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An Evaluation of Momentum and Contrarian Strategies in Adaptive Market Hypothesis Framework for Conventional and Shari'ah Compliant Securities of Selected Islamic Markets

by

Aamna Batool

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By

Aamna Batool

(DMS163006)

Dr. Ozge Kandemir Kocaaslan, Associate Professor

Hacettepe University, Çankaya-Ankara, Türkiye

(Foreign Evaluator 1)

Dr. Tanveer Ahsan, Associate Professor

Rennes School of Business, France

(Foreign Evaluator 2)

Dr. Nousheen Tariq Bhutta

(Research Supervisor)

Dr. Lakhi Muhammad

(Head, Department of Management Sciences)

Dr. Arshad Hassan

(Dean, Faculty of Management & Social Sciences)

DEPARTMENT OF MANAGEMENT SCIENCES

CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

ISLAMABAD

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Dedication

I dedicate my dissertation to the one of Ninety-Nine names of Allah, The Almighty "AL ALEEM" The All-Knowing, The Omniscient

Allah is fully aware of everything that has occurred and will happen from the beginning to the end. He is all-knowing.

Allah calls Himself Al-'Aleem on more than 150 occasions in the Quran

Allah Al-'Aleem loves those who seek knowledge and taught us to pray for increase in knowledge [Quran, 20:114]

I am grateful to Allah for choosing me and increase my knowledge.

CERTIFICATE OF APPROVAL

This is to certify that the research work presented in the dissertation, entitled **"An Evaluation of Momentum and Contrarian Strategies in Adaptive Market Hypothesis Framework for Conventional and Shari'ah Compliant Securities of Selected Islamic Markets"** was conducted under the supervision of **Dr. Nousheen Tariq Bhutta**. No part of this dissertation has been submitted anywhere else for any other degree. This dissertation is submitted to the **Department of Management Sciences, Capital University of Science and Technology** in partial fulfillment of the requirements for the degree of Doctor in Philosophy in the field of **Management Sciences.** The open defence of the dissertation was conducted on **February 01, 2024**.

Student Name :   Aamna Batool (DMS163006)

The Examination Committee unanimously agrees to award PhD degree in the mentioned field.

Examination Committee :

(a)	External Examiner 1:	Dr. Abdul Rashid, Professor IIU, Islamabad
(b)	External Examiner 2:	Dr. Syed Muhammad Amir Shah Professor AIOU, Islamabad
(c)	Internal Examiner :	Dr. Imran Riaz Malik Associate Professor CUST, Islamabad

Supervisor Name :   Dr. Nousheen Tariq Bhutta
                               Assistant Professor
                               CUST, Islamabad

Name of HoD :   Dr. Lakhi Muhammad
                           Associate Professor
                           CUST, Islamabad

Name of Dean :   Dr. Arshad Hassan
                            Professor
                            CUST, Islamabad

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Registration No : DMS163006

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Registration No : DMS163006

List of Publications

It is certified that following publication(s) have been made out of the research work that has been carried out for this dissertation:-

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(Aamna Batool)

Registration No: DMS163006

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Abstract

The current study seeks to offer new insights in addition to the conventional judgement of the market's efficiency or inefficiency in order to portray a clear picture of market behavior. Although the conventional EMH has been carefully explored in previous studies, academicians and researchers disagree on whether or not markets are efficient. Additionally, some research projects evaluated the EMH using a specific sample period while neglecting the notion that market efficiency levels may change or vary over time. Lo (2004) attempts to balance the EMH with various levels of market efficiency through the Adaptive Market Hypothesis (AMH). According to this theory, market inefficiencies can coexist with market efficiency (EMH) and capital markets can become more efficient over time. The purpose of the thesis is to find out if AMH offers a more realistic picture of stock return behavior and momentum/contrarian anomaly than traditional EMH. Seven frontier economies are chosen for this purpose: Pakistan, Bangladesh, Indonesia, Malaysia, Turkey, Qatar, and Nigeria, and their stock markets are divided into Shari'ah and conventional markets. Their stock behavior is examined for the presence of a momentum/contrarian premium in order to determine AMH from 2012 to 2022. When linear unit root tests (Augmented Dicky Fuller and Phillips Perron) and VR test are applied, all selected conventional and Shari'ah markets exhibit weak form inefficiency during the research period. With the exception of the conventional and Shari'ah markets in Bangladesh and Turkey, where stochastic return behavior is apparent. BDS, the nonlinear efficiency test, confirms the outcomes of linear tests for all markets. The presence of winner minus loser and loser minus winner portfolios is investigated in both Shari'ah and conventional markets for various J= 3, 6, 9, 12, and k= 6, 12, 18, 24, 30, and 36 combinations using the J-K overlapping technique as proposed by Jegadeesh and Titman (1993). Sample of 199 Shari'ah compliant companies and 202 conventional companies has been taken. It is found that only four Shari'ah markets (Pakistan, Bangladesh, Turkey, and Qatar) show evidence of momentum and a contrarian premium. Moreover, Momentum/contrarian premiums are present in five conventional markets (Pakistan, Indonesia, Malaysia, Turkey, and Nigeria). When using the Sharpe ratio,

the highest performing portfolios in the Shari'ah market are Pakistan's (j6k6) momentum portfolio, Bangladesh's (j6k6) contrarian portfolio, Turkey's (j9k24) contrarian portfolio, and Qatar's contrarian (j6k6) portfolio as the best performing than other combinations. While in conventional markets, Pakistan (j3k36) contrarian portfolio, Indonesia (j3k30) contrarian portfolio, Malaysia (j9k24) momentum portfolio, Turkey (j9k24) momentum portfolio, and Nigeria (j6k6) momentum portfolios performed best. The rolling window analysis of momentum/ contrarian profits explains the adaptive behavior of all Shari'ah markets where momentum/ contrarian profits are significant however, conventional markets in Pakistan, Indonesia, and Nigeria support AMH, whereas the Malaysia and Turkey remain non adaptive. When the GARCH (1, 1) model is used, it shows that crashes in Shari'ah and conventional markets have a negative influence on momentum profits but a favorable impact on contrarian profits, hence supporting AMH. Bullish sentiment boosts momentum/contrarian profits in both markets, whilst bearish sentiment has the reverse impact. Significant momentum gains in both the Shari'ah and conventional markets have revealed under reaction, while significant contrarian profits have been attributed to overreaction. Observing AMH, in context of Islamic stocks is very useful as these markets have their own specifications which can affect the market efficiency due to certain traditional and psychological biases associated to a specific market. This study provides certain directions to financial decision makers for investment portfolio construction. Presence of predictable returns of Islamic equity shows that these markets are speculative.

Keywords: Adaptive Market Hypothesis; Efficient Market Hypothesis; Momentum Profit; Contrarian Profit; Stock Returns; Shari'ah Market; Conventional Market; Under Reaction; Over Reaction.

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Abbreviations

ACAER	Aggregate Cumulative Average Excess Return
ADF	Augmented Dicky Fuller Test
AMH	Adaptive Market Hypothesis
CAPM	Capital Asset Pricing Management
DJIA	Dow Jones Industrial Average
DSX	Dhaka Stock Exchange
EMH	Efficient Market Hypothesis
FOREX	Foreign Exchange
GARCH	Generalized Auto Regressive Conditional Heteroskedasticity
GSADF	Generalized Supremum Augmented Dickey-Fuller
IDX	Indonesia Stock Exchange
PSX	Pakistan Stock Exchange
QSE	Qatar Stock Exchange
RWH	Random Walk Hypothesis
VR	Variance Ratio
WF-EMH	Week form Efficient Market Hypothesis
IFS	Islamic Financial System
BF	Behavioral Finance

Chapter 1

Introduction

The Efficient Market Hypothesis was a crucial financial theory that Fama presented in 1970. This theory holds that financial markets are effective in presenting and incorporating all of the information that investors need to make investment decisions. Financial economists generally agree that random walk is a key element of the EMH and an important driver in stock behavior. Three types of market efficiency includes weak form efficiency, semi-strong form efficiency and strong form efficiency. All assume that stock prices are settled after taking into account all available information, leaving investors with no way to use fundamental and technical analysis to forecast stock prices and earn abnormal returns.

This field of study has attracted a lot of attention from researchers. Mixed results have been gathered through various studies which examines the EMH. Tests of the EMH have been questioned by researchers for treating efficiency of market with all profit or no profit case (Campbell, Lo, & McKinlay, 1997; Lo & MacKinlay, 1988). Market factors like institutions, regulations and technology which are continuously changing along with market participants' behavior makes the market efficiency an evolving phenomenon. Assumptions of EMH are being criticized by proponents of behavioral finance (Shleifer, 2000). Firstly, EMH claims that all the investors behave rationally while valuing securities. Reality is different as incentives, emotions and biases of the investors influence their decision making process. This fact is ignored by classical finance (Barberis, Shleifer, & Vishny, 2005). Secondly, according to the EMH noise traders trade randomly in the market and cancel

each other's trade effect leaving no distinctive impact on the market. However, behavioral finance identified that biases occur due to investors heuristic decision making. Last, the EMH supports that influence of irrational investors are offset by rational arbitrageurs in the market. Contrarily, behavioral finance emphasizes that because of the limited number of rational arbitrageurs, fundamental value cannot be matched in the market (Bodie, Kane, & Marcus, 2013).

Lo (2004) presented a theory called Adaptive Markets Hypothesis (AMH) to address the controversies about EMH. AMH allows, market anomalies (market inefficiency) to exist with EMH. Alternative behavioral responses like adaption, natural selection, evolution and competition to financial interactions are soul for AMH. This controversy of market efficiency had grouped researchers into two groups: supporters of the EMH and proponents of Behavioral finance. Another new era of investigation of efficient market hypothesis started in 2004 with emergence of AMH. The research studies in support of AMH have concentrated on varying and cyclic patterns of efficiency and inefficiency thus supports existence of market anomalies in both developed as well as emerging markets. Major practical implication attributed to AMH is to timely exercise the profitable investment strategies which keep on appearing and disappearing from one time to another. AMH believes in active portfolio management unlike the EMH which states that to earn abnormal profit is not possible (Urquhart & McGroarty, 2014; O. Al-Khazali & Mirzaei, 2017; Shi & Zhou, 2017; Shahid & Sattar, 2017). The specific market environment, changing market sentiments and factors relating to institutions encourages the appearance of profitable strategies. Hence, the market efficiency vary in cyclical fashion and has strong dependency on market dynamics, forfeiting the proponents of EMH. Meier (2014) discussed adaptive efficiency's role to explain some of the anomalies. The result showed that some of the anomalies fade away with time, whereas some of the anomalies like value and momentum anomalies do not.

In financial markets, whenever there is a case of a security or group of securities performing opposite to the concept of efficient markets are referred as anomalies. Previous research has evidences for calendar, fundamental and technical anomalies in different stock exchange markets around the world. According to

(Frankfurter & McGoun, 2001) anomalies may be caused by social sciences' incapacity to take into account both the qualitative and quantitative aspects of the phenomenon. They proved that term anomaly was earlier related to deviation from EMH/ CAPM. However, Fama (1965) named it as BF which rejected the EMH/ CAPM. He argued that, pillars of efficient market hypothesis cannot be shaken due to presence of anomalies unless behavioral finance will be ranked as a better theory than EMH/ CAPM. He also inferred that anomalies kept on changing themselves and even could disappear on changing the data frequency, data source and methodology. Literature has identified two of the most important market anomalies, Momentum effect and contrarian effect as serious violations of the EMH as they are significantly predictable (Kandir, Halime, et al., 2011). These are always considered as departure from market efficiency. Jegadeesh and Titman (1993) first presented the concept of the momentum profit. Results of their studies showed that significant positive returns can be earned for 3 to 12 month defining periods by buying stocks which performed exceptional in past and selling the stocks which exhibited poor performance. Momentum anomaly is the presence of the continuous price hike and decreasing prices are further decreasing (Chan, Hameed, & Tong, 2000). Fama (1965) found that except momentum anomaly, all the anomalies got explained by their three factor model which were not even captured by Capital Asset Pricing Model (CAPM). Their findings nominated the momentum effect as one of the most persistent, robust and serious threat to the Efficient Market Hypothesis (EMH) validity.

While referring to the contrarian strategy, the stocks whose value have decreased (increased) in the past will witness an increase (decrease) which eventually shows reversed movement of prices. Along with the stock value, the rate of return will also observe an increase (decrease) (De Bondt & Thaler, 1985). Study of relationship between price movements of assets could be used to evaluate the momentum and contrarian strategies performance (Charles, Darné, & Pop, 2015). Instead of canceling each other's effect, the effects of momentum and contrarian premium even enhances themselves due to overreaction and under reaction of investors. According to the proponents of Behavioral finance, investors' over or under reaction to the information of stocks is proved to be the main reason for the momentum

and contrarian profits (De Bondt & Thaler, 1985; Jegadeesh & Titman, 1993). Nonetheless, it is still to be identified that what are the reasons of investors' over or under reaction. Neither abnormal profits nor the presence of systematic risk explains the delayed stock price reactions. However, behavioral finance literature tries to identify several psychological biases which could lead to the momentum or contrarian effect (Lakonishok, Shleifer, & Vishny, 1994; Daniel, Hirshleifer, & Subrahmanyam, 1998).

Cooper, Gutierrez Jr, and Hameed (2004) explained the momentum profit in the context of market states (up and down). They observed that more prosperous economies should have greater momentum profits. Similar findings has also been identified by (Huang, 2006) for international market. Events like the Asian financial crisis and the Global Financial Crisis lead to changed market conditions that affects the degree of market efficiency (Kim, Shamsuddin, & Lim, 2011; Smith, 2012). Such market events have strong influence on the market participants' psychology and their response towards the new information to prices, which as a result effects degree of return predictability of the investors.

The significant recent growth of Islamic financial and capital markets has opened up new study opportunities. The literature has already collected a remarkable quantity of comparative study between conventional and Shari'ah equities, which revealed that both stocks act differently in terms of liquidity, volatility, return predictability and many other aspects. There is, however, no study that examines the presence of momentum and the contrarian premium in the context of conventional stock markets and shariah stock markets.

The purpose of this thesis is to investigate AMH's claims on the existence and evolving behavior of momentum and the contrarian premium in conventional and Shari'ah markets. This study tries to pinpoint the causes of momentum and contrarian behavior and their relationship with investors' behavior since the reasons behind the momentum/contrarian profit remain unexplainable. Identification of over or under reaction to news as the cause of these market anomalies is essential in order to further study the issue of momentum/contrarian profit. In this sense, a comparative study such as it would give investors extremely significant insight

into whether market, conventional or Shari'ah, has greater potential to generate high returns by either exercising momentum or by contrarian strategies.

The remaining of the thesis is organized as follows. Chapter 2 reflects on recent and past knowledge presented in literature about the Efficient Market Hypothesis, adaptive market hypothesis and the momentum/ contrarian effect. Chapter 3 explains the data and methodology being used for the analysis. Chapter 4 discusses the outcomes of research and analyses the results of research. Chapter 5 concludes the research and also presents future research direction.

1.1 Theoretical Background

The theory of expected utility by traditional theorists suggested that utility is an indicator of the contentment an individual gets from consuming any good or service. (Bernoulli, 1954). Mill (1844) introduced the concept of homo economicus which suggests that human exercises his rational behavior to get the utmost utility by consuming goods or services while facing certain limitations as well. This economic being is believed to have characteristics of perfect rationality, high levels of self-interest and being well informed (Kapoor & Prosad, 2017). Different classical theories like portfolio selection model by (Markowitz, 1952), Capital asset pricing model by (Sharpe, 1964) and Efficient market hypothesis by (Fama, 1965) followed basic assumptions of Mill. Furthermore, market efficiency assumptions by (Fama, 1965) has served as basis for various asset pricing models. Fama explained that efficient markets are characterised by stocks whose prices incorporates all the available information at all times. EMH has been questioned for many decades because of its unrealistic assumptions which includes that market exhibits unbiased true value of investments. Agrawal and Tandon (1994); Gultekin and Gultekin (1983) and Ariel (1987) witnessed existence of anomalies which includes calendar, size and momentum/ contrarian anomalies in different stock exchanges worldwide due to which asset prices become predictable (Banz, 1981; Keim, 1983; Lakonishok & Smidt, 1988; Fama & French, 1992, 1993; Lakonishok et al., 1994). Literature has given behavioral explanations to the existence of such anomalies and provides foundation to the behavioral school of finance. Comparing to EMH, followers of

Behavioral school support that markets may not be efficient all the time and investors may not take rational decisions all the time (De Bondt & Thaler, 1985). In pursuance of behavioral finance (Lo, 2004) presented Adaptive market hypothesis which reconciles EMH and BF and presents that efficiency and departure from efficiency shows cyclical patterns in various environmental settings.

In the beginning of this chapter EMH, its history, its different forms and implications are discussed. Critics by opponents of EMH which results in establishment of BF is then included. Later, the AMH is introduced for investigating efficiency and inefficiency (due to existence of momentum and contrarian profits opportunities) of financial markets. AMH is emphasized as it supports co-existence of efficiency and anomalies in cyclic manner. Furthermore, Islamic and conventional shares behavior is studied with in framework of AMH to explore different profitable investment opportunities and to study any difference in both market settings. Lastly, over reaction or under reaction to news is identified as the cause of momentum/ contrarian profit in both of the markets.

1.1.1 Efficient Market Hypothesis

1.1.1.1 History

Tracing back to the history, it is found that stock market price models are based on gambling as investment and gambling both attempts to figure out return and risk (Lo & Andrew, 2017). Charles et al. (2015) explained gambling principle as providence of equal conditions to opponents in terms of money and situation and then comes the level when they start facing different scenarios, if one of the opponent wins then other is fool and if other one wins, then one is unjust.

Martingale is based on the idea of a fair game, where none of the opponents is favored (Lo & Andrew, 2017). According to Martingale, past performance cannot be used to estimate win or lose, thus making a game a fair play by not providing any one a profit opportunity. Eventually, the concept of martingale serves as the foundation for assessing market efficiency. According to (Bachelier, 1900), the developer of stock price mathematical modelling, the market evaluates

assets using martingale metrics, making outperforming the market logically impossible. He pointed out that since there are buyers and sellers involved, none of whom want to be tricked, so a stock market transaction need to be fair. He was among one of the pioneers who established EMH but was not formally recognized. Later on, Bachelier's argument got support from researchers like (Pearson, 1905) through random walk concept, (Barriol, 1914) and (De Bondt & Thaler, 1985) through their probability texts for financial transactions (Sewell, 2011). Martingale, hence presented security pricing theory, which claims that it is not possible to systematically estimate stock investments return as they are randomly distributed (Urquhart & McGroarty, 2014). Then (Samuelson, 1965) followed Bachelier's findings and came up with highly acceptable and recognized concept of efficient markets. He claimed that past information about price cannot guide about the security's upcoming prices. An efficient market, according to (Fama, 1965), is one in which participants have unlimited access to critical recent information and where there are sufficient logical investors competing to anticipate the projected values of certain assets. A situation where information based on past, present and future occurrences is already included in the values of individual assets arises through competition among several rational investors in efficient market shows that a rapid adjustment takes place in the stock prices leaving no opportunity to earn higher returns persistently.

1.1.1.2 Forms of EMH

By referencing (Roberts, 1967) work, Fama develops the weak-form, semi-strong-form, and strong-form of market efficiency while taking into account information that is represented in the pricing. These efficiency types are variations on the fundamental EMH. The weak form is the main topic of the current study, but additional forms are briefly discussed for clarity's sake.

1.1.1.3 Weak Form Hypothesis

The weak form hypothesis states that the current prices already take into account the all prior data/ information available. It implies that all historical information,

including the previous price and trading volume, is already reflected in today's stock values (Urquhart & McGroarty, 2014). According to the weak form EMH, those who rely on price history analysis to outperform the market are unable to generate above average profits because all knowledge would have been instantly incorporated into the market price. Since previous share price information is available to the public and can be acquired for absolutely no money, so even if such information ever shows plausible indicators of predicted performance, all participants would already be familiar with how to capitalize on the signs. According to (Arief & Anggono, 2012) and (Maximillian, 2015), a weak form efficient market means that security returns will follow the random walk and be devoid of technological abnormalities (Chinga, Sook, & Bahrona, 2014).

1.1.1.4   Semi Strong Form Hypothesis

According to this theory of efficiency, asset prices take into account all publicly available information. The majority of the firm's publicly available information is made available in the financial statements and market data, which are used in the computation of the current security price in addition to the historical price data. As a result, analysts cannot determine if an asset is undervalued or overvalued using technical and fundamental methodologies. The semi strong form hypothesis states that because these data are publicly available, they are immediately included into securities prices as soon as they reach investors (Abraham & Anggono, 2012). As a result, it is useless to choose assets based on publicly available statistics such as a company's sales, earnings or book-to-market ratios. However, the proponent of this version of EMH thinks that when investors have access to this knowledge that is private or not readily available to the public, above market average returns can be made.

1.1.1.5   Strong Form Hypothesis

A market is strong form efficient when the price of a security incorporates even insider or secret knowledge, in addition to prior price information and all publicly available information (Fama, 1970). Only the management have access to

the private knowledge, also referred to as insider information, which has not been disclosed to the general public but is known only to them regarding the company's prospects. Insider trading will not be able to profit above-averagely by depending on confidential knowledge under this form of market efficiency (Abraham & Anggono, 2012). When a market is efficient in its strongest form, it is also efficient in its semi efficient and weak efficient form. In accordance with proponents of this interpretation of efficiency, investors cannot get returns above those of the market, regardless of the information types examined.

Prices may fluctuate over time, but EMH claims it is hard to identify a trend. The efficient market hypothesis was validated by a substantial amount of empirical research, including many of the earlier tests. Conclusions about (Samuelson, 1965) and (Fama, 1965, 1970) contributions to the development of EMH share the notion that an efficient market is one in which price fluctuations are totally random and unanticipated. Accordingly, the more efficient the market, the more random the sequence of price changes in the market will be (Lo & Andrew, 2017, p.38).

1.1.1.6 EMHs' Subsequent Performance

The majority of the earlier studies particularly those conducted between 1960 and 1980 support EMH, whereas later studies those conducted between 1980 and 2004 cast doubt on its applicability (Kim et al., 2011). According to (Kemp & Reid, 1971), the majority of past studies exclusively used the U.S. stock market as a sample. By taking into account the UK context, it was demonstrated that stock price movements deviate from the RWH and contradict (Fama, 1965, 1970) claim. Ball and Brown (1968) asserts that stable surplus returns occur after the disclosure of a company's earnings to the public, which evidently runs counter to the EMH in its semi strong form. Another EMH violation was discovered by (Shiller, 1979), who also noted that volatility is more than anticipated by expectations models, indicating some predictability of long-term interest rates. In fact, in case if markets are efficient, nobody would research stocks or trades since there would be no profit (Grossman & Stiglitz, 1980). As a result, the market would become inefficient. According to (Shleifer, 2000) participants in market on getting idea of inefficiency

in a market will look for abnormal profit opportunities through buying and selling. So, these later researchers brought evidences which contradicts with EMH.

1.1.2 Establishment of Behavioral Finance

The EMH appeared to achieve enormous success till first 10 years of its inception. After that, researchers started to notice a wide variety of anomalies, which fundamentally defy the EMH and indicate inefficiency. French (1980) discovered stock prices has calendric trend. Ball and Brown (1968); Fama and French (1992, 1993) and Keim (1983) demonstrated the superior performance of small capitalization companies. Securities with high price-to-earnings and book-to-market ratios also outperform the market. Jegadeesh and Titman (1993) found that stocks performing well in the past repeats its satisfactory performance later on and vice versa. Thus, market anomalies prevails and are represented through existence of market bubbles, overreaction or under reaction to market news, momentum and contrarian premiums. These anomalies show that the rationality assumption is not the only factor influencing investors' choices. BF gradually developed in an effort to offer behavioral explanations for the abnormalities. The BF contends that investors are not always rational and that the market is not efficient, in contrast to the EMH. BF is defined as the study of psychological factors influencing investors' conduct and how those factors affect the market as a result. (Kapoor & Prosad, 2017). Selden (1912) studied stock market psychology and presented the idea that investor and trader attitudes play a significant role in how market prices evolve.

Although in financial theory it is assumed that market participants are rational, there are times when they act rapidly and without sufficient knowledge or time. Investor decisions are influenced by things like fears, desires, and emotions. In reality, investors take their emotions into account, so in some circumstances the market may not represents economic fundamentals (Goedhart, Koller, & Wessels, 2005). The proponents of BF have disputed these EMH premises by identifying the possibility that investors may act irrationally by failing to make rational expectations or by having different expected utility (Tan, 2013). Common behavioral biases and heuristics have an inherent contradiction between rationality and

EMH and human decision making. As a result, BF clarifies the influence of psychological biasness and heuristics and their effects on decisions taken by investors. Emotional and cognitive biases are the two categories of bias that have been recognised. The former happened when people make decisions based on emotions rather than facts, whereas the later happened as a result of flaws in how people perceive reality (Sarpong, 2017).

Over the long period of time various theories of BF have been presented which includes prospect theory, overreaction, framing, mental accounting, endowment bias, over confidence, herding affect, heuristic, anchoring and adjustment bias, availability bias, representative bias, regret aversion and under reaction theory. The mainstream theories, namely the overreaction and under reaction biases as cause of anomalies are highlighted and explained in the following sub-sections.

1.1.3 Over Reaction Hypothesis

Overreaction is an emotional response that results from greed or fear to fresh information about a stock. Overreaction is defined by (De Bondt & Thaler, 1985) as the prediction of good (poor) future performances based on bad (good) prior returns. Investors' overreaction to news causes the stock to be overbought or oversold until it returns to its fundamental value. View of J. M. Keynes about the market overreaction is that daily changes in the earnings of existing investments, which are obviously of an ephemeral and insignificant nature, tend to have an excessive amount of influence on the market, often to the point of absurdity.

When (De Bondt & Thaler, 1985) discovered that consumers typically respond to unexpected and sudden news events, they provided startling and incisive evidence of the stock market being weak-form inefficient. They also found that recent information is over weighed by people. (Williams, 1938) argues that prices place a significantly more emphasis on recent earnings power than on a company's potential to pay dividends in the future, which supports the idea that recent news can cause overreaction. Similar to this (Veronesi, 1999) presented asset prices model, which states that included prices that make a big deal out of a bad news in good

times by over reacting and ignores good news in bad times by under reacting to it. Thus, overreacting is in conflict with being rational.

1.1.4   Under Reaction Hypothesis

Barber and Odean (2000) defined the under reaction as the difference between the average stock return in the period immediately following the revelation of good news and the average stock return in the period immediately following the disclosure of bad news. When investors under react to such information two facts appears.

1) Direct relation between unexpected earnings and abnormal returns

2) On announcement of earnings investors show delayed response

This slow response to information by the investor accepts the validity of under reaction hypothesis against the efficient market hypothesis. Thus the under-reaction theory is preferred as a possible explanation for the momentum effect over the efficient market hypothesis.

According to the under-reaction hypothesis, stock prices and returns drift over short time horizons as a result of investors gradually incorporating information into prices. (Cutler, Poterba, & Summers, 1991; Chan et al., 2000; Doukas & McKnight, 2005; Kaestner, Schneebeli, & Graf, 2006). Such behavior is explained by the conservatism bias identified by (Edwards, 1968) by (Barberis, Shleifer, & Vishny, 1998).

Because of their conservatism, people take a long time to modify their opinions in response to new information. According to Barberis et al. (1998), investors who under reacts may ignore an announcement's contents because they think it comprises a significant amount of short lived information and instead place more, if not all, of their faith in previous earnings projections.

As a result, investors share valuation will be partially modified by the earnings report. The theory of an efficient market is called into question by evidence of under reaction. According to the EMH, stock prices reflect all readily accessible pertinent information right away. In an efficient market we should anticipate a favorable correlation between market response and market news at the moment

the information is released. In other words, over a window that encompasses the event announcement, good news will be followed by positive market reaction and bad news will be followed by negative market reaction. As long as the news is gradually spreading throughout the market, there will be gradual, comparable reaction prior to the event days with no additional reaction occurring on days after the announcement. The delayed response of investors to the earnings announcement refuses the efficient market hypothesis and accepts under reaction as cause of momentum/ contrarian effect.

1.1.5   EMH and Behavioral Finance Conflicts

Sharma (2014) outlines the inconsistencies between the two investment theories EMH and BF, mentioning the rationality of the investors, the importance of emotions, the information validity and demographic aspects. EMH emphasises the significance of accurate information processing by rational entities in predicting stock market conduct. However, the BF counterpart also considers how psychological and emotional fundamentals in addition to facts, influence people's behavior and the stock market. As a result, participants' psychological and emotional traits have an impact on decisions made by investors and rational evaluations are not always the final word (Sharma, 2014). As a result, since investors are social and emotional beings, objective processing of information does not always hold true. (Pompian & Wood, 2006) emphasizes the importance of emotion in his argument that human activity is more the product of irrational impulses than of reason. Additionally, the BF has deemed it almost impossible for investors to constantly have equitable access to information, which is instantly reflected in pricing, per the EMH impressions. In response, Pompian and Wood (2006) states aptly that there is an almost unlimited amount to know and study in the field of investment which cannot be mastered by even successful investors.

As a result, the market price could not be an exact reflection of information processing. BF maintains that differences in gender, age group, educational occupation and other demographic aspects have an impact on the attitude of investors. Whereas EMH fails to distinguish investors and consider them equally rational in

the decision making process. In conclusion, if markets were efficient, the stock market would not have bubbles and crises, which have been attributed to the irrationality of market participants.

1.1.6 Behavioral Biases and Existence of Anomalies

In the literature, the BF has successfully identified as reason for many stock market anomalies. Behavioral biases offered explanations while investors (even the well-informed) tend to behave differently to the same information (Tan, 2013).

When an incident is difficult to rationally explain using the accepted theories or presumptions, it is deemed to be anomalous. Anomalies, according to (Schwert, 2003), are observed situations that defy asset pricing theory or situations in which a return on shares displays patterns that contradicts asset pricing models evaluation. So, anomalies are market inefficiencies that allow investors to make some anomalous returns by employing carefully thought-out tactics within a variety of observable market movements that are not adequately supported by efficient market hypotheses. As a result, in stock market the anomalies signify the occurrence of unusual stock return patterns (Sedeaq & Nassar, 2016). Blume, Brock, Durlauf, and Ioannides (2011), market anomalies pose a significant challenge to the EMH since they represent a predictable returns pattern. Because of the pattern's regularity and dependability there exists some degree of returns predictability so many investors can take advantage of it. Condition of pricing or profit distortion is proof of the financial markets' inefficiency (Kroon, 2008). In addition, according to (Akkaya & Cimen, 2013) and (Guler & Cimen, 2014), a financial anomaly is equivalent to an abnormal return, which denotes a departure from the typical return. Structural problems including unfair competition, a lack of market transparency, or behavioral biases among different economic participants frequently lead to Behavioral finance. Stock market anomalies, according to (Vandana, 2016), are the observable patterns based on openly available information that may consistently produce abnormal returns. According to (A. Hassan, 2005), anomaly is also defined as an anomalous return that may have an impact on investors' decisions about portfolio management and their choice of investing strategy. Almost 34

anomalies are grouped as fundamental, technical and calendar anomalies by (Lo & Andrew, 2017). Momentum and contrarian anomalies are possible due to technical analysis i.e. pattern recognition by human and have been recognized as an important component of the technical anomaly family (Lo & Hasanhodzic, 2010).

