary index "Muslim index with a social conscience" was launched in 1998. Since then, the variability of Muslim indexes

stretched out and, accordingly, the Islamic index investors proposed these days a series of jurisprudence indices.

The global financial setting has been changed by global financial crisis (GFC) of 2008-09. Certainly, the GFC have enlarged the shocks and transferred them from market to market and then include the overall global financial system. Therefore, Ahmed (2009) declares that if the Islamic financial rules are followed by institutions, organizations and products, they can prevent themselves from the existing global crisis. Policy makers looks at the agencies as a potential basis contributing to increase the volatility in financial market. Volatility in stock increases, it increases the financial instability level and its unpredictability, later increase in levels of volatility are linked with greater risk for market contributors. However an increase in volatility and their perceived risk have same effects about the macroeconomic uncertainty by increasing output volatility

The data set (counting extraordinary developments or significant occasions) for one bank may have an extensive logical intensity of different banks and different markets (e.g., foreign exchange markets, stock markets and commodity markets) (Mensi and Hammoudeh, 2018). The Islamic finance industry is viewed as one of the new financial market which is imitated by the noteworthy development of this industry during the most recent decade, especially in the wake of the GFC.

It has been viewed that Islamic investment might offer a strong result to the present financial crisis (Kantakji, 2008). According to Jouini and Pastré (2008) suggests that Islamic finance as a fascinating and likely possibility for the most significant conventional finance by French organization which might tend to sum up 100 billion Euros approximately in Paris Stock Exchange, Hence there would be an financial turmoil on the capital markets which would be effected internationally, (France, the USA and the World) both as in conventional and Islamic

stock indexes has been tested by Jawadi (2012). He indicated that recently financial crisis exaggerated both markets; the effect was a lesser amount of significant with Islamic indexes.

Markowitz model that specifies the revelation of Islamic banks to risk was high before the global crisis as compared to conventional banks but those investments create diversifying opportunities and have greater impact on dual banks after the crisis. These increased opportunities cause the change in investor's choices (Arouri et al., 2013). Moreover, the comparative study of stock index performance reveals that the effects of GFC on Islamic market are not so critical as compared to the three states (France, the USA and the World) by measuring performance ratios (Jawadi et al., 2014).

The unexpected development of the Islamic financial industry has directed to a reliable increase in academic exploration. Islamic banks could perform as an encouraging substitute to conventional banks meanwhile the technique they function. It is certainly a lesser amount of volatile and structures only reasonable risk. It has been viewed from Nazlioglu (2015) opinion that by increasing the risk and instability in the financial markets, the Islamic financial system can offer a buffer against it. During usual periods and at the time of worldwide financial crises (2008) in terms of volatility, the Islamic stock market and conventional market is not same. In recent times, Arshad and Rizvi (2013) compared the effects of fundamental changes to Islamic records utilizing a nonstop wavelet technique for the period 1997 to 2011 for Asia Pacific and creating securities exchanges. They showed that Islamic lists were not as a lot of influenced by theoretical stuns and concluded that Islamic money may maybe be better substitute to the misery of customary account.

Literature Review

Kassab (2013) investigates the persistence of volatility of the Islamic (DJIM) and customary (S&P 500 record) markets, utilizing the GARCH model. This creator shows that the volatility persistence of the two business sectors is exceptionally critical, with the DJIM file being less unstable than the customary file over the long haul and introducing less danger at emergency periods. On the effect of worldwide components, Yousef and Majid (2007) analyze the degree to which volatility in the Islamic and regular securities exchanges in Malaysia is touchy to the volatility in the US interest rates. They find that the US interest rate volatility influences the traditional securities exchange volatility yet not the Islamic securities exchange volatility, suggesting that the balancing out interest rate would have unimportant effect on the volatility of the Islamic securities exchanges. Qualities of Islamic account lessen volatility linkages among Islamic and ordinary stocks, bonds and bills. Akhtar et al. (2014) report that including at any rate one Islamic resource in a portfolio that incorporates regular stocks, securities and bills would bring down volatility linkages between the benefits by up to 7.17% focuses, in the wake of controlling for nation and resource attributes. Those discoveries are more grounded during money related emergencies and furthermore are not driven by the oil segment. Chau et al. (2014) analyze the effect of this political vulnerability on securities exchange volatility in MENA nations, utilizing an assortment of GARCH models. They give proof that political strife has expanded financial exchange volatility, mostly through the Islamic files.

Actually, Islamic banks depend on Sharia or Islamic Law—exclude assumption, ambiguity (gharar), and interest rate in any form (riba) on glory that is adapted by illegal interest practice. Profits and losses are also shared with depositors, and capitalize only there, where in activity areas that fulfill with the Sharia. So, Islamic banking investments are more prospective to decrease financial risk and surplus volatility and to provide a more established financial

industry. (Fakhfekh and Jawadi, 2016). After global financial crises among Islamic investment and conventional ones have difference in the characteristics of risk and return (Abdullah et al., 2007). The Islamic investment products for example Islamic bonds (Sukuks), Islamic stock market indices, exchange traded Islamic funds, launch of Islamic interbank benchmark rate (IIBR) and Islamic insurance (Takaful) have growing demand and popularity in Islamic finance after global financial crises. Specially, the reliance structure among the Islamic stock indices and conventional stock indices with the occurrence of major risk factors is not well understood, specifically during the bull and bear market periods.

For the creators, the prompt effects are negative and mirror the misfortunes of Islamic banks and establishments due to the budgetary slump and the breakdown of the monetary zone, while the roundabout effects are positive, including a reexamination of Sharia rules to re-advance and direct standard reserve, and to improve chance organization controls in Europe and the USA. The amount of meetings, books, and investigation exercises on Islamic reserve has risen basically as of late, while some monetary associations (for instance the French bank Société Générale) have similarly as of late held onto Islamic money related things just as introduced new budgetary things that are Sharia predictable. Extended interest in Islamic monetary things in like manner mirrors the new demeanor of speculators towards this industry, today considered as a shelter from the overall budgetary crisis.

The investigation of interest rate on budget policy is notable to consider the fact which reveals the new understanding of information in terms of costs assets (Andritzky et al. 2007) and delivering advantage to the central request in terms of monetary issues and cash theories (Brenner, Pasquariello & Subrahmanyam 2009). Further, interest rate obsolete shocks have been

seemed to have economy-wide significance and have been concentrated concerning customary assets in different papers (Andersen et al., 2007; Nowak et al., 2011).

Previous studies give proofs that interest rate declarations have normally critical impacts on regular monetary markets and show that financing costs are commonly conversely identified with stock and security costs. Further, the research conducted by Bredin, Vaz, Ariff and Brooks (2008) claim that the effects of interest rate on stocks can fluctuate across ventures and nations, because of individual market attributes. Additionally, there are various circumstances through which varieties in interest rates impact resource returns, for example, through by changes in the company's incomes or the rebate rate. Bredin et al. (2007) also find that frightening changes in financial methodology lead to a determined negative response with respect to future wealth returns for different divisions in the UK.

The essential instrument of the ordinary monetary policy, for instance interest rate, has demonstrated tentatively in its negative effects, paying little heed to where and how Islamic financial functions. For instance, a study have reviewed the response of the Islamic and traditional stores and credits to the adjustments in interest rates and advances to the changes in advance charges and they have established that the Islamic banks also have been affected by the financing cost chance thusly barring the principal assumption of the sans interest contention (Turkey, Ergeç & Arslan, 2013).

The dynamics of volatility in monetary policy are considered to be seen significant in terms of three contemplation. Initial, a large number of studies have discussed that that the volatility of basic stuns, for example, monetary policy, gracefully, and request has vacillated generously in industrialized nations. Second, the ongoing money related emergency has featured

the way that volatility can't be viewed as a "pre–Great Moderation wonder." as such, variances in volatility and their potential effect is an important worry for policymakers. Third, there is a developing collection of hypothetical work that has distinguished diverts through which changes in volatility can influence the genuine economy. For instance, Bloom (2009) presents reenactments from a model where higher vulnerability makes firms stop their employing and speculation, prompting a drop in genuine action. (Mumtaz & Zenitti, 2013).

Any move in monetary policy assumes a significant job in the valuing of budgetary instruments. The expectation of financial market players are measured on the basis of the two fundamental hypothesis. The first is adaptive expectation which Introduction 4 only rely on past information to find the bond or stock market value. The second hypothesis is based on past and current available information and also on understanding of market behavior. Any change in Money supply, exerts a large impact on both output and prices. A significant relationship exists between the stock prices, the monetary policy and the economic growth. Any change in monetary policy in expansionary phase can lead to increase in financial wealth and ultimately its consumption increase, which leads to increase in economic growth of country. If a country economic growth is increasing day by day it exerts a significant impact on credit rating of country. In case of unexpected shocks in money supply, a monetary policy in tighter phase results increase in interest rates which leads to the lower economic activity and thus it affects the volatility.

There are such many studies investigated importance of monetary policy in regulating the volatilities of stock markets internationally. For example, Hammoudeh and Li (2008) examined the volatility of the Arab stock markets and their impacts to the estimated volatility persistence over the period 1994 to 2001 and found the contradicting findings to the Aggarwal et al. (1999),

where the Gulf Arab stocks were more responsive to major international events than to the domestic and regional shocks. Zakaria and Shamsuddin (2012) found a modest significant consequence of macro-economic volatilities on the stock returns in Malaysia, and it was highly persistent and positively correlated to the expected stock returns in the Khartoum Stock Exchange (Ahmed and Suliman, 2011; Ahmed et al, 2016) and the Islamic stocks have a higher volatility during the 2008 global crisis than their conventional counterparts (Romli et al., 2012). Similarly, the Malaysian Islamic banks were also affected by the 1997 Asian economic crisis and 2007 global crisis (Kassim and Majid, 2010).

Bomfim (2001) discuss the news and pre-announcement effect on stock market in perspective of exposing the information to public of monetary policy decision and it also discuss the decisions of policy makers on actual interest rates affect stock market volatility. The results recommend that stock market have a tendency to be a moderately quiet, which shows that volatility is unusually lower on past days regularly scheduled policy announcement. The surprise component in these decisions in short run lift the volatility in stock market significantly, and critical astonishments higher than anticipated estimations of the objective supports rate-will in general largerly affect volatility than negative shock.. Zarea, Azalib and Habibullah (2013) examines that stock market volatility exhibit an asymmetric response to monetary policy over bear and bull periods in Asians countries when pooled mean group (PMG) is employed. Using the data from 1991 to 2012 result shows that in Monetary policy in contractionary phase (rise in interest rate) stronger affects sock volatility in bearish market than bulls which are reliable with the desire for money imperatives model. Qayyum and Qayum (2007) examine the monetary policy and stock return relationship in Pakistan. The examinations apply the distinctive assessment strategies including Engle granger two stage strategy and bivariate EGARCH

technique and reports that change in monetary policy will impact the volatility of securities exchange.

Recently, there has been an increased interest in researching the trends of Islamic stock markets and their macroeconomic determinants worldwide. Concerning the Islamic financial exchange in Malaysia, the restrictive volatilities of regular and Islamic securities exchanges and their relations to the volatilities of monetary instruments have been investigated utilizing the GARCH Mean (Yusof and Majid, 2006) and GARCH (1,1) inside the Vector Autoregressive (VAR) structure (Yusof and Majid, 2007) over the period 1992 – 2000. They found that the volatility in interest rate just influenced the ordinary financial exchange, yet it didn't influence the volatility of Islamic stocks. Then, Hammoudeh and Li (2008) analyzed the unexpected changes in the volatility of the Arab financial exchanges and their effects on the assessed volatility persistence utilizing the Iterated Cumulative Sums of Squares (ICSS) over the period 1994 to 2001. As opposed to the discoveries in the developing business sectors by Aggarwal et al. (1999), they found that lion's share of the Gulf Arab stocks were more receptive to significant worldwide occasions than to the residential and local stuns. For instance, the 1997 Asian emergency and the September eleventh, 2001 assault have continually influenced the Arab markets.

Majid and Yusuf (2009) further explored the extent to which the macroeconomic determinants caused the Islamic equity market of Malaysia to change and documented that both changes in the domestic and the US monetary instruments impacted the Islamic stocks in the long run. This finding is in harmony with the study by Zakaria and Shamsuddin (2012) who documented a modest support on the presence of the stock returns-macroeconomic volatility relation.

Furthermore, Kassim and Majid (2010) and Romli et al. (2012) evaluated observationally the effect of the 1997 Asian monetary emergency and 2007 worldwide emergency on the Islamic and traditional securities exchanges in Malaysia and found that both the Islamic and ordinary banks were vulnerable to budgetary stuns and the Islamic stocks have a higher volatility than their regular partners. Ahmed and Suliman (2011) uncovered that the restrictive volatility of the Khartoum Stock Exchange (KSE) was exceptionally determined and decidedly connected to the normal stock returns over the 2008 monetary emergency time frame. Similarly, Dewandaru et al. (2014) and Saadaoui and Boujelbene (2015) found that the co-movements between the Islamic and ordinary value markets during the significant emergencies were spread through extreme linkages, inferring that the emergency has influenced every single monetary resource, both Islamic and customary. Nonetheless, the US was feebly associated to the Islamic developing business sectors (Majdoub and Mansour, 2014), the Islamic securities exchange of Malaysia was autonomous from the adjustments in interest rate (Yusof and Majid, 2006; 2007), and subsequently the Islamic stocks were moderately invulnerable to the adjustments in interest rates when contrasted with their traditional partners (Shamsuddin, 2014). These discoveries repudiated the boundless convictions that because of its without interest nature, the Islamic financial framework is shielded from the monetary stuns.

The volatilities of the monetary policy instruments and their impacts on the Indonesian Islamic and customary securities exchanges over the period 1999-2015 utilizing the GARCH (1,1) and GARCH (M) models. The examination reported that, except for the US interest rate, the volatilities of all monetary policy factors of interest rate, conversion scale, and cash gracefully were archived influencing the volatilities of both Islamic and ordinary financial exchanges. These discoveries suggest that the volatilities of Islamic and traditional financial

exchanges have comparative determinants, subsequently to settle the business sectors, the volatilities of the cash gracefully, interest rate, and conversion scale ought to be controlled for by the policy-producers. (Shabir, 2018)

In Pakistan context, the transmission mechanism of monetary policy is the process in which monetary policy changes affects the inflation and aggregate demand. This monetary transmission mechanism has these five channels; exchange rate, interest rate, assets price, expectations, and balance sheet channel. Interest rate channel refers to the mechanism through which it influencing the retail interest rates that banks offer on deposits or charge on loans to businesses. The change in policy rate may influence interest rates of money market like KIBOR that impact the long-term interest rates. For lending to customers and businesses KIBOR is also used as a benchmark. The higher interest rates give confidence to people to save more and consume less and vice versa.

Various transmission mechanisms and the effects of monetary policy on the environment of dual banking, Sukmana and Kassim, (2010) examined on the monetary transmission of Islamic banks in Malaysia and Indonesia and behavior of these banks. Similar study was conducted by Zulkhibri, Sukmana, et al. in 2016. To conclude these studies, in the monetary transmission, Islamic financial institutions play a significant role. The dual banking system of Pakistan allows the researchers to accomplish a comparative study on the impact of monetary policy shocks between conventional and Islamic banks that's why, deficiency in different regulatory behavior guide us to feature any different response to behavioral and operational differences between conventional and Islamic system.

As a substitute view, the Islamic business investigator Abdullah (2015) fights that the financial strategies effect-sly affect Islamic monetary system just as on its customary

accomplice. He analyzed the effect of monetary hypothesis and banking rehearses on the Malaysian economy through a full populace examination of cash gracefully, GDP, interest rates and costs. He found that ordinary cash related hypotheses and approaches have ensured the financial and budgetary insecurity.

There is developing assemblage of writing that recommend that utilization of volatility figure from additional refined time-arrangement models will prompt more exact determination gauges, asset assessing, danger evaluation and danger the board. Furthermore, this cognizance can incite better assessment of the dissemination of stock returns. Volatility shows the marvels of tirelessness for instance clustering of gigantic moves and little moves (of either sign) in the worth methodology, an inside and out revealed component of volatility of focal points. As shown by Lamoureux and Lastrapes (1990) step by step returns are made by mix of scatterings, in which the pace of step by step data appearance is the stochastic mixing variable.

There are various views about the effect of interest rate on the volatility of frameworks and connections. Firstly, volatility might diminish before interest rate presentations are completed which is eluded by way of the "temporary peace before a violent upheaval" impact (Jones, Lamont and Lumsdaine 1998; Andritzky, Banister and Tamirisa 2007). At that point, if an assertion reveals significant new information, volatility will in general ascent on the declaration day, an as business sectors modify their situations accordingly (Harvey and Huang 1991; Andritzky, Banister and Tamirisa 2007). Volatility will when all is said in done rising on the statement day, an as business divisions alter their circumstances appropriately (Harvey and Huang 1991; Andritzky, Banister and Tamirisa 2007). It would be describe with the models of Ross (1989) who battles that the volatility of expenses is related to the presence of information in

a compelling business sector, similarly as the models in Foster and Viswanathan (1993) and Pasquariello and Vega (2007) who shows that the presence of unexpected open information fabricates esteem volatility and trading volume. For example, in their careful examination of US markets, Brenner, et al. (2009) find that unforeseen stock return volatility falls from the outset yet increases in a general sense the day the sudden news is delivered.