1.1.6.1 Technical Anomalies

A market must pass RWH tests and be free of technical anomalies in order to be considered as weak-form efficient (Chinga et al., 2014). Anomalies that can be identified through technical analysis and are used to guide investment decisions by taking historical price trend patterns into account. In order to identify patterns that can provide successful predictions of future price movements, technical analysis entails looking at time series of previous prices and returns of a stock (Brown & Jennings, 1989; Verheyden & De, 2013). According to (Lo & Andrew, 2005), technical analysis is examining historical market data, such as trade volume and stock prices, to predict future price movements. There are various types of technical anomalies, including calendar anomalies, volatility clustering, momentum and contrarian anomalies (Chinga et al., 2014).

Momentum Anomaly   As one of the technical abnormalities in the stock market, the momentum strategy involves holding long positions in the historically best performing companies while having short positions in the historically poor performing stocks. The momentum effect postulates a favorable correlation between a securities' historical and anticipated returns (Pandey & Samanta, 2016). Also, momentum effect is generally characterised as a favourable relationship between a stock's return over a specific time period and its lag time return. Stocks having high recent returns, therefore forecast stronger future returns than those with low recent returns. On its basis, investors adopt the strategy of purchasing recent winners and selling recent losers (Jegadeesh & Titman, 1993; Bundoo, 2011). EMH finds it challenging to describe the momentum strategy because an increase in the price of an asset should not, by itself, be a guarantee of increased future price. This anomaly is thought to result from cognitive bias, including investors' slow response to fresh information and is known as under reaction hypothesis.

Contrarian Anomaly The possibility that an investment with poor present returns will create large returns in the future, and vice versa, is known as a contrarian anomaly. Contrarian anomaly exists in both long run i.e 3 to 5-year period and short run i.e. 1 to 3 month (De Bondt & Thaler, 1985). After their study in 1985, scholars from all over the world have debated the issue but have come to the conclusion that contrarian investment techniques produce higher returns. Therefore, the past performance provides the basis for assessing the present or future performance. Investors' under reaction or overreaction to current news have an impact on short and long run return reversal. Fama and French (1988), who support EMH, contend that the anomaly may not foreshadow accurate prediction or promise recurrent abnormal returns and that it will vanish as a result of the arbitrageurs' operations. Instead of the greater return itself, the profitability source is the subject of most disagreements on the topic of contrarian methods, and there are two competing theories being discussed. One is risk based explanation according to which investors get reward for facing extra risk and another is a behavioral explanation (Jegadeesh & Titman, 1993). However, overreaction was the primary cause which states that why investors with extensive market knowledge repeatedly go over the deep end and thus people make recurring and predictable mistakes (De Bondt & Thaler, 1985).

Adaptive Market Hypothesis Lo (2004) suggests the AMH to reconcile economic theories, particularly the EMH and BF, by applying the evolution principles to financial interactions that includes competition, adaptation and natural selection. This is done in an effort to account for efficiency and inefficiency. AMH and its assumptions and implications are discussed as follows.

1.1.6.2 Concept of AMH

The AMH can be thought of as an evolutionarily-based updated version of the EMH (Lo & Andrew, 2005). The main elements of the AMH follow the ideas that: (i) Investors or market players pursue their own interests; (ii) Investors or market participants make errors; (iii) Market participants or investors learn and adapt;

(iv) Market players or investors pick up new skills and adapt; (v) Natural selection shapes market ecology; and (vi) Market ecology is shaped by natural selection.

The debate between supporters of BF and EMH appears to be over due to development of AMH. It is based on evolutionary principles and the time varying level of market efficiency described by (Campbell et al., 1997). The simultaneous existence of EMH and BF is supported by (Lo, 2004) framework known as the AMH in a way that is intellectually consistent. AMH elaborates that the degree of market efficiency is influenced by environmental factors that define market ecology, such as the quantity and type of market competitors, the degree of profit opportunities, and the adaptability of the market participants, using the principles of evolution (Lo & Andrew, 2005). The sociobiology and bounded rationality notions proposed by (Williams, 1938) and Simon and Fassnacht (1982) serve as the foundation for the AMH. It indicates that investors learn via trial and error and take decisions based on their best guesses. The evolutionary model of individuals adapts dynamic environments via basic heuristics validates factors such as loss aversion, overconfidence, overreactions to information and other biases that form the cornerstone of behavioral school (Lo & Andrew, 2005).

Investors are capable of making mistakes and are able to learn from them. They also adjust to changing economic conditions. Therefore, markets are not always efficient but are typically competitive and adaptable, changing in their level of efficiency over time as the environment and players change. AMH portrays market players as acting in their own best interests, just like EMH does. AMH contends that although people frequently make mistakes, they have the capacity to learn from them and change their behavior as a result, in contrast to EMH, which maintains that people function in a fixed and equilibrium market environment and as a result, do not make mistakes (Lo & Andrew, 2005). Last but not the least, the market dynamics are driven by market participants and described by competition, adaptation and natural selection to environmental conditions. According to AMH which is a novel version of theory of market efficiency, prices reflect all the information about external factors, including the quantity and kind of competitors, profit potential and adaptability. Profitable prospects increase the number

of competitors, and as they engage in internal competition, the profits eventually run out making a market an efficient one. When a profit opportunity arises due to a change in market conditions, another cycle will begin. Along with the new comers, some of the departing participants will come back, while others go extinct (Lo & Andrew, 2005). Efficiency and inefficiency will alternate during the cycles. Due to changing business conditions, fluctuations in the number of participants entering and exiting the market, and variations in the nature and scope of profit opportunities, investment strategies will experience periods of profitability and loss (Lo & Andrew, 2005). The population of affected investors tends to vary when opportunities change, and vice versa as well.

1.1.6.3 Implications of AMH

There are four key implications of the new AMH (Lo & Andrew, 2005). First, according to AMH, the stock risk premium is erratic, altering over time, and path dependent due to variables such shifting market dynamics, rivals' preferences, and laws (Lo & Andrew, 2005). Because players who have experienced big losses in the past have a tendency to exit the market, natural selection affects who engages in market interactions today as opposed to in the past.

Second, according to Lo and Andrew (2005), there are random possibilities for arbitrage that vanish as soon as they are taken advantage of. Otherwise, there won't be any price discovery because there won't be any reason for players to process information (Grossman & Stiglitz, 1980). However, as some participants depart, the others arrive and rules due to economic conditions changes which yields fresh profits. The AMH describes highly complicated market dynamics, typified by cycles, trends, panics, manias, bubbles, crashes, and other typical characteristics of real markets, as opposed to the growing trend towards increased efficiency predicted by the EMH (Lo & Andrew, 2005). Thirdly, AMH investing techniques may be successful in one context but not in another. The AMH suggests that methods which are not profitable earlier return to profitability when environmental conditions favor them, in contrast to the EMH, which assumes that profit opportunities are eliminated by competition (Lo & Andrew, 2005).

Finally, AMH infers that different characteristics like value and growth can act as risk factors from time to time (Lo & Andrew, 2005). While AMH is flexible in terms of what can be a risk factor, EMH faces a significant issue of non-stationarity, where a trait can be a risk factor or not a risk factor at all (Lo & Andrew, 2005).

1.1.7 Islamic Financial System

1.1.7.1 Concept and Features of IFS

The most important task for investors is selecting the right investments. To make the best investment decisions, they must track and evaluate the performance of various investments. Investors can assess performance in a variety of ways to see if the value of their investment is rising over time and how well their investment is doing in reducing the risk. After emergence of Islamic financial markets, investors evaluate investments not only on the basis of risk and return but also give importance to the source of these returns. Evolution and emergence of Islamic finance can be traced back to 7th century through Prophet Muhammad (sallallahu alaihi wasallam) revelations which were bestowed upon Him by Almighty Allah. Developments in this regard started in 1950s' with establishment of Mit –Ghamr Bank in Egypt. To the date great deal of achievements and additions has been made in field of Islamic finance worldwide. Now there is Islamic Financial Service Board (IFSB) to regulate and supervise corporate governance issues. Islamic Finance now becomes a Global phenomenon which is not restricted to Islamic countries only. Academicians and researchers pursuing a lot of research in this field. A wide variety of banking services are now being offered from Islamic banks plate forms. It includes wealth management facilities, structured products for trade financing, hedging instruments, corporate financial solutions and investment banking facilities. Islamic capital markets are also getting fame, with the instruments like equities, asset management and Islamic bonds.

Different Islamic financial principles have been incorporated into contemporary conventional finance because of investors increased attention towards Islamic financial products and services, Islamic Banking and Islamic financial products (Saiti, Bacha, & Masih, 2014). Muslim investors are generally drawn to Islamic

investments since Islamic finance completely forbids interest on investments and gambling. Additionally, the ethical manner in which these investments are managed attracts non-Muslim investors' as well. On comparing, conventional and Islamic finance it is found that they differ in the way these systems are using to reach to the end product. Conventional systems use interest based activities for profit earning. On the other hand interest is strictly forbidden in Islamic system. In Islamic based system two peculiar features are its ban on interest and its limitation on investment in businesses that the Shari'ah forbids. While the conventional financial system concentrates on the economic and financial sides of transactions, the Islamic system places equal weight on social, moral and religious dimensions to enhance equity and fairness for the benefit of society, which can only be fully accomplished within the context of Shari'ah principles. Furthermore, Islamic stock market refrains from speculating activities and discourages taking pointless risk (Naughton & Naughton, 2000). These qualities are crucial for resolving the financial crisis.

1.1.7.2 Performance of Islamic and Conventional Stocks

Financial information plays an important role for forecasting both conventional and Islamic stock returns (Narayan & Phan, 2017). Time-varying discovery of price can forecast Islamic as well as conventional portfolio stock returns using a variety of econometric tests (P. K. Narayan, Phan, Thuraisamy, & Westerlund, 2016). When comparing Islamic and conventional stock benchmarks with Islamic equities, it is discovered that Islamic funds perform badly (Hayat & Kraeussl, 2011). The choice of determinants used by Islamic bond issuers differs significantly from conventional bonds (Azmat, Jalil, Skully, & Brown, 2016). The global financial crisis of 2007 had less of an impact on Islamic markets than on conventional markets (Rizvi, Arshad, & Alam, 2015). For Islamic equities, momentum methods can be successful, but the amount of profit depends on the stock's features (P. Narayan, Narayan, Phan, Thuraisamy, & Tran, 2015). The profitability of Islamic stocks is not the result of miss pricing but rather risk compensation (Dewandaru, Bacha, Masih, & Masih, 2015). Momentum profits continue to exist regardless of the stock's credit quality. Profits are higher for a portfolio of low

credit quality companies than for a portfolio of high credit quality stocks (Derigs & Marzban, 2009).

The above discussion puts emphasis on studying AMH for both settings i.e. Islamic shares and conventional shares evolving behavior. Investors' behavior and rationale is very important determinants of AMH and investors dealing in conventional and Islamic shares must have different preferences, so this comparative study is very important. It also encourages me to study existence of Momentum and contrarian premiums for both Islamic and conventional shares. Last but not the least identifying over reaction and under reaction as source of momentum/ contrarian premium for both Islamic and conventional shares is very vital.

1.2   Problem Statement

The AMH infers that market efficiency is a time-varying phenomenon and efficiency of market and profitability of trading strategies relies heavily on market sentiments. In order to intricate AMH, there are number of perspectives which can be studied. According to AMH, efficiency keeps on evolving, is momentum and contrarian anomaly also evolves with time? If efficiency is affected by market sentiments, is momentum and contrarian anomaly equally affected by market sentiments in both Shari'ah compliant stock markets and conventional stock markets? It remained to be seen whether market efficiency /inefficiency and momentum/-contrarian anomalies switch over time and how long will they take to revert back from one phase to another phase in both Shari'ah compliant stock markets and conventional stock markets. Similarly, to identify the underlying cause of momentum/ contrarian premium is also important. Over reaction and under reaction to news are identified as main causes of premium. It is therefore required to know the reason for momentum / contrarian profits for both Shari'ah and conventional markets. Global development of Islamic finance is witnessed in recent past. Some key drivers are making Islamic finance industry more efficient and competitive. Comparing with past, Shari'ah principles are more practical and flexible. Now Islamic finance industry is getting support from regulators and standard corporate governance principles are being observed by Islamic finance system. Due to

this, there is reduction in religious borders making Islamic stock market an active player in Finance industry. Comparative literature on Sharia compliant stocks and conventional stocks provided variety of results showing the different as well as same behavior of both types of stocks. All this makes it very important to study Islamic stock markets for different dynamics. There is need to study the existence of momentum and contrarian profits in Islamic markets, to explore the time varying nature of these profits and their behavior under different market sentiments. The comparative study in Islamic markets will provide results which can help investors in choosing optimal portfolios.

1.3 Research Questions

I. Are Shari'ah and conventional stock markets of selected countries efficient markets?

II. Does momentum and contrarian premium in both Shari'ah and conventional stock markets of selected countries exist and evolve to support AMH?

III. Out of momentum portfolios, contrarian portfolios, winner portfolios and looser portfolios which portfolios perform better in both Shari'ah and conventional stock markets of selected countries?

IV. Is there any relationship between Momentum and contrarian profits and Market sentiments in both Shari'ah and conventional stock markets of selected countries counterparts?

V. Does (over reaction or under reaction) is cause of momentum or contrarian premium in both Shari'ah and conventional stock markets of selected countries counterparts?

1.4 Objective of the Study

Study objectives includes

1. To test Shari'ah and conventional stock markets of selected countries for market efficiency.

2. To investigate existence of momentum and contrarian premium in both Shari'ah and conventional stock markets of selected countries in order to support AMH.

3. To evaluate the performance of momentum portfolios, contrarian portfolios, winner portfolios and looser portfolios in both Shari'ah and conventional stock markets of selected countries.

4. To confirm the relationship between Momentum and contrarian profits and Market sentiments in both Shari'ah and conventional stock markets of selected countries counterparts.

5. To identify (over reaction and under reaction) as cause of momentum or contrarian premium in both Shari'ah and conventional stock markets of selected countries counterparts.

1.5   Significance of Study

As an emerging area, this study provides a detailed investigation of AMH in the Shari'ah compliant stocks on large scale. This study validates AMH in specialized Shari'ah stock market which has a specific and different nature from its counterparts. This comparative study will provide inferences to resolve the debate between the opponents of EMH and those who are supporters of Behavioral Finance. It introduces the evolving nature of efficiency and inefficiency of market and settle the confusion about the notion of absolute efficiency or inefficiency in both conventional and Islamic Stock Market. The combination of methodologies (linear and nonlinear) provides the robust results. This study fulfilled an important role by investigating the existence of momentum and contrarian profits and their behavior in context of efficiency and inefficiency under different market sentiments. The study, therefore, provides useful information for investors who invests in Shari'ah compliant stocks by elaborating that whether different markets display

similar or different return behavior at the same period of time or should be viewed differently. The study will become one of the few studies to examine fluctuation in market anomalies. Belaire-Franch and Opong (2005), recognized regarding the knowledge encapsulating efficiency or randomness of marketable asset's behavior is very important for regulators, traders, and academicians. An insight into the Islamic stock markets could provide additional and relevant evidence for the AMH. Islamic stock markets are very important and have their own specificities. Regional and cultural attributes can shape the psychological biases under a specific market, which as a result can affect the market efficiency. So, observation of the AMH in the context of Islamic stock markets is relevant and need of time. To generalize AMH, it is useful to assess it across different contexts and different cultures.

This thesis, in particular by comparing Shari'ah and their conventional stocks ability to exhibit efficient as well as inefficient behavior in different market moods by taking advantage from existence of momentum and contrarian premium elucidates AMH in a better way. Thus, it not only adds to the literature of AMH but also contributes to the comparative literature of Shari'ah/ conventional stock performance and stock market behavior. This study is extended on seven Shari'ah and seven conventional markets from seven Islamic countries. The differentiated results from data set facilitates investors as well as researchers to look into the distinctive performance of momentum and contrarian premium of both Shari'ah and conventional stocks. Following the results of this research, investors can take decisions to either add Shari'ah or to add conventional stocks in their optimal investment portfolio, under the different market sentiments. It also addresses the behavioral aspects of investors in both Shari'ah and conventional markets by identifying the overreaction or under reaction as a cause of momentum/ contrarian premium. Thus, this study also contributes to the literature of Behavioral finance by explaining the differential reaction towards the market news from the Shari'ah as well as conventional stock investors.

This research provides useful insight for different stakeholders. In recent years, Islamic equity has become more widespread than ever, and its analysis contributes in better acceptance of this specific market. Investors become able to precisely, completely and quickly measure the behavior of particular market and to have easy

comparison with its competitors. This comparative research may assist decision makers relating to finance to make up-to-date judgements while constructing investment portfolios. It makes behavior of Islamic equity markets more understandable for investors and regulators'. Moreover, the study conclusions may inspire more seekers/researchers to explore more about the behavior and specifications of Islamic equity markets through empirical investigations. The predictable patterns of prices makes Islamic equity markets more speculative which calls for more attention of regulators to control these markets.

Chapter 2

Literature Review

Introduction

This chapter examines how stock return behavior and momentum / contrarian anomaly behavior has affected market efficiency over time. The chapter analyses EMH using various studies that have already been done on market efficiency and market anomalies using various statistical and econometric tools in stock markets of both emerging and developed countries, while putting special emphasis on Shari'ah and conventional markets in specific Islamic countries. Review of the relevant literature reveals that few research on the subject have focused on emerging nations along with little comparative studies on the stock markets of Shari'ah and conventional nations, whereas the majority of studies on the subject have focused on the stock markets of established nations. Appreciating efforts of (Roberts, 1967) early work on the concept of market efficiency is discussed in Section 2.1. Fama (1970) provides a more thorough examination and presentation of this work. Section 2.2 presents early research work of (Jensen, 1978), who supports the efficient markets hypothesis, but more recent evidence (after the middle of the 1970s) has shown several anomalies known as "market anomalies," and these seasonal patterns seriously call into question the reliability of both the efficient markets hypothesis and EMH. The Adaptive Market Hypothesis (AMH), put forth by (Lo, 2004), resolves this paradox. As a result, section 2.3 examines the empirical evidence of changing market efficiency and talks about AMH. In order to determine

the levels of efficiency, past studies using linear and nonlinear tests are used to describe the behavior of equity market returns. Literature on the under reaction and over reaction as a cause of potential momentum/contrarian anomalies is described in Section 2.4. Several research have been undertaken to support the notion that market oddities and efficiency are developing. The comparative analysis of conventional and Shari'ah stocks spanning many qualities are summarized in Section 2.5. To the best of the researcher's knowledge, no prior study has used AMH to examine the changing nature of market efficiency, momentum, and contrarian anomalies for Shari'ah as well as conventional market in Islamic frontier and emerging markets using firm-level data. There exists theoretical gaps that are presented later in the chapter.

2.1 Empirical Studies on Weak form Market Efficiency

The theoretical underpinnings of EMH can be traced back to random walks, which Bachelier first proposed in his Ph.D. dissertation presented in 1900 (MacKenzie, 2006). According to his analysis, commodity prices change at random (Jethwani & Achuthan, 2013). Prior to 1964, the technical analysis and fundamental analysis were two well-known approaches used in investment and financial assessments. Technical analysts are known as chartists since their work involves analysing historical statistical data, such as commodity values and prices as well as return patterns. They held the opinion that the markets are being 90% psychological and 10% rationality is there only (Malkiel, 2003) whereas fundamental analysis focuses on examining the factors at play in the economy that are relevant to financial markets in particular. Three types of market efficiency (allocation, informational, and operational) are of interest to economists in the capital markets. Allocation efficiency deals with allocating capital funds in the most effective manner, operational efficiency, deals with carrying out transactions for market participants at a reasonable cost, and informational efficiency, on the other hand, deals with the reflection of available information into the price of securities. The Informational

Efficiency is the main topic of the current study. The phrase "efficient market" was first used by (Fama, 1965), who claimed that stock market prices are determined by a random walk. In his dissertation, he makes the case that stock prices are unpredictable because they behave randomly.

2.1.1 Empirical Studies of Weak form Market Efficiency in Developed Economies

With a variety of findings from both emerging and developed markets, EMH is a subject that is frequently explored in financial literature. Studies have confirmed the existence of WF-EMH in industrialised economies. Kim et al. (2011), when examined index data of the DJIA (Dow Jones Industrial Average Index) on daily basis throughout the period of January 1900–June 2009, provided support for the work done on the US equity market. The results showed that when market circumstances and economic fundamentals changes, it caused returns on the stock to fluctuate over time. Similar to this, (Seiler & Rom, 1997) defended the effectiveness of the New York Stock Exchange, which examined the stock price behavior of all listed companies over the years 1885 to 1962 in an effort to forecast the stock market. However, they discovered that monthly and weekly returns performance were considerable but it did not help investors to foresee the future trend. They noticed same random walk behavior in daily stock prices as well. The WF-EMH was supported by (Sheikh & Noreen, 2012) in the UK equity market. They proved that UK fund managers couldn't foresee how stocks would behave in the future. Their conclusions were based on monthly return data collected from 50 UK mutual funds between 1990 and 2008.

Opong, Mulholland, Fox, and Farahmand (1999) used data of the London Financial Times Stock Exchange for the period (1986–1997) for all listed companies shares to demonstrate market inefficiency. They also noted that the major economies China, Germany, India, South Korea, the United States, Brazil and the United Kingdom were inefficient from January 2007 to December 2010. They also discovered that the degree of efficiency of these markets fluctuates over time. It declined during the period of Global Crisis and then raised again. Fattahi (2010)

employed autocorrelation, autoregressive tests and variance ratio, to determine whether or not the German stock market behaved randomly or efficiently. The author demonstrated that the random walk exists in DAX daily returns, which supported the weak-form efficiency.

2.1.2 Empirical Studies of Weak form Market Efficiency in Emerging Stock Markets

Mishra (2011), examined the use of RWH in three developed and five rising economies, found that these markets are weak form inefficient. These economies were found to not adhere to a subpar type of efficiency. However, it was discovered that these inefficiencies were related to inventions and financial products, and that over time, markets became efficient. For the years (1985 to 2001), (Laopodis, 2004) provided support for the WF-EMH for the Athens Stock Exchange. They made a connection between stock market activity and declarations of financial liberalization. (Aga & Kocaman, 2008) demonstrated the validity of the EMH on the Istanbul Stock Exchange (ISE). In another discussion paper (2015) 16 markets, including 5 developed, 9 emerging, and 2 frontier markets were studied. Efficiency was witnessed among all developed markets, whereas all frontier markets were ineffective, with varying outcomes for less developed markets. Similar to this, (Malhotra, Tandon, & Tandon, 2015) used run test and autocorrelation to analyze weak form of efficiency for daily, weekly, and monthly returns from 1997 to 2012 for Asia-Pacific markets representative 10 selected stock exchanges. The findings demonstrated that their monthly returns were weak form efficient but that daily and weekly returns lacked random walk features. The findings have significant ramifications for investors who can profit from market inefficiencies by holding a well-diversified portfolio in these developing nations (Malhotra et al., 2015).

Said and Harper (2015) used Box-Ljung test and auto correlation statistics to examine weak performance at the Russian stock market for daily index returns from 2003 to 2012. Mollah (2007) demonstrated market efficiency for daily stock returns of the Botswana Stock Exchange using the triangulation econometric approach for a sample period from 1989 to 2005. For share prices daily data, the

Gulf Stock Market over a ten-year period (2000–2009) did not provide evidence of any weak forms of efficiency. The inefficiency of Chinese Stock Market was also observed by, (Groenewold, Tang, & Yanrui, 2004). However, Post-SOE reform in China (Chong, Lam, & Yan, 2012) studied the market efficiency. Their findings showed that the pre-SOE reform era saw aberrant returns and abnormal earnings. Between 1991 and 2010, they looked at SHC Index i.e. the Shanghai Composite Index and SZC Index the Shenzhen Composite Index.

A sample of 20 companies from (Abeyratna & Power, 1995) study of the Colombo Stock Exchange from 1990 to 2001 did not reveal any form of efficiency. The Jung-Box test was performed on data of daily, weekly, and monthly frequency, and the results demonstrated that stock price behavior could be predicted based on historical data. Poshakwale's statistical findings from 2002 support the claim that RWH's daily returns had little impact on the Indian stock market. According to earlier studies, (Masood, Ashraf, & Ahmed, 2006) discovered weak forms of inefficiency for the Indian market (Hamid, Suleman, Ali Shah, & Imdad Akash, 2017) looked into the stock markets of the Pacific-Asian nations, including Hong Kong, Malaysia, Korea, India, Sri Lanka, Philippines, China, Taiwan, Singapore, Pakistan, Australia, Indonesia, and Thailand. Between January 2004 and December 2009, the study used the Unit Root, Q-statistic Test, and Autocorrelation. It came to the conclusion that not all countries' monthly prices matched the weak efficiency form.

2.1.3 Empirical Studies of Weak form Market Efficiency in Developing Economies Stock Markets

Ekechi (1989) also discovered no proof of RWH for the Nigerian Stock Market during the years 1980–1986. This result was supported by the author's documentation that it was compatible with (Granger & Ap, 1978) that there is a likelihood that shares having infrequent trade may not observe a random walk. The Dhaka Stock Exchange sample for EMH was rejected by (Mobarek & Keasey, 2000). A. Hassan (2005) also declared weak form inefficiency in daily, weekly, and annual returns throughout the years 2000–2008 for the same stock market. Alkhatib and

Harasheh (2014) investigated Palestine's market efficiency and proposed that the PEX market is inefficient. It's possible that inefficiency is because of presence of behaviors like autocorrelation and stationarity. Similar to this, from July 2012 to June 2013, (Guermezi & Boussaada, 2016) investigated the weak type of efficiency on the Tunisian Stock Market. The investigation came to the conclusion that the country's financial sector, did not exhibit inefficient behaviors. While studying daily data from 2011 to 2016 of Ugandan Securities Exchange (USE) to evaluate weak form efficiency, linear tests provides evidence of weak form efficiency. Estimates from non-linear models, on the other hand, provide evidence against the USE's weak-form efficiency. The study supports that it's possible that technical studies and linear models have no idea how to forecast future returns (Emenike & Kirabo, 2018).

2.1.4 Empirical Studies of Weak form Market Efficiency in Stock Markets of Islamic Countries

Following Arab economies were considered by (Abdmoulah, 2010) to evaluate their form of market effeciency: Tunisia, Dubai, Egypt, Qatar, Jordan, Morocco, Bahrain, Saudi Arabia, Oman, and Kuwait. He applied the following test, the GARCH-M (1,1) technique with state-space time changing parameter, using data of daily frequency ending in March 2009. His research revealed that all markets had a poor level of efficiency and were extremely sensitive to recent shocks. In order to examine weak forms of efficiency, several academicians have undertaken experiments in the Pakistani equity market. For the daily, weekly, and monthly data, (Mustafa, Nishat, et al., 2007) found weak form of efficiency. On basis of non-linearity tests on weekly and monthly data, weak form efficiency was discovered.

In contrast to earlier results of efficiency, (Haider & Nishat, 2009) found evidence of inefficiency for the KSE. Tahir (2011) rejected WF-EMH for 20 listed businesses on the KSE between the years of 2000 and 2009 based on technical analysis. Similar to this, WF-EMH for KSE-100 Index for weekly data during the ten years (2000-2010) was rejected by (A. Haque, Liu, & Nisa, 2011). His research

showed that historical data had patterns and could be utilised to forecast future results.Sultan, Madah, and Khalid (2013) evaluate the Kuwait and Karachi stock exchanges' subpar efficiency between 2005 and 2010. The results suggest that EMH for both markets is inefficient when using ADF and autocorrelation. Using daily data from the KSE-100 index for two years (2009 and 2010), (Rehman & Qamar, 2014) discovered market inefficiencies. Budd (2012) looked at Saudi Arabian stock market's seventeen sectors from April 2007 to May 2011 under the efficient market and random walk hypothesis. By using tests of runs and variance ratio to examine the RWH and EMH, he discovered that none of the seventeen Saudi stock market sectors support the random walk theory according to the variance ratio test. Runs test provides evidence of weak form efficiency in the banking, construction, insurance, and telecom sectors.

Research done on Saudi Arabia by (Asiri & Alzeera, 2013) in which they used daily data from October, 2006 to November, 2012 to examine all-share index and all sectoral indices for weak form of efficiency. For a non-stationary series, they utilised the Unit Root Dickey-Fuller test, Durbin-Watson test, Pearson Correlation test, and Wald-Wolfowitz runs-test. It was determined that 11 of the indices, including the all-share price index, followed a weak form of efficiency. In a similar vein, (Al-Abdulqader, Hannah, & Power, 2007) discovered that 45 listed businesses used filter rule tactics to follow the weak form of efficiency. Here, 45 listed firms were tested for weekly data from July 1990 to August 2000 utilising the moving average test and filter rule procedures. However, (Dahel, Laabas, et al., 1999) examined stock markets of Bahrain, Oman, Saudi Arabia and Kuwait for the weak form of efficiency using weekly data from September 1994 to April 1998. The unit root test, autocorrelation tests and variance ratio, among others, were used to show that Saudi Arabia, Oman, and Bahrain rejected one of the tests (autocorrelation), whereas the Kuwait stock market supported the weak form of efficiency in each of the three tests. In a similar vein, (Hokroh, 2013) came to the conclusion that there is insufficient data to establish if the Saudi stock market exhibits weak efficiency both before and after Tadawul's inception. Daily data were used from January 1, 2007, to March 18, 2007, prior to Tadawul, and from March 19, 2007, to May 29, 2007, following Tadawul. The runs test of randomness and

autocorrelation were performed to evaluate the strength of an efficiency. By using data of weekly frequency from 2000 to 2001, A. Haque et al. (2011) examined the Pakistani Stock Market's subpar efficiency. They demonstrated that the Pakistani stock market is an inefficient market using autocorrelation, variance ratio, and runs test. The analysis of earlier literature, however, revealed that there is not enough evidence to prove that the Saudi stock market operates with a low level of efficiency. According to Khoj and Akeel (2020), using daily data from the Tadawul All Share Index (TASI), it is found that Saudi Arabian stock market adheres to the weak form of market efficiency. To evaluate the daily data from 2012 to 2019 the study used a variety of test types, including autocorrelation, unit root test, runs test, and variance decomposition test.

On the basis of all studies discussed above the following hypothesis drawn out for this study;

Hypothesis 1: Both Shari'ah compliant stock markets and their conventional counterparts are efficient.

2.2 Empirical Studies on Market Anomalies

Anomalies are a sign of inefficient markets; some just occur once and disappear, while others do so again or continually (Tversky & Kahneman, 1986). A deviation from the currently accepted paradigms that is too significant to be overlooked, too systematic to be written off as random error, and too fundamental to be handled by loosening the normative framework are all examples of market anomalies. When a stock's or a group of stocks' performance deviates from the assumptions of the efficient market hypothesis, this is referred to as a financial market anomaly in conventional finance theory. Financial market anomalies are movements or events like these that can't be explained by the efficient market hypothesis (Silver, 2011). Some of anomalies which are very common are as follows:

Week end Effect: Proposed by (Smirlock & Starks, 1986), weekend effect states that on Monday, stock prices are probably going to decline which means Monday's closing price are lower than the prior Friday closing price.

Turn-of-the-Month Effect: Agrawal and Tandon (1994) exclaimed that the final trading day of the month after and the first three trading days of the following month are likely to see an uptick in stock prices.

Turn-of-the-Year Effect: Agrawal and Tandon (1994) explains the rise in stock prices and stock exchange trading activity during the final week of December and the first part of January.

January Effect: Chatterjee, Maniam, et al. (1997) gave this concept which claims that it is the tendency for small-company equities to outperform other asset classes and the market in the first two to three weeks of January.

Value anomaly: Graham and Dodd (1934) talks about value anomaly where due to investors' inaccurate predictions, projected earnings and returns of growth companies are exaggerated while underestimating those of value companies.

Low Price to Book: Fama and French (1992) when compared stocks with high book to market ratios to stocks with low price to book ratios produce higher returns.

High Dividend Yield: (Fama & French, 1988) found out that high dividend yielding stocks outperform the market and produce higher returns.

Low Price to Earnings (P/E): Peavy and Goodman (1983) observed that while equities with high price to earnings ratios typically underperform the index, those with low price to earnings ratios are more likely to generate higher returns and outperform the market.

Moving Averages: Brock, Lakonishok, and LeBaron (1992) proposed a crucial method of technical analysis in which stock buying and selling signals are produced by both long- and short-term averages. In this technique, stocks are bought when short-term averages rise above long-term averages and sold when short-term averages decline below long-term averages.

Trading Range Break: Brock et al. (1992) explained the method of technical analysis which is focused on levels of support and resistance. When a price crosses the local maximum resistance level, a buy signal is generated. Investor pressure to sell at the top pushes the resistance level higher than it was previously. A buy signal results from this break out. When a price reaches the support level, which

is the lowest price level, a selling signal is generated. Therefore, according to technical analysis, buy when prices rise above their most recent peak and sell when they decline below their most recent trough. But it is challenging to implement this tactic.

The Size effect: Banz (1981) discovered that as firm size increased, the value of the stock market fell. The phenomena that small-cap stocks outperform large-cap stocks and CAPM-calculated returns (Reinganum, 1981) especially in January, is a glaring contradiction to EMH because firm size and the start of January are both regarded as public information.

Contrarian Effect/ Reversal effect: De Bondt and Thaler (1985) concluded after conducting a research that the stock price deviates from its fundamental worth because investors are overly positive about the past winner portfolio and much pessimistic about the past loser portfolio. The Winner-Loser Effect is supported after a period when the market start acting normal and past losers are earning positive excess returns while past winners are earning negative excess returns. As a result, a novel technique for forecasting stock returns can be developed by buying the loser portfolio from the previous three to five years and selling the winner portfolio.

Momentum effect: Jegadeesh and Titman (1993) discovered that stock returns are positively associated in the time period of 3 to 12 months, i.e., the Momentum Effect, at a time when more and more empirical evidence is being gathered to support the Winner-Loser Effect. The same outcomes were achieved when (Chan et al., 2000) increased the research samples used by (Jegadeesh & Titman, 1993). Focus of our study is on the contrarian and momentum effect anomalies because they occur as a result of behavioral biases and serves as basis of stock markets' adaptiveness nature in comparison to efficient nature of stock markets.

2.2.1 Empirical Studies on Momentum Effect and Contrarian Effect

Using techniques comparable to those of (Lo & MacKinlay, 1990) and (Conrad & Kaul, 1998) analysed momentum strategies in the AMEX stock market and US

NYSE from 1926 to 1989. The analysis split the earnings from securities into two parts: a cross-sectional fluctuation and a time-varying component with various formation and holding periods. They tested 120 trading strategies and discovered that 50% of them produce notable profits. They hypothesised that momentum and contrarian strategies were generally equally profitable over the course of medium-term (3 to 12 months), short-term (1 week to 1 month), and long-term (3 to 5 years), with the exception of the period from 1926 to 1947. They proved that variations in mean returns can be used to explain the performance of the contrarian and momentum strategies.

When ranking their data into 20 separate industry groupings, (Moskowitz & Grinblatt, 1999) analysed the momentum of the various industries. They discovered that the momentum techniques don't produce much profit for any one industry. However, the techniques are frequently quite profitable when they buy the successful industries and sell the unsuccessful ones.

Alonso and Rubio (1990), studied the contrarian anomaly and concluded that the past losing stock portfolio's return was 24% more than past winner stock portfolio. Their research sample was from Spanish market. Kato (1990) found out that contrarian strategy holds true for the Japanese capital markets. (Clare & Thomas, 1995) checked for validity of the contrarian anomaly in the UK market. They concluded that the past losing stock portfolio's return was 1.7% more than past winner stock portfolio. Literature provided support for existence of contrarian anomaly and contrarian premium in conventional financial markets of various countries which includes South Africa, Canada, Japan, Italy, Germany, UK, and France, Malaysia and China. (Page & Way, 1992; Baytas & Cakici, 1999; Hameed & Ting, 2000; Z. Ahmad & Hussain, 2001; Rafik & Marizka, 2017; DOĞUKANLI & ERGÜN, 2011; Chen, Jiang, & Li, 2012).

Daniel et al. (1998) and Asem and Tian (2010) studied the connection between momentum premium and market conditions. Results showed that the momentum profits will be higher when the markets remains in the same state and these profits will be lower when markets transitions take place. On the other hand, (Cheema & Nartea, 2017) research showed that, in case of China momentum returns follows down market.

According to Schiereck, De Bondt, and Weber (1999) who examined all significant businesses listed on the FSE between 1961 and 1991, momentum and contrarian strategies seemed to outperform a passive strategy that invested in the market index.

Fung (1999) used a 2-year portfolio building period for winners and losers to study the contrarian approach in the Hong Kong Heng Sang Index (HSI). He discovered that, by approximately 10% a year, the loser portfolio greatly outperforms the winner portfolios. It is very different from the 8% (De Bondt & Thaler, 1985) claimed to have observed in the US equity market. The study did note that the Hong Kong market has unique characteristics, such as a different stock market capitalization, significant liquidity, the existence of a legal and accounting system, similarity to western standards, and the dominance of mutual funds.

The Chan et al. (2000) finding that momentum methods could perform well in international investment is the key piece of evidence. The study chose winners and losers based on their performance departure from the U.S. market, but they specifically suggested that increasing portfolio weights in countries with recently performing stock markets and reducing weights in relatively underperforming markets could improve portfolio performance. Barber and Odean (2000, 2001) found strong evidence in support of momentum effects among retail investors. Daniel et al. (1998) suggested that investor will be in state of higher overconfidence when the markets keeps the pace with its same state (UP or DOWN).The profitability of the momentum investment approach was examined by (Hameed & Ting, 2000) in six Asian stock markets (Thailand, Taiwan, Korea, Singapore, Malaysia, and Hong). They discovered that the investment techniques based on momentum do not produce large momentum profits. They came to the conclusion that elements influencing the American momentum phenomenon are not as prevalent in Asian markets and that the impact of national particular traits can vary internationally.

In 2002, Kang, Liu, and Ni investigated how stock returns behaved on the Chinese stock exchange. They discovered that both intermediate-term momentum and short-term contrarian strategies produce sizable rewards. Further investigation led to the suggestion that the only source of short-term contrarian gains is overreaction to firm-specific information. Momentum profits are not distinct in

the medium term, which is explained by the dominance of the overreacting effect. Similarly, (Griffin, Ji, & Martin, 2003) performed their research from data across the globe. They argued that both good and bad circumstances can be attributed to economically large and statistically significant momentum profits. They also concluded that macroeconomic risk fails to explain the momentum profits. Results of (Conrad & Kaul, 1998) research showed that macroeconomic risks and time varying risk premium successfully explains the existence of the momentum premium. Pástor and Stambaugh (2003) and (Sadka, 2006) claimed that some part of momentum risk can be explained by liquidity risk. As recent winners faced greater exposure to liquidity risk than recent losers so they will enjoy a return premium going forward.

In the Spanish stock market, (Marhuenda & Forner, 2003) discovered indications of momentum and contrarian impacts. Their investigation was limited to the Spanish market and did not consider the global perspective, but they came to the conclusion that contrarian strategies presented profitable chances over 60-month periods while momentum strategies may be profitable on a 12-month basis.

Farooqi, Ngo, Huerta-Sanchez, and Chen (2015) looked for the prevalence of the momentum strategy in the Dow Jones Islamic Index. They concluded that the momentum strategy works well for Islamic stocks. Narayan and Phan (2017) also inferred similar findings for the Dow Jones Islamic index. Li, Ee, and Rashid (2016) inspected the momentum anomaly in the Malaysian Islamic stock market. He found that there is very limited literature regarding to the momentum strategy for Islamic stocks.

Shah and Shah (2018) looked at the profitability, risk-based explanation, and deconstruction of the momentum profits, among other elements of the momentum tactics on monthly data from 581 companies listed on the Pakistan Stock Exchange (PSX) from 2004 to 2014. While the majority of the contrarian profits were only seen in the presence of penny stocks, which have share prices of PKR 10 or less, the presence of momentum profits throughout both short and long time horizons was discovered. It was determined by applying the (Lo & MacKinlay, 1990) model that the overreaction effect is the main cause of contrarian profits in PSX. Similar to this, the under reaction effect is the main cause of momentum profits.

Nanda and Adrianto (2019) tested the Islamic stocks for validity of momentum and contrarian strategies. Data for this study was collected from the Jakarta Islamic 30 index for the period of 2010 to 2018. Results showed that there were no proof for validity of momentum and contrarian strategies in the Jakarta 30 index. Tee et al. (2019) analysed the momentum strategy's validity for the Malaysian capital markets. This study used both conventional and Islamic stocks data and found that both conventional and Islamic stocks momentum strategies worked very well.

Imran, Wong, and Ismail (2019) Investigated the short-term momentum effect's existence in 13 developed and emerging stock markets which includes Poland, Turkey, Pakistan, Australia, Brazil, Indonesia, Japan, Thailand, Brazil, Taiwan, Singapore, South Korea, Hong Kong and Malaysia. The momentum returns are calculated using the J6K6 momentum investment technique. In all 13 stock markets, their study identified a negative substantial momentum effect. Although the momentum effect is present in 13 nations, momentum investing does not allow investors to make exceptional profits. These findings are extremely important for practitioners because they warn them against using momentum investment strategies in these nations since they are losing money. Additionally, regulators of the stock market want to base these markets on the idea of the efficient market hypothesis.

Sinlapates and Chancharat (2022) studied period from January 1, 2016 to December 31, 2019 to determine whether companies listed on the Thailand Sustainability Investment outperformed those listed on the Stock Exchange of Thailand (SET) in terms of contrarian profits. Results showed that contrarian gains are more successfully generated by SET-listed companies than those listed on Thailand Sustainability Investment.

Jagirdar and Gupta (2023) built a portfolio of returns of listed equities in India's Bombay Stock Exchange (BSE) during a period from 1990–1991 to 2018–19, and empirically assessed and analysed the contrarian strategies. It is demonstrated via a Venn diagram that contrarian investment methods essentially choose several equities at any given period. The study also reveals that both value and contrarian investment strategies can function in the same way when it comes to market efficiency.

On the basis of all studies discussed above the following hypotheses are drawn out for this study

Hypothesis 2: Both Shari'ah compliant stock markets and their conventional counterparts are inficient due to presence of momentum premium in the market

Hypothesis 3: Both Shari'ah compliant stock markets and their conventional counterparts are inefficient due to presence of contrarian premium in the market.

2.3 Empirical Studies on Adaptive Market Hypothesis

The majority of weak form EMH work applies tests and models to the whole sample period under the assumption that market efficiency is a constant trait that does not change regardless of market growth stages or events in the market ecosystem. By doing this, they ultimately addressed the problem of efficiency of market and existence of anomalies in absolute form and came up with contradictory results. Campbell et al. (1997) propose the idea of relative efficiency, a novel methodology that enables the level of market efficiency to be examined across time, in terms of relative efficiency. This supports Lo (2004) claims in AMH, who suggested a new framework of the adaptive market hypothesis (AMH), which is highly helpful to explain the observed time fluctuation in the levels of market efficiency. This framework incorporates the fluctuating degree of market efficiency. Lo (2004) explains the adaptive character of the agents and how subsequently markets become adaptive by fusing the evolutionary method of biology with economic interactions. Lo and Andrew (2005) calls for an evolutionary view on market efficiency (Lim, Habibullah, & Hinich, 2009) in an effort to bring the opposing camps of EMH and behavioral finance together. According to (Lo & Andrew, 2005), the development of AHM is based on limited rationality concept which ensures that nothing results in "all-or-none condition" for stock market efficiency, but rather, there exists continuously changing conditions over time. They explained that market efficiency is related to environmental elements characterising market ecology, such as the number of rivals, the scope of profit opportunities, and the flexibility of the market

participants. AMH claims that the survival of the fittest influence the evolution of markets and institutions in actual markets, which contain frictions, in contrast to EMH, which posits a friction less market.

Anatolyev and Gerko (2005) looked into AMH in the US stock market and found that inefficiencies do occur in addition to efficiencies. Similar to this, Todea, Ulici, and Silaghi (2009) found that Australia, Singapore, Japan, Hong Kong, Malaysia and India had sub-periods of linear and non-linear reliance with variations in the intensity of dependencies across time. In a different study, (Ito & Sugiyama, 2009) used moving average models and time-varying auto-regressive as the estimation techniques and came to the conclusion that market efficiency in the US stock market cycles and changes with time. Lim (2007) examined two developed and eleven emerging markets. He applied the portmanteau bicorrelation test and sample framework which has rolling specifications. He supported AMH as his results showed that market efficiency is an evolving phenomenon.

Todea et al. (2009) investigated the profitability of investment strategy. Windows are forwarded here by using moving average strategy. Here, conclusive results showed that returns evolves consuming certain time, but are periodic in nature. Market inefficiency has been measured by (Ito & Sugiyama, 2009) via time varying structure. Results showed that degree of inefficiency of market keeps on changing on a timescale. They used daily DJIA data over time and applied tests of automatic variance ratio and portmanteau tests. They used a rolling window strategy. Results showed that predictability is time varying and is directly proportional to conditions of the market.

The findings of rolling window automated, wild-bootstrap, and combined sign VR testing in Austria and 12 other emerging markets demonstrated that predictability is less for developed markets (Dyakova & Smith, 2013). Similar to this, (Urquhart & McGroarty, 2014) used subsample techniques to look at the development of linear / non-linear dependence in long-term stock market data from the US, UK, and Japanese markets. All markets experience periods of dependency and independence, as demonstrated by the results of the linear runs, autocorrelation, and VR tests, while the results of the non-linear tests supports strong dependence in all windows.

Smith (2012) examined the nature of adeptness of 15 markets (Markets of Greece, Portugal and the United Kingdom). The results supported AMH as there was an evidence that return predictability was time varying. Urquhart and McGroarty (2014) extended their study on AMH in the US, UK and Japanese stock markets. They used linear and nonlinear methods of testing. Their findings supported AMH, as it provides a better clarification of the stock returns behavior than the EMH.

Zhou and Lee (2013) concluded that total efficiency of markets keeps on changing on a certain time while showing dependency on the conditions of the market. Their findings support the AMH. Hull and McGroarty (2014) concluded with empirical indications in line with AMH. They took data from 22 countries and used the Hurst–Mandelbrot Wallis rescaled range to measure the market efficiency.

Manahov, Hudson, and Gebka (2014), showed that stock markets dynamics are dependable on evolutionary nature of AMH. They used data from the FTSE100, S and P500 and Russell 3000. They noticed that traders act positively in efficient adaptive system which grows over a certain period of time.

Additionally, Mobarek and Fiorante (2014) used autocorrelation, run, and VR tests in five-year fixed length moving windows to test the same hypothesis in the BRIC, UK, Japan and US. The markets are allegedly moving in the direction of greater levels of efficiency. de Almeida Dourado and Tabak (2014) used generalised spectral analysis and rolling wild bootstrap VR statistics to evaluate daily frequent index data in Brazil from 1991 to 2012 and test for linear and non-linear correlations, respectively. RWH was discovered to be present but to vary in accordance with AMH. Shi and Zhou (2017) used weekly and daily data from 1990 to 2015 in China. They discovered that return predictability varies over time, with high predictability being reported around 2007 (the year of the financial crisis).

Research in domain of AMH also covers developing and emerging economies. For instance, between 1998 and 2011, (Smith, 2012) used daily index to conduct linear VR experiments. Fixed-length rolling sub-period window assessments revealed alternating periods of efficiency and inefficiency, with Kenya, Zambia, and Nigeria being the most predictable while South Africa, Egypt, and Tunisia showed the

least predictability. Seetharam (2022) used conventional linear tests, the Hurst exponent, non-linear BDS, an artificial neural network, and sub-sample analysis to assess the daily, weekly, and monthly indices of 44 shares and six local indexes of the Johannesburg Stock Exchange from 1997 to 2014. The conclusion painted a picture of the JSE as a market with fluctuating levels of efficiency throughout time.

Gyamfi, Kyei, and Gill (2016) supported AMH as markets in Egypt, Botswana, Morocco, Kenya, Nigeria, Mauritius, South Africa, and Tunisia indicated times of unpredictability in rolling window spectrum test results despite being shown to be inefficient in absolute forms. A further research of the Ghanaian stock market employing data of index return from 2011 to 2015, rolling window VR, generalised spectrum tests, and the same finding (Gyamfi et al., 2016) was published. (Ahmad, Shahid, Ateeq, Zubair, & ul Nazir, 2018) focused on Asian economies and used sub-period techniques and linear tests for analysis. They found that the stock markets in Pakistan and India adjust, alternating between phases of efficiency and phases of inefficiency.

It is significant that in addition to stock markets, other markets have been tested for AMH. Charfeddine, Khediri, Aye, and Gupta (2018) used a state space GARCH-M model, which indicated time-varying efficiency in the developed bond markets of the US and UK as well as the emerging bond markets of South Africa and India, and the US market proved to be most efficient. Similar to this, Kumar et al. (2018) used data from 1999 to 2017 to validate the AMH in the Indian FOREX market. Later, (Urquhart & McGroarty, 2016) applied the rolling window Hurst exponent, VR, and BDS tests to examine the time-varying trend of precious metal returns. They demonstrated that the market is time-varying rather than static, with platinum being the most predictable metal and silver being the least.

Boya (2019) looked at the French Stock Market's level of market efficiency and tested the market for adaptive market hypothesis (AMH). In order to give a summary of the efficiency behavior from 1988 to 2018, a rolling variance ratio test technique is used and supports that the French stock market alternates between efficient and inefficient times. Additionally, periods of inefficiency correlate with

significant macroeconomic events. Meng and Li (2021) used order book of NAS-DAQ for the SPY exchange-traded fund data to study the connection between high frequency trading (HFT) and informational market efficiency. It is discovered that the efficiency level varies significantly over time and seems to cluster. High efficiency periods are followed by low efficiency periods, and vice versa. Additionally, we discover that HFT activity is increased during low efficiency periods. These results validates the claim that the adaptive market hypothesis (AMH) is a suitable description of how prices change to take information into account.

Lekhal and El Oubani (2020) used the daily returns data of the MASI index and studied Moroccan financial market for the period from January 1992 to September 2019 using several methods. Using rolling window tests, both linear and nonlinear tests to gauge the change of efficiency degree results of the linear and nonlinear tests showed that the efficiency level varies with time. Furthermore, it is discovered through the momentum test that profit chances occasionally occur and vanish after being taken advantage of. It's interesting to note that the momentum earnings depend on the level of market efficiency as well as certain market factors. Thus, employing trading methods like momentum, investors can profit from inefficiencies and specific market situations. Noreen, Shafique, Ayub, and Saeed (2022) employed investor myopia as a novel proxy to test the adaptive market hypothesis. Data from December 1994 to December 2020 were gathered from the New York Stock Exchange. Lower Partial Moment ratio was utilised as part of the robustness study. In the years from 1995 to 1999, 2002 to 2006, and 2010 to 2020, investors did not behave in a myopic manner towards losses, but in the years 2000 to 2001 and 2007 to 2009, they did. The study concludes that, in accordance with the adaptive market theory, the US market at different times act as efficient and non-efficient as investors switch between myopic and non-myopic loss aversion.

2.3.1 Adaptive Market Hypothesis and Momentum/ Contrarian Premium

Since it is so effective at identifying weak-form inefficiency, momentum and contrarian anomalies are now also assessed using the time-varying method of AMH.

Several studies have used the rolling window approach to find out why the momentum and contrarian irregularities continue to exist (A. Antoniou, Lam, & Paudyal, 2007) and (Asem & Tian, 2010).

Griffin et al. (2003) studied 22 OECD countries macroeconomic variables and found that the determinants like GDP, industrial protection, inflation, and default risk-premium, etc., failed to explain the presence of momentum anomalies and raised the direction for future research to identify the reason of momentum profit. Cooper et al. (2004) nominated markets as up or down state on the basis of past one to 3 years' market return. Findings showed that the momentum profits prevails when markets are in upstate.

Huang (2006) studied 17 MSCI countries and found that for up markets the momentum profits are statistically significant. Study data was from December 1969 to December 1999. Asem and Tian (2010) found that when the markets moved in the same state (up or down) the momentum profit is higher compared to when the profits reversed. Kim et al. (2011) confirmed that, the degree of return predictability were smaller during economic bubbles. Same results were found for associated uncertainties as well. For various asset classes researches by (Asness, Frazzini, Israel, & Moskowitz, 2014; Daniel & Moskowitz, 2016; Fama & French, 2012; Hong & Stein, 1999; Lee & Swaminathan, 2000), and (Moskowitz, Ooi, & Pedersen, 2012) presented strong evidence of momentum. Results supported that, Momentum effects are adaptively efficient. Antoniou, Doukas, and Subrahmanyam (2013) reported that momentum profits were more strengthen for the optimistic time periods in stock market.

Akhter and Yong (2019) investigated AMH by using the momentum and contrarian profits data and their time varying nature for Dhaka Stock Exchange (DSE) of Bangladesh. The study period was from January 1995 to December 2018. Results showed that there were time varying medium-term momentum profits which reverses in long term and were dependent on market conditions.

Lekhal and El Oubani (2020) scrutinized different aspects of the Adaptive Market Hypothesis (AMH). Financial market of Morocco was studied for the period from January 1992 to September 2019. Daily return data of MASI index was tested

through linear and nonlinear tests. Results showed that the degree of efficiency is time-varying. Momentum test further supported that profitability exits depending on opportunities coming our way from time to time. Once availed, these opportunities will disappear. The degree of market efficiency and market conditions are determinants of momentum profits.

Munir, Sukor, and Shaharuddin (2022) examined the existence of the AMH in South Asian emergent stock markets through the impact of altered market conditions on time-varying contrarian profitability. The empirical results showed that there is a significant contrarian influence in every emerging economy. It has been demonstrated that contrarian returns are stronger during market downturns, times of increased volatility, and crisis situations, like the Asian financial crisis. Contrary to what has been found in mature markets, the market state, not market volatility, is the main predictor of contrarian payoffs. We contend that the relationship results from structural and psychological variations in emerging countries gave rise to distinctive intuitions about returns on stock market oddities.

On the basis of all studies discussed above the following hypotheses are drawn out for this study

Hypothesis 4: There is a relationship between momentum profits and market sentiments in both Shari'ah compliant stock market and their conventional counterparts

Hypothesis 5: There is a relationship between contrarian profits and market sentiments in both Shari'ah compliant stock market and their conventional counterparts

2.4 Empirical Studies on Under Reaction and over Reaction Biases as a Cause of Momentum and Contrarian Anomalies

De Bondt and Thaler (1985) presented first study on overreaction (contrarian) anomaly. They analyzed the monthly rate of returns of the stocks traded on the NYSE for 56 years from 1926 to 1982. These results showed that winning and

losing stocks will perform in reverse after 36 months period. USA stock markets also showed the same results. (Howe, 1986; Zarowin, 1989; Aguiar & Sales, 2010).

13 European countries were included in a study by (Doukas & McKnight, 2005) that looked at international data from 1988 to 2001. When specific nations are examined, they found profitable 6-month/6-month momentum strategies in the majority of stock markets and profitable worldwide momentum strategies within the combined 3084 stocks. They used the under reaction theory, which is based on two behavioral theories—gradual information diffusion and conservatism bias—to explain the momentum. Researchers such as (Grinblatt & Han, 2005) and (Frazzini, 2006) have studied a link between momentum and the disposition effect. An artificial headwind could be created due to disposition effect which results in delayed response of buying or selling due to arrival of either a good or a bad news. Good news or bad news will not be fully reflected immediately in prices due to headwind effect. The momentum profits existence can be described by the market's late response (under reaction) to information and more specifically due to self-attribution biases. Daniel et al. (1998) implied that when public information is being underreacted it will yield short-run momentum profits. On the other hand due to the overreaction to private signal there will be event of long-run reversal.

Otchere and Chan (2003) investigated the pre- and post-Asian financial crisis periods of the Hong Kong market's overreaction phenomena from March 1996 to June 1998. They discovered that the Hong Kong market overreacted to information during this time. They discovered that winners tend to exhibit overreaction more so than losers. Hurn and Pavlov (2003) investigated the use of momentum methods in the Australian stock market. They looked at 200 stocks because tiny companies sometimes had liquidity problems, and they found that short- to medium-term momentum existed. They discovered that during the yearly holding term, momentum techniques produce a considerable profit of between 4.79% and 13%.

Griffin, Parker, and Mason (2010) looked at the widespread belief that, when compared to developed markets, emerging equities markets are characterised by considerable profits and weak and semi strong form market inefficiencies. The study did not establish when the contrarian and momentum strategies alter in

these markets or whether there is similitude and divergence in the momentum and reversal behavior in both markets. But it did examine the short-term reversal of momentum strategies and found that they earn similar returns in emerging and developed markets. Avramov, Chordia, and Goyal (2006) presented the fact that momentum earnings are high (low) when the market is highly liquid (illiquid) is the supportive evidence for this. Over the period of 1928 to 2011, a one standard deviation rise in overall market illiquidity reduces momentum earnings by 0.87 per month. In their 2016 study, (P. K. Narayan et al., 2016) looked at the profitability of momentum strategies in Islamic stocks. They discovered that momentum techniques are effective for Islamic stocks but are characteristics dependent after controlling for stock features, market conditions, and seasonal patterns. According to (Cheema & Nartea, 2017), momentum returns in China only coincide with downward market movements. The under reaction of the market to information can be used to explain the momentum profits.

On the basis of all studies discussed above the following hypotheses are drawn out for this study.

Hypothesis 6: Over-reaction to market news causes momentum premium in both Shari'ah compliant stock markets and their conventional counterparts

Hypothesis 7: Under reaction to market news cause momentum premium in both Shari'ah compliant stock markets and their conventional counterparts

Hypothesis 8: Over-reaction to market news causes contrarian premium in both Shari'ah compliant stock markets and their conventional counterparts

Hypothesis 9: Under reaction to market news causes contrarian premium in both Shari'ah compliant stock markets and their conventional counterparts

2.5 Empirical Studies on Performance of Shari'ah and Conventional Stock Market

Islamic finance is one of the fastest growing and adaptable phenomenon during the last two decades. That is the reason we can find the researchers to highlight the

comparative studies of Islamic and conventional markets to explore the difference and similarities between the two. Literature has supported that there are remarkable differences between these two especially in terms of relation between risk and return, volatility, performance and liquidity. It is interesting to research both of the markets to check difference between prevalence of momentum and contrarian profits in both markets.

Hassan and Girard (2010) conducted his research on monthly data of Global Dow Jones Islamic Index for 5 years from 1996 to 2000. Results showed the normal distribution of returns and weak form of efficiency. Hussein and Omran (2005) studied performance of Islamic indices. Results showed that non-Islamic indices have been outperformed the Islamic indices during bull market period but such results could not be obtained for bear market sub- period. He used CAPM, Sharpe, Treynor and Jensen to measure the performance.

Elfakhani, Hassan, and Sidani (2005) studied the 46 Islamic mutual funds and their behavior. Their results showed that there exists no specific difference among conventional and Islamic mutual funds. Contrarily, research showed that traditional competitors are being outstripped by Islamic indices. Outperformance was prominent in certain time periods (1996- 2003) and sub- periods (Jan 1996 to Mar 2000) and (Apr 2000 to Jul 2003).

Islamic and non-Islamic indices' comparative study has been conducted by (Girard & Hassan, 2008). They covered data from Jan 1999 to Dec 2006 and reported that indices run on Islamic principle's exhibits more growth also they are oriented as small-cap. On the other hand conventional indices possess more value and are mid-cap focused.

Alam and Rajjaque (2010) found that in period of general economic downturn, Islamic equities outperform the market in European market. It showed that during general economic downturn Shari'ah-compliant equity portfolios are less risky, and have higher robustness. Results showed, Islamic Equity Funds (IEFs) underperformed conventional ones when compared to their Islamic benchmarks; (Hayat & Kraeussl, 2011). Al-Khazali, Lean, and Samet (2014) found that conventional indices dominate Islamic indices in all markets except Europe for the periods

(1996–2012) and (2001–2006). For the period from 2007 to 2012 European, US and Global Islamic stock Indices outperformed the conventional ones. These results showed that during economic meltdowns Islamic investing is a better option as it outperforms the conventional investing.

Ho, Abd Rahman, Yusuf, and Zamzamin (2014) also found that during periods of crisis, indices run on Islamic rules beat their conventional counterparts. During non-crisis periods no such results were found. However, (Hayat & Kraeussl, 2011) found that performance of IEFs remained worst in both the market conditions either bearish or bullish. Abdelsalam, Fethi, Matallín, and Tortosa-Ausina (2014) research concluded that there is absence of any differences in performance of Islamic funds and non-Islamic funds.

Jawadi, Jawadi, and Cheffou (2015) investigated Islamic stock markets via EMH for three major Dow Jones (World, Emerging, and Developed). Results showed, Islamic stock markets of emerging economies are less efficient than Islamic markets of developed economies. These results suggested that benefits can be achieved by investing in these regions. Sensoy (2013) studied the market efficiency (weak form) of Islamic equity and conventional markets. Results of their analysis showed that all indices have different degrees of time – varying predictability.

Charles et al. (2015) studied predictability of the returns in context of informational efficiency of the weak form. Data for study is comprised of daily data of Islamic market of Dow Jones (DJIM) and Dow Jones Global index (DJGI) for conventional size and sector indices. Study period was from1996 to 2013. When variance ratio and automatic portmanteau tests were used to validate the asset returns relating to martingale difference hypothesis, results showed portfolio returns for both conventional and Islamic indices are foreseeable for certain periods (measurable). These findings supported implications of the adaptive market hypothesis. Furthermore, Islamic sector indices proved to be more informational efficient than conventional ones for consumer goods and services, financial and technology sectors. Additionally, in crisis periods Islamic sub- indices acted more market efficient. Recently, O. M. Al-Khazali, Leduc, and Alsayed (2016) examined nine conventional and nine Islamic stock indices. They validated the random walk hypothesis (RWH) and the martingale difference hypothesis (MDH). Study

period was from 1997 to 2012, results showed that not even one Islamic index was efficient, however efficiency was observed for three conventional indices (Europe, Japan, and UK). Results further showed that both conventional and Islamic indices were efficient during and after the crisis period (2007–2012). Ben Rejeb and Arfaoui (2019) investigated Islamic stock indices and conventional stock indices for informational efficiency and risk during the period of financial instability. More volatility was observed in the returns of Islamic stock indices than their conventional counterparts. Furthermore, Islamic indices proved not to be totally immune against global financial crisis. Results for informational efficiency showed that conventional stock indices were less efficient than the Islamic stock indices. Informational efficiency and conditional volatility was not static and showed time-varying behavior. Time-varying nature of efficiency, makes it possible to track the changing aspects of good and bad news due to market risk factors.