Then again, a few declarations may diminish volatility (Andritzky, et al., 2007; Brenner, et al., 2009). Volatility could be higher preceding the news event and lower a brief timeframe later if the coming of information prompts assurance of uncertainty or potentially contradiction among market members (Brenner, et al., 2009 Kim, McKenzie and Faff 2004; Pasquariello 2007;)

Here is a predetermined number of that reflects the consolidating association among macroeconomic issues and stock expenses in Muslim countries, despite the way that they don't use Islamic stocks or protections and they don't concentrate on credit charge stuns (Ibrahim 2003; Rahman et al. 2009). It is possible that the impact of credit expense stuns true to form and volatility of preferences' benefits contrasts among Islamic and non-Islamic stocks and securities since of the unprecedented characteristics of Islamic store. Islamic law denies interest or moneylending (riba), trades including trivial weakness or a purposeful nonappearance of straightforwardness (gharar), and wagering (qimar/maysir), which covers short selling, trade, gambling and theory (Abdul Aziz and Gintzburger 2009). Or maybe, Islamic cash related plans rely upon advantage and-adversity sharing, leasing, and various structures.

Literature Review

Islamic bonds (Sukuk) ought to remain sorted out judiciously so as per to evade express interest. Sukuk shift from customary securities in that they are asset founded (as opposed to resource sponsored) protections, with a substantial major asset that is Shari'ah-predictable in its inclination and use. The exclusion of unequivocal interest rates shows that interest rate disclosures have an inferior effect on Islamic resources. This is Islamic Banks records reject firms that also pay or get a great deal of energy (through money property or influence).

Bourkhis and Nabi Mahmoud (2013) broke down either Islamic banks are further secure than conventional banks for time of the emergency. By means of a non-parametric assessment and a board data technique, the makers demonstrated that Islamic bank benefit moved across promote stages, and that they are more gainful than conventional banks not long before the monetary emergency. All the more as of late, Tabash and Dhankar (2014) examined the introduction extent of all totally fledged Islamic banks in the Kingdom of Saudi Arabia throughout the monetary emergency. Using execution and sufficiency extents of Islamic banking for the period 2005 to 2010, their outcomes discovered that Islamic banks were steadier to the extent capital fitness and liquidity. Ouerghi (2014) investigated whether Islamic banks were more grounded than customary banks throughout the monetary emergency. He found that standard banks were more helpful, less slanted to credit risk, and more powerful than Islamic banks during the post-emergency period. The discoveries in like manner demonstrated that tremendous banks fared more unfortunate than minimal ones and that standard banks were more fiscally constant than Islamic ones. Practically identical closures remained moreover completed by Chenguel (2014). Abedifar et al. (approaching) drove an investigation on the progressing

observational writing in Islamic banking and cash anyway perceived no any huge differentiations among Islamic and regular banks by and large.

Clark(1973) and Lamoureux and Lastrapes (1990, 1994) interface value volatility through the essential facts stream trendy the business divisions and apply volume as an extent of the facts stream. Clark(1973) showed that the time arrangement of market returns isn't taken from a solitary likelihood circulation in spite of the fact that from a blend of contingent appropriations with fluctuating degrees of effectiveness in delivering the normal return. The rate at which realities comes to at the market is estimated by the autoregressive blending variable and is depict the event of GARCH impacts in day by day stock value developments. In any case, where monetary authorities shift from one to another is in their feelings nearby the influence of innovative open information on asset costs. The asymmetry in their investigation of the normal data drives financial specialists to extended exchanging and it shows that there is decidedly relationship between exchanging volume and supreme value changes.

The base paper explored the volatility elements of ordinary and Islamic banks with regards to the emergency as well as during quiet phases and designed for various heterogeneous banks. To this termination, we utilized late time-arrangement and econometric turns of events (long-memory-GARCH model class) and ongoing information for the duration of 2006–2013, applying auxiliary opportunity assessments to form for additional adjustments in volatility elements. Afterward, we built up a proper econometric detail dependent on a Fractionally Integrated EGARCH model to catch extensive haul volatility reliance. The particular was intended to catch volatility asymmetry and determination. Researching the persistence

speculation is critical to decide the span of volatility stuns for customary and Islamic banks. The paper contributes a few discoveries. To begin with, our examination focuses to noteworthy bunching volatility and tails, proposing proof of outrageous monetary danger. Second, volatility shows critical determination that is distant complex for customary banks than for Islamic banks and is likewise more noteworthy during emergency periods instead of ordinary ones. Third, the volatility conveyance is fundamentally lopsided also terrible news. It appears to influence volatility designs more unequivocally than progressive news. Traditional banks additionally respond emphatically to a non-positive stun than to non-negative news. Moreover, customary banks are extra touchy towards the appearance of terrible news than Islamic banks.

Chapter 3

DATA AND METHODOLOGY

3.1 Data

Data is approved by Pakistani Islamic & Conventional banks during the time period of 2010 - 2019. Samples which are taken contained 16 Conventional Banks and 2 Islamic Banks listed on PSX. Variable which is most important used in this study is returns of every bank. The closing prices of daily data of each bank are taken from PSX. In order to calculate the daily stock index prices, the returns are quantified as log returns by the given formula;

$$R_t = \ln(\frac{P_t}{P_{t-1}})$$

Where,

P_t= price of stock at time t

P_{t-1}= price of stock at time $t-1$

R_t= is the stock return at time t

3.2 Description of variables

The variable bank's return is a dependent variable. The volatility effect on the bank's return is measured through ARCH effect and for Islamic & conventional banks summary (descriptive) statistics is calculated.

3.2.1 Volatility

Volatility is a measure of the dispersion of returns for a given security or market index. It might be calculated by applying the standard deviation of returns from the market. Here the more the volatility the riskier the market.

Volatility of Market = S.D of Stock Market Return.

3.2.2 Monetary Policy

Monetary policy is captured by using the interest rates. Interest rate is captured by using the lending amounts. Loaning amount is the bank proportion that typically used to encounter the dumpy & medium term financing requirements of the isolated area. This amount is typically distinguished agreeing to wealth of debtors & purposes of financing. The condition applies on these rates differ by country.

3.3 Methodology

There are three parts of this methodology. In the very first part is to measure volatility persistence by using ARCH-GARCH model. Second, this paper presents the EGARCH model which is based on the study of long-term volatility dependency and reports that variation in monetary policy will have no an insignificant influence on the volatility of ordinary market and third, TGARCH model is used to form the asymmetries in terms of negative & positive shocks.

3.3.1 Econometric model

The volatility effect for the stock returns of Islamic & Conventional banks is investigated via ARCH-GARCH model.

3.3.1.1 ARCH-GARCH model

This model was represented by Engle & Tim and Bollerslev in 1986 which states that the value of the variance influenced by mutually on preceding value of the stocks that are taken by the

lagged squared residual terms, and on preceding observations by themselves. The return series of stocks is modeled through ARCH (1, 1) GARCH (1, 1) model. The benefit of this model is to interpret temporal changes in the volatility of typical stocks (clustering of volatility), to determine the volatility to endogenously and consequently avoids the size mistakes associated with volatility proxies, even as it's also greater parsimonious than ARCH models (Brenner, Pasquariello and Subrahmanyam 2009).

$$R_t = \beta_0 + \beta_1 R_{t-1} + \mu_t \quad (1)$$

$$\sigma_t^2 = \gamma_0 + \gamma_1 \mu_{t-1}^2 + \gamma_2 \sigma_{t-1}^2 + \gamma_3 IR \quad (2)$$

σ_t^2 is the volatility of a specific bank at time t

μ_{t-1}^2 is the error term of a specific bank

σ_{t-1}^2 is the lagged variance from a specific bank

IR = Interest rate of country at time "t"

Return of specific country estimated by daily market index whereas IR is provided through lending rate.

3.3.1.2 E GARCH Model

The Exponential GARCH model, at first presented by Engle and Ng (1993), is frequently applied for volatility elements. Preferences are given to the standard GARCH model as it doesn't have need of the positivity situation of variance equation parameters. This asymmetric impact is called the 'leverage' effect, mentioning towards the statistic that ruthless summary impacts are greater than worthy summary effects. Basically, an AR(1)-EGARCH(1, 1) model, as in Nelson (1991), is defined as;

Data and Methodology

$$\ln\sigma_t^2 = \gamma_0 + \gamma_1 \frac{|\mu_{t-1}|}{\sigma_{t-1}} + \gamma_2 \frac{\mu_{t-1} - E(\mu_{t-1})}{\sigma_{t-1}} + \gamma_3 \ln\sigma_{t-1}^2 + \gamma_4 IR$$

Where β_0, β_1, $\gamma_0, \gamma_1, \gamma_2, and\ \gamma_3$, are the expected values of parameter model. Parameter $\gamma_1$measures the asymmetric impact on volatility.