Jabeen and Kausar (2022) compared the performance of Islamic and conventional equities using the Karachi Meezan Index-30 and the Karachi Stock Exchange Index-30 as proxy for Islamic and conventional stock prices, respectively for period of 2009 to 2020 and used the Treynor ratio, Sharpe ratio, Jensen's alpha and beta, stochastic dominance and generalised auto-regressive conditional heteroscedasticity as performance indicators. The findings indicate that the KMI-30 performs better than the KSE-30 overall. The KMI-30 offers better returns than the KSE-30. The volatility and risk of the KMI-30 and KSE-30 are comparable, though. The excess returns per unit of systematic risk for both indices are comparable. Additionally, the KMI-30 returns statistically outperform the KSE-30 returns. These findings demonstrate that the Islamic index outperforms the traditional index.

Ali, Rehman, Ashraf, and Shear (2022), studied performance of Shari'ah-compliant equities in comparison to their non-Shari'ah-compliant counterparts in PSX for period of Jan 2020 to June 2022, particularly during the Covid-19 shock. By using firm-level stock returns data researchers conclude that Shari'ah compliant equities outperformed their conventional counterparts during the Covid-19 market crash. More precisely, it is discovered that the prices of Shari'ah-compliant equities responded less negatively than the prices of non-Shari'ah-compliant stocks to the rise in Coronavirus confirmed cases and government social distancing measures.

Overall, our results suggest that stocks that adhered to Shari'ah performed better throughout the Covid-19 crisis incident. Tabash, Sahabuddin, Abdulkarim, Hamouri, and Tran (2023), examined the diversification potential of investing in the stock markets of established and developing nations, both those adhering to Shariah and those not, during the global financial crisis (GFC) and the COVID-19 pandemic. This study's evidence demonstrates that stock returns in developing markets are very volatile, Malaysia's traditional indices are the most volatile which shows that Shariah indexes have greater potential for diversification and reduced risk exposure. When it comes to developed markets conventional indexes are more volatile than other market indices.

Raza, Suleman, and Zaremba (2023), studied the role of political risk in the performance of Shari'ah complaint portfolio. The findings indicate that when political risk is taken into account when allocating funds, Shariah-compliant investors significantly outperform conventional investors. When invested in politically stable nations, a Shariah-compliant portfolio beats its conventional counterpart by 8 percent yearly.

2.6 Gap in Literature

Primarily, there is strong evidence in support of adaptive behavior of stock returns in the developed and emerging economies. There are very few studies which examined the evolutionary behavior of momentum/ contrarian returns over time as implicated by AMH (Akhter & Yong, 2019). However, there is lack of studies which can explain the behavior of momentum/ contrarian profits for different market sentiments. To enlighten the AMH, which justifies the appearance, disappearance and reappearance of market efficiency and in efficiency over time, there is a need to investigate momentum and contrarian anomalies by examining the changes in stock return patterns over time or under different market sentiments. This study aims to add the comprehensive support for AMH while exploring the momentum and contrarian profits under different market sentiments.

Capital markets running on Islamic rules are experiencing the rapid growth and got attention of practitioners and academicians especially after the world financial

crisis of 2007-2008; (Hayat & Kraeussl, 2011; Al-Khazali et al., 2014; Al-Ajmi & Kim, 2012). It is very much necessary to observe their behavior in the market. In spite of having Islamic finance relevance, quiet minute evidences on the market efficiency has been available in academic literature. Moreover, there exists remarkable differences between conventional and Islamic stocks. Islamic stocks are usually less diversified, concentrated in specific sectors, and are less levered. In comparison to conventional stocks, Shari'ah compliant stocks are more illiquid because of small capitalization (Sensoy, 2013). These differences are due to five main principles which includes prohibition of interest (Riba), uncertainty (Gharar), Speculation (Maysir), Risk and return sharing, investment in unethical industries (Hayat & Kraeussl, 2011). Stock return predictability of conventional and Islamic stocks is expected to be different. In order to address this timely need, this study focus on the momentum and contrarian anomalies and AMH for Shari'ah compliant stock markets.

When studied under different market sentiments, it has been shown that during crisis period Shari'ah compliant stock index act as an effective hedging instrument. Ahmad et al. (2018) when studied returns and volatile behavior of both stocks found that Shari'ah compliant stocks beat conventional ones and after financial crisis both indices faced more vulnerability. Ajmi, Hammoudeh, Nguyen, and Sarafrazi (2014) studied Islamic and conventional Global stock markets during and after several global economic and financial crisis. Results showed that Islamic stock markets also get affected by different regional external market shocks. During Bull market Islamic stocks outperformed conventional stocks and for bearish market they act vice versa hence rejecting decoupling hypothesis.

Alexakis, Pappas, and Tsikouras (2017) when studied long term relation between Islamic and conventional stock indices found that during crises times Islamic indices were least responsive. It proved the robust nature of Islamic equity. It also supported that investors of both markets respond differently to market news. Arouri, Ben Ameur, Jawadi, Jawadi, and Louhichi (2013) found that Islamic markets are more stabilised in before and after crisis period because they provide opportunity of higher returns and lower risk. Azad, Azmat, and Hayat (2019) found that Islamic stocks provides opportunity to diversify the investment risk

and their performance in both trunks and turmoil is better than conventional stock. Bahloul, Mroua, and Naifar (2017) found that standard deviation relationship between Islamic stocks and conventional portfolios depend on market regime and investment region. US investors showed indifferent behavior towards diversification through Islamic stock investment but in North America Europe and global region it was considered as an optimal choice. Cevik and Bugan (2018) when studied dependency of diversified portfolio performance on regime found that Islamic stocks cannot be considered as safe haven. They studied performance of 107 Shari'ah compliant and non-Shari'ah compliant securities of Malaysia. Jensen Alpha index and Trenor index were used as performance measurement. Both type of securities tends to be indifferent, however among four segments of time period Sharia and conventional portfolios performed significantly different.

Secondly, due to mixed empirical results for both conventional and Shari'ah compliant markets, there is a need of a study which can explain behavior of momentum and contrarian anomalies under different market set ups globally. This comparative study of Shari'ah compliant stock markets and their counterparts shed more light on the adaptive behavior of momentum and contrarian anomalies in Islamic Stock markets and Conventional stock markets. To know the reason for momentum/ contrarian profit is very vital because it determines the performance and sustainability of momentum strategy. A strategy which takes long position for winning stocks due to over reaction on market news creates upward pressure on prices for that stock. Mispricing is aggravated for such stock and price drifts away from intrinsic value of that stock on realizing the price deviation, market forces then revert back the price of stock to its fundamental value so momentum premium which is a result of over reaction to news faces the risk of price reversals. A strategy that takes a long position for a winner stock due to under reaction on market news reduces the pressure on the stock prices. It finally diminishes the miss pricing and subsequent stock price reversals does not take place. Momentum strategies for which source is under reaction to news are considered as less risky because of no chance of price reversals and it tries to make market more efficient.

Thirdly, success/ failure of momentum/ contrarian strategy depends on the underlying reason (over reaction / under reaction). So, identification of cause of

momentum / contrarian premium for both Shari'ah compliant and conventional stocks is very important.

Therefore, it is a meaningful contribution in field of behavioral finance by emphasizing on AMH. It also adds to comparative literature which can address the differences between conventional stock markets and Shari'ah compliant stock Markets.

2.7 Hypotheses of Study

In order to achieve the aims of this research work, following hypotheses are tested altogether.

Hypothesis 1: Both Shari'ah compliant stock markets and their conventional counterparts are efficient

Hypothesis 2: Both Shari'ah compliant stock markets and their conventional counterparts are inefficient due to presence of momentum premium in the market

Hypothesis 3: Both Shari'ah compliant stock markets and their conventional counterparts are inefficient due to presence of contrarian premium in the market

Hypothesis 4: There is a relationship between momentum profits and market sentiments in both Shari'ah compliant stock market and their conventional counterparts

Hypothesis 5: There is a relationship between contrarian profits and market sentiments in both Shari'ah compliant stock market and their conventional counterparts

Hypothesis 6: Over-reaction to market news causes momentum premium in both Shari'ah compliant stock markets and their conventional counterparts

Hypothesis 7: Under reaction to market news cause momentum premium in both Shari'ah compliant stock markets and their conventional counterparts

Hypothesis 8: Over-reaction to market news causes contrarian premium in both Shari'ah compliant stock markets and their conventional counterparts

Hypothesis 9: Under reaction to market news causes contrarian premium in both Shari'ah compliant stock markets and their conventional counterparts

Chapter 3

Research Methodology

The focus of this empirical and quantitative study is to explore the stock returns behavior in a market and how market conditions affect return behavior. Stock returns are analysed for both conventional and Shari'ah equity markets. It makes use of secondary time-series data that is gathered over a 10-year period and then examine it by using various estimation approaches. The results of the analysis are briefly provided, impartially interpreted, and discussed with respect to the purpose of research, its goals, and its concerns.

This chapter explains the data types used for research, sources of data collection, how samples are chosen, and the statistical techniques used for analysis. This chapter comprises of population, sample details, models and techniques used to achieve research objectives. Population of study is presented in section 3.1. Sample specifications and sample period is presented in section 3.2. Research models used in the study to achieve research objectives are presented in section 3.3.

3.1   Population of Study

After so many developments, Islamic Financial system has gained a lot of attention and popularity over the last two decades with annual growth at rate of 10-12%. According to report, presented by Standard Chartered Bank on Islamic Finance outlook, at present (April,2023) the worldwide Islamic finance sector has worth

of USD 2.2 trillion. Experts predict that by 2025, this might reach USD4.94 trillion due to inclusion of novel Islamic finance tools. Important sectors operating is Islamic financial market's includes banks, other financial institutions, capital markets, Insurance and money market. Islamic financial tools are now considered very effective worldwide even in non-Muslim countries. Major financial markets experienced that Islamic finance has already become mainstreamed inside the global financial system. Now, investors of stock market have an option to either buy conventional stocks or Shari'ah compliant shares. Shari'ah compliant equities are ones which are screened for compliance with Shari'ah norms under the supervision of a Shari'ah supervisory board. Our focus for this research is on selected Islamic frontier and emerging economies. Frontier (pre- emerging markets) are considered as emerging markets subset, having market inefficiency, less market capitalisation and low liquidity. They are attractive markets for active investors to take benefit from market inefficiencies and earn abnormal returns due to market anomalies like momentum / contrarian anomaly. Seven Islamic countries Pakistan, Bangladesh, Malaysia, Indonesia (Asia Pacific region), Qatar (Gulf Region), Nigeria (African region) and Turkey (Europe region) has been selected to study because of trade of Shari'ah compliant and conventional shares in stock exchanges of all these countries. Furthermore, these countries have witnessed prominent growth of Islamic financial system especially over the last decade. As on 30th June 2022, distribution of Shari'ah compliant and conventional shares in stock markets of selected countries are as follows.

In Pakistan at PSX (Pakistan Stock Exchange) 257 companies which represents 53% of stock market are declared as Shari'ah compliant shares and rest of 47% are conventional shares. Out of 216.23 million people living in Pakistan, 207.58 million are Muslims. The country has a Muslim majority of approximately 96%, making it the second most Muslim populated nation in the world.

In Bangladesh at DSE (Dhaka stock exchange), 131 companies which represents 37% of stock market are declared as Shari'ah compliant shares and rest of 63% are conventional shares. Out of 162 million people living in Bangladesh, 146 million are Muslims. The country has a Muslim majority of approximately 90%, making it the third most Muslim populated nation in the world.

In Indonesia at Indonesia Stock Exchange (IDX), 483 companies which represents 61% of stock market are declared as Shari'ah compliant shares and rest of 39% are conventional shares. Out of 274 million people living in Indonesia, 231 million are Muslims. The country has a Muslim majority of approximately 87%, making it the first most Muslim populated nation in the world.

In Malaysia at Kuala Lumpur Stock Exchange (KLSE) now known as Bursa Malysia, 782 companies which represents 82% of stock market are declared as Shari'ah compliant shares and rest of 18% are conventional shares. Out of 33.57 million people living in Malaysia, 21.3 million are Muslims. The country has a Muslim majority of approximately 63.5%.

In Turkey at Borsa Istanbul, 209 companies which represents 37% of stock market are declared as Shari'ah compliant shares and rest of 63% are conventional shares. Out of 85.2 million people living in Turkey 84.37 million are Muslims. The country has a Muslim majority of approximately 99%.

In Qatar at Qatar Stock Exchange (QSE), 24 companies which represents 55% of stock market are declared as Shari'ah compliant shares and rest of 45% are conventional shares. Out of 2.7 million people living in Qatar, 1.7 million are Muslims. The country has a Muslim majority of approximately 65.5%.

In Nigeria at Nigerian Exchange Limited (NGX), 20 companies which represents 13% of stock market are declared as Shari'ah compliant shares and rest of 87% are conventional shares. Out of 218.5 million people living in Nigeria 115.8 million are Muslims. The country has a Muslim majority of approximately 53%.

It shows that data set consists of countries having different concentrations of Shari'ah and conventional shares. There are certain challenges in the growth of Islamic financial system which includes lack of Shari'ah financial experts, lack of harmonization and standardization of Shari'ah financial tools, less public awareness, lack of regulatory framework and poor liquidity management practices. However, countries selected for this research are experiencing exponential growth of Islamic Finance as they are addressing the said issues because they want to achieve the environment of social welfare which is the key feature of Islamic financial system. According to report of Daar ul Iftaa (2022) Malaysia, Indonesia and Bangladesh

are the countries, which are believed to follow 85% Shari'ah financial principles in all markets by year 2027. To meet research objectives of this study, data for Shari'ah and conventional shares is collected with great scrutiny. Shari'ah investment principles issued by each country are to be followed for segregation of conventional and Shari'ah stocks. Every country in data set has their own Shari'ah stock screening criteria but generally basic screening rules as agreed up on by Sharia'ah Advisory board are same.

3.1.1 Understanding difference between Conventional and Shari'ah compliant stocks

All the stocks traded on stock exchanges of selected markets can be divided into catogories of Shari'ah compliant or conventional stocks on the basis of their ability to meet the three levels of stock screening process. The stocks who failed to meet any of the mentioned requirements are considered as conventional shares. However, to be a shari'ah compliant stock, stock must meet all requirements of the Shari'ah screening process. Those companies which meet the said criteria gives investors the company's ownership rights through Shari'ah compliant shares. Following are three levels of stock's screening process.

3.1.1.1 Business Sector Screening

A company conducts its operations in compliance with Shari'ah guidelines as determined by the Shari'ah Advisor. Companies engaged in the following activities are excluded:

Alcohol: Businesses that make money off of alcohol in any way are prohibited. Producers, suppliers, bottlers, retailers, and all other service providers who work with and profit from the alcohol industry are included in this. Financial Services: Companies that participate in traditional interest-based financial services are considered as forbidden. It includes commercial banks, Mortgage agencies, investment banks, insurance agencies, insurance companies, stock brokers, and under writers. However, Islamic banks, Islamic Insurance companies and Islamic financial institutions are exception to the above.

Gambling: Casino and lottery activities, gambling related activities including software development for gamblers, gambling promoters and gambling machine manufacturers.

Pork related activities: Businesses manufacturing and distributing pork containing products. It also includes hotels and restaurants where pork is being sold. Similarly, all other activities like breeding, slaughtering, packaging and processing of pork products are declared as non Shari'ah compliant.

Pornographic content: Businesses that create, print, distribute, or advertise pornographic or explicit content are not permitted for investment. Print, visual, or audio medium are all possible for this. Abusive or offensive content is also regarded as being forbidden. Tobacco: Businesses engaged in the manufacturing, distribution, packaging and retail of tobacco products are prohibited. Advertising Business: Advertising business pursuing advertising activities for Pork, gambling, alcohol, cigarettes, and any other non-Islamic activities is prohibited. Media advertising outlets that run programming that violates Islamic principles is also forbidden.

Media and Entertainment: Companies that derive their revenue from the media and advertising industries are regarded as being against Shari'ah. Advertising is detested by the Shari'ah because it may use images or language that are wrong in the eyes of the law. Companies that create, broadcast, distribute, or market entertainment content including feature films, music, television soap operas, etc. are likewise prohibited. However, exceptions are newspaper, sports channels, children channels and educational channels. Silver and gold trade exceptions: According to Shari'ah, gold and silver are considered to be forms of money and cannot therefore be sold in advance. Despite the fact that Shari'ah rules are followed in the primary business operations of gold and silver mining enterprises but their forward contracts are not allowed.

3.1.1.2 Financial Screening

Companies indulging in non-compliant business practices are eliminated, and the remaining companies are then checked for compliance with accounting ratios because some ratios may go against the compliance standards.

Leverage, cash, and the proportion of revenues from non-compliant operations are the three areas of concern. Continuous evaluations are conducted on each of these. Cash Compliance: Regarding cash holdings, there are compliances, which are as follows

I: Ratio of Receivables to Market Value of Equity (average over the previous 36 months) should be less than 49%;

II: Ratio of (Cash + Interest Bearing Securities) to Market Value of Equity (average over the previous 36 months) should be less than 33%;

Leverage Compliance: Measures of this compliance includes Ratio of Debt to Market Value of Equity (average over the previous 36 months) should be less than 33%.

Revenue Compliance: Measures of this compliance includes Ratio of Income from Non Shari'ah complaince to total revenue should be less than 5% where total revenue includes gross revenue and any other revenue earned by company from other sources.

3.1.1.3 Dividend and Purification Ratio

Companies are regarded as Shari'ah -based screened if lesser than 5% of their income come from illegal business operations. However, the percentage of dividends attributable to income from such prohibited economic activities and interest income will need to be cleaned up. Purification of dividends and banned revenue involves removing from total income any income derived from practices or sources that are against Shari'ah law. A purifying process occurs when Shari'ah compliant stocks earn dividends or any other banned income in accordance with Shari'ah principles as part of a company's regular business operations. Any portion of revenue from non-compliant with Shari'ah principles activity that is received may be donated to charity and 'purified' in this way. The amount of the dividends that must be cleansed (i.e., donated to charity) is determined by the dividend purification ratio. A DP ratio of 10% denotes that 10% of the dividends must be donated to charity. Dividend purification ratio = Non-Permissible Revenue, including Interest Income, divided by Total Revenue.

3.2 Sample of Study

A sufficiently big sample size is required for the current model estimation task. The availability of an averagely long sample size serves as the foundation for market selection. As a result, recently developed markets are automatically excluded. Representative Stock exchanges of the 7 selected countries are used to take adjusted closing prices of shares and share indices. Return on shares and share indices are calculated from prices which is then used for whole analysis. For testing market efficiency and evaluating market sentiments in both Shari'ah and conventional markets of selected countries market indices served as unit of analysis.

However, for evaluating presence, performance and reasons of momentum and contrarian premium individual companies return data served as unit of analysis. www.investing.com is a major source used for data collection, as it provides historic and other important financial data. Data from June-2012 to June 2022 is used for the study.

Study period is kept for 10 years only because of the establishment of Shari'ah index in the most of the selected countries just a decade ago. For each country included in data set, returns of one Shari'ah based index and one conventional index are used to represent Shari'ah and conventional market respectively. For studying momentum and contrarian anomaly in each country, 30 component companies from Shari'ah and 30 component companies from conventional index are used. Consider example of Pakistan to elaborate how data is gathered and used. Pakistan stock exchange official website was used to segregate company stocks as Shari'ah and as conventional shares. KMI 30 index was used to represent Shari'ah market. Component stocks of KMI 30 as on 30th June 2022, was included in study.

However, when data is not available for the component companies for nominated study period then the companies with highest market capitalisation as on 30th June 2022 which are not part of KMI 30 but are Shari'ah compliant companies was included in data set. Similarly, KSE 100 index was used to represent conventional market. Component stocks of KSE 100 index as on 30th June 2022, which must not be Shari'ah compliant components was included in study.

TABLE 3.1: Country Shari'ah and Conventional index data

Country Name	Representative Stock Exchange Market	Representative of Conventional Market	Representative of Shrai'ah Market
Pakistan	PSX	KSE 100 Index	KMI 30
Bangladesh	DSE	DSEX30	DSE Shari'ah 30
Nigeria	NGX	NSE30	Lotus Islamic
Malaysia	KLSE	FTSEKLCI	FTSE Hijrah 30
Indonesia	IDX	Components JKILQ45	JKI Islamic 30
Turkey	BIST	BIST 50	BIST Participation 50
Qatar	QSE	QE ALL SHARES	QE Al-Rayan

However, when data is not available for the component companies for nominated study period then the companies with highest market capitalisation as on 30th June 2022 which are not part of KSE 100 but are non-Shari'ah compliant shares was included in data set. For each country their relative stock exchanges.

The purpose of segregating Shari'ah and non- Shari'ah shares is to capture and analyse the difference in both Shari'ah and conventional markets in terms of market efficiency, existence of momentum and contrarian anomalies, reasons of these anomalies in both markets and degree of evolving efficiency in AMH framework. Rapid recognition of Islamic markets and Islamic financial instruments requires to compare these two different categories of stocks as it is observed that most of the time Shari'ah compliant stocks are preferred over conventional stocks by investors with Shari'ah preferences.

Information about other countries in our data set is given in the following table.

The chosen markets have also all gone online and implemented electronic systems with regard to their trading mechanisms, and they have all been made open to foreign participation (Boako, Omane-Adjepong, & Frimpong, 2016). Literature also supported that the selection of the sample is based on the availability of reliable data and that economies with insufficient data should be excluded. (Auret & Cline, 2011; Basiewicz & Auret, 2010) For the study, only consistent data are maintained. The data must meet each of the requirements listed below in order to be valid:

I: Only those companies are included whose data is available for whole study period i.e June 2012 to June 2022.

II: Only those companies are included whose prices are available for the start and the end of the each formation and holding periods;

III: Companies those who have made their earnings announcement public are included.

For each country data for 60 companies (30 Shari'ah and 30 conventional) for 120 months are extracted except for Qatar where data is available for only 19 Shari'ah compliant and 22 conventional stocks. Similarly, for Nigeria data of 8 Shari'ah based stocks are collected. However, for Nigeria's conventional stocks complete

data set of 30 companies stock are extracted. Finally, 379 companies in data set for which analysis is done for 120 months duration.

For individual company's shares and market indices calculation of the continuous compounded monthly returns of stocks are done by using following formula:

$$R_t = 100ln\left(\frac{P_t}{P_{t-1}}\right) \tag{3.1}$$

R_t represents the return (monthly)

P_t represents the adjusted closing price of index or shares at time period t (monthly)

P_{t-1} represents the adjusted closing price of index or shares at time period $t-1$ (monthly).

Each index return indicates the gross total return, including dividends.

According to (Brooks, 2019), disregarding dividend would cause the overall return to be underestimated and the cross section return statistics to be distorted.

Indices under study are calculated by using method of capital weighted free float market capitalisation. This is a technique of figuring out the underlying companies' market capitalisation in a stock market index. The market capitalisation is determined using the free-float methodology by multiplying the equity's price by the quantity of freely available shares on the market. The free-float technique does not include locked-in shares, such as those held by governments, insiders and promoters, unlike the full-market capitalisation method, which uses all active and inactive shares. The free float market capitalisation obtained is less than that obtained when utilising a full market capitalisation method. Due to the fact that it only considers shares that are traded, an index that follows the free-float approach has a tendency to mirror market trends. Under this methodology base of index also widens because of a smaller number of top companies are considered in the index. It is calculated as follows. Furthermore, using capital weighted method instead of price weighted method for index calculation decreases the chances of inclusion of the stocks having higher prices only.

$$\text{Free float capitalisation} = \text{share price } x \text{ (Shares issued – Locked-In Shares)} \tag{3.2}$$

3.2.1   Data Property

The testing of the data generation and distributional aspects of stock return are covered in this part. The tests are typically run for robustness reasons and address the common characteristics of stock returns. According to (Brooks, 2019), volatility clustering refers to the propensity for large price swings in stocks to be followed by smaller price changes. It implies that the stock return exhibits some nonlinear characteristics. Jarque-Bera normalcy tests are used to further analyse the distributional characteristics of returns.

3.2.1.1   Normality Tests

To determine whether data is normal, Jarque-Bera statistics, kurtosis, and skewness are utilized. Kurtosis is a metric used to define how a random variable's probability distribution looks in comparison to a normal distribution. It also determines whether a sequence of data is flat or peaks. According to (Balanda & MacGillivray, 1988), kurtosis is primarily a characteristic of symmetric distributions. A normal distribution has a kurtosis value of 3, with a positive kurtosis suggesting a peaked distribution and a negative kurtosis indicating a flat distribution. A distribution's kurtosis will be higher than 3 if its tails are thicker than those of the normal distribution.

Skewness measures symmetry, or more specifically, the absence of symmetry, within the return series. A distribution or data set is considered to be symmetric if it appears the same to the both right and left side of the central point. Data that has a negative value for skewness is skewed to the left, whereas positive values for skewness are biased to the right. A curve that is entirely normal has a zero skewness (Morgan, Leech, Gloeckner, & Barrett, 2004). Most of the time series data (Bera & Premaratne, 2001; Jasic & Wood, 2004) show that some of series have a positive skewness coefficient while the others have a negative one.

The Jarque-Bera test was developed by Carlos Jarque and Anil K. Bera (Jarque & Bera, 1980) to check the stock return distributions level of non-normality. The JB test statistic determines how the series' kurtosis and skewness compare to those from a normal distribution. For, a normal distribution's null hypothesis, the test

statistic should be distributed as an X2 (chi-square) with a degree of freedom of 2. According to (Urquhart & McGroarty, 2014), the reported probability is the likelihood that, if the null hypothesis (that return series follows a normal distribution) is rejected with a very small probability value, the absolute value of the JB statistic will be higher than the observed value.

3.3 Econometric Model

The models used to analyse each research objective are covered in this section. Each of the following segments corresponds to the methodology used to achieve the research objectives of the study. The first segment presents the models for testing of Random walk hypothesis by using linear and non- linear dependence tests in Shari'ah as well as conventional market. The second segment presents strategies to evaluate the existence and performance of momentum and contrarian premium in both Shari'ah and conventional market.

3.3.1 Linear Dependence Tests

The earliest techniques for testing weak-form EMH are linear dependence tools. The unit root test has been considered insufficient to prove the randomness of price movements unless it is combined with serial correlation tests (Rahman & Saadi, 2008). The VR test is the major and most important test in this work (Verheyden & De, 2013), however unit root tests, which is popular test for linear dependency, is also estimated for robustness and confirmation. No linear test is without flaws, according to (Urquhart & McGroarty, 2014), but if many tests support the same finding, the results' accuracy can be verified. The tests for linear dependence in this study are described below.

3.3.1.1 Unit Root Tests

To validate and confirm the weak form of market efficiency in both Shari'ah compliant and conventional stock markets Random walk hypothesis is tested by using

unit root tests. According to (Gilmore & McManus, 2003; Rahman & Saadi, 2008), unit root is a requirement but not a sufficient condition for RWH. According to (Gujarati & Porter, 2009) a stochastic process is called stationary when mean and variance remains constant and the value of the covariance between the time t and t+1 depends on how far apart they are from one another rather than the precise moment at which the covariance is measured. The randomness in the daily stock index prices shows that stock index prices are independent and dispersed. A well-known example of a non stationary process is the RWM. According to (Gujarati & Porter, 2009), the phrases non stationary, random walk, and unit root are used interchangeably. RWM might have drift, drift and intercept, or drift only. According to random walk, current prices (P_t) are free and are in no connection at all with past prices $[(P_{t-1}), P_{t-2}), (P_{t-3})]$ hence cannot be used to forecast prospect prices (P_{t+1}). The presence of unit root indicates the time series data is found to be non-stationary or time series is following a random walk. It represents that such a time series is weak form efficient and current price absorbs all historical prices in it. Consider, a zero mean and variance σ^2 and error term ϵt with mean 0 and, then the series P_t is said to be a random walk if;

$$P_t = P_{t-1} + \epsilon t \tag{3.3}$$

Where,

P_t = current closing prices,

P_{t-1} are prices with one lag

εt is random error

When P_t follows unit root then P_t is stationary at first level. Therefore, a random walk time series' first order derivative is stationary, as shown by:

$$\Delta P_t = (P_t - P_{t-1}) = \varepsilon t \tag{3.4}$$

When drift term δ is introduced in equation 3.3, it makes RWM with a drift and is nonstationary which is represented as

$$P_t = \delta + P_{t-1} + \varepsilon t \tag{3.5}$$

Augmented Dickey-Fuller (1979) Test

The Augmented Dicky Fuller test is largely acceptable unit root test and is used to test autoregressive time series. A. Haque et al. (2011) also showed that presence of unit root in time series data supports random walk and confirms weak form of market efficiency. Absence of unit root shows that share prices are deterministic in nature and dependent on each other. There being a unit root is the test's null hypothesis. Alternate Hypothesis is the time series being stationary or trend-stationary. The calculated value of ADF t- stats is to be compared with the critical value (Mackinnon tabulated value). Test statistic and a p-value from the results of the ADF test is used for interpretations. A comparison between the test statistic and the critical values is made at several significance levels, often 1%, 5%, and 10%. Null hypothesis is to be rejected if the test statistic is more negative than the critical value and it is determined that the time series is stationary. The null hypothesis is to be accepted if the test statistic is less negative than the crucial value and determine that the time series has a unit root.

$$P_t = \alpha + \rho P_{t-1} + \mathcal{E}_t \tag{3.6}$$

Where,

P_t represents stock index price at time t

P_{t-1} represents the lag value of the stock index price,

α represents the mean

$\mathcal{E}_t$ is the random error term.

Phillips-Perron (1988)-Test This test follows the nonparametric approach and is used to find out the presence of unit root in time series complex data. It is different from ADF on the basis of treatment of Heteroscedasticity and serial correlation of errors. The calculated value of PP t - stats is to be compared with the critical value (Mackinnon tabulated value). When the PP t - stats is higher than the critical values we accept the null hypothesis which indicates the data series is stationery and market is weak form efficient.

$$y_t = c + \delta t + \phi y_{t-1} + \varepsilon_t \tag{3.7}$$

c is the intercept

δ is the deterministic coefficient at t

εt is error term

The calculated value of PP t - stats is to be compared with the critical value (Mackinnon tabulated value). Test statistic and a p-value from the results of the PP test is used for interpretations. A comparison between the test statistic and the critical values is made at several significance levels, often 1%, 5%, and 10%. Null hypothesis is to be rejected if the test statistic is more negative than the critical value and it is determined that the time series is stationary. The null hypothesis is to be accepted if the test statistic is less negative than the crucial value and determine that the time series has a unit root.