The first equation captures the average equation while the second deals with variance. This determination is adjusted to restore additional asymmetry by representing the size of dataset $\gamma_1 \frac{|\mu_{t-1}|}{\sigma_{t-1}}$. Specifically, if γ_1 is negative and measurably noteworthy, it suggests that a negative development initiates an expansion in unpredictability in excess of a positive one of equivalent greatness. This marvel is reliable with the influence impact, which implies that a negative development prompts an expansion in the total obligation to-value proportion and consequently delivers a higher instability impact. The quantity $\frac{\mu_{t-1} - E(\mu_{t-1})}{\sigma_{t-1}}$ quantifies the extent impact of a positive or negative advancement, while the articulation $\gamma_2 \frac{\mu_{t-1} - E(\mu_{t-1})}{\sigma_{t-1}}$ permits an expansion (resp. a fall) in unpredictability if $\mu_{t-1}$is more prominent (resp. lesser) than its estimated observation. In particular, the positive and negative effects of standard shocks on instability are given by the following equation:

$$\frac{\partial \ln\sigma_t^2}{\partial \mu_t^+} = \gamma_1 + \gamma_2 \text{ and } \frac{\partial \ln\sigma_t^2}{\partial \mu_t^-} = \gamma_1 - \gamma_2$$

We can describe the asymmetry ratio as S = $\frac{|\gamma_1 - \gamma_2|}{\gamma_1 + \gamma_2}$, it will be:

$S > 1$ negative asymmetry,

S=1 perfect symmetry

$S < 1$ positive asymmetry

We can then calculate the degree of volatility by calculating the time it takes for the shock to reduce the half-life resistance (HL) relative to its initial level. HL is calculated as follows:

$$HL = \frac{\ln(0.5)}{\ln \gamma_3}$$

3.3.1.3 T GARCH

Another volatility model to deal with the influence impact is TGARCH model. The threshold GARCH model was presented by crafted by Zokian in 1990 and Glostan, Jaganathan and Runkle (1993). The main focus of this model is on the asymmetry detection of negative and positive shocks. Therefore, the dummy multiplication variable is summarized in the variance equation to check whether there is a statistical difference when the shock is negative.

Now the equation of a variance TGARCH (1, 1) is as following;

$$\sigma_t^2 = \gamma_0 + \gamma_1 \mu_{t-1}^2 + \gamma_2 D * \mu_{t-1}^2 + \gamma_3 \sigma_{t-1}^2 + \gamma_4 IR$$

Where "1" is the value of D when $\mu_t < 0$ (negative shocks), and 0 or if $\mu_t > 0$ (positive shocks). Good news has an effect "γ_1", whereas bad news has an effect of . if "$\gamma_1 + \gamma_2$", if $\gamma_2 > 0$ it is said that a leverage effect exists and when $\gamma_2 \neq 0$, the news impact is asymmetric

3.4 Bank indices

The index for conventional banks are as follows

Banks	**Index**
Allied Bank Limited	abl
Askari Bank Limited	akbl
Bank Alfalah limited	bafl
Bank Of Khyber	bok

Bank Of Punjab	bop
Faisal Bank limited	fabl
Habib Bank limited	hbl
Habib Metropolitan Bank	hmb
Jahangir Siddiqui Bank limited	jsbl
Muslim Commercial Bank	mcb
National Bank Pakistan	nbp
Standard Chartered Bank Limited	scbpl
Silk Bank	silk
Summit Bank Limited	smbl
Soneri Bank Limited	snbl
United Bank Limited	ubl

The index for Islamic banks are as follows:

Bank Islami Pakistan Limited	bipl
Meezan Bank Limited	mebl

Chapter 4

Results and Discussion

4.1 Descriptive statistics

The descriptive statistics Table express the performance of the data. Mean shows the central tendency of the data however standard deviation describes the distribution of the data that how much data is diverged from its mean. Kurtosis, skewness, minimum and maximum values signify the scattering of the figures.

4.1.1 Descriptive Statistics for Dual Banking System

Table 4.1: Descriptive Statistics for Overall Banking System

Bank Index conventional banks	Mean	Minimum	Maximum	Standard deviation	Skewness	Kurtosis
Abl	0.022	-15.068	7.183	1.783	-0.565	6.754
Akbl	-0.015	-19.360	11.578	2.186	-0.103	5.693
Bafl	0.049	-10.947	9.564	1.942	0.115	2.278
bok	0.038	-21.622	20.479	3.450	0.201	3.092
bop	-0.021	-17.563	17.746	2.939	0.352	3.820
fabl	0.005	-17.297	10.350	2.436	-0.048	3.926
hbl	0.010	-14.622	8.329	1.876	-0.536	6.39

Results

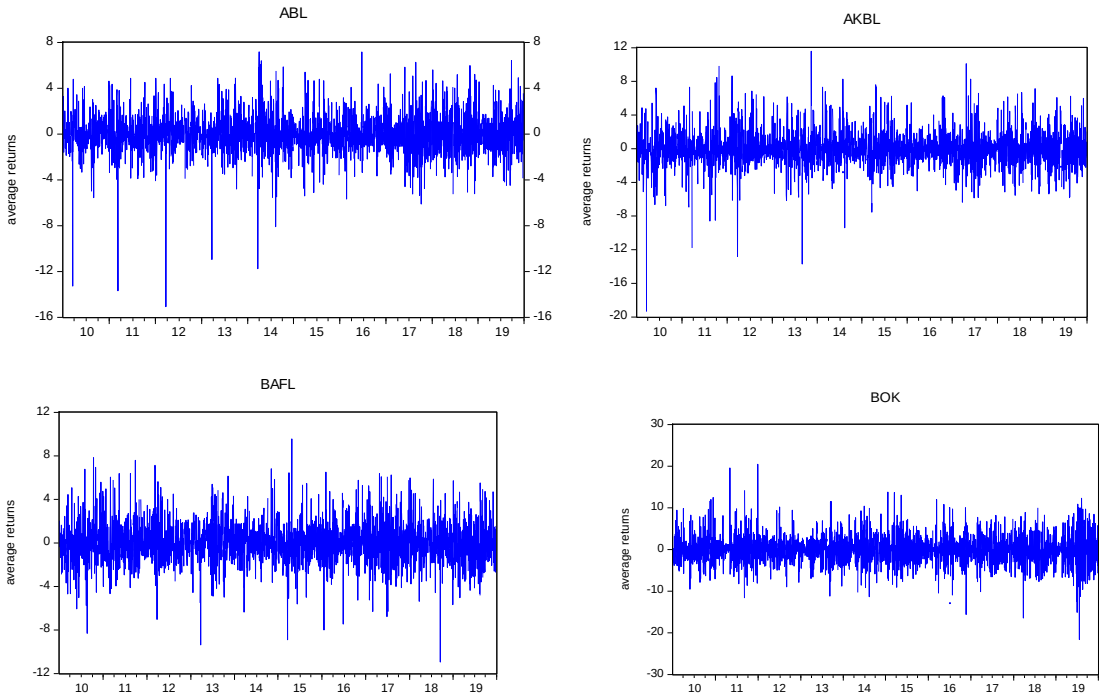
hmb	0.006	-19.435	12.533	2.063	-0.815	8.475
jsbl	0.001	-17.002	31.113	3.883	0.815	5.121
mcb	-0.003	-12.241	7.781	1.776	-0.323	4.188
nbp	-0.021	-36.484	9.172	2.308	-4.169	58.275
scbpl	0.039	-12.034	13.534	2.654	0.160	1.983
silk	-0.060	-40.547	24.532	3.275	0.385	15.704
smbl	-0.068	-39.992	30.900	4.569	0.767	7.595
snbl	-0.005	-16.107	18.641	2.721	0.372	4.823
ubl	0.043	-11.657	7.878	1.810	-0.169	2.646
Bank Index Islamic banks	Mean	Minimum	Maximum	Standard deviation	Skewness	Kurtosis
bipl	0.025	-14.551	18.694	3.134	0.511	3.160
mebl	0.073	-16.705	10.513	2.235	-0.274	4.080

In the context of Pakistan, it is computed from the main descriptive statistics of conventional and Islamic banks that shows some remarkable outcomes. Initially, it seems that bank returns are positive on average in the given time period. Further, the similar absolute volatilities were also examined for conventional and Islamic banks both which were obtained as more than their actual return. At third, it can be seen that distributions regarding Islamic and conventional banking is leptokurtic. Which additionally qualify the specific existence of risk and the extreme tail in terms of Islamic and conventional banking showing distributions. The hypothesis test was used to relate the leptokurtic excess of Islamic banks and the conventional banks which were expressed at the risk level and were considered same for both banks. The skewness values were also established in optimizing the banking index and during this time

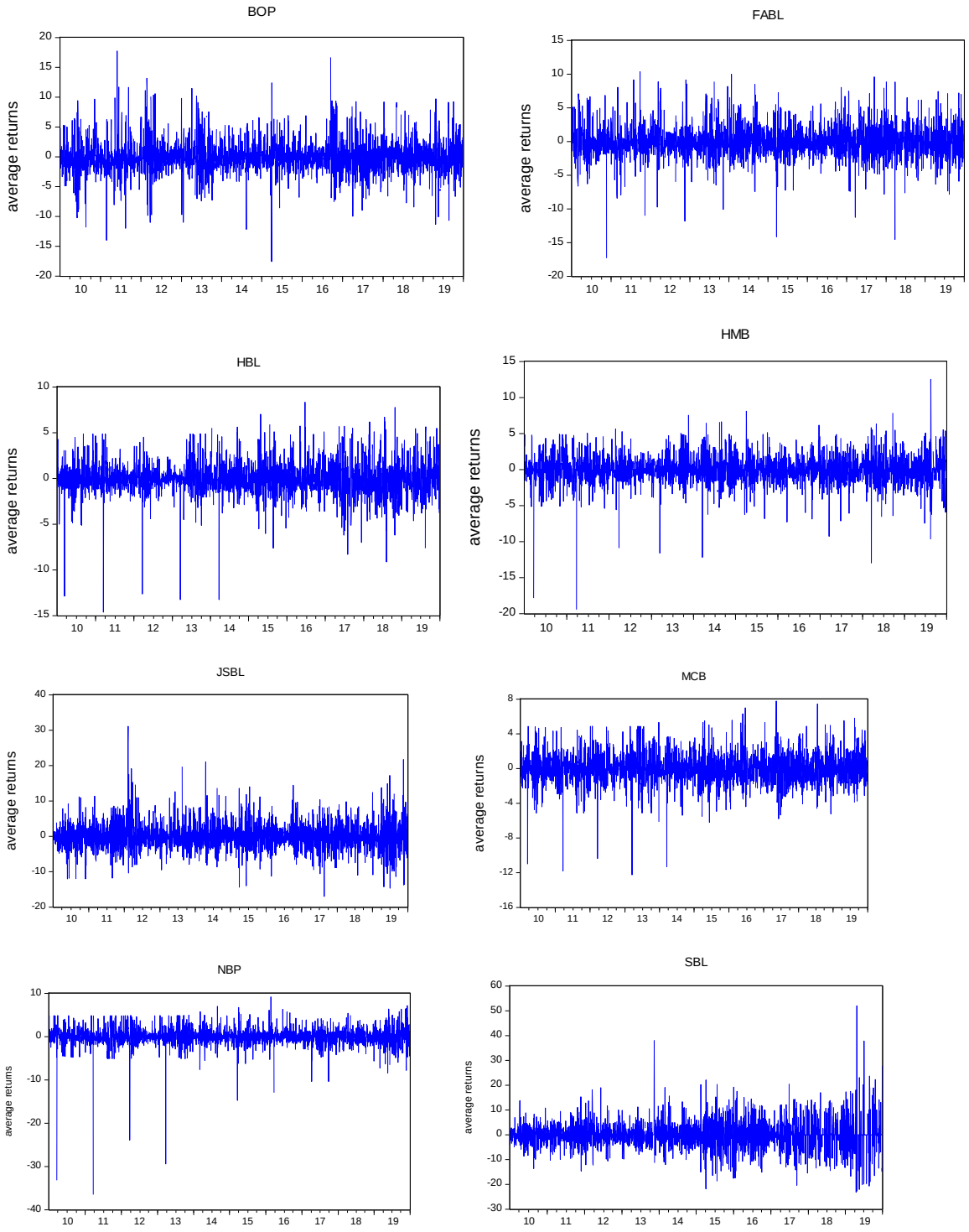
periods, the specification of these return were considered as asymmetrical. Hence, the Islamic and conventional banks both gave distributions to show the awareness if asymmetry, leptokurtic effect on right and left in contrast to normal distribution.

4.2 Assessing for asymmetrical and ARCH-GARCH EFFECT

The significant values of GARCH elaborates the persistence of volatility even as arch term explains the involvement of past fee overall performance on volatility. Desk four. 2 shows that there is conditional heteroscedasticity in the returns of both conventional and Islamic banks. This GARCH final results is extra full-size for the duration of the given period, via showing the exploration of figs. 1 and a pair of. It's far illustrated that the GARCH outcomes were present and statistically huge in all the banks, signifying more indication of staying power in banking index volatility. It's far well worth perceiving that this GARCH effect is vast for each conventional and Islamic banking indices, which indicates the presence of a clustering impact, whatever the type of the bank or financial marketplace situation.



Results


BOP
average returns
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MCB
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NBP
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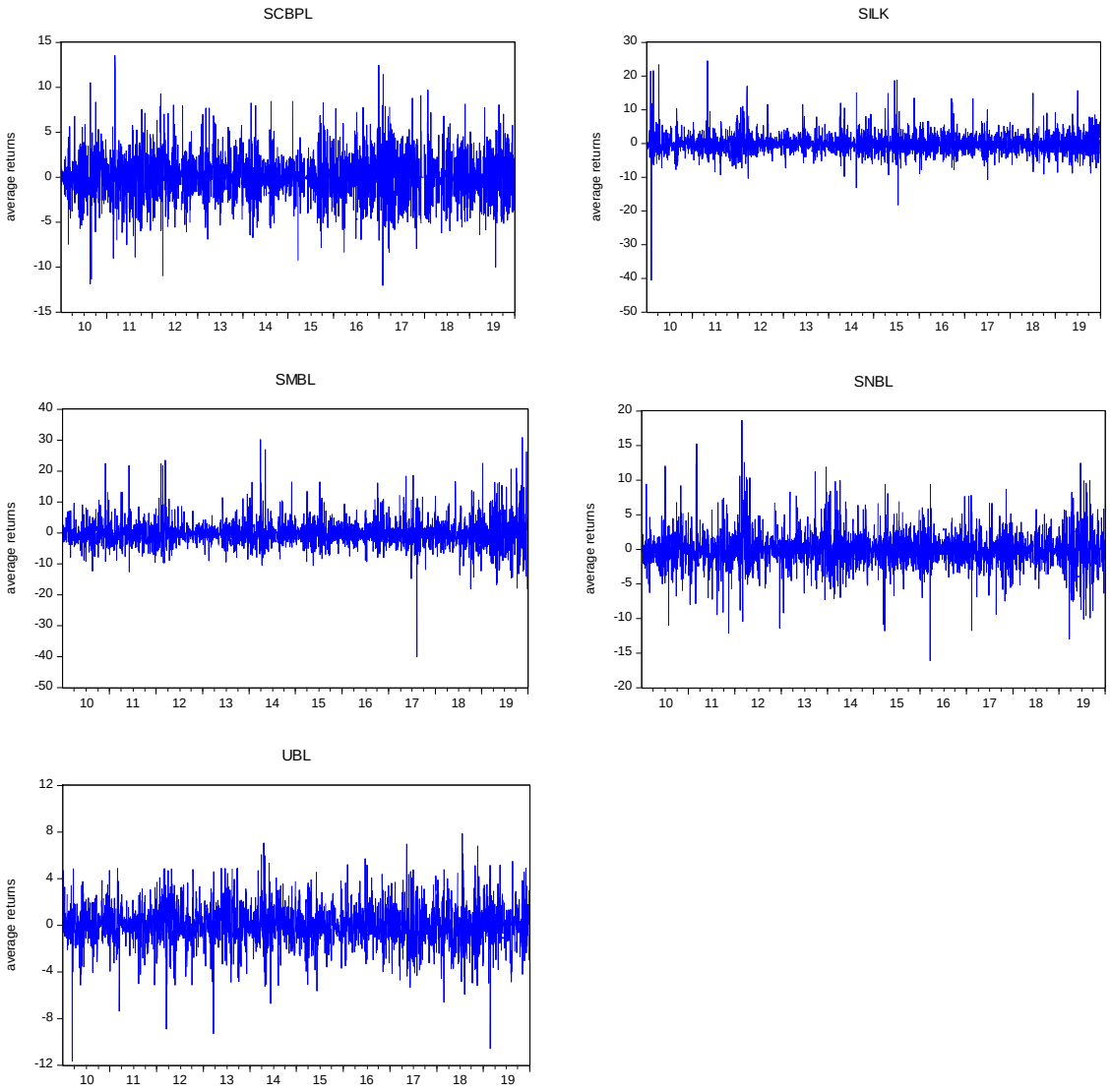