3.3.1.2   Variance-Ratio Test

The VR test is the standard and most widely used test for determining whether serial correlation exists between price changes because it is effective and has good power among the linear estimation tools, including the runs test, the autocorrelation test, and the unit root test (Lo & MacKinlay, 1988; Urquhart & McGroarty, 2014). Another benefit is that it can eliminate the inherent heteroscedasticity in stock return data. The variance ratio test makes the assumption that if stock prices behave randomly, the variance of the return over k periods will be equal to k times the variance over a single period, meaning that the variation over a period of 10 days will be equal to 10 times the volatility over a period of daily return. VR is given as follows for return rt with holding period k:

$$(k) = \frac{\sigma^2 k}{k \sigma^2} \tag{3.8}$$

Where rt denotes t time return

$t = 1, 2, 3 ... T$

σk^2 = variance of return$(rt + rt - 1 + ... + rt - k + 1)$

$k\sigma^2$ = variance of k period.

The VR equals to 1 for all k's scenario is the null hypothesis for the variance ratio

test. Positive serial correlations are implied by VR values greater than 1, whereas negative serial correlations are implied by VR values less than 1.

The variance ratio test, which increases the number of observations needed to generate the test statistic, makes it easier to use overlapping equity returns when constructing test statistics. The $M_2(k)$ test can be used to analyse stock index return series having heteroskedastic structure in this study. The methodology proposes a rectification for test-statistic to accommodate the heteroscedasticity of stock index returns. A common decision rule is used for the standard normal distribution when the $M_2(k)$ test is applied to a series of stock index returns. A decision must be taken on the worth of the holding period k while estimating VR (k). 2, 4, 8, and 16 are common choices for daily returns in the literature, despite the fact that they are arbitrary and poorly or never justified (Urquhart & Hudson, 2013). Because these values of k are the norm, they are used in the current study. In comparison to conventional serial correlation tests, the test's power and efficiency are increased by the inclusion of this feature. If a stock's returns are neither positively nor negatively correlated, then returns are purely random.

$$M_2(k) = \frac{VR(x; k) - 1}{\phi(k)^{1/2}} \tag{3.9}$$

3.3.2   Non-linear test

Many aspects of economic behavior may not follow a linear trend. Investors' attitudes towards risk and projected return may not be linear, according to experimental data and casual reflection. According to (Campbell et al., 1997) non-linearity is a property of all strategic interactions between market participants, the method by which information is factored into security prices, and the dynamics of variations across the entire economy. Therefore, modelling non-linear processes is a logical new area of study for financial econometrics. So in order to avoid any wrong inferences non-linear dependence should also be considered. To study the non-linear reliance in the indices returns, the linear dependence among the returns must be

eliminated. In order to investigate the non-linear structure in the index returns from equity, a pre whitening AR-model can act as a filter to eliminate any remaining linear relationship. The linear structure has been successfully removed from the index return series, according to the predicted AR-GARCH models. However, it is important to note that the absence of auto correlation in the AR- GARCH residuals does not mean that the series behave independently or randomly. The BDS test of non-linear dependency is then used to the residuals to look at the non-linear dependence in the series of filtered returns after the linear structure of the series has been removed.

BDS test is considered as one of the most often used tests for nonlinear predictability in time series (Broock, Scheinkman, Dechert, & LeBaron, 1996). BDS is purely a test of hypotheses. In other words, it is possible that the series are completely random or just noise. Additionally, it has been demonstrated to have the ability to detect a variety of deviations from randomness, including linear, non-linear disturbances and deterministic chaos, etc. (Broock et al., 1996; Brooks, 2019), and it is independent of the distribution of the returns.

3.3.2.1 BDS Test

Under the null hypothesis, the BDS test has a typical normal distribution (Brooks, 2019). The correlation dimension developed by Grassberger and Procaccia in 1983 is used in the test. The likelihood that any two points in phase space are only ε distance apart is known as the correlation integral. Brock et al. (1996) formulated that;

$$W_m = \frac{\sqrt{T}C_{m,\varepsilon} - C_{1,\varepsilon m}}{S_{m,\varepsilon}} \tag{3.10}$$

The BDS, abbreviated as Wm, ε is used to test the null hypothesis that return series are independent. When the p-value of the BDS is significant at 5%, ruling out linear dependence or market inefficiency, the hypothesis is rejected. The BDS p-values, which are produced for the given data, are daily measurements of nonlinear predictability.

3.4 Momentum/ Contrarian Anomalies through J-K Overlapping Strategy

Momentum strategies are classified as cross- sectional and time series momentum. Jegadeesh and Titman (1993) explained cross sectional strategies as inclusion of stocks on the basis of some past period's relative performance. Moskowitz et al. (2012) explained time series momentum as inclusion of securities on the basis of some past period's absolute performance. Under time-series momentum strategy, in strong market condition, there are more stocks in category of winners and lesser number of stocks in category of looser and vice versa. In contrast, the same number of stocks are there in each portfolio irrespective of market performance when focus is on cross sectional momentum. Cooper et al. (2004) showed that market performance has great impact on results of cross-sectional momentum strategies. Market performance is highly determined by the market conditions and market sentiments so considering the market sentiments as important factor of this study, focus our focus is on cross sectional momentum strategies.

In this study j-k relative strength overlapping winner-looser portfolios are formed by using strategy of portfolio formation proposed by (Jegadeesh & Titman, 1993). Portfolios are made for various formation period also called ranking period (Siganos, 2010) and is denoted by J. Stocks are arranged in descending order on the basis of cumulative returns of J=3,6,9 and 12 months . On the basis of quintiles cumulative returns first 20% stocks are declared as winners and last 20% are declared as losers. These stocks are then hold for K period. K is used to denote the holding period/ test period (Siganos, 2010; Khan & Khan, 2016). In literature term of investment period and evaluation period is also used (Khan, Siddiqui, & Khan, 2016) to represent the duration for which investor holds the investment (Annerstedt & Schönström, 2006). Lately, the momentum (contrarian) profits are then calculated by subtracting losers return from winners . It indicates having a long position on winner stocks and short position on loser stocks. One month lag is to be considered for minimising the micro distortions. In this study various combinations of J and K which includes j=3, 6,9,12 and K= 6, 12, 18,24,30,36 are studied. Hence, a j6k12 portfolio on July 1st, 2013 shows the a portfolio performance from 31st

December, 2012 to 30th June, 2013 and holding period ends at 30th June, 2013. For 4 formation periods and 6 different holding periods 24 strategies are formed altogether for conventional and 24 for Shari'ah stocks. In this way we have 168 strategies for 7 selected countries. Panda's environment of Python distribution is used to make J-k strategies and Eviews 8 is used for rest of analysis. Formation period One-month gap Holding period

TABLE 3.2: Representation of $J - K$ overlapping momentum strategy

Formation period   One-month gap   Holding period

t-3	t-2	t-1		t+1	t+2	t+3	t+4	t+5	t+6		
	t-3	t-2	t-1		t+1	t+2	t+3	t+4	t+5	t+6	
		t-3	t-2	t-1		t+1	t+2	t+3	t+4	t+5	t+6

3.4.1 Testing the Existence of Momentum/ Contrarian Premium

As momentum/ contrarian strategies are assumed to be zero – cost, therefore the profitability of the returns of Momentum/ contrarian strategies for both Shari'ah and conventional stocks is compared with benchmark of zero return.

The null hypothesis H_0: Momentum/ Contrarian portfolio return is equal to zero and information about past doesn't help investors to outperform the market.

$$H_0 : R_p = 0 \tag{3.11}$$

The alternative hypothesis (H_1): Momentum/ Contrarian portfolio return is non zero which indicates presence of either Momentum effect or Contrarian profit. When the portfolio return is positive it shows validation of momentum profit and when the portfolio return is negative it validates contrarian profit.

$$H_1 : R_p \neq 0 \tag{3.12}$$

To test null hypothesis one sample test (t-test) have been used. H_0 is rejected when the p. value is less than 0.01, 0.05 or 0.1 representing 1%, 5% and 10% significance

level). When H_0 is rejected in favor of H_1, it shows presence of momentum/ Contrarian profits to earn abnormal profits.

3.4.2 Measuring the Profitability of Momentum and Contrarian Ctrategy

Following the modern portfolio theory, the Sharpe ratio (1994) is used to measure and evaluate portfolio performance of the momentum/ contrarian strategies (Kang, Liu, & Ni, 2002). Sharpe ratio provides risk adjusted return of Momentum/ Contrarian portfolio via arithmetic returns and standard deviation which is the proxy of total risk. It is determined by dividing the difference between the investment's returns and the risk-free return by the returns on investment's standard deviation. It is a measure of the additional return an investor obtains for every unit of increased risk. Portfolios estimated returns or past returns are compared with market's benchmark on basis of variability of returns.Momentum and contrarian portfolio returns are measured using a risk-adjusted return, which takes into account the level of risk incurred to attain the return. To assess performance, volatility, index alignment, and quality using risk-adjusted returns. An effective way to assess fund performance is to look at risk-adjusted returns.

$$\text{Sharpe Ratio} = \frac{R_p - R_f}{\sigma_p} \tag{3.13}$$

where,

R_p = Portfolio's expected return,

R_f = Risk-free rate

σp = Portfolio's risk standard deviation

In formula (4), country index return (both conventional and Islamic stock indices) is a proxy measure for market return. The ninety-one (91) days' T-bill rate is proxy for risk-free rate. Investors typically find it interesting when two assets are compared the one with a higher Sharpe ratio seems to offer a better return for the same risk.

A portfolio with negative Sharpe ratio shows underperformance in comparison to its benchmark. In general, investors prefer a greater positive Sharpe ratio since it offers either higher returns or lower volatility, all else being equal. However, two reasons which includes increased returns (a positive thing) or increased volatility (a negative thing) can make a negative Sharpe ratio bigger. As a result, the Sharpe ratio does not match normal investor utility functions well for negative values. Sharpe ratio is considered practical, because it can be derived just from any observable sequence of returns and there is no need of the additional profitability knowledge regarding the source of profit.

3.5 Model for Momentum/Contrarian Premium Time Varying Behavior

Examining time-varying momentum/ contrarian profits, along with time-varying efficiency, is one of the goals of this study because anomaly and efficiency are seen as two sides of the same coin. Similar to the fixed state EMH models, the majority of investigations on momentum anomalies used static models. Momentum/ contrarian anomaly is implied to be a fixed characteristic when models (OLS, GARCH) are applied to the entire sample period data, and the results have also been contradictory. Thus, rolling window and sub-period analysis serve as fixed state models' substitutes. In this study, rolling window analysis are used to investigate how momentum/ contrarian inconsistencies change in behavior over the span of time.

3.5.1 Rolling Window Analysis

In the investigation of market anomalies, rolling windows have recently been used to estimate model coefficients. The process tested the identified anomaly's capacity to hold steady over time. Rolling analysis, in general, can assess the model's continuity throughout time (Zivot & Wang, 2003). Two key characteristics of rolling analysis are step of window and size of window. While the latter reflects

the number of increments between consecutive rolling windows, the former represents the number of successive data used for analysis. For the purpose of this analysis 2-year fixed length rolling window, moved forward by 6 months, to see whether trends in momentum/ contrarian anomalies in selected Shari'ah and conventional markets vary over time or conform to AMH. The first window, which spans from July 2013 to Jun 2015, is followed by windows for Jan 2014 to Dec 2015 to the end of Jun 2022. For this analysis the momentum strategy with the highest statistically significant market-adjusted profits is taken into account. Detailed study of momentum behavior is done through rolling window analysis (Lim, 2007). Rolling window analysis provides the results which can help to understand the nature and anomalous behavior in a particular stock market. Pattern of momentum profits' time- varying behavior is studied through plot of t- values and time period. These patterns either supports or rejects the existence of AMH.

3.6 Modelling of Market Sentiments and Momentum/ Contrarian Returns

AMH also has to identify the market sentiments that encourage efficiency and inefficiency in addition to modelling time-varying efficiency. Therefore, this study explores whether the relationship between presence of momentum and contrarian profits and market efficiency, as proposed by (Lo, 2004), varies under various market conditions and investors' stock investment decisions. The monthly measurements of best performing momentum/ contrarian portfolio strategies are regressed on market conditions dummies to assess how the market conditions affect returns of these strategies in the Shari'ah and conventional markets of selected markets in our study.

3.6.1 Market Sentiments Measures

Although AMH did not specify the precise make-up of market conditions or its anticipated relationship with return predictability, it ties variations in efficiency

to changes in market conditions. According to the literature, the market conditions can be classified as bullish or bearish depending on how the stock market price, return behavior, or trend is seen. In the field of investment, the terms bull and bear conditions are used most frequently to describe market circumstances. These parameters were established because they accurately predicted the market's trajectory, which has a significant impact on investment portfolios. Numerous classifications of bullish and bearish market circumstances were outlined by Fabozzi and Francis in 1977. The first definition divides return data into up and down months—when returns are positive and negative, respectively—to identify these market circumstances (Fabozzi & Francis, 1977; Urquhart & McGroarty, 2016). Since this classification does not take trend into account, (Klein & Rosenfeld, 1987) descriptions of the bull, bear, and normal market circumstances are also taken into account. Following the literature and empirical support in mind, following proxy measurements for different market sentiments is used in this research.

Bull/Bear market: To test the market state influence on the monthly profits (momentum or contrarian) lag year is ranked as "bull" or "bear" (Cooper et al., 2004). Cumulative returns of the market index of every country (conventional and Shari'ah compliant) are calculated each year. Market is declared bull if the cumulative return on market at year t-1 is positive and a market is declared bear if the for year t-1 cumulative return on market is negative.

Market Crash: Presence of market crashes is identified if monthly returns (cumulative) has been decreased by 25% or more at time t as compared to period t-1 (Greenwood, Shleifer, & You, 2017).

Market Bubble: In this study the periods of bubble are also identified, by the use of the Generalized SADF (GSADF) test by (Phillips, Shi, & Yu, 2015). Homm and Breitung (2012) preferred GSADF as its moving window detector is more reliable for detection of multiple bubbles. Window size of the regression can be calculated as $r_2 - r_1$ where r_1 is staring point of test and r_2 is its end point. ADF tests will be repeated on expanding sample sequence to get results for The SADF test. The SADF statistics is defined as follow:

$$SADF(r_0) = supADF^{r_2} \qquad (3.14)$$

Where,

$r_2 \in [r_0, 1]$

The sub sample data range exceeds in the GSADF as it allows the starting point r_1 to vary within the range of 0 to r_2 which leads to identify multiple bubbles more accurately. The GSADF test is defined as follows:

$$GSADF(r_0) = supADF^{r_2,0} \qquad (3.15)$$

Where,

$r_2 \in [r_0, 1]$ and $r_1 \in [0, r_2 - r_0]$

Bubbles in the Shari'ah as well as in conventional market are identified by using Price – dividend ratio by SADF and the GSADF tests (Phillips et al., 2015). Data of monthly dividend yield and monthly index value for a particular country's Shari'ah as well as conventional markets is used to calculate price- dividend ratio. Dividends of companies constituting a particular index are used to calculate the dividend. The data is then tested for null and alternate hypothesis. Null hypothesis i.e. there are no bubbles is rejected when GSADF statistic value is greater than critical values at 90%, 95% or 99% confidence level.

3.6.1.1 Regression Model for Market Sentiments and Momentum/ Contrarian Returns

Additionally, the regression models are estimated after the calculation of momentum and contrarian returns and dummies of market sentiments as dependent and independent variables, respectively. To analyse momentum/ contrarian profits, a variety of techniques have been used separately which includes descriptive statistics, the OLS, various GARCH family models or in combinations. Another group (Alagidede, 2013) put together the descriptive statistics with dummy OLS regression but does not take into account the sample data's time series features. Due to the data production procedure and misspecification, the validity of their findings may be questioned. This well-liked dummy OLS regression technique was also criticized for its auto correlated error term and potential for false conclusions. However, the distributional characteristics of the data are not taken into account

in this set. After determining that the series are leptokurtic, the final set of investigations focuses on descriptive statistics of the return series and estimating GARCH models to find anomalies (Alagidede, 2013). According to (Urquhart & McGroarty, 2014), OLS regression has been used in the majority of studies on stock market anomalies; however, more recent studies have supported the use of various GARCH (p, q) model iterations. As a result, GARCH family models are used as the primary estimate techniques in this study. According to (Brooks, 2019), through GARCH models conditional variances can be modelled and forecasted. It has been claimed that a GARCH model, which is nonlinear, may handle the non-normal distribution properties and non- linearity of the stock return data better than a linear model. Various definitions of market sentiments (bull, bear, bubbles and crashes), are provided, the proxies discussed in previous section is used to make best model on basis of available information.

$$R_{mt} = c + \beta_1 BU + \beta_2 BE + \beta_3 BUB + \beta_4 BCR + \varepsilon_t \tag{3.16}$$

$$R_{ct} = c + \beta_1 BU + \beta_2 BE + \beta_3 BUB + \beta_4 BCR + \varepsilon_t \tag{3.17}$$

$H_0 : \beta_i = 0...H_1 : \beta_i \neq 0$

Where Rmt represents momentum returns

Rct represent contrarian returns

BU = Dummy Variable, 1 for bullish market, 0 for bearish market;

BE = Dummy Variable, 1 for bearish market, 0 for bullish market;

BUB = Dummy Variable, 1 for market bubbles, 0 for no bubble;

BCR = Dummy Variable, 1 for market crashes, 0 for no crash;

$\beta_i(i = 1, 2, ...4)$ = market conditions estimated coefficients

εt = stochastic error term

3.7 Testing Under Reaction Hypothesis for Momentum/Contrarian Premium Existence

When the market is functioning effectively, it anticipates a favorable correlation between news and market response at the moment the information is released. This

is due to the fact that at the time of the earnings announcement, an efficient market ought to have completely and promptly responded to the new information. To identify under reaction towards information as a cause of momentum/ contrarian anomaly in selected Shari'ah and conventional markets earnings announcement is considered. Only markets of Pakistan are Turkey are selected for under reaction hypothesis, as both of these countries have significant momentum and contrarian profits in both Shari'ah and conventional markets. Earnings announcement are regularly reported by all firms and they can act as good news (when announced earnings are more than expected) and as bad news (when announcement earnings are less than expected). To monitor the market response around the time of the earnings announcement, event study methodology is used.

3.7.1 Portfolio Construction for Unexpected Earnings

Based on standardized unexpected earnings (SUE), companies are rated for both Shari'ah and conventional markets for the study period 2012–2022. Businesses that receive negative news are represented by SUE-in both markets. Businesses that report well have positive SUE, which is shown by SUE+. Firms are grouped using tercile. Based on SUE, companies are ranked as lowest, moderate, and highest, denoted by the symbols SUEt1, SUEt2, and SUEt3, respectively. Since we are looking at 30 companies to represent the Shari'ah and conventional markets, there are 10 companies in each SUE category, and these companies change with each event based on SUE value. Various nations declare their monthly earnings at varying times. Turkey declares earnings in January and Pakistan declares earnings in July. The window of -11 to + 12 months is employed, with the month "0" serving as the announcement month. We use two time frames in our research to collect return data. When Turkey announces its results in January, the returns data from February 2013 to January 2015 is used and is regarded as a single event for the earnings disclosed in January 2014. Since Pakistan disclosed its earnings in July, the returns data from August 2012 to July 2014 is used and is regarded as a single event for the earnings announced in July 2013. We examine eight earnings announcement events across a ten-year sample span in this manner.

The amount of fresh information provided by the current income number serves as the primary factor in determining how an earnings announcement affects the market, as was previously said. In empirical investigations, it is usual practice to deduct earnings projected by the market from actual earnings (scaled by volatility, stock price, or total assets) in order to isolate the new information. The "consensus analysts' forecasts of earnings" that reflect analyst estimates are a good approximation of the projected earnings. However, according to (Chan et al., 2000), this proxy may not be a precise reflection of predicted earnings, as it may be influenced by other factors, such as the desire to encourage investors to trade so that brokerage commissions can be earned. Furthermore, for the sample countries there are no similar data accessible. As an approximation for this variable, (Nichols & Wahlen, 2004) advise utilising past period announced earnings. The difference between the current year's annual earnings and the previous year's annual earnings serves as proxy for the earnings surprise for each earnings event in this study. Around date of earning announcements, excess return of each stock is calculated and averaged to SUEt1, SUEt2 and SUEt3 category. In order to standardized change in earnings total assets are used as follows for cross-sectional comparison:

$$SUE_{i,n} = \frac{E_{i,n} - E_{i,n-1}}{TA_{i,n-1}} \tag{3.18}$$

Where

$SUE_{i,n}$ represents standardized unexpected earning of i firm

Ei, n represents 'i' firm earnings for year n

$E_{i,n-1}$ represents 'i' firm earnings for year $n-1$ $TA_{i,n-1}$ represents previous year total assets of firm 'i'

Step 1: Excess return of each stock for -11 to +12 (0 is earning announcement month)

$$ER_{i,t} = R_{i,t} - R_{m,t} \tag{3.19}$$

here

$ER_{i,t}$ represents excess return of stock (market adjusted)

$R_{i,t}$ represents monthly return of stock 'i' Rm, t represents monthly return of

market

Step 2: Calculation of Average excess return

$$AER_{pt,t} = \frac{\sum_{i=1}^{n} ER_{i,t}}{N} \tag{3.20}$$

t = -11, -10, ...,0, +1, +2,...,+12

Step 3: Calculation of Cumulative Average Excess Return

$$CAER_{P,t} = \sum_{m=-11}^{t} AER_{P,m} \tag{3.21}$$

Step 4: Calculation of Aggregate Cumulative Average Excess Return

Cumulative average excess return are calculated and distributed across 10 years study period.

$$ACAER_{P,t} = \frac{1}{10} \sum^{10} CAER_{P,t} \tag{3.22}$$

3.8 Testing Over Reaction Hypothesis for Momentum/Contrarian Profit Existence

already chosen Shari'ah and conventional stocks of Pakistan and Turkey are employed , to represent their Shari,ah and conventional market for the study period from June 2012 to June 2022 as sample to examine relationship between overreaction and momentum/ contrarian returns in these markets. Selection of these two countries is justified because of existence of both momentum and contrarian profits in Shari,ah as well as conventional markets of both countries. The information on return, trading volume, and accounting variables are taken from annual reports of the selected companies and also get some information from www.investing.com. 60 Shari'ah and 60 conventional markets made up our sample over a 120-month period. In order to build an empirical measure of overreaction, we first replicate (Byun, Lim, & Yun, 2016) methodology. Monthly trading volume is utilized as a stand-in for the degree of investor overconfidence/ overreaction.

The positive correlation between trading volume and overconfidence, which has been shown by various researchers (Benos, 1998; Barber & Odean, 2001; Statman, Thorley, & Vorkink, 2006; Glaser & Weber, 2009; Hou, Xiong, & Peng, 2009), is the driving force for the usage of trading volume. In addition to trade volume, it's critical to determine the direction of overreaction by looking at the contemporaneous return sign. Byun et al. (2016) suggest the signed volume measure, which assumes that a high trading volume with a positive (negative) return is associated to investor overconfidence regarding a positive (negative) piece of private information. Sign are assigned to monthly volume of stock on the basis of sign of monthly return for that particular time t.

Therefore $Vol_{i,t}$ represents a positive trading volume if $r > 0$. $- Vol_{i,t}$ represents a negative trading volume if $r < 0$.

Byun et al. (2016) aggregate across these weighted signed volumes with a normalization to capture this feature. They also apply rising weights to signed volumes in the more recent months of the formation period. The measure of overreaction for each stock in a given month, abbreviated as OvR, is then constructed as follows:

$$OvR = \frac{\sum_{i=1}^{12} W_j SV_{i,t-j}}{\sum_{j=1}^{12} Vol_{i,t-J}/12} \tag{3.23}$$

$SV_{i,t-J}$ = signed voluem of stock i in month t-J
$W_j = a$ weight as 12-J+1 in month t-J(i.e., w12 = 1,...,w1=12)

According to this methodology, a high positive (negative) OvR value indicates that investors have historically reacted overconfidently to positive (negative) information.We then total the weighted signed volumes over the most recent few months and normalise the sum using the average trading volume for the same time period. This shows if investor overconfidence grows or shrinks over time. Biassed self-attribution serves as the primary motivator of the intermediate-term return predictability in DHS (1998) and results in ongoing overreaction with an upward tendency in overconfidence. The momentum strategy is then built based on the OvR values of individual equities, as recommended by (Jegadeesh & Titman, 1993). The individual equities are classified into quintiles at the start of each month by ranking them according to their OvR values. Stocks with OvR

values in the top 20% are allocated to the winner portfolio, and those with OvR values in the lowest 20% are allocated to the loser portfolio. Thus, the overreaction approach entails investing equal weights in the winner portfolio and the loser portfolio, and holding the strategy for the ensuing K months (K=6, 12, 18, 24, 30, 36).The momentum profit is determined for a given month t as the difference in returns between winning and losing portfolios. The formation period of 12 month is considered in this study. Using (Newey & West, 1987) standard errors, hypothesis testing is applied to assess the average returns using t-statistics and p values.

Chapter 4

Data Analysis and Discussion

This chapter's goal is to provide the analytical findings and have a discussion about them in order to connect them to the study's goal. The different statistical test and techniques used throughout the research as described in the methodology, their findings and analysis are shown in this part of thesis. It includes the performance measures of momentum and contrarian profit of both Shari'ah and conventional stocks. The chapter looks at the varied levels of momentum anomalies and market efficiency. It examines if stock return predictability changes over time, as well as whether momentum/ contrarian anomalies have a time-varying nature for both the Shari'ah and conventional stock markets. The chapter gives an investigation of the shifting stock return behavior from 2012 to 2022 using linear and non-linear approaches on daily price data of Shari'ah as well as conventional representative indices for Pakistan, Bangladesh, Indonesia, Malaysia, Qatar, Turkey and Nigeria.

Additionally, descriptive statistics are shown to determine the existence of momentum/ contrarian effects in these stock exchanges and demonstrate whether investors can take advantage of unusual gains by utilizing these anomalies. Performance of various momentum and contrarian strategies (following the Jagdeesh and Titman's methodology) is evaluated by using Sharpe ratio. Momentum and contrarian profits behavior in different market sentiments is explained. Furthermore, results of analysis to check out over reaction or under reaction as the reason of Momentum and contrarian premium in both Shari'ah as well as conventional selected share markets is presented.

TABLE 4.1: Descriptive Statistics of Daily Return of Shari'ah and Conventional Indices (June 2012-June 2022) of the Selected Countries

	Obs	Mean	Med	Max	Min	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
KMI 30	3648	0.0298	0.000	6.1935	-7.8311	0.99344	-0.46224	10.66054	9032.497
KSE 100	3648	-0.0307	0.000	7.1024	-4.6839	0.85352	0.719382	11.16924	10464.32
DSES30	3078	0.00012	0.000	1.4187	-1.4317	0.03693	-0.51521	1442.158	266000000
DSEX30	3078	0.00013	0.000	0.5346	-0.5279	0.02321	0.229938	455.5371	29310574
JKI Islamic 30	3648	0.000011	0.000	0.1205	-0.0816	0.01071	-0.07282	13.61333	17139.02
Components JK-ILQ45	3648	0.00011	0.000	0.13908	-0.08623	0.01086	0.041097	17.46932	31823.92
FTSE Hijrah 30	3648	-0.000015	0.000	0.059428	-0.05021	0.00599	-0.16713	13.01928	15288.2
FTSEKLCI	3648	-0.000025	0.000	0.0662	-0.054	0.0055	-0.3171	17.706	32922
BIST Participation 50	227	0.0019	0.000	0.0624	-0.0881	0.018	-1.5287	11.183	721
BIST 50	227	0.0015	0.000	0.0552	-0.0929	0.0189	-1.6028	10.774	668
QE Al-Rayan	3682	0.0002	0.000	0.0893	-0.0957	0.0083	-0.9849	27.139	89992
QE ALL SHARES	3682	0.00018	0.000	0.0981	-0.1008	0.0082	-0.8617	31.507	125104
Lotus Islamic	3648	0.00024	0.000	0.20978	-0.1638	0.0103	1.1786	80.51	914534
NSE30	3648	0.00018	0.000	0.08423	-0.0569	0.0084	0.4207	12.73	14499

4.1   Descriptive Statistics of Complete Sample

Table 4.1 presents the descriptive statistics of the complete sample period of all the selected countries. Data is included on the basis of the time period when individual countries has started maintaining their Shari'ah as well as conventional indices. Data shows that KMI 30 the Shari'ah index of PSX has highest mean return value of 0.02972 with highest volatility of 0.99344 showing that stocks of KMI 30 are the most liquid. BIST participation a representative index of Shari'ah stocks of Bora Istanbul, Turkey shows second highest mean return. The lowest return mean and second highest volatility is shown by KSE 100 representing conventional stocks of PSX which means that these stock prices changes very quickly. Maximum return value 7.10243 is achieved by KSE 100, however the minimum return of -7.83116 is attained by KMI 30 among all the indices. The least volatile is FTSEKLCI with 0.00551 value which shows least price movements.

Skewness (S), Jarque-Bera (JB) test, and kurtosis (K) considerations are made for the testing of the normality assumption. According to the normal distribution's null hypothesis, the S, JB and K are each 0, 0, and 3 correspondingly. The degree of symmetry in a variable's distribution is measured by skewness. A distribution is said to be skewed if the responses for a given variable tend towards the right or left tails of the distribution. A higher proportion of larger values is indicated by a negative skewness, and a higher proportion of smaller values is indicated by a positive skewness. A negative or positive S distribution in a series indicates the presence of asymmetry in the returns data. Both Shari'ah and conventional indices of Bora Istanbul have the most negatively skewed (with s value -1.52873 and -1.6028 respectively) turns with longer left tail which shows that stocks are riskier here in this stock exchange. Positive skewness showing longer right tail is present in case of Lotus Islamic, showing the least riskiness of the stocks traded in this stock exchange market. In most of the stock markets skewness is between -0.5 and 0.5 showing that distribution is quite symmetric. Kurtosis is a metric that indicates how heavy-tailed or light-tailed the data are in comparison to a normal distribution. Therefore, data sets with a high kurtosis tend to have large outliers or heavy tails. Data sets with low kurtosis frequently lack outliers and

have light tails. A K coefficient value of less than three or greater than three indicates a flat or peaked distribution, respectively. Positive k values of indices return represents that distribution is leptokurtic for all indices with DSES 30 the most leptokurtic and KMI30 the least leptokurtic. The Jarque-Bera statistics are subjected to significance testing. Significant levels are indicated by ***, **, and * at 1%, 5%, and 10%, respectively. P-values for the JB statistic are less than 1%, which suggests that the return series' normal distribution is not the case. The seven market return series representing Shari'ah markets and their counter conventional markets are not normally distributed, which appears to be a violation of the fundamental RWM assumption that return should be regularly distributed. As discussed in chapter 3 of financial literature, it should be emphasized that the non-normal distribution and leptokurtic nature of stock index returns have long been established. Country level descriptive statistics of stock return data of the all companies included in data set is presented in next section. The monthly cumulative returns of the firms whose returns are less than 95.00% are rounded up to 95.00%, while the companies whose monthly cumulative returns are higher than 100.00% are rounded down to 100.00%, in order to limit the likelihood of including aberrant values in the dataset (Cooper et al., 2004). Overall, it is observed in the data set that few abnormal returns are reported especially with very less proportion of abnormal returns in Shari'ah complaint shares.