Fig. 1. Evolution of the conventional banks' returns

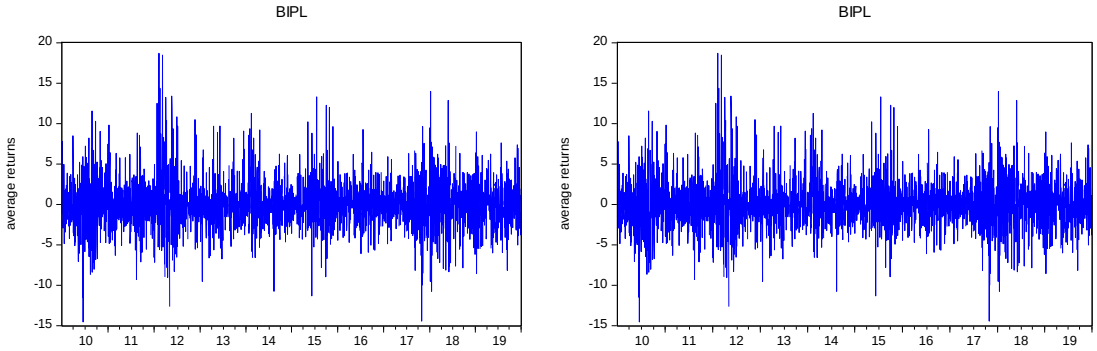

Fig. 2. Evolution of the Islamic banks' returns.

Results

Table 4.2: persistence of volatility in conventional and Islamic Banks

Bank Index conventional banks	C	ARCH	GARCH
abl	2.53082	-0.02596	0.578589
Akbl	0.184071	0.059948	0.904504
bafl	0.428383	0.070977	0.816337
bok	1.316925	0.114791	0.764088
bop	0.730432	0.125483	0.791937
fabl	3.511857	0.207119	0.215976
hbl	0.462133	0.089906	0.781945
hmb	1.924772	0.019527	0.586901
jsbl	1.698826	0.144197	0.743385
mcb	0.826848	0.189176	0.560557
nbp	2.855971	0.571184	0.08437
scbpl	0.384576	0.099933	0.846185
silk	3.575346	0.111421	0.579957
smbl	0.324928	0.054632	0.932703
snbl	0.355776	0.087661	0.866122
ubl	0.013119	2.344961	0.553775
Bank Index Islamic banks			
bipl	0.310676	0.07236	0.895513
mebl	1.844519	0.232121	0.39646

Therefore, in order to explain the volatility dynamics while capturing the ARCH effect, asymmetry and volatility clustering in banking index returns, we estimated an EGARCH model in the following phase.

4.3 Volatility modeling with an EGARCH model

Table 4.3 describes the key econometric outcomes associated with an EGARCH (1 , 1) model calculation. The number of intervals is reported using squared innovation series data criteria and autocorrelation mission. More precisely, the banks' ÿ 3 assessments were positive and showed values close to 0.90, indicating that recent volatility is heavily dependent on lagging volatility in each sub-period. In addition, the high ÿ 3 level indicates a significant point of persistence of volatility in both banks, reflecting the level at which momentum results are present in the conditional volatility procedure.

Furthermore, the estimations of β specifies the constancy of volatility and a trend for the shocks to persist. In fact, the assessment of the half-life (HL) factors during the different periods (also reported in Table 4.3) gives the major information on the volatility persistence of returns. Most primarily based on the traditional and Islamic banks' H1 results fig. three and fig. Four suggests that the prior require extra time to reduce volatility staying power through 1/2 with respect to its precise level. Specifically, the 1/2-life is between 1 and 20 days for Islamic banking index returns at some stage in the length, and between 3 and 35 days for conventional ones. Overall, but, this found conclusion indicates that conventional banks take more time than Islamic ones to lower the go back volatility patience through half of with respect to its preliminary level.

Results

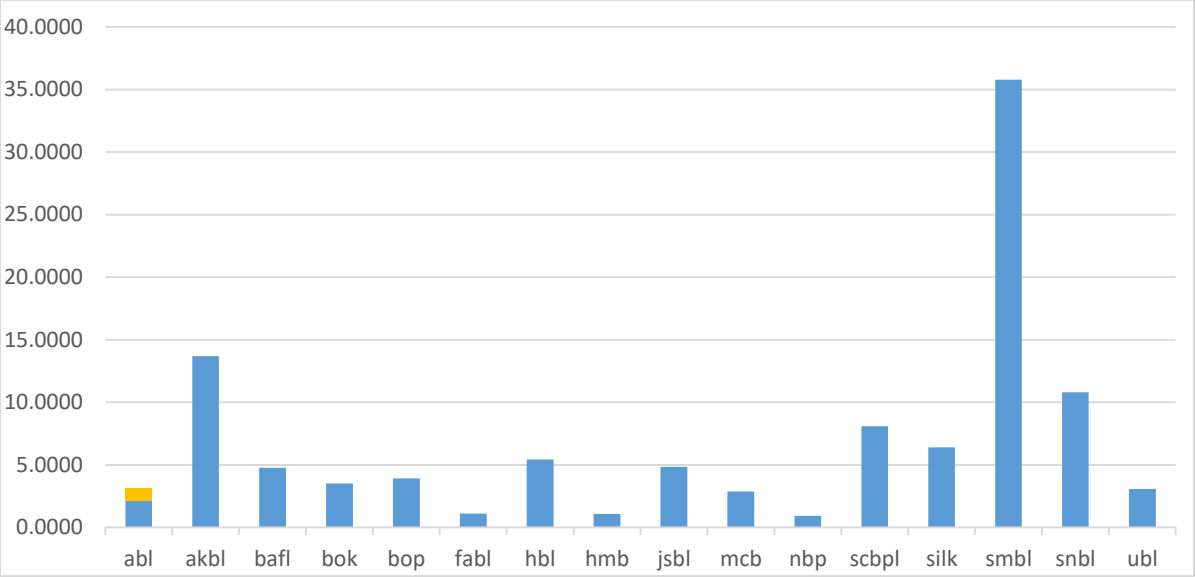

Fig 3: HL of conventional Banking indices of Pakistan

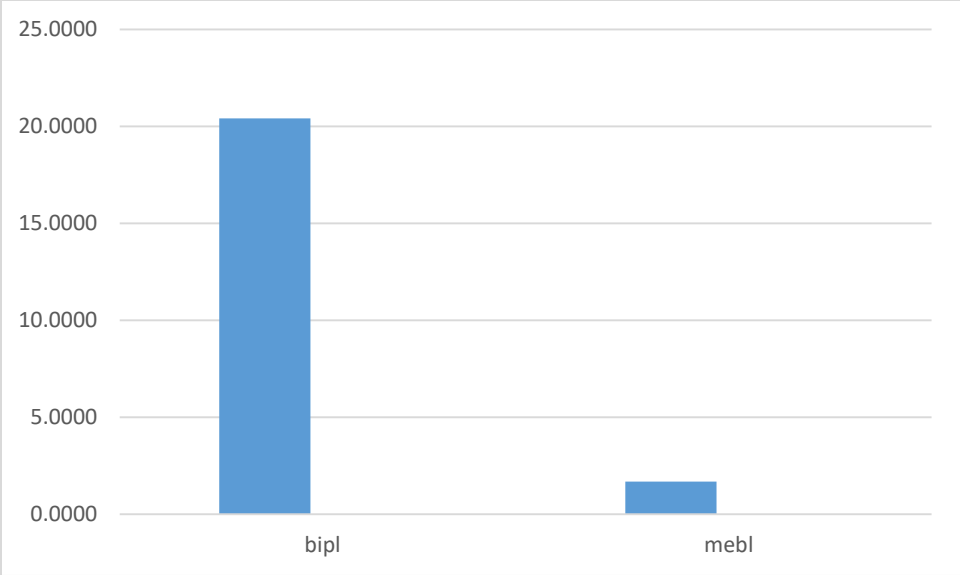

Fig 4: HL of Islamic banking indices

Results

Table 4.3: Volatility modeling with an EGARCH model

Bank Index conventional banks	Lev(1) γ_1	γ_3	HL	S
abl	0.3547	0.7225	2.1321	0.0300
akbl	0.1324	0.9506	13.6906	0.2727
bafl	0.1796	0.8646	4.7645	0.2122
bok	0.2264	0.8206	3.5049	0.1375
bop	0.3369	0.8376	3.9108	0.0196
fabl	0.3332	0.5327	1.1005	0.0318
hbl	0.1740	0.8800	5.4203	0.0630
hmb	0.3940	0.5234	1.0706	0.0103
jsbl	0.2924	0.8663	4.8305	0.1281
mcb	0.3155	0.7849	2.8617	0.0625
nbp	0.5659	0.4761	0.9341	1.0742
scbpl	0.2117	0.9180	8.0984	0.0441
silk	0.3652	0.8974	6.4012	0.0449
Smbl	0.1225	0.9808	35.7801	0.1483
snbl	0.2031	0.9378	10.7964	0.0320
ubl	0.7507	0.7990	3.0887	0.2168
Bank Index Islamic banks				
bipl	0.1617	0.9666	20.4031	1.0974

Results

It has showed that volatility dynamics show asymmetry. Actually, the leverage effect or asymmetric shock describes all banking indices since the estimates of parameter γ_1 are positive and statistically significant (also reported in Table 4.3). The positive and negative signs of $\gamma_2$estimators proposes that banking volatility increases or decreases correspondingly when the amount of market movement is large. On the other hand, it is estimated that the intensity of the leverage effect is very weak in both conventional and Islamic banks.

The asymmetry coefficient S (also stated in Table 4.3) is therefore smaller than one for all banking index returns, which indicates that positive past developments for Islamic and conventional banks result in higher conditional volatility in the current period and vice versa. However, conventional banks are more noteworthy of this asymmetric effect. In conventional banks the leverage effects are greater than in Islamic ones.

4.4 Size of Shocks effect volatility with T-GARCH Model:

Table 4.4 shows the results from referring to the simple TARCH model. In all banks, the terms ARCH and GARCH are highly statistically significant, and in magnitude similar. The asymmetric effect captured at the level of 5 percent is negative and statistically significant except for 'bok.' The results show that the positive coefficients on average indicate a strong market response to 'good' news $\mu t > 0$. Thus, although the 'good' news tends to have a favourable impact on conditional volatility ($\mu t > 0$).

The impact of monetary policy on volatility of market captured through GARCH model. The interest rate is the proxy of monetary policy and it is captured by using the lending rates. The results from IR are statistically significant in Islamic and conventional banks except ‘scbpl’ which shows that interest rate also affect the volatility of both banks.

Table 4.4 Size of Shocks effect volatility with T-GARCH Model

Results

Bank Index conventional banks	GARCH	μ_t	Prob. Of IR
abl	0.586603	-0.10462	0
akbl	0.906896	0.024327	0.0029
bafl	0.811106	0.039437	0.069
bok	0.76392	-0.00783	0.1323
bop	0.795771	0.029719	0
fabl	0.225713	0.009827	0
hbl	0.806062	-0.05179	0
hmb	0.587758	-0.03606	0
jsbl	0.748069	-0.04438	0.1821
mcb	0.571479	0.059386	0
nbp	0.218169	0.834399	0.0381
scbpl	0.847226	0.007166	0.6358
silk	0.559839	-0.07846	0
smbl	0.932795	0.004737	0
snbl	0.866011	-0.00238	0.0043
ubl	0.579724	-0.11427	0.0561
Bank Index Islamic banks			
bipl	0.895844	0.02352	0.0003
mebl	0.507448	-0.30678	0

Chapter 5

Conclusions and Recommendations

5.1 Conclusions

There are number of studies that relates the volatility aspects for Islamic and conventional banking indices in the different countries. In case of Pakistan, this paper established a suitable econometric structure to examine persistence and asymmetry and the effect of monetary policy on volatility. The representation of these properties allowed this study to develop the analysis of volatility and to recognize their drivers. For this tenacity, ARCH and GARCH models are used to check the persistence of volatility in the dual banks. Volatility displays important persistence which is much higher for traditional banks than for Islamic banks and is also higher during the given periods.

EGARCH version is projected and beneficial to recent day by day Islamic and conventional banking indexes, allowing us to degree volatility endurance at some point of the given duration. The volatility distribution is substantially asymmetrical, and right news seems to affect volatility preparations greater strongly than negative news. Leverage consequences are more in traditional banks than in Islamic ones.

The effect of financial policy on volatility of stock returns is examined. Economies have several ways through which economic coverage can have an effect on the events of economic system. This specifies that stock market and financial coverage dating is very necessary to take the benefit of belief of transmission mechanism of monetary policy. This examine states the affiliation between the volatility of stock returns and the economic policy in Islamic and conventional banks of Pakistan with the aid of the usage of the T-GARCH version. The end

result directs that inventory marketplace returns reacts to any modifications in the financial coverage the effect of financial policy on volatility of stock returns is examined. Economies have enormous ways by which economic coverage can have an effect on the events of economic system. This specifies that stock market and financial coverage dating is very necessary to take the benefit of belief of transmission mechanism of monetary policy. The study indicates that the interest rate effect the volatility of Islamic and conventional banks of Pakistan. Also, it shows that good news appears to have positive effect on the volatility of Islamic and conventional banks.

5.2 Recommendations

As a useful guide, concepts and variations based on the Islamic bank framework may be used to increase efficiency of traditional banks and strengthen regulation of their persistence of volatility and risk management. The effect of other monetary policy measures can also be used to calculate the shocks of uncertainty at Pakistan's dual banks. Nevertheless, it is worth noting that this analysis is followed by accessible data due to restricted access to data for Islamic banks, so our findings are basically data- and sample-dependent.

REFERENCES

Abdullah, A. (2015), "Economic security requires monetary and price stability: analysis of Malaysian macroeconomic and credit data", *Al-Shajarah*, special issue in Islamic banking and finance, pp. 205-247.

Abdul Aziz, R. P. and A. Gintzburger (2009), "Equity-based, asset-based and asset-backed transactional structures in Shari'a-compliant financing: Reflections on the current financial crisis", Economic Papers 28(3): 270-278.

Abdous, A., Arrabi, M., 2011. Effects of the global financial crisis on Islamic banks. First International Meeting of the Institute of Economic Sciences, Commercial and science management: Islamic Economics, reality and future bets 2011, 1–22 (February 23–24).

Abedifar, P., Ebrahim, S., Molyneux, P., Tarazi, A., 2015. Islamic banking and finance: recent empirical literature and directions for future research. J. Econ. Surv. (Forthcoming).

Ahmed, H. (2009). Financial crisis, risks and lessons for Islamic finance. *ISRA International Journal of Islamic Finance*, *1*(1), 7-32.

Ahmed, A. E. M., & Suliman, S. Z. (2011). Modeling Stock Market Volatility Using GARCH Models: Evidence From Sudan. International Journal of Business and Social Science. Vol. 2(23): 114-128

Akhtar, S., Akhtar, F., Jahromi, M., & John, K. (2017). Impact of interest rate surprises on Islamic and conventional stocks and bonds. Journal of International Money and Finance, 79, 218–231. doi:10.1016/j.jimonfin.2017.09.003

Akhtar, S. M., Jahromi, M. and John, K. (2014) Intensity of volatility linkages in Islamic and conventional markets, in 2014 Cambridge Conference Business & Economics, Cambridge, 1–2 July. Á

References

Albaity, M., & Ahmad, R. (2008). Performance of Syariah and composite indices: Evidence from Bursa Malaysia. *Asian Academy of Management Journal of Accounting and Finance, 4*(1), 23-43.

Andreou, E., Ghysels, E., 2002. Detecting multiple breaks in financial market volatility dynamics. J. Appl. Econ. 17 (5), 579–600.

Andersen, T. G., T. Bollerslev, F. X. Diebold and C. Vega (2007), "Real-time price discovery in global stock, bond and foreign exchange markets", Journal of International Economics 73: 251-277.

Andritzky, J. R., G. J. Bannister and N. T. Tamirisa (2007), "The impact of macroeconomic announcements on emerging market bonds", Emerging Markets Review 8(1): 20-37. Australian Trade Commission (Austrade) (2010), "Islamic Finance", Australian

Arouri, M., Ben Ameur, H., Jawadi, N., Jawadi, F., Louhichi, W., 2013. Are Islamic finance innovations enough for investors to escape from a financial downturn? Further evidence from portfolio simulations. Appl. Econ. 45 (24), 3412–3420.

Arshad, S., Rizvi, S.A., 2013. The impact of global financial shocks to Islamic indices: speculative influence or fundamental changes? J. Islam. Finance. 2 (1), 1–11.

Barnett, W.A., Jawadi, F., 2013. Recent developments in alternative finance: empirical assessments and economic implications. In:

Barnett, W.A. (Ed.) International Symposia in Economic Theory and Econometrics vol.22. Emerald Group Publishing Limited.