4.2 Empirical Results of Linear Tests of Market Efficiency

In this section results and the analysis of linear tests which are used to check for market efficiency are presented. Tests includes Unit root tests (Augmented Dicky fuller test and Phillips Peron test) and Variance ratio test.

4.2.1 Results of Unit Root tests

The two-unit root tests ADF and Phillips Peron are estimated in this work and are interpreted because unit root is a necessary but inadequate condition for RWH.

TABLE 4.2: Results of ADF and PP Tests for Complete Sample

Country	Linear Dependence Test	ADF (Constant + trend)		PP (Constant + trend)	
		t- stats	Critical value@5%	t- stats	Critical value@ 5%
Pakistan	KMI30	-21.5859	-3.411042	-56.5042	-3.41104
	KSE 100	-19.1638	-3.411042	-56.3862	-3.41103
Bangladesh	DSES 30	-27.3168	-3.411278	-183.9714	-3.411272
	DSEX 30	-12.36559	-3.411132	-103.5832	-3.411115
Indonesia	JKI Islamic 30	-17.14819	-3.411042	-59.87424	-3.411037
	Participation JK-ILQ45	-16.08925	-3.411048	-57.71469	-3.411038
Malaysia	FTSE Hijrah 30	-12.42655	-3.411045	-60.47509	-3.411037
	FTSEKLSE	-16.08925	-3.411048	-60.60032	-3.411038
Turkey	BIST Participation 50	-19.92326	-3.422184	-19.90741	-3.422184
	BIST 50	-21.85595	-3.411042	-397.0667	-3.422218
Qatar	QE Al-Rayan	-24.02825	-3.411028	-55.72655	-3.411026
	QE All Shares	-25.0779	-3.411028	-59.33465	-3.411027
Nigeria	Lotus Islamic	-14.15099	-3.411046	-60.91159	-3.411037
	NSE	-19.87269	-3.411042	-46.11548	-3.411038

Critical values are One-sided p-values by MacKinnon (1996).

The ADF unit root tests, Phillips Peron test data, and critical values for Shari'ah indices representing halal stock markets of selected countries, including KMI30, DSES 30, JKI Islamic, FTSE Hijrah 30, BIST Participation 50, QE AL- Rayan, and Lotus Islamic, are reported in **Table 4.2**. In a similar manner, traditional indices representing the conventional stock market, such as KSE 100, DSEX30, Participation JKILQ45, FTSEKLCI 30, BIST 50, and QE All Shares and their ADF unit root tests and Phillips Peron test statistics and critical values are presented in table 4.3.1. The null hypothesis of unit root is tested against the alternative hypothesis of stationarity by using the information presented in table 4. The test statistic for ADF and PP at level with intercept and trend for complete sample for all seven countries included in this study shows that t stats of both tests are more negative than the critical values therefore, Null hypothesis of time series has a unit root is rejected.

Results presented in **Table 4.16** supports that stock index returns for complete data set have no unit root and are trend-stationary. Shari'ah Index returns and conventional index returns are used to determine the data stationarity in Shari'ah and conventional market. The parametric and non-parametric tests (Phillips-Perron (PP) tests and Augmented Dickey-Fuller (ADF) respectively disproved the non-stationarity hypothesis of index returns for daily data. The Random Walk Hypothesis (RWH) was disproved which demonstrates market inefficiency and also invalidates weak forms of efficiency for daily returns.

4.2.2 Results of Variance Ratio Test

Variance ratio test is a linear test which is carried out for more robust results and to provide support to other unit root tests of Random walk model. Test is carried out by using Eviews 8. Daily index returns are tested for different lags of 2, 4,8,16 represented by k.

In **Table 4.3** Variance ratio and Z stats are presented in rows and columns represents various k periods. Z stats shows that negative serial correlation exists throughout the sample.

TABLE 4.3: VR Tests Result for Complete Sample

Country	Index	Test Stat	k=2	k=4	k=8	k=16
Pakistan	KMI30	VR	0.589172***	0.279691***	0.143133***	0.072978***
		Z stat	-12.09567	-11.64356	-9.031603	-6.741415
	KSE 100	VR	0.578265***	0.284613***	0.145836***	0.074281***
		Z stat	-12.50287	-11.70313	-9.145989	-6.875161
Bangladesh	DSES 30	VR	0.342546	0.168461	0.084157	0.04228
		Z stat	-1.422693	-1.167814	-1.084053	-1.049807
	DSEX 30	VR	0.442651**	0.250543*	0.096817	0.048688
		Z stat	-2.195307	-1.867256	-1.535246	-1.145981
Indonesia	JKI Islamic 30	VR	0.533619***	0.255698***	0.123303***	0.061699***
		Z stat	-11.62193	-10.05671	-7.789271	-5.970466
	Participation JKILQ45	VR	0.553222***	0.267325***	0.126118***	0.063699***
		Z stat	-11.90506	-10.31743	-8.111786	-6.18757
Malaysia	FTSE Hijrah 30	VR	0.502201***	0.258955***	0.132739***	0.063857***
		Z	-11.50096	-10.24141	-8.495175	-6.588916
	FTSEKLSE	VR	0.481025***	0.249290***	0.131235***	0.064915***
		Z	-9.411854	-8.305794	-7.121214	-5.72145
Turkey	BIST Participation 50	VR	0.391248***	0.246625***	0.119181**	0.056178**

Continued Table 4.3: VR Tests Result for Complete Sample

Country	Index	Test Stat	k=2	k=4	k=8	k=16
		Z	-3.798973	-2.826793	-2.444625	-2.05781
	BIST 50	VR	0.333552	0.167121	0.083673	0.041738
		Z	-1.425786	-1.156146	-1.071963	-1.038185
Qatar	QE Al-Rayan	VR	0.479509***	0.245034***	0.139879***	0.065029***
		Z	-10.42509	-9.689728	-8.677677	-7.38448
	QE All Shares	VR	0.521295***	0.254814***	0.126051***	0.065389***
		Z	-10.23119	-9.77594	-8.703628	-7.600968
Nigeria	Lotus Islamic	VR	0.496096***	0.294930***	0.140470***	0.072496***
		Z	-13.31208	-11.5987	-10.48836	-8.402353
	NSE	VR	0.668553***	0.354647***	0.186914***	0.089262***
		Z	-10.31359	-11.24376	-9.631229	-7.860479

*** , **,* represents VR stats at 1%, 5% and 10% significance level

It should be observed that, despite having slightly lower p-values, the wild boot-strap VR p-values for the stock indices return are largely consistent with the Lo and Mac Kinlay VR results. The H0 of a random walk can be rejected at the 5% level of significance against the H1 that the returns are serially connected if the p-value is less than 0.05.

Since the probability values of the test at all lags are significant at 1 percent for the majority of markets (Shari'ah and conventional), therefore the VR results demonstrates that the majority of markets (Shari'ah and conventional) are inefficient or predictable in linear form. Bangladesh and Turkish markets, however behaved differently. It is shown in the table that for DSES which represented Shari'ah market of Bangladesh VR is not significant at any of the lag periods. It means that H_0 cannot be rejected and returns are not serially correlated and follows a random walk.

Similarly, DSEX (Bangladesh's conventional market) has significant VR at 5% , and 10% significance level for 2 and 4 lags respectively but VR becomes insignificant for all the lag values beyond k=4. Also, BIST index representative of Turkey's conventional market, VR is insignificant for all lags supporting that this market follows a random walk and returns are not serially correlated.

4.3   Empirical Analysis of Nonlinear Test

It has been proven in the literature that conditional heteroscedasticity cannot be separated by the standard AR (p) model, typically causes nonlinear dependence in return series. Additionally, conditional heteroscedasticity would not constitute a violation of the EMH if nonlinear dependence were the result. As a result, it's important to exclude any potential heteroscedasticity from the return index.

According to (Urquhart & McGroarty, 2016), conditional heteroscedasticity-related nonlinear dependence of returns could only be filtered by AR-GARCH (1, 1). The BDS test is performed on the standardized residuals of the AR-GARCH (1, 1) by using E Views 8.

TABLE 4.4: Empirical Results of BDS Test

Country	Index	Test Stat	2	3	4	5	6
Pakistan	KMI30	BDS Stat	0.020410***	0.044431***	0.058026***	0.064820***	0.069246***
		Z stat	10.5064	14.14469	15.92679	17.5289	18.2686
	KSE 100	BDS Stat	0.020697***	0.040627***	0.074376***	0.071585***	0.069410***
		Z stat	11.30988	14.41585	16.87415	18.26448	19.73953
Bangladesh	DSES 30	BDS Stat	0.028109***	0.050371***	0.063535***	0.070801***	0.075969***
		Z stat	12.8738	15.84862	17.04435	18.86516	20.74771
	DSEX 30	BDS Stat	0.027675***	0.052626***	0.067855***	0.079074***	0.087299***
		Z stat	14.46112	17.21244	18.78636	20.80002	23.20915
Indonesia	JKI Islamic 30	BDS Stat	0.024391***	0.042450***	0.052698***	0.058118***	0.058845***
		Z stat	12.59887	14.5891	15.44497	16.44516	17.29519
	Participation JKILQ45	BDS Stat	0.028219***	0.049740***	0.064166***	0.071995***	0.073116***
		Z stat	13.98657	16.23027	17.77662	19.18306	20.16886
Malaysia	FTSE Hijrah 30	BDS Stat	0.027336***	0.04921***	0.065180***	0.076028***	0.081653***
		Z stat	12.72811	15.76991	17.47521	19.98546	22.2802
	FTSEKLSE	BDS Stat	0.024190***	0.045643***	0.059823***	0.069347***	0.074316***
		Z stat	12.03331	15.11726	16.85189	18.81056	20.89828
Turkish	BIST Participat 50	BDS Stat	0.019196***	0.032977***	0.040421***	0.045545***	0.047575***

Continued Table 4.18 Empirical Results of BDS Test

Country	Index	Test Stat	2	3	4	5	6
		Z stat	2.352826	2.562744	2.75914	2.85898	3.002077
	BIST 50	BDS Stat	0.007803***	0.017829***	0.025329***	0.030365***	0.031293***
		Z stat	3.27078	5.532869	7.374404	8.618028	9.229172
Qatar	QE Al-Rayan	BDS Stat	0.030353***	0.055578***	0.074483***	0.085049***	0.089002***
		Z stat	14.21507	17.11975	19.48709	21.40965	23.22061
	QE All Shares	BDS Stat	0.028137***	0.052001***	0.069270***	0.077839***	0.080867***
		Z stat	13.2839	16.17437	18.27894	19.73054	21.20999
Nigeria	Lotus Islamic	BDS Stat	0.044907***	0.074245***	0.092679***	0.102038***	0.105037***
		Z stat	15.14138	17.34796	18.62664	19.77739	21.0498
	NSE	BDS Stat	0.045645***	0.073465***	0.090188***	0.096758***	0.097739***
		Z stat	18.71337	20.82507	22.0093	22.77883	23.8044

Note: *** represents BDS stat at 1% significance level

Table 4.18 represents BDS test results for the Shari'ah as well as conventional markets of sample country indices. BDS stat and Z stat are shown for 5 dimensions of 2,3,4,5 and 6. BDS stats are significant at 1% significant level for all the markets at all the dimensions. Hence, H0 that return series are independent is rejected against the alternate hypothesis that returns are linearly dependent and markets are efficient. Even though the linear dependence has previously been subtracted from the returns using an AR-filter, the full-sample findings demonstrate that there is a considerable non-linear reliance in return (significant at 1%) virtually in all the dimensions in all the markets).

TABLE 4.5: Summary of Random walk Tests and Market Efficiency

Country	Index	ADF	Phillips Perron	VR	BDS
Pakistan	KMI30	No	No	No	No
	KSE 100	No	No	No	No
Bangladesh	DSES 30	No	No	Yes	No
	DSEX 30	No	No	Yes	No
Indonesia	JKI Islamic 30	No	No	No	No
	Participation JKILQ45	No	No	No	No
Malaysia	FTSE Hijrah 30	No	No	No	No
	FTSEKLSE	No	No	No	No
Turkey	BIST Participat 50	No	No	No	No
	BIST 50	No	No	Yes	No
Qatar	QE Al-Rayan	No	No	No	No
	QE All Shares	No	No	No	No
Nigeria	Lotus Islamic	No	No	No	No
	NSE	No	No	No	No

This **Table 4.19** shows that none of the Shari'ah stock market and conventional market follows a random walk hypothesis wholly. For Bangldesh's both markets and conventional market of Turkey VR test shows that random walk exists in these markets. It means that when these markets are evaluated for efficiency on the basis of auto correlation the results show no auto correlation between past and

present prices. However, when combination of parametric and non parametric test are used to check the Randon walk in these markets the results support no random walk which means markets are inefficient.

Absence of auto correlation in only 3 markets out of 14 markets can be due to unusual economic events which includes Pandemic covid-19. According to (S. Haque & Chowdhury, 2020) stock market of Bangladesh faced lots of restrictions imposed by Government during Covid-19 due to which trading days, working hours, security listings, total trade-in- value of indices, capitalization of market and Monthly turnover were affected which also impacted efficiency of market. According to (Cem Çakmaklı, 2021) the transition to traditional policy making in November 2020 by Government of Turkey is a positive move due to which investor confidence is restored through more conservative measures, the depreciation of the Lira presents a chance for international investors to profit from inexpensive Turkish assets.In contrast to the anticipated global recession in 2020, Turkish growth in that year is probably going to be rather close to positive.

The results of absence of weak form efficiency in selected markets are in line with following as well as other a lot of studies. For Pakistan (Khan et al., 2016), for Bangladesh (Zaman, 2019), for Indonesia (Mubarok & Fadhli, 2020), for Malaysia (Kumar et al., 2018), for turkey (Büyükşalvarcı & Abdioğlu, 2011), for Qatar (Awan & Subayyal, 2016) and for Nigeria (Okotori & Ayunku, 2019).

4.4 Testing of Momentum and Contrarian Premium

J-k Overlapping strategy by Jegadeesh and Titman (1993) is used to formulate winner and looser portfolios to identify the presence of momentum and contrarian premium in the selected Shari'ah and conventional markets. After forming portfolios by using Python's Pandas environment, Eviews 8 hypothesis testing was used to evaluate the existence of momentum and contrarian premium in the selected Shari'ah and conventional markets. These hypothesis testing output tables are retrieved from processing data using Eviews 8.

TABLE 4.6: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Pakistan Stock Exchange

J	K	6 Months	12 Months	18 Months	24 Months	30 Months	36 Months
3 Winner	Mean	1.51%	1.11%	0.88%	0.20%	0.12%	0.69%
	t stat	1.936	1.444	1.05	0.237	0.142	0.857
	p value	0.0553*	0.151	0.295	0.813	0.887	0.394
3 loser	Mean	0.53%	0.15%	0.15%	0.22%	0.63%	0.38%
	t stat	0.646	0.181	0.194	0.269	0.738	0.413
	p value	0.52	0.857	0.847	0.788	0.462	0.681
3 winner-loser	Mean	0.99%	0.96%	0.73%	-0.03%	-0.51%	0.31%
	t stat	1.489	1.49	1.23	-0.047	-0.866	0.477
	p value	0.139	0.139	0.221	0.963	0.388	0.635
6 Winner	Mean	1.91%	1.52%	0.66%	0.56%	0.93%	0.73%
	t stat	2.343	1.823	0.076	0.661	1.079	0.833
	p value	0.0208**	0.071*	0.939	0.51	0.283	0.407
6 loser	Mean	0.56%	-0.12%	0.06%	0.06%	1.28%	1.90%
	t stat	0.654	-0.146	0.094	0.531	1.079	0.813
	p value	0.514	0.884	0.939	0.653	0.283	0.567
6 winner-loser	mean	1.35%	1.64%	0.60%	0.50%	-0.35%	-1.17%
	t stat	1.859	2.531	1.942	-0.542	-0.648	-1.774
	p value	0.0654* M	0.0127 ** M	0.0848*M	0.589	0.521	0.079*C
9 Winner	mean	1.49%	1.00%	0.92%	0.11%	0.10%	-0.24%
	t stat	1.824	1.259	1.173	0.133	0.12	-0.267
	p value	0.0708*	0.21	0.243	0.895	0.905	0.79
9 loser	mean	0.22%	0.06%	0.50%	0.48%	0.77%	0.56%

Continued Table 2.20: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Pakistan Stock Exchange

J	K	6 Months	12 Months	18 Months	24 Months	30 Months	36 Months
	t stat	0.266	0.075	0.603	0.57	0.844	0.621
	p value	0.791	0.941	0.547	0.57	0.401	0.536
9 winner-loser	mean	1.27%	0.94%	0.42%	-0.36%	-0.67%	-0.81%
	t stat	1.886	1.9401	1.649	-0.555	-0.973	-1.182
	p value	0.0618* M	0.0964*M	0.0518*M	0.58	0.333	0.24
12 Winner	mean	1.52%	1.02%	0.66%	0.16%	0.09%	-0.37%
	t stat	1.842	1.29	0.802	0.197	0.105	-0.409
	p value	0.0681**	0.2	0.424	0.844	0.917	0.683
12 loser	mean	0.13%	-0.08%	0.24%	0.59%	0.78%	0.77%
	t stat	0.158	-0.095	0.282	0.662	0.856	0.805
	p value	0.875	0.925	0.779	0.509	0.394	0.423
12 winner-loser	mean	1.39%	1.10%	0.42%	-0.43%	-0.69%	-1.14%
	t stat	1.999	1.964	1.663	-0.653	-0.931	-1.476
	p value	0.048** M	0.0914*M	0.0509*M	0.515	0.354	0.143

Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5%and 10% significance levels

In **Table 4.20**, on analyzing Shari'ah stocks winner portfolio's return, it shows that 22 strategies have positive mean return out of total 24 strategies. However, only 4 of these winner portfolio strategies exhibit significant positive returns which includes J3k6, j6k6, j9k6 and j12k6 with mean returns of 1.511%, 1.907%, 1.489% and 1.524% respectively. None of the winner portfolios with negative return yield has statistically significant results. It concludes that winner portfolios perform better when are held for shorter periods of time i.e 6 months. Hence for Sharia'ah stocks winner portfolios of shorter to medium formation period with shorter holding period enables investors to earn abnormal returns.

While studying Shari'ah stocks loser portfolio's return, it shows that 22 strategies have positive mean return and 2 strategies have negative mean return. However, out of total 24 loser portfolio strategies none of them have statistically significant returns. It indicates that investing in looser stocks is not facilitating investors to earn abnormal profits.

While exploring Shari'ah stocks momentum/ contrarian portfolios, it is found that 10 out of total 24 strategies are different than zero i.e. are statistically significant. These significant strategies include J6K6, J6K12, J6K18, j6k36, j9k6, j9k12, j9k18, j12k6, j12k12, and j12k18. All of these strategies support the existence of momentum behavior i.e buying winners and selling losers except only on strategy j6k36 which supports contrarian effect i.e. buying losers and selling winners. Highest mean return of 1.64% is reported by j6k12 momentum strategy. It shows that medium term holding i.e. up to 18 months supports momentum but no evidence for longer holding period supports momentum.

Our findings support the presence of momentum effect in the Shari'ah market of PSX. Investors can earn abnormal profits by investing in short to medium term past winners and selling short to medium term losers. They can earn profit even by holding such investments for shorter period of time that ranges from 6 months to 12 months.

In **Table 4.21**, when analysing conventional stocks winner portfolio's return, it shows that 18 strategies have positive mean return out of total 24 strategies.

TABLE 4.7: Momentum/ Contrarian Premium of Selected Conventional Stocks of Pakistan Stock Exchange

j k		6 Months	12 months	18 Months	24 months	30 Months	36 months
3 Winner	Mean	0.91%	1.26%	1.14%	0.58%	0.25%	-0.34%
	t stat	1.457	2.102	1.771	0.871	0.424	-0.528
	p value	0.148	0.0377**	0.0792*	0.386	0.672	0.599
3 loser	Mean	0.95%	0.94%	0.73%	0.82%	1.08%	1.16%
	t stat	1.503	1.463	1.044	1.216	1.502	1.71
	p value	0.135	0.146	0.299	0.226	0.136	0.0903*
3 winner-loser	Mean	-0.03%	0.32%	0.40%	-0.24%	-0.83%	-1.50%
	t stat	-0.056	0.569	0.694	-1.37	-2.212	-2.456
	p value	0.956	0.57	0.489	0.0712*C	0.0228**C	0.0157**C
6 Winner	mean	0.89%	0.65%	0.53%	0.67%	0.30%	0.04%
	t stat	1.379	1.15	0.85	1.093	0.46	0.08
	p value	0.17	0.252	0.397	0.277	0.647	0.936
6 loser	mean	0.59%	1.15%	0.36%	0.87%	1.06%	0.46%
	t stat	0.995	1.751	0.518	1.328	1.545	0.605
	p value	0.322	0.0825*	0.605	0.187	0.125	0.546
6 winner-loser	Mean	0.29%	-0.50%	0.17%	-0.20%	-0.76%	-0.42%
	t stat	0.491	-0.898	0.294	-1.354	-1.935	-1.719
	p value	0.624	0.371	0.769	0.0724*C	0.0954*C	0.084*C
9 Winner	mean	0.59%	0.79%	0.57%	0.09%	-0.19%	-0.02%
	t stat	1.002	1.399	1.098	0.154	-0.298	-0.041
	p value	0.319	0.164	0.275	0.878	0.766	0.968
9 loser	mean	0.72%	0.85%	0.47%	0.71%	1.00%	0.49%

Continued Table 4.21 Momentum/ Contrarian Premium of Selected Conventional Stocks of Pakistan Stock Exchange

j k		6 Months	12 months	18 Months	24 months	30 Months	36 months
	t stat	1.1058	1.26682	0.68439	1.00157	1.37516	0.63627
	p value	0.2711	0.9167	0.4951	0.3187	0.172	0.5261
9 winner-loser	mean	-0.12%	-0.06%	0.10%	-0.62%	-1.19%	-0.52%
	t stat	-0.2221	-0.10481	0.17213	-1.93705	-2.09729	-1.87031
	p value	0.8246	0.9167	0.8636	0.03507**C	0.0383**C	0.0386**C
12 Winner	mean	0.52%	0.54%	0.32%	-0.23%	-0.03%	-0.21%
	t stat	0.8115	0.98056	0.5716	-0.3703	-0.05982	-0.36842
	p value	0.4188	0.328	0.5687	0.7119	0.9524	0.7134
12 loser	mean	0.56%	0.40%	0.47%	0.78%	0.83%	0.27%
	t stat	0.8317	0.5848	0.64157	1.09537	1.0939	0.36453
	p value	0.4073	0.5598	0.5225	0.2758	0.2765	0.7163
12 winner-loser	mean	-0.04%	0.14%	-0.15%	-1.01%	-0.86%	-0.49%
	t stat	-0.0611	0.23122	-0.2479	-1.98172	-2.52919	-0.81866
	p value	0.9514	0.8176	0.8047	0.0911*C	0.0429**C	0.415

*Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5%and 10% significance levels.*

However, only two of these winner portfolios exhibit significant positive returns which includes J3k12 strategy j3k18 strategy yielding 1.26% and 1.14% return respectively. It concludes that winner portfolios enable investors to earn abnormal profit if they have shorter formation periods with shorter to medium holding periods.

Conventional stocks loser portfolios return shows that all of 24 strategies have positive yield. However, only two of these loser portfolios exhibit significant positive returns which includes J6k12 strategy and j3k36 strategy yielding 1.147% and 1.158% return respectively. It shows that loser portfolios can generate abnormal returns for short 12 months as well as long 36 months holding period. Furthermore, almost same mean returns are reported by winners' and losers' portfolios.

While exploring conventional stocks momentum/ contrarian portfolios, it shows that only 6 out of 24 momentum strategies yield positive returns but none of them are different than zero i.e. are statistically significant. Rest of 18 strategies exhibits negative returns while 11 of them has shown statistically significant results and supports existence of contrarian profit under conventional share market of PSX. Portfolio strategy of J3k36 yields maximum mean return of 1.50% and supports validity of long-term contrarian effect strongly in conventional stock market. Furthermore, no significant momentum/ contrarian profit is observed for shorter holding periods. Thus, presence of medium to long term contrarian effect in conventional stock market of PSX confirms that investors can earn abnormal profits by holding past losers for medium term to earn abnormal profits.

In **Table 4.22** , when analyzing Shari'ah stocks Winner portfolio's return of DSX , it shows that 2 strategies have positive mean return out of total 24 strategies. However, only 4 of these winner portfolio strategies exhibit significant positive returns which includes J3k6, j6k6, j9k6 and j12k6 with mean returns of 1.947%, 1.591%, 1.53% and 1.480% respectively. None of the winner portfolios with negative return yield has statistically significant results. It concludes that winner portfolios perform better when are held for shorter periods of time i.e 6 months. Hence for Sharia'ah stocks winner portfolios of shorter to medium formation period with shorter holding period enables investors to earn abnormal returns.

TABLE 4.8: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Dhaka Stock Exchange

j k		6 Months	12 months	18 Months	24 months	30 months	36 months
3 Winner	mean	1.95%	0.03%	0.30%	0.69%	0.25%	0.74%
	t stat	3.0801	0.0483	0.4879	1.257	0.4429	1.2271
	p value	0.0027***	0.9616	0.6268	0.2122	0.6591	0.2238
3 loser	mean	-0.13%	1.43%	1.06%	1.84%	0.92%	1.11%
	t stat	-0.2403	2.3088	1.6874	2.4524	1.4463	1.5319
	p value	0.8106	0.0231**	0.095*	0.0163**	0.1521	0.1299
3 winner-loser	mean	2.08%	-1.40%	-0.76%	-1.15%	-0.67%	-0.37%
	t stat	3.3035	-2.6603	-1.1011	-1.6031	-1.2396	-0.5303
	p value	0.0013*** M	0.0257**C	0.2738	0.1127	0.2188	0.5975
6 Winner	Mean	1.59%	0.27%	0.60%	0.31%	0.56%	-0.09%
	t stat	2.5219	0.5074	1.0179	0.5407	0.9057	-0.1465
	p value	0.0133**	0.613	0.3114	0.5902	0.3679	0.8839
6 loser	mean	-0.52%	1.06%	0.34%	1.33%	1.41%	1.69%
	t stat	-0.9317	1.7256	0.5022	1.8029	2.0808	2.2389
	p value	0.3538	0.0876*	0.6168	0.075*	0.0407**	0.0283**
6 winner-loser	mean	2.11%	-0.79%	0.26%	-1.02%	-0.85%	-1.78%
	t stat	3.265	-1.3859	0.3932	-1.5947	-1.8709	-2.6633
	p value	0.0015***M	0.169	0.6951	0.1145	0.0774*C	0.0095***C
9 Winner	mean	1.53%	0.49%	0.88%	0.40%	0.09%	0.11%

Continued Table 4.22: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Dhaka Stock Exchange

j k		6 Months	12 months	18 Months	24 months	30 months	36 months
	t stat	2.6562	0.8897	1.5126	0.7195	0.1748	0.1852
	p value	0.0092	0.3758	0.1339	0.4738	0.8617	0.8536
9 loser	mean	0.10%	1.64%	1.31%	0.98%	1.34%	1.05%
	t stat	0.173	2.6227	1.7329	1.5186	1.8396	1.2947
	p value	0.863	0.0101**	0.0865*	0.1326	0.0696*	0.1996
9 winner-loser	mean	1.44%	-1.15%	-0.42%	-0.59%	-1.25%	-0.94%
	t stat	2.1644	-1.7499	-0.6584	-1.6343	-1.8464	-1.2392
	p value	0.0328**M	0.0833*C	0.512	0.0804*C	0.0686*C	0.2193
12 Winner	mean	1.48%	0.34%	0.84%	0.31%	0.16%	0.33%
	t stat	2.7706	0.672	1.3864	0.5896	0.3099	0.51
	p value	0.0067	0.5032	0.1691	0.557	0.7575	0.6116
12 loser	mean	0.73%	0.97%	1.17%	1.47%	1.19%	1.09%
	t stat	1.2333	1.5238	1.5732	2.1218	1.6832	1.452
	p value	0.2204	0.1308	0.1192	0.0368**	0.0963*	0.1508
12 winner-loser	mean	0.75%	-0.63%	-0.33%	-1.16%	-1.04%	-0.76%
	t stat	2.1021	-1.1848	-0.4472	-1.828	-1.5525	-1.0237
	p value	0.07731*M	0.239	0.6558	0.0711*C	0.0925*C	0.0869*C

Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5%and 10% significance levels

While studying Shari'ah stocks Loser portfolio's return of DSX , it shows that 22 strategies have positive mean return and 2 strategies have negative mean return. Out of total 24 loser portfolios 12 of them have statistically significant returns with highest mean return of 1.84% of j3k24 strategy. It indicates that investing in looser stocks is very much attractive for investors to earn abnormal profits for short, medium and long holding period.

While examining Shari'ah stocks momentum/ contrarian portfolios in DSX, it is found that 13 out of total 24 strategies are different than zero i.e. are statistically significant. These significant strategies include J3K6, J6K6, J9K6, and j12k6 which provides significant results for momentum profit with highest mean of 2.107% of j6k6. Rest of 9 strategies provides evidence for contrarian profit with highest mean return of 1.39% of j3k12. Although higher mean return of momentum strategy suggests that momentum strategy is good to go in Shari'ah market of DSX but high frequency of significant contrarian profits suggest that if investors go for contrarian strategy, they get more chances to earn abnormal returns. Furthermore, momentum profits are present for shorter holding period on only six months, but for contrarian profit longer holding periods of 24, 30 and 36 months are required.

In **Table 4.23**, while analyzing conventional stocks Winner portfolio's return, it shows that 21 strategies have positive mean return out of total 24 strategies. However, none of them has shown significant positive returns which concludes that winner portfolios don't enable investors to earn abnormal profit. Conventional stocks loser portfolios return shows that all of 23 strategies out of 24 have positive mean return with none of them exhibit significant results. It shows that loser portfolios cannot generate abnormal returns.

While exploring conventional stocks momentum/ contrarian portfolios, it shows that only 11 out of 24 momentum strategies yield positive returns but none of them are statistically significant. Rest of 13 strategies exhibits negative returns while none of them has shown statistically significant results. These figures don't support presence of both momentum and contrarian profit in conventional market of DSX.