Baele, L., Farooq, M., & Ongena, S. (2014). Of religion and redemption: Evidence from default on Islamic loans. *Journal of Banking & Finance, 44*, 141-159.

References

Brenner, M., P. Pasquariello and M. Subrahmanyam (2009), “On the volatility and comovement of U.S. financial markets around macroeconomic news announcements”, Journal of Financial and Quantitative Analysis 44(6) : 1265-1289.

Stock market volatility has a great interest for both policy makers and market participants others are more concerned about the effect of volatility on stock market.

Bloom, Nicholas. (2009) “The Impact of Uncertainty Shocks.” Econometrica, 77, 623–85.

Bourkhis, K., Nabi Mahmoud, S., 2013. Islamic and conventional banks' soundness during the 2007–2008 financial crisis. Rev. Financ. Econ. 22 (2), 68–77.

Burak Yungucu Buerhan Saiti , (2016),"The effects of monetary policy on the Islamic financial services industry", Qualitative Research in Financial Markets, Vol. 8 Iss 3 pp. 218 - 228 P

Chau, F., Deesomsak, R. and Wang, J. (2014) Political uncertainty and stock market volatility in the Middle East and North African (MENA) countries, Journal of International Financial Markets, Institutions and Money, 28, 1–19. doi:10.1016/j.intfin.2013.10.008 C

Chenguel, M.B., 2014. Islamic banking and the last financial crisis. Int. J. Res. Appl. Sci. 3, 29–34.

Choi, K., Hammoudeh, S., 2009. Long memory in oil and refined products markets. Energy J. 30 (2), 97–116.

Clark, P. (1973). A Subordinate Stochastic Process Model with Finite Variance for Speculative Prices. *Econometrica* , 41 (1) (1973), 135-155.

Dewandaru, G., Rizvi, S. A. R., Masih, R., Masih, M., & Alhabshi, S. O. (2014). Stock Market Co-movements: Islamic Versus Conventional Equity Indices with MultiTimescales Analysis. Economic Systems. Vol. 38(4): 553-571.

Engle, R.F., 1982. Autoregressive conditional heteroscedasticity with estimates of the variance of United Kingdom inflation. Econometrica 50 (4), 987–1007.

References

Ergeç, E.H. and Arslan, B.G. (2013), "Impact of interest rates on Islamic and conventional banks: the case of Turkey", *Applied Economics*, Vol. 45 No. 17, pp. 2381-2388.

Fakhfekh, M., Hachicha, N., Jawadi, F., Selmi, N., Cheffou, A.I., 2016. Measuring volatility persistence for conventional and Islamic banks: an FI-EGARCH approach. Emerging Markets Review 27, 84–99.

Fleming, M. and E. Remolona (1999), "Price formation and liquidity in the U.S. Treasury market: The response to public information", Journal of Finance 54: 1901–1915.

Hakim, S., & Rashidian, M. (2002, October). Risk and return of Islamic stock market indexes. In *9th Economic Research Forum Annual Conference in Sharjah, UAE* (pp. 26-28)

Hammoudeh, S., & Li, H. (2008). Sudden Changes in Volatility in Emerging Markets: The Case of Gulf Arab Stock Markets. International Review of Financial Analysis. Vol. 17(1): 47-63. doi: https://doi.org/10.1016/S2212-5671(12)00118-9.

Hasan, M., Dridi, J., 2010. The effects of the global crisis on Islamic and conventional banks: a comparative study. Working PaperWP/10/ 201 (IMF).

Hammoudeh, S., Mensi, W., Reboredo, J.C. and Nguyen, D.K. (2014). Dynamic dependence of global Islamic stock index with global conventional indexes and risk factors. *Pacific-Basin Finance Journal*, 30, 189-206.

Hussein, A.K. and Omran, M. (2005). Ethical investment revisited: Evidence from Dow Jones Islamic indexes. *Journal of Investing*, 14, 105-124

Jawadi, F., 2012. La finance islamique est-elle à l'abri de la crise financière globalisée? Rev. Sci. Gest. 255 (256), 123–132.

Jawadi, F., Jawadi, N., Louhichi, W., 2014. Conventional and Islamic stock price performance: an empirical investigation. Int. Econ. 137, 73–87.

References

Jouini, E., Pastré, O., 2008. Enjeux et opportunités du développement de la finance islamique pour la place financière française. Availabl at:http://www.pariseuroplace.net/files/doc137647.pdf (May 2013).

Kassab, S. (2013) Modeling volatility stock market using the ARCH and GARCH models: comparative study index (SP Sharia VS SP 500), European Journal of Banking and Finance, 10, 72–77. Ki

Kantakji, M.-S., 2008. Controls the Islamic economy against the international financial crisis. Publishing and Distribution, First Edition, Dar Renaissance Printing, p. 103.

Kassim, S. H., & Majid, M. S. A. (2010). Impact of Financial Shocks on Islamic Banks: Malaysian Evidence During 1997 and 2007 Financial Crises. International Journal of Islamic and Middle Eastern Finance and Management. Vol. 3(4): 291-305. doi: https:// doi.org/10.1108/17538391011093243.

Lamoureux, C. G., & Lastrapes, W. D. (1994). Endogenous trading volume and momentum in stock-return volatility. *Journal of Business & Economic Statistics* , 12(2), 253-260.

Majid, M. S. A., & Yusof, R. M. (2009). Long-run Relationship Between Islamic Stock Returns and Macroeconomic Variables: An Application of The Autoregressive Distributed Lag Model. Humanomics. Vol. 25 (2): 127-141. doi: https://doi. org/10.1108/08288660910964193.

Majdoub, J., & Mansour, W. (2014). Islamic Equity Market Integration and Volatility Spillover Between Emerging and US Stock Markets. The North American Journal of Economics and Finance. Vol. 29(C): 452-470.

MUMTAZ, H., & ZANETTI, F. (2013). *The Impact of the Volatility of Monetary Policy Shocks. Journal of Money, Credit and Banking, 45(4), 535–558.* doi:10.1111/jmcb.12015

References

M. Shabri Abd. Majid, (2018). Assessing Volatilities of Monetary Policy and their Effects on the Islamic and Conventional Stock Markets in Indonesia. Journal Ilmu Ekonomi Volume 7 (2), 2018: 161 - 172 P-ISSN: 2087-2046; E-ISSN

Nazlioglu,S., Hammoudeh, S., & Rangan Gupta (2015): Volatility transmission between Islamic and conventional equity markets: evidence from causality-in-variance test, Applied Economics, DOI: 10.1080/00036846.2015.1039705

Nazlioglu, S., Soytas, U., & Gupta, R. (2015). Oil prices and financial stress: A volatility spillover analysis. *Energy Policy*, *82*, 278-288.

Nowak, S., J. Andritzky, A. Jobst and N. Tamirisa (2011), "Macroeconomic fundamentals, price discovery, and volatility dynamics in emerging bond markets" Journal of Banking & Finance 35: 2584–2597

Ouerghi, F., 2014. Are Islamic banks more resilient to global financial crisis than conventional banks? Asian Econ. Financ. Rev. 4 (7), 941–955.

Romli, N., Mohamad, A. A. S., & Yusof, M. F. M. (2012). Volatility Analysis of FTSE Bursa Malaysia: Study of the Problems of Islamic Stock Market Speculation in The Period 2007 to 2010. African Journal of Business Management. Vol. 6 (29): 84-90.

Rozga, A., & Arneric, J. (2009). dependence between volatility persistence, kurtosis and degree of freedom. *Investigación Operacional* , 30(1), 32-39.

Saadaouia, A., & Boujelbene, Y. (2015). Volatility Transmission Between Dow-Jones Stock Index and Emerging Islamic Stock Index: Case of Subprime Financial Crises. Journal of Emerging Economies and Islamic Research. Vol. 3(1): 1-9. S

Vaz, J. J., M. Ariff and R. D. Brooks (2008), "The effect of interest rate changes on bank stocks", *Investment Management and Financial Innovation* 5(4): 221-236.

References

Yusof, R. M. and Majid, M. S. A. (2007) Stock market volatility transmission in Malaysia: Islamic versus conventional stock market, J.KAU: Islamic Economics, 20, 17–35.

Zakaria, Z., & Shamsuddin, S. (2012). Empirical Evidence on the Relationship Between Stock Market Volatility and Macroeconomics Volatility in Malaysia. Journal of Business. Vol. 4(2): 61-71.

Zare, R., Azali, M., & Habibullah, M. S. (2013). Monetary policy and stock market volatility in the ASEAN5: Asymmetries over Bull and Bear markets. Procedia Economics and Finance, 7, 18-27.