TABLE 4.9: Momentum/ Contrarian Premium of Selected Conventional Stocks
of Dhaka Stock Exchange

j k		6	12	18	24	30	36
3 Winner	mean	0.35%	0.54%	0.32%	0.57%	0.43%	0.53%
	t stat	0.4912	0.7112	0.4334	0.9525	0.6094	0.7855
	p value	0.6244	0.4787	0.6657	0.3436	0.5441	0.4347
3 loser	mean	0.32%	1.09%	-0.17%	0.18%	0.66%	0.53%
	t stat	0.4828	1.5227	-0.2725	0.2636	0.9525	0.729
	p value	0.6303	0.1311	0.7859	0.7927	0.3438	0.4684
3 winner-loser	Mean	0.37%	-0.56%	0.49%	0.39%	-0.23%	0.03%
	t stat	0.0618	-0.9708	0.8203	0.7325	-0.3436	0.0056
	p value	0.9508	0.3341	0.4142	0.4659	0.7321	0.9956
6 Winner	Mean	0.85%	0.42%	0.68%	0.33%	0.67%	-0.32%
	t stat	1.2381	0.5554	1.0271	0.4749	0.8707	-0.5298
	p value	0.2186	0.5799	0.3071	0.6361	0.3866	0.5979
6 loser	mean	0.24%	0.96%	0.23%	0.81%	0.30%	1.55%
	t stat	0.332	1.3794	0.3563	1.1642	0.4524	1.7322
	p value	0.7406	0.171	0.7224	0.2477	0.6522	0.0875
6 winner-loser	mean	0.61%	-0.54%	0.45%	-0.48%	0.37%	-1.87%
	t stat	0.977	-0.8355	0.8127	-0.8889	0.4963	-1.5729
	p value	0.331	0.4055	0.4185	0.3766	0.6211	0.1211
9 Winner	mean	0.37%	0.24%	0.26%	-0.16%	0.01%	0.63%
	t stat	0.5435	0.3231	0.3845	-0.226	0.0119	0.9807
	p value	0.588	0.7474	0.7015	0.8218	0.9905	0.33
9 loser	mean	0.37%	1.00%	0.05%	0.45%	0.37%	0.33%
	t stat	0.5552	1.405	0.0745	0.7636	0.5234	0.3797
	p value	0.58	0.1632	0.9407	0.4472	0.6022	0.7053
9 winner-loser	mean	-0.01%	-0.76%	0.21%	-0.61%	-0.37%	0.31%
	t stat	-0.0124	-1.2031	0.3836	-0.8261	-0.5368	0.4691
	p value	0.9902	0.2319	0.7022	0.4111	0.5929	0.6404
12 Winner	mean	0.47%	0.34%	0.32%	-0.27%	0.11%	0.63%
	t stat	0.5545	0.3341	0.3955	-0.237	0.022	0.9917
	p value	0.698	0.7473	0.8025	0.9228	0.9985	0.431
12 loser	mean	0.48%	1.10%	0.15%	0.55%	0.48%	0.50%
	t stat	0.5662	1.416	0.0855	0.7746	0.5344	0.3898
	p value	0.681	0.2642	0.9487	0.5482	0.7032	0.8063
12 winner-loser	mean	-0.01%	-0.76%	0.17%	-0.81%	-0.37%	0.20%
	t stat	-0.0137	-1.2042	0.3847	-0.8272	-0.5379	0.4701
	p value	0.9986	0.3329	0.8122	0.5211	0.5329	0.7104

Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5% and 10% significance levels

TABLE 4.10: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Indonesia Stock Exchange

J	K	6	12	18	24	30	36
3 Winner	mean	0.92%	0.28%	0.08%	0.28%	1.38%	0.06%
	t stat	1.068	0.3486	-0.0927	0.3472	1.6797	0.0558
	p value	0.2711	0.7281	0.9263	0.7293	0.097*	0.9556
3 loser	mean	0.07%	-0.53%	0.84%	0.85%	0.22%	1.63%
	t stat	0.0703	-0.6285	0.9604	0.8808	0.2178	1.8341
	p value	0.9441	0.5312	0.3394	0.3809	0.8282	0.0708
3 winner-loser	Mean	0.86%	0.81%	-0.91%	-0.57%	1.15%	-1.56%
	t stat	0.9364	1.0799	-1.154	-0.5921	1.2419	-1.5638
	p value	0.3514	0.2829	0.2515	0.5554	0.218	0.1223
6 Winner	Mean	-0.30%	-0.09%	0.24%	-0.30%	-1.03%	0.47%
	t stat	-0.4055	-0.1171	0.2535	-0.4223	-1.2699	0.5484
	p value	0.686	0.907	0.8005	0.6739	0.2079	0.5851
6 loser	mean	0.53%	0.27%	0.29%	1.31%	1.23%	1.19%
	t stat	0.6269	0.3255	0.3323	1.2181	1.1266	0.9736
	p value	0.5321	0.7455	0.7405	0.2266	0.2638	0.3335
6 winner-loser	mean	0.83%	-0.36%	-0.06%	-1.61%	-0.20%	-0.73%
	t stat	-1.0661	-0.4646	-0.0653	-1.6128	-0.203	-0.6812
	p value	0.289	0.6432	0.948	0.1105	0.8397	0.4979
9 Winner	mean	-0.04%	0.09%	-0.07%	0.37%	0.94%	0.47%
	t stat	-0.0525	0.117	-0.0878	0.4822	1.325	0.6361
	p value	0.9582	0.9071	0.9302	0.6309	0.189	0.5267
9 loser	mean	0.02%	0.46%	0.62%	0.92%	2.07%	1.83%
	t stat	0.0196	0.5173	0.6838	0.8768	1.9002	1.6157
	p value	0.9844	0.6061	0.4959	0.3831	0.0611*	0.1105
9 winner-loser	mean	-0.06%	-0.37%	-0.69%	-0.55%	-1.12%	-1.36%
	t stat	-0.073	-0.476	-0.7664	-0.5974	-1.1225	-1.5019
	p value	0.9419	0.6346	0.4454	0.5518	0.2651	0.1375
12 Winner	mean	-0.03%	0.37%	-0.40%	0.10%	0..7513%	0.56%
	t stat	-0.0324	0.4871	-0.5424	0.1257	1.0395	0.7588
	p value	0.9742	0.6273	0.5889	0.9002	0.3018	0.4564
12 loser	mean	0.39%	0.50%	0.21%	1.16%	2.26%	1.58%
	t stat	0.4769	0.6046	0.2261	1.0606	2.1056	1.3793
	p value	0.6345	0.5468	0.8217	0.2919	0.0385	0.1721
12 winner-loser	mean	0.41%	-0.13%	-0.61%	-1.05%	-1.51%	-1.03%
	t stat	-0.4922	-0.1617	-0.7599	-1.0681	-1.5653	-1.1796
	p value	0.6236	0.8719	0.4994	0.2885	0.109	0.242

Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5%and 10% significance levels

In **Table 4.24**, while analyzing Shari'ah stocks winner portfolio's return of IDX, it shows that 15 strategies have positive mean return out of total 24 strategies. However, only 1 of these winner portfolio strategies j3k30 exhibit significant positive return of 1.375%. While studying Shari'ah stocks loser portfolio's return, it shows that 23 strategies have positive mean return and 1 strategy has negative mean return. However, out of total 24 loser portfolio strategies only one of them j9k30 have statistically significant returns.

These results provide almost no evidence of distinct profitability of either winner or loser portfolios in this market setting and indicates that investors are not able to earn extra returns by investing and holding both winner or loser portfolios. While exploring Shari'ah stocks momentum/ contrarian portfolios, it is found that none of 24 strategies are statistically significant. Our findings support the absence of momentum/ contrarian profit effect in the Shari'ah market of IDX.

In **Table 4.25**, while analysing conventional stocks winner portfolio's return of IDX it shows that 12 strategies have positive mean return out of total 24 strategies. However, none of these winner portfolios exhibit significant positive returns. Conventional stocks loser portfolios return shows that all of 24 strategies have positive yield. However, 4 of these loser portfolios exhibit significant positive returns with highest mean return of 2.764% of j12k36 strategy. It shows that loser portfolios can generate abnormal returns when kept for longer period of 36 months.

While exploring conventional stocks momentum/ contrarian portfolios, it shows that only 7 out of 24 momentum strategies yield positive returns but none of them are different than zero i.e. are statistically significant. Rest of 17 strategies exhibits negative returns while 12 of them has shown statistically significant results and supports existence of contrarian profit under conventional share market of IDX. Contrarian strategy of J12k36 yields maximum mean return of 2.898% and supports validity of long-term contrarian effect strongly in conventional stock market. Furthermore, no significant contrarian profit is observed for shorter holding periods. Thus, presence of medium to long term contrarian effect in conventional stock market confirms that investors can earn abnormal profits by holding past losers for medium term to earn abnormal profits.

TABLE 4.11: Momentum/ Contrarian Premium of Selected Conventional Stocks of Indonesia Stock Exchange

J	K	6	12	18	24	30	36
3 Winner	mean	0.26%	0.88%	0.62%	-0.42%	-0.37%	-0.66%
	t stat	0.3955	1.2732	0.8802	-0.5195	-0.5271	-0.6363
	p value	0.6934	0.206	0.3811	0.6048	0.5996	0.5265
3 loser	mean	0.36%	0.49%	0.26%	0.88%	0.43%	0.88%
	t stat	0.4874	0.8168	0.3641	1.0961	0.5471	1.0783
	p value	0.6271	0.4161	0.7166	0.2762	0.5858	0.2845
3 winner-loser	Mean	-0.10%	0.38%	0.35%	-1.29%	-0.80%	-1.53%
	t stat	-0.1145	0.5147	0.4502	-2.0335	-1.9195	-1.9204
	p value	0.9091	0.6079	0.6536	0.0852*C	0.0866*C	0.0759*C
6 Winner	Mean	0.49%	0.53%	0.95%	-0.59%	-0.80%	-0.45%
	t stat	0.8457	0.7822	1.4604	-0.7475	-1.1196	-0.5356
	p value	0.3992	0.4361	0.1477	0.4568	0.2663	0.5939
6 loser	mean	0.88%	0.41%	0.39%	1.18%	0.84%	1.40%
	t stat	1.3052	0.5903	0.5215	1.4968	1.673	1.7562
	p value	0.1949	0.5564	0.6033	0.1382	0.2891	0.0833*
6 winner-loser	mean	-0.38%	0.12%	0.56%	-1.76%	0.06%	-1.85%
	t stat	-0.4962	0.1401	0.7006	-1.9825	-1.0735	-1.9701
	p value	0.6209	0.888	0.4854	0.0507*C	0.0942*C	0.0527*C
9 Winner	mean	0.99%	0.33%	-0.12%	-0.84%	-0.18%	-0.58%
	t stat	1.6501	0.5184	-0.172	-1.0313	-0.1986	-0.6075
	p value	0.1021	0.6054	0.8638	0.3053	0.8431	0.5454
9 loser	mean	0.31%	0.63%	0.07%	0.96%	1.21%	1.40%

Continued Table 4.11 Momentum/ Contrarian Premium of Selected Conventional Stocks of Indonesia Stock Exchange

J	K	6	12	18	24	30	36
	t stat	0.4538	0.8864	-0.1001	1.2129	1.5766	1.6995
	p value	0.651	0.3776	0.9205	0.2285	0.1189	0.0935*
9 winner-loser	mean	0.69%	-0.30%	-0.06%	-1.80%	-1.39%	-1.98%
	t stat	0.9051	-0.4002	0.0724	-2.3919	-2.6305	-1.796
	p value	0.3676	0.6899	0.9425	0.019**C	0.0832*C	0.0767*C
12 Winner	mean	1.20%	0.04%	-0.58%	-0.88%	0.74%	0.85%
	t stat	2.0086	0.0694	-0.8822	-1.0006	0.8636	0.894
	p value	0.0473	0.9447	0.38	0.3199	0.3904	0.4104
12 loser	mean	0.43%	0.53%	0.40%	1.11%	1.66%	2.76%
	t stat	0.6105	0.715	0.5976	1.4468	2.0946	2.2146
	p value	0.5429	0.4763	0.5516	0.1517	0.0394**	0.0372**
12 winner-loser	mean	0.77%	-0.49%	-0.99%	-2.00%	-0.92%	-1.91%
	t stat	0.9849	0.5831	-1.3831	-2.515	-2.498	-2.898
	p value	0.3271	0.5612	0.17	0.0138**C	0.0467**C	0.0343**C

*Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5%and 10% significance levels*

TABLE 4.12: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Malaysia Stock Exchange

J	K	6	12	18	24	30	36
3 Winner	mean	0.56%	0.35%	-0.11%	0.58%	0.51%	-0.39%
	t stat	1.0046	0.5034	-0.152	0.9525	0.6454	-0.386
	p value	0.3175	0.6158	0.8799	0.3436	0.5205	0.7009
3 loser	mean	0.09%	0.26%	0.14%	-0.22%	-0.74%	-0.08%
	t stat	0.1221	0.4034	0.1957	-0.26	-0.89	-0.109
	p value	0.903	0.6875	0.8453	0.7952	0.3763	0.9135
3 winner-loser	Mean	0.47%	0.10%	-0.24%	0.80%	1.25%	-0.31%
	t stat	0.7526	0.1252	-0.309	0.8626	1.5501	-0.301
	p value	0.4534	0.9	0.758	0.3908	0.1252	0.7644
6 Winner	Mean	0.75%	0.39%	-0.05%	0.52%	0.40%	-0.11%
	t stat	1.6797	0.5898	-0.072	0.7212	0.5852	-0.111
	p value	0.0962	0.5567	0.9431	0.4728	0.5601	0.9122
6 loser	mean	0.44%	-0.74%	-0.06%	-0.21%	-0.34%	0.13%
	t stat	0.5284	-0.932	-0.008	-0.228	-0.493	0.1983
	p value	0.5984	0.3537	0.9938	0.8201	0.6232	0.8434
6 winner-loser	mean	0.32%	1.13%	-0.04%	0.73%	0.74%	-0.25%
	t stat	0.4003	1.4759	-0.056	0.8076	1.0935	-0.242
	p value	0.6898	0.1433	0.9557	0.4216	0.2776	0.8095
9 Winner	mean	0.78%	0.47%	0.25%	0.80%	0.67%	-0.14%
	t stat	1.3605	0.6973	0.3604	1.0776	0.9568	-0.137
	p value	0.1768	0.4873	0.7194	0.2843	0.3416	0.8916
9 loser	mean	0.69%	-0.08%	-0.20%	-0.35%	-0.78%	-0.50%
	t stat	1.0735	-0.101	-0.244	-0.379	-1.17	-0.689
	p value	0.2857	0.9202	0.8075	0.7055	0.2455	0.4927
9 winner-loser	mean	0.09%	0.54%	0.45%	1.15%	1.46%	0.36%
	t stat	0.1227	0.764	0.5032	1.1204	1.432	0.3527
	p value	0.9026	0.4466	0.616	0.2657	0.1556	0.7253
12 Winner	mean	0.92%	0.45%	0.11%	0.70%	0.29%	0.34%
	t stat	1.6762	0.7295	0.1576	0.945	0.3855	0.3618
	p value	0.0968	0.4674	0.8752	0.3474	0.7009	0.7186
12 loser	mean	-0.03%	-0.30%	-0.48%	-0.23%	-0.91%	-0.34%
	t stat	-0.032	-0.428	-0.555	-0.268	-1.298	-0.425
	p value	0.9744	0.6694	0.5804	0.7892	0.198	0.6719
12 winner-loser	mean	0.94%	0.75%	0.59%	0.94%	1.20%	0.68%
	t stat	1.1925	1.0582	0.6597	0.9907	1.528	0.7119
	p value	0.2359	0.2926	0.5111	0.3247	0.1306	0.4789

Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5% and 10% significance level

In **Table 4.26**, while analyzing Shari'ah stocks winner portfolio's return, it shows that 19 strategies have positive mean return out of total 24 strategies. However, none of these winner portfolio strategies exhibit significant positive returns. While studying Shari'ah stocks loser portfolio's return, it shows that 6 strategies have positive mean return and 18 strategies have negative mean return. However, out of total 24 loser portfolio strategies none of them have statistically significant returns. It indicates that investing either in looser stocks or in winning stocks is not facilitating investors to earn abnormal profits.

While exploring Shari'ah stocks momentum/ contrarian portfolios, it is found that none out of total 24 strategies are different than zero i.e. are statistically significant. Thus, no investor can earn extra returns by exercising both momentum and contrarian strategy in Shari'ah market of Borsa Malaysia.

In **Table 4.27**, when analyzing conventional stocks winner portfolio's return, it shows that 8 portfolios have positive mean return out of total 24 strategies. However, none of these winner portfolios exhibit significant positive returns. One winner portfolio j6k18 has significant negative return which off course is of no importance to investors. Conventional stocks loser portfolios return shows that only 3 strategies have positive yield.

However, none of these loser portfolios exhibit significant positive returns. It shows that, both the winner and loser stock portfolios cannot generate abnormal returns for investors.

While exploring conventional stocks momentum/ contrarian portfolios of Bursa Malaysia, it shows that only 20 out of 24 momentum strategies yield positive returns and 12 of them are different than zero i.e. are statistically significant. The strategy j12k30 yields highest return of 3.413%.

Furthermore, results show that momentum strategies of all formation periods but of medium to long-term holding periods generates profit. Rest of 4 strategies exhibits negative returns while none of them has shown statistically significant results and supports no existence of contrarian profit under conventional share market of Bursa Malaysia.

TABLE 4.13: Momentum/ Contrarian Premium of Selected Conventional Stocks of Malaysia Stock Exchange

J	K	6	12	18	24	30	36
3 Winner	mean	0.00%	-0.87%	-0.66%	-0.27%	-0.45%	0.16%
	t stat	0.0016	-0.8315	-0.8053	-0.3185	-0.3744	0.1358
	p value	0.9987	0.4077	0.4228	0.7509	0.7091	0.8923
3 loser	mean	-1.77%	-0.02%	-0.33%	-0.84%	-0.70%	-1.27%
	t stat	-1.2919	-1.1963	-0.2499	-0.5231	-0.5301	-0.9573
	p value	0.1994	0.2345	0.8032	0.6023	0.5975	0.3416
3 winner-loser	Mean	1.77%	0.62%	-0.33%	0.57%	0.25%	1.44%
	t stat	1.4393	0.4893	-0.2852	1.3635	1.683	2.0805
	p value	0.1532	0.6257	0.7761	0.07171*M	0.08526*M	0.02835**M
6 Winner	Mean	-0.05%	-0.39%	-1.62%	-0.82%	1.18%	0.61%
	t stat	-0.0529	-0.4272	-1.9109	-1.0972	1.0425	0.5167
	p value	0.9579	0.6702	0.0592*	0.2757	0.3004	0.607
6 loser	mean	-1.50%	-1.46%	-0.43%	-1.57%	-1.72%	-1.56%
	t stat	-1.0735	-1.0725	-0.3146	-0.9156	-1.3366	-1.0927
	p value	0.2856	0.2861	0.7538	0.3625	0.1852	0.2782
6 winner-loser	mean	1.45%	0.65%	-1.96%	0.76%	2.89%	2.17%
	t stat	1.0979	0.8779	-0.9674	1.5023	2.7557	2.4674
	p value	0.2749	0.3822	0.3359	0.06168*M	0.0073***M	0.02466**M
9 Winner	mean	-0.33%	-0.97%	-1.30%	-0.39%	0.93%	0.24%

Continued Table 4.27: Momentum/ Contrarian Premium of Selected Conventional Stocks of Malaysia Stock Exchange

J	K	6	12	18	24	30	36
	t stat	-0.349	-1.2268	-1.5468	-0.4536	0.8194	0.2237
	p value	0.7278	0.2229	0.1254	0.6512	0.415	0.8236
9 loser	mean	-1.64%	-1.76%	0.74%	-1.24%	-0.74%	-2.22%
	t stat	-1.2785	-1.1672	-0.4336	-0.7122	-0.6101	-1.2126
	p value	0.204	0.246	0.6656	0.4783	0.5436	0.2292
9 winner-loser	mean	1.32%	0.79%	-0.56%	0.85%	1.67%	2.46%
	t stat	1.2999	0.5767	-0.3399	1.5505	1.775	1.6869
	p value	0.1967	0.5655	0.7348	0.05834*M	0.0798*M	0.0959*M
12 Winner	mean	-0.22%	-0.75%	-1.37%	-0.16%	1.56%	0.44%
	t stat	-0.2705	-0.903	-1.6596	-0.1741	1.3714	0.4247
	p value	0.7874	0.3688	0.1005	0.8622	0.1742	0.6723
12 loser	mean	-1.89%	-1.69%	-0.93%	-1.50%	-1.86%	-1.02%
	t stat	-1.2776	-1.1151	-0.5618	-1.0045	-1.3889	-0.5269
	p value	0.2044	0.2676	0.575	0.318	0.1685	0.599
12 winner-loser	mean	1.66%	13.07%	-0.44%	1.35%	3.41%	1.46%
	t stat	1.3815	0.712	-0.2697	1.152	2.9718	1.9179
	p value	0.1702	0.4782	0.7918	0.08526*M	0.0039***M	0.03617**M

Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5% and 10% significance levels

TABLE 4.14: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Bursa Istanbul

J	K	6	12	18	24	30	36
3 Winner	Mean	3.23%	1.83%	2.62%	1.36%	1.95%	2.35%
	t stat	4.1013	2.2902	3.3444	1.7694	1.8727	2.7114
	p value	0.0001***	0.0242**	0.0012***	0.0804*	0.0649*	0.0084***
3 loser	Mean	1.85%	1.90%	0.02%	3.38%	0.03%	2.62%
	t stat	2.1608	2.407	2.392	3.2126	3.5876	2.375
	p value	0.0331**	0.018**	0.0188**	0.002***	0.0006***	0.0202**
3 winner-loser	Mean	1.37%	0.06%	0.44%	-2.01%	-1.37%	-0.27%
	t stat	2.0026	0.1106	0.5798	-2.4854	-1.9259	-2.3489
	p value	0.048**M	0.9121	0.563	0.0149**C	0.0578*C	0.0388**C
6 Winner	Mean	3.40%	1.91%	2.34%	1.28%	3.55%	2.41%
	t stat	4.0019	2.3041	2.6179	1.5598	3.8398	2.5981
	p value	0.0001***	0.0234**	0.0104**	0.1226	0.0002***	0.0114**
6 loser	Mean	2.03%	2.49%	2.70%	3.01%	3.18%	3.22%
	t stat	2.3668	3.1353	2.909	2.9454	3.242	2.803
	p value	0.0199**	0.0023***	0.0046***	0.0042***	0.0018***	0.0065***
6 winner-loser	Mean	1.39%	-0.59%	-0.36%	-1.72%	0.34%	-0.83%
	t stat	1.9572	-0.8928	-0.5022	-2.2959	0.5037	-1.9819
	p value	0.0531*M	0.3755	0.6168	0.0242**C	0.6459	0.06255*C
9 Winner	Mean	2.65%	2.15%	1.28%	1.04%	2.92%	2.89%
	t stat	3.1774	2.4133	1.4018	1.2467	3.337	3.2746

Continued Table 4.28: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Bursa Istanbul

J	K	6	12	18	24	30	36
	p value	0.002***	0.0177**	0.1644	0.216	0.0013***	0.0016***
9 loser	Mean	1.65%	2.06%	2.97%	3.35%	3.43%	3.17%
	t stat	2.0477	2.4729	2.9584	3.5938	3.1346	2.6146
	p value	0.0432**	0.0152**	0.0039***	0.0005***	0.0024***	0.0109**
9 winner-loser	Mean	1.00%	0.09%	-1.65%	-2.31%	-0.51%	-0.28%
	t stat	1.4846	0.1159	-2.075	-3.1909	-1.6556	-1.3174
	p value	0.1408	0.908	0.0408**C	0.002***C	0.0814*C	0.07519*C
12 Winner	Mean	2.73%	2.31%	1.80%	1.68%	2.65%	3.43%
	t stat	3.3425	2.6495	2.0328	1.9827	2.9781	2.8559
	p value	0.0012***	0.0094***	0.045**	0.0507*	0.0039***	0.0056***
12 loser	Mean	1.47%	2.63%	3.06%	2.94%	3.99%	5.95%
	t stat	1.8626	2.8933	3.1754	2.8669	3.6378	1.2792
	p value	0.0655*	0.0047***	0.002***	0.0052***	0.0005***	0.2631
12 winner-loser	Mean	1.26%	-0.31%	-1.26%	-1.26%	-1.34%	-2.52%
	t stat	1.6891	-0.3651	-1.5346	-1.782	-1.8172	-2.8105
	p value	0.0943*M	0.7158	0.1284	0.0783*C	0.073*C	0.0064***C

*Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5% and 10% significance levels*

In **Table 4.28**, when analyzing Shari'ah stocks winner portfolio's return, it shows that 24 strategies have positive mean return. However, 21 of these winner portfolio strategies exhibit significant positive returns with highest mean return of 3.552% by j6k30. Results show that winner portfolios are profitable for all formation periods and short, medium as well as long holding periods, so investors can get benefit by investing in winners in Shari'ah market of Turkey. While studying Shari'ah stocks loser portfolio's return, it shows that all 24 strategies have positive mean return. However, out of total 24 loser portfolio strategies 23 of them have statistically significant returns. The strategy j12k30 earns the maximum mean return of 3.989%. It indicates that investing in looser stocks can be a big attraction for investors to earn abnormal profits for all formation and holding periods. Furthermore, the analysis supports that loser portfolios yields better returns then winner portfolios. While exploring Shari'ah stocks momentum/ contrarian portfolios, it is found that 15 out of total 24 strategies are different than zero i.e. are statistically significant. These significant strategies include 3 strategies of shorter holding period with positive mean returns and supports profitable momentum strategy for shorter holding period. The highest mean return of 1.390% is generated by J6K6. Rest of 12 strategies provides strong support in favor of existence of contrarian profit in Turkey Shari'ah market. The highest return of 2.50% is earned by J12k36 strategy. The findings support the presence of contrarian effect in the Shari'ah market of Bora Istanbul. Investors can earn abnormal profits by investing in past losers and selling past winners.

In **Table 4.29,** when analyzing conventional stocks winner portfolio's return, it shows that all 24 strategies have positive mean return. However, 23 of these winner portfolios exhibit significant positive returns with highest mean return of 3.38% by J6k30 strategy. It concludes that winner portfolios investment provides investors to earn abnormal profits if they have for all formation periods with short, medium and long holding periods but highest returns can be enjoyed if investment kept for longer period. Conventional stocks loser portfolios return shows that 17 strategies have positive yield. However, only 1 of these loser portfolios strategy j6k12 exhibit significant positive returns. It shows that investment in loser portfolios cannot generate abnormal returns for any of the formation or holding periods.

TABLE 4.15: Momentum/ Contrarian Premium of Selected Conventional Stocks of Bursa Istanbul

J	K	6	12	18	24	30	36
3 Winner	mean	2.46%	1.41%	2.99%	2.85%	2.49%	2.70%
	t stat	2.9968	1.608	3.832	3.096	2.7183	2.7325
	p value	0.0034***	0.1111	0.0002***	0.0027***	0.0081***	0.0079***
3 loser	mean	0.93%	-1.00%	0.87%	0.81%	-0.06%	-0.08%
	t stat	1.2937	-1.4384	1.059	1.0509	-0.0749	-0.088
	p value	0.1987	0.1536	0.2924	0.2963	0.9405	0.9301
3 winner-loser	Mean	1.53%	2.42%	2.13%	2.05%	2.55%	2.77%
	t stat	1.7904	2.603	2.3137	2.2596	2.4026	2.3696
	p value	0.0765*M	0.0107**M	0.023**M	0.0264**M	0.0187**M	0.0205**M
6 Winner	Mean	2.93%	1.12%	1.89%	2.83%	3.38%	2.62%
	t stat	3.2947	1.3603	2.183	3.06	3.5843	2.6562
	p value	0.0014***	0.1769	0.0316**	0.0029***	0.0006***	0.0097***
6 loser	mean	0.76%	2.71%	-0.61%	0.81%	0.23%	0.09%
	t stat	0.9007	2.8576	-0.7103	0.9416	0.2469	0.1026
	p value	0.3699	0.0052***	0.4793	0.3491	0.8051	0.9185
6 winner-loser	mean	2.17%	-1.59%	2.50%	2.02%	3.61%	2.53%
	t stat	2.6585	-2.1091	2.5695	2.1115	3.3824	2.3246
	p value	0.0092***M	0.0375**M	0.0118**M	0.0377**M	0.0011***M	0.0229**M
9 Winner	mean	2.33%	1.77%	2.27%	2.70%	3.52%	3.30%
	t stat	2.7234	2.0697	2.8188	3.0986	3.9386	3.5726
	p value	0.0076***	0.0412**	0.0059	0.0026	0.0002***	0.0006***
9 loser	mean	0.72%	-0.65%	0.24%	0.47%	0.26%	0.22%

Continued Table 4.29 Momentum/ Contrarian Premium of Selected Conventional Stocks of Bursa Istanbul

J	K	6	12	18	24	30	36
	t stat	0.9976	-0.7976	0.2781	0.5133	0.2968	0.2561
	p value	0.3209	0.427	0.7816	0.6091	0.7673	0.7986
9 winner-loser	mean	1.62%	2.41%	2.02%	2.22%	3.26%	3.08%
	t stat	1.8498	2.57	2.084	2.1432	2.909	2.6813
	p value	0.0673*M	0.0117**M	0.04**M	0.035**M	0.0047***M	0.0091***M
12 Winner	mean	2.40%	1.35%	2.00%	2.87%	3.23%	2.53%
	t stat	2.8304	1.6787	2.5414	3.3423	3.4496	2.8108
	p value	0.0056***	0.0965*	0.0128**	0.0012***	0.0004***	0.0064***
12 loser	mean	0.72%	-1.21%	-0.32%	0.25%	0.32%	-0.40%
	t stat	0.9368	-1.5231	0.3638	0.2927	0.3395	-0.4873
	p value	0.3511	0.131	0.7168	0.7704	0.7351	0.6275
12 winner-loser	mean	1.68%	2.57%	2.32%	2.62%	2.91%	2.93%
	t stat	1.8711	2.8211	2.3516	2.6092	2.5326	2.4956
	p value	0.0643*M	0.0058***M	0.0209**M	0.0107**M	0.0133**M	0.0149**M

Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5%and 10% significance levels

TABLE 4.16: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Qatar Stock Exchange

J	K	6	12	18	24	30	36
3 Winner	mean	-0.39%	-0.80%	-0.40%	-0.88%	-0.12%	-0.09%
	t stat	-0.6143	-1.3398	-0.5873	-1.2778	-0.1703	-0.1376
	p value	0.5404	0.1835	0.5582	0.2048	0.8652	0.8909
3 loser	mean	-0.11%	0.05%	-0.30%	0.00%	0.15%	0.10%
	t stat	-0.1684	0.0707	-0.4695	-0.0355	0.2191	0.1325
	p value	0.8666	0.9438	0.6398	0.9972	0.8271	0.8949
3 winner-loser	Mean	-0.26%	-0.84%	-0.10%	-0.88%	-0.27%	-0.19%
	t stat	-1.5657	-1.7151	-1.1968	-1.6645	-0.5202	-0.3081
	p value	0.05729*C	0.0895*C	0.08444*C	0.0997*C	0.6043	0.7589
6 Winner	Mean	0.07%	-0.70%	-0.61%	-0.78%	-0.12%	-0.21%
	t stat	0.1085	-1.1817	-0.9125	-1.1471	-0.1703	-0.3347
	p value	0.9138	0.24	0.3639	0.2546	0.8652	0.7388
6 loser	mean	0.18%	0.27%	0.17%	0.03%	0.15%	-0.17%
	t stat	0.2831	0.3883	0.25	0.0449	0.2912	-0.2464
	p value	0.7776	0.6986	0.8031	0.9642	0.8271	0.806
6 winner-loser	mean	-0.12%	-0.98%	-0.78%	-0.81%	0.44%	-0.04%
	t stat	-1.1925	-1.7039	-1.9351	-1.4617	0.6535	-0.0626
	p value	0.08477*C	0.0916*C	0.09*C	0.1475	0.5154	0.9502
9 Winner	mean	-0.22%	-0.69%	-0.86%	-0.79%	-0.05%	0.48%

Continued Table 4.30: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Qatar Stock Exchange

J	K	6	12	18	24	30	36
	t stat	-0.3675	-1.1438	-1.3308	-1.1324	-0.0891	0.8135
	p value	0.714	0.2555	0.1866	0.2607	0.929	0.4186
9 loser	mean	-0.01%	0.65%	-0.26%	-0.30%	0.15%	0.58%
	t stat	-0.013	0.9224	-0.3944	-0.4936	0.2104	0.7484
	p value	0.9889	0.3586	0.6942	0.6229	0.8334	0.4566
9 winner-loser	mean	-0.21%	-1.34%	-0.60%	-0.49%	-0.20%	-0.10%
	t stat	-1.387	-2.5252	-2.1837	-0.8312	-0.3765	-0.1546
	p value	0.06992*C	0.0132**C	0.0239**C	0.4082	0.7075	0.8775
12 Winner	mean	-0.21%	-0.80%	-0.78%	-0.55%	0.15%	0.16%
	t stat	-0.3246	-1.4123	-1.1039	-0.8467	0.2806	0.2471
	p value	0.7461	0.1611	0.2726	0.3996	0.7797	0.8056
12 loser	mean	-0.09%	1.00%	-0.19%	0.00%	-0.05%	0.05%
	t stat	-0.1206	1.4211	-0.3118	0.0047	-0.0678	0.0617
	p value	0.9042	0.1585	0.7559	0.9963	0.9462	0.951
12 winner-loser	mean	-0.12%	-1.80%	-0.58%	-0.55%	0.20%	0.11%
	t stat	-1.2123	-3.4802	-2.0792	-1.0685	0.3783	0.18
	p value	0.08323*C	0.0008***C	0.07834*C	0.2884	0.7062	0.8577

Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5% and 10% significance levels

While exploring conventional stocks momentum/ contrarian portfolios, it shows that all of 24 momentum strategies yield positive returns and are different than zero i.e. are statistically significant. Highest mean return of 3.609% is earned by J6k30 strategy. Furthermore, it is concluded that momentum strategies are significant for all the formation and holding periods but the most earning strategies are those with longest holding period. Thus, presence of short, medium and long term momentum effect in conventional stock market of Turkey confirms that investors can earn abnormal profits by holding past winners and selling past losers to earn abnormal profits. However, no evidence of contrarian profit is there in Turkey conventional market. In **Table 4.30**, while analyzing Shari'ah stocks winner portfolio's return, it shows that 4 strategies have positive mean return out of total 24 strategies. However, none of these winner portfolios exhibit significant positive returns. It concludes that winner portfolios investment could not enables investors to earn abnormal return. While studying Shari'ah stocks Loser portfolio's return, it shows that 14 loser portfolios have positive mean return. However, none of them have statistically significant returns. It indicates that investing in loser stocks is not facilitating investors to earn abnormal profits nor for longer holding periods. In a nutshell, winner and loser portfolios both are not attractive for investors in Qatar Shari'ah market. While exploring Shari'ah stocks momentum/ contrarian portfolios in QSX, it is found that 13 out of total 24 strategies are different than zero i.e. are statistically significant. All of these strategies support the existence of contrarian behavior i.e. buying losers and selling winners. Highest mean return of 1.795% is reported by j12k12 strategy. Furthermore, it is noticed that contrarian strategies are significant for maximum of 18 months holding period i.e. medium term holding period. However, no evidence of momentum profit is there in Shari'ah market of Qatar.

In **Table 4.31**, when analyzing conventional stocks winner portfolio's return, it shows that 5 winner portfolios have positive mean return out of total 24 strategies. However, none of these winner portfolios exhibit significant positive returns. There are 6 winner portfolios having significant negative mean return but they are not of any importance to the investors. It concludes that winner portfolios don't enable investors to earn abnormal profit in QSX conventional market.

TABLE 4.17: Momentum/ Contrarian Premium of Selected Conventional Stocks of Qatar Stock Exchange

J	K	6	12	18	24	30	36
3 Winner	mean	0.94%	0.17%	-0.86%	-1.39%	-1.76%	-0.82%
	t stat	0.6861	0.201	-1.2126	-2.0792	-1.8389	-1.1841
	p value	0.4942	0.8411	0.2284	0.0407	0.067	0.2403
3 loser	mean	-0.68%	-0.34%	0.23%	-0.13%	-0.26%	0.55%
	t stat	-0.7144	-0.3789	0.2049	-0.0946	-0.1915	0.4349
	p value	0.4767	0.7055	0.8381	0.9249	0.8457	0.6649
3 winner-loser	Mean	1.62%	0.51%	-1.08%	-1.26%	-1.50%	-1.36%
	t stat	1.0752	0.472	-0.9647	-0.9892	-1.0435	-1.1004
	p value	0.2849	0.638	0.3372	0.3254	0.2999	0.2746
6 Winner	Mean	0.51%	-0.50%	-0.71%	-1.69%	-1.77%	0.46%
	t stat	0.4294	-0.7709	-1.1652	-3.1793	-2.139	-0.5802
	p value	0.6685	0.4426	0.247	0.0015	0.0356	0.5635
6 loser	mean	-0.62%	-0.32%	-0.67%	0.12%	0.17%	-0.13%
	t stat	-0.6949	-0.3578	-0.5342	0.0886	0.13	-0.1589
	p value	0.4887	0.7212	0.5945	0.9296	0.8969	0.8742
6 winner-loser	mean	1.13%	-0.18%	-0.04%	-1.80%	-1.94%	-0.33%
	t stat	0.842	-0.1976	-0.0282	-1.441	-1.4917	-0.4656
	p value	0.4018	0.8437	0.9776	0.1532	0.1398	0.6429
9 Winner	mean	0.71%	-0.59%	-0.39%	-1.18%	-1.63%	-0.83%
	t stat	0.6069	-0.9246	-0.6221	-2.1981	-2.1069	-1.0302
	p value	0.5453	0.3575	0.5354	0.0307	0.0388	0.3063
9 loser	mean	-0.30%	-0.22%	-0.38%	0.09%	0.48%	0.21%
	t stat	-0.3491	-0.1981	-0.2846	0.0634	0.3688	0.2583
	p value	0.7277	0.8434	0.7766	0.9496	0.7132	0.7969
9 winner-loser	mean	1.00%	-0.37%	-0.01%	-1.27%	-2.11%	-1.04%
	t stat	0.7637	-0.3609	-0.0105	-0.9082	-1.6235	-1.535
	p value	0.4469	0.719	0.9916	0.3664	0.1085	0.1291
12 Winner	mean	0.65%	-0.55%	-0.97%	-0.97%	-0.87%	-0.99%
	t stat	0.7284	-0.5734	-1.6242	-1.6246	-1.3834	-1.2589
	p value	0.4681	0.5664	0.1077	0.1077	0.1705	0.2121
12 loser	mean	-0.71%	-0.36%	-0.73%	0.07%	-0.34%	0.35%
	t stat	-0.6791	-0.3509	0.0511	0.051	-0.232	0.2317
	p value	0.4986	0.7264	0.9594	0.9594	0.8171	0.8174
12 winner-loser	mean	1.37%	-0.19%	-1.04%	-1.04%	-0.53%	-1.34%
	t stat	1.1127	-0.1464	-0.7452	-0.7453	-0.3743	-0.8826
	p value	0.2685	0.8839	0.458	0.458	0.709	0.3804

*Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5% and 10% significance levels*

Conventional stocks loser portfolios return shows that 9 out of 24 strategies have positive yield. However, none of these loser portfolios exhibit significant positive returns. It shows that investment in both winner and loser portfolios is not helpful to outperform the market.

While exploring conventional stocks momentum/ contrarian portfolios, it shows that none of the strategies yields returns which are statistically significant. No evidence of either momentum or contrarian profit is there in conventional market.

In **Table 4.32**, when analyzing Shari'ah stocks winner portfolio's return in NGX, it shows that 18 strategies have positive mean return out, but none of these winner portfolio strategies exhibit significant positive returns. It concludes that investment in winner portfolios does not provide any profit-making opportunity. While studying Shari'ah stocks loser portfolio's return, it shows that 20 strategies have positive mean return with only 1 of them have statistically significant returns. It does not provide sufficient support in favor of investment in loser stocks. However, when mean returns are compared it is shown that loser portfolios have better returns then winner portfolios. While exploring Shari'ah stocks momentum/ contrarian portfolios, it is found that none of the strategies are different than zero i.e. are statistically significant. Our findings support the absence of momentum and contrarian effect in the Shari'ah market of Nigeria.

In **Table 4.18**, while analyzing conventional stocks winner portfolio's return, it shows that 7 strategies have positive mean return out of total 24 strategies while none of them exhibit significant returns. It concludes that winner portfolios don't enables investors to earn abnormal profit. Conventional stocks loser portfolios return shows that 12 strategies have positive yield. However, only one of these loser portfolios exhibit significant positive returns. It provides insufficient evidence for successful loser portfolios.

While exploring conventional stocks momentum/ contrarian portfolios, it shows that only 12 out of 24 momentum strategies yield significant returns. Out of these 12 strategies, 6 strategies support existence of momentum profit with highest mean return of 1.52% by j9k6. Rest of 6 strategies supports existence of contrarian profit with highest mean return of 2.22% by j3k6.

TABLE 4.18: Momentum/ Contrarian Premium of Selected Shari'ah Stocks of Nigeria Stock Exchange

j k		6	12	18	24	30	36
3 Winner	mean	-0.61%	-0.04%	0.26%	0.13%	0.52%	0.82%
	t stat	-0.7056	-0.0518	0.2647	0.1292	0.5178	0.7879
	p value	0.4821	0.9588	0.7918	0.8975	0.606	0.4333
3 loser	mean	0.50%	0.77%	0.20%	1.05%	1.49%	1.29%
	t stat	0.5928	0.909	0.1978	1.0943	1.59	1.3564
	p value	0.5546	0.3656	0.8436	0.2769	0.1159	0.1792
3 winner-loser	Mean	-1.16%	-0.82%	0.06%	-0.92%	-0.97%	-0.77%
	t stat	-1.0339	-0.8411	0.0572	-0.807	-0.853	-0.3779
	p value	0.3037	0.4024	0.9545	0.4219	0.3961	0.7066
6 Winner	Mean	-0.11%	0.48%	1.03%	1.25%	0.48%	0.26%
	t stat	-0.1183	0.565	1.0405	1.2915	0.4662	0.2652
	p value	0.905	0.5731	0.3009	0.2	0.6423	0.7916
6 loser	mean	-0.06%	0.31%	0.18%	0.27%	1.06%	0.33%
	t stat	0.0569	0.3407	0.1938	0.2703	1.0903	0.3646
	p value	0.9547	0.7341	0.8467	0.7876	0.2789	0.7165
6 winner-loser	mean	-0.05%	0.17%	0.85%	0.99%	-0.58%	-0.07%
	t stat	-0.0467	0.1586	0.8328	0.9251	-0.5116	-0.0636
	p value	0.9628	0.8743	0.4071	0.3516	0.6103	0.9495
9 Winner	mean	-0.06%	0.51%	0.66%	-0.18%	0.18%	0.70%
	t stat	-0.0623	0.5793	0.6289	-0.1788	0.2056	0.7254
	p value	0.9504	0.5637	0.531	0.8505	0.8376	0.4761
9 loser	mean	-0.59%	0.23%	0.73%	0.28%	0.79%	0.50%
	t stat	-0.6803	0.2434	0.7745	0.29	0.9159	0.5378
	p value	0.4949	0.8082	0.4407	0.7726	0.3625	0.5929
9 winner-loser	mean	52.95%	0.28%	-0.07%	-0.46%	-0.61%	0.20%
	t stat	0.4793	0.2625	-0.0572	-0.4397	-0.5458	0.1716
	p value	0.6328	0.7935	0.9545	0.6612	0.5531	0.8643
12 Winner	mean	0.20%	0.03%	0.56%	-0.16%	0.61%	0.57%
	t stat	0.2252	0.0338	0.6082	-0.155	0.7005	0.6216
	p value	0.8223	0.9731	0.5446	0.8772	0.4857	0.5361
12 loser	mean	-0.04%	0.51%	-0.11%	-0.15%	1.65%	0.31%
	t stat	-0.0438	0.5675	-0.1157	-0.1525	0.7639	0.3392
	p value	0.9652	0.5717	0.9081	0.8792	0.817	0.7354
12 winner-loser	mean	0.24%	-0.48%	0.68%	-0.02%	-1.03%	0.26%
	t stat	0.2287	-0.4758	0.6033	-0.0149	-0.997	0.2478
	p value	0.8196	0.6353	0.5478	0.9882	0.3218	0.8049

Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5%and 10% significance levels

TABLE 4.19: Momentum/ Contrarian Premium of Selected Conventional Stocks of Nigeria Stock Exchange

j k		6	12	18	24	30	36
3 Winner	Mean	-0.09%	-0.14%	0.71%	-0.82%	-0.39%	-0.30%
	t stat	-0.0962	-0.1848	0.7965	-0.9622	-0.5102	-0.4211
	p value	0.9236	0.8538	0.4278	0.3387	0.6114	0.6522
3 loser	Mean	2.16%	-0.62%	-0.73%	0.39%	0.23%	0.01%
	t stat	2.1299	-1.7863	-0.8094	0.4455	0.2303	0.0008
	p value	0.0366**	0.4337	0.4204	0.6571	0.8184	0.9994
3 winner-loser	Mean	-2.23%	0.48%	1.44%	-1.21%	-0.62%	-0.31%
	t stat	-1.9886	1.598	1.8794	-1.1587	-0.6023	-0.3511
	p value	0.0505*C	0.0751*M	0.0712*M	0.2499	0.5487	0.7262
6 Winner	Mean	0.38%	-1.35%	-0.09%	-0.36%	0.18%	-0.41%
	t stat	0.4232	-1.9688	-0.1041	-0.4484	0.1948	-0.4623
	p value	0.6731	0.0519	0.9173	0.6551	0.8461	0.6452
6 loser	Mean	-0.97%	0.07%	-0.71%	-0.13%	0.78%	1.03%
	t stat	-1.1983	0.0745	-0.8354	-0.1242	0.9396	1.0557
	p value	0.2336	0.9408	0.4057	0.9014	0.3503	0.2946
6 winner-loser	Mean	1.35%	-1.42%	0.62%	-0.24%	-0.60%	-1.44%
	t stat	1.6621	-1.8945	1.7053	-0.2577	-0.5966	-1.4749
	p value	0.0996*M	0.0741*C	0.04824**M	0.7972	0.5525	0.1446
9 Winner	Mean	0.70%	-0.21%	0.02%	-0.35%	0.27%	0.64%

Continued Table 4.19: Momentum/ Contrarian Premium of Selected Conventional Stocks of Nigeria Stock Exchange

j k		6	12	18	24	30	36
	t stat	0.9404	-0.2908	0.0229	-0.3828	0.2979	0.7105
	p value	0.3493	0.7719	0.9817	0.7028	0.7665	0.4797
9 loser	Mean	-0.83%	0.43%	0.08%	0.47%	0.99%	0.95%
	t stat	-1.075	0.4527	0.8563	0.4801	1.1177	0.9366
	p value	0.2847	0.6517	0.9318	0.6324	0.2671	0.3521
9 winner-loser	Mean	1.53%	-0.64%	-0.07%	-0.81%	-0.71%	-0.31%
	t stat	1.9557	-1.6812	-1.0653	-0.8623	-0.7956	-0.3227
	p value	0.0533*M	0.06973*C	0.08481*C	0.3909	0.4286	0.7478
12 Winner	Mean	-0.37%	-1.24%	-0.11%	-0.01%	0.57%	0.39%
	t stat	0.5558	-1.7961	-0.1671	-0.0134	0.5882	0.3894
	p value	0.5796	0.0756	0.8677	0.9893	0.558	0.6981
12 loser	Mean	-1.08%	-0.18%	-0.07%	0.28%	1.02%	0.73%
	t stat	-1.3249	-0.2172	-0.0726	0.2934	1.1553	0.8319
	p value	0.1882	0.8285	0.9423	0.7722	0.2515	0.4082
12 winner-loser	Mean	0.70%	-1.06%	-0.04%	-0.29%	-0.46%	-0.34%
	t stat	1.893	-1.8018	-1.0495	-0.2832	-0.5056	0.3301
	p value	0.0874*M	0.0961*C	0.09607*C	0.7777	0.6146	0.7422

Note: M represents significant momentum profits and C represents significant contrarian profits (C). Symbols of ***, **, * represents t statistics at 1%, 5%and 10% significance levels

It shows that both momentum and contrarian strategies are profitable in Nigeria conventional market. However, results reveal that contrarian strategies provide higher mean returns. Furthermore, it is shown that both strategies are performing well for short to medium holding period of 6 to 18 months.

Rest of 18 strategies exhibits negative returns while 11 of them has shown statistically significant results and supports existence of contrarian profit under conventional share market of PSX. Portfolio strategy of J3k36 yields maximum mean return of 1.50% and supports validity of long-term contrarian effect strongly in conventional stock market.

Furthermore, no significant momentum/ contrarian profit is observed for shorter holding periods. Thus, presence of medium to long term contrarian effect in conventional stock market of PSX confirms that investors can earn abnormal profits by holding past losers for medium term to earn abnormal profits.

4.4.1 Summary of Momentum and Contrarian Premium Existence

Following table presents summary of existence and effectiveness of momentum and contrarian premium for Shari'ah and conventional stocks in selected frontier economies. Three important results of our analysis are;

1) Both momentum and contrarian strategies significantly exist in Pakistan, Bangladesh, and Turkey Shari'ah stock markets.

2) Both momentum and contrarian strategies are non-existent in Bangladesh (conventional), Indonesia (Sharia'ah), Malaysia (Shari'ah) market, Qatar (conventional) and Nigeria (Shari'ah) markets.

3) Indonesia and Pakistan conventional market has effective contrarian profit.

4) Shari'ah markets of Malaysia and Turkey , and conventional market of Qatar has effective momentum profit.

TABLE 4.20: Country Wise Momentum and Contrarian Profit Existence

Country	Stocks	Momentum Effect	Contrarian Effect
Pakistan	Sharia'ah	Strong (90%)	Weak (10%)
	Conventional	No	Strong (100%)
Bangladesh	Shari'ah	Weak (30%)	Strong (70%)
	Conventional	No	No
Indonesia	Shari'ah	No	No
	Conventional	No	Strong (100%)
Malaysia	Shari'ah	No	No
	Conventional	Strong (100%)	No
Turkey	Shari'ah	Weak (20%)	Strong (80%)
	Conventional	Strong (100%)	No
Qatar	Shari'ah	Strong (100%)	No
	Conventional	No	No
Nigeria	Shari'ah	No	No
	Conventional	Partial (50%)	Partial (50%)

Values of this table are based on the t values and p values of above all tables discussed in previous section

It can be inferred from the above **Table 4.34** that momentum and contrarian strategies behave differently under different settings of Shari'ah and conventional markets in different countries. Various national economic factors, market states, investor's psychology and investor's preferences of investing in Shari'ah or conventional stocks can influence the effectiveness of momentum and contrarian strategies in these markets. In Pakistan, heuristics and overconfidence plays an important role in irrational decision making of investors. Due to this investors can earn both momentum and contrarian premium in both the markets (Rasheed & Akhtar, 2018).Similarly, in Indonesia Muslim investors have a low risk tolerance and take Shari'ah into account while making investments. However, there are differences in their adherence to Shari'ah. Therefore, it is impossible to view and handle Indonesian Muslim investors as a similar group. Investors of conventional stocks are prepared to take on greater risk when building a portfolio as long as the potential

for greater returns justifies it (Firmansyah, 2020). In table 4.34 Presence of contrarian profit in Indonesian conventional market and absence of both momentum and contrarian profit in Shari'ah market supports the research results of . It is also shown in the table that no momentum and contrarian profits exist in Shari'ah.

According to (F. A. Khan & Imam, 2023) herding behavior exists in Bangladesh stock market. Intensity of herding behaviour is linked to market sentiments. In table 4.34 it can be observed that no traces of contrarian and momentum premium is there in conventional market is there because herd follows the majority. On the other hand in Shari'ah market most of the investors tries to earn excess returns by exercising momentum and contrarian portfolio strategy. According to (Kamola Bayram, 2019) In turkey both Shari'ah as well as conventional markets has similar performance. In both markets there is no causal relationship between past and present stock prices. Existence of auto correlation however is the reason of existence of momentum in both markets. Contrarian profits also exists in Shari'ah market but not in conventional market becomes causal relationship starts appears in long run.

4.5 Evaluation of Momentum and Contrarian Strategies Performance

In this section, Sharpe ratio is used to measure the performance of winner portfolios, loser portfolios, momentum portfolios and contrarian portfolios of both Shari'ah and conventional markets. This ratio provides the risk adjusted return to evaluate which portfolio can outperform the others in both Shari'ah and conventional markets. For this purpose, only those portfolios have been selected which have shown statistically significant positive returns with exception to contrarian portfolios which have been selected on basis of significant negative returns. Therefore, negative figures of momentum, contrarian, winner and loser portfolio Sharpe ratio are not because their returns are negative but because of higher returns of bench mark rate of return. Bench mark taken in this study is average of 91 days Treasury bill rate of each country.

TABLE 4.21: Sharpe Ratios of Selected Shari'ah Stocks Portfolios of PSX

Strategy	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	KMI 30 returns
J3k6	3.518	-23.667	9.131	-2.292	5.215
j6k6	7.774	-26.174	13.2	-1.806	5.215
j6k12	12.83	-33.373	8.67	-9.65	5.215
j6k18	-1.923	-19.27	-0.808	-7.464	5.991
j9k6	7.407	-27.313	8.555	-5.845	3.769
j9k12	2.864	-22.931	3.133	-7.39	3.769
j9k18	-4.376	-16.422	2.294	-2.546	4.541
j12k6	8.858	-28.427	8.946	-6.628	3.486
j12k12	5.126	-25.46	3.414	-9.067	3.486
j12k18	-4.638	-17.108	-0.84	-5.468	4.266
Mean	3.744	-24.1	5.569	-5.8156	4.4953

TABLE 4.22: Sharpe Ratios of Selected Conventional Stocks Portfolios of PSX

Strategy	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	KSE 100
j3k12	-6.847	-17.241	8.037	2.997	7.067
j3k18	-5.141	-17.913	5.842	0.044	7.877
j3k24	-14.113	-7.203	-2.113	1.194	8.61
j3k30	-21.866	1.356	-7.701	4.65	9.383
j3k36	-35.97	12.435	-16.238	6.224	7.788
j6k12	-20.122	-3.725	-1.37	5.817	7.067
j6k24	-15.113	-8.515	-0.932	2.025	8.61
j6k30	-27.029	0.463	-6.326	4.559	9.383
j6k36	-19.408	-5.236	-12.408	-3.426	7.788
j9k24	-19.17	-1.54	-10.049	-0.221	7.07
j9k30	-32.715	7.836	-14.182	3.623	7.798
j9k36	-20.88	-3.56	-12.692	-3.038	6.114
j12k24	-26.008	4.154	-14.788	0.651	6.492
j12k30	-27.698	2.292	-13.637	1.28	7.212
Mean	-20.863	-2.6	-7.04	1.884	7.732

Table 4.21 shows that mean Sharpe ratio of 5.57 represents better performance of winner portfolios among all other momentum, contrarian, and loser portfolios as well as against market index in Shari'ah market of PSX. Strategy j6k6 shows the highest Sharpe ratio of 13.2. Consequently, mean Sharpe value of 3.744 shows that momentum portfolios are also performing well than the contrarian ones with highest ratio of 12.83 of J6k12 strategy.

Table 4.22 shows that mean Sharpe ratio of 1.884 represents better performance of loser portfolios among all other momentum, contrarian, winner portfolios as well as against market index. Strategy j3k36 shows the highest Sharpe ratio of 6.224. Consequently, mean Sharpe ratio of -2.6 shows that contrarian portfolios are also performing well than the momentum ones with highest ratio of 12.435 of J3k36 strategy.

TABLE 4.23: Sharpe Ratios of Selected Shari'ah Stocks Portfolios of DSX

Strategy	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	DSES 30 Returns
j3k6	-4.902	-4.943	-4.873	-5.778	-6.095
j3k12	-5.342	-4.88	-5.801	-4.876	-6.027
j3k18	-4.734	-4.719	-5.346	-5.194	-6.007
j3k24	-4.68	-4.657	-6.101	-4.447	-6.243
j6k6	-4.772	-0.021	0.016	-0.005	0.008
j6k12	-5.517	-5.501	-5.869	-5.095	-6.12
j6k24	-5.249	-5.229	-5.893	-4.539	-6.243
j6k30	-5.615	-5.598	-5.632	-5.122	-6.325
j6k36	-5.427	-5.392	-5.915	-4.771	-6.368
j9k6	-4.647	-4.676	-5.344	-5.518	-6.095
j9k12	-4.806	-4.783	-5.69	-5.016	-6.12
j9k18	-5.053	-5.045	-5.546	-4.29	-5.974
j9k24	-5.931	-5.92	-6.062	-5.17	-6.243
j9k30	-5.139	-5.114	-6.707	-4.75	-6.325
j12k6	-4.556	-4.571	-5.773	-5.192	-6.095
j12k24	-5.291	-5.267	-6.367	-4.82	-6.243
j12k30	-5.221	-5.2	-6.861	-4.894	-6.325
j12k36	-4.856	-4.841	-5.665	-4.811	-6.368
Mean	-5.097	-4.798	-5.524	-4.683	-5.845

Table 4.37 reports that mean Sharpe ratio of -4.683 represents better performance of loser portfolios among all other momentum, contrarian, and winner portfolios as well as against market index. Strategy j6k6 shows the highest Sharpe ratio of -0.005. Consequently, mean Sharpe ratio of -4.798 shows that contrarian portfolios are also performing well than the momentum ones with highest ratio of -0.021 of J6k6 strategy.

TABLE 4.24: Sharpe Ratios of Selected Shari'ah Stocks Portfolios of IDX

Strategy	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	JKI Islamic 30 returns
j3k30	-0.582	-0.605	-0.66	-0.539	-1.361
j9k30	-0.559	0.011	0.009	0.021	0
Mean	-0.571	-0.297	-0.325	-0.259	-0.68

Table 4.38 reports that mean Sharpe ratio of -0.259 represents better performance of loser portfolios among all other momentum, contrarian, and winner portfolios as well as against market index. Strategy j9k30 shows the highest Sharpe ratio of 0.021. However, t statistics of momentum/ contrarian hypothesis showed that none of these strategies provided significant results.

TABLE 4.25: Sharpe Ratios of Selected Conventional Stocks Portfolios of IDX

Strategy	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	JKLQ 45 Components Returns
j3k24	-0.562	-0.537	-0.666	-0.657	-1.018
j3k30	-0.779	-0.763	-0.786	-0.699	-1.233
j3k36	-0.547	-0.516	-0.563	-0.696	-1.215
j6k24	-0.615	-0.58	-0.681	-0.665	-1.018
j6k30	-0.633	-0.631	-0.696	-0.696	-1.233
j6k36	-0.63	-0.593	-0.694	-0.703	-1.215
j9k24	-0.724	-0.688	-0.66	-0.663	-1.018
j9k30	-0.661	-0.634	-0.619	-0.706	-1.233
j9k36	-0.541	-0.502	-0.608	-0.684	-1.215
j12k24	-0.689	-0.649	-0.61	-0.679	-1.018
j12k30	-0.611	-0.593	-0.635	-0.677	-1.233
j12k36	-0.623	-0.605	-0.647	-0.689	-1.245
Mean	-0.635	-0.607	-0.656	-0.685	-1.158

Table 4.39 reports that mean Sharpe ratio of -0.607 represents better performance of contrarian portfolios among all other momentum, loser, and winner portfolios as well as against market index. Strategy j9k36 shows the highest Sharpe ratio of -0.502. Furthermore, mean Sharpe ratio of momentum is succeeding contrarian portfolios ratio, but according to hypothesis testing, there is no evidence of significant mean returns of momentum strategies in Indonesian conventional market.

TABLE 4.26: Sharpe Ratios of Selected Conventional Stocks Portfolios Bursa Malaysia

Strategy	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	FTSEKLSE
j3k24	-1.633	-1.621	-1.593	-2.988	-9.091
j3k30	-1.95	-1.944	-2.009	-2.219	-10.246
j3k36	-1.833	-1.821	-1.793	-3.188	-9.091
j6k18	-1.974	-1.998	-1.814	-2.907	-8.435
j6k24	-1.687	-1.672	-1.493	-3.428	-9.091
j6k30	-2.541	-2.483	-2.07	-2.326	-10.246
j6k36	-1.876	-1.833	-1.933	-2.326	-10.07
j9k24	-0.008	-1.643	-0.012	-0.004	-0.002
j9k30	-2.817	-2.784	-2.166	-2.324	-10.246
j9k36	-1.899	-1.849	-1.517	-2.513	-10.07
j12k24	-2.187	-2.16	-1.713	-2.83	-9.091
j12k30	-2.328	-2.26	-1.992	-2.303	-10.246
j12k36	-1.736	-1.706	-1.428	-2.624	-10.07
Average	-1.867	-1.967	-1.641	-2.445	-8.923

Table 4.40 shows that mean Sharpe ratio of -1.641 represents better performance of winner portfolios among all other momentum, contrarian, and loser portfolios as well as against market index. Strategy j9k24 shows the highest Sharpe ratio of -0.012. Consequently, mean Sharpe ratio of -1.867 shows that momentum portfolios are also performing well than the contrarian ones with highest ratio of -0.008 of J9k24 strategy, which is also evident in hypothesis testing of strategies.

TABLE 4.27: Sharpe Ratios of Selected Shari'ah Stocks Portfolios Borsa Istanbul (Turkey)

	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	BIST Participation x Portfolio
j3k6	-14.215	-14.243	-12.431	-11.455	-11.734
j3k12	-16.978	-16.976	-12.405	-12.592	-11.636
j3k18	-13.667	-13.676	-13.105	-11.248	-11.583
j3k24	-13.177	-13.137	-13.737	-10.082	-13.288
j3k30	-15.472	-15.445	-10.587	-11.88	-14.971
j3k36	-14.801	-14.796	-13.228	-10.382	-15.357
j6k6	-13.712	-13.74	-11.498	-11.558	-11.734
j6k12	-15.105	-15.094	-12.01	-12.491	-11.636
j6k18	-14.343	-14.336	-11.451	-11.026	-11.583
j6k24	-14.168	-14.133	-12.9	-10.376	-13.288
j6k30	-16.243	-16.25	-12.003	-11.164	-14.971
j6k36	-13.618	-13.601	-12.357	-9.892	-15.357
j9k6	-14.549	-14.569	-11.71	-12.118	-11.734
j9k12	-12.567	-12.569	-11.16	-11.948	-11.636
j9k18	-12.94	-12.907	-11.258	-10.354	-11.583
j9k24	-14.734	-14.688	-12.687	-11.372	-13.288
j9k30	-14.232	-14.221	-12.557	-10.037	-14.971
j9k36	-13.177	-13.228	-12.945	-9.428	-15.357
j12k6	-11.56	-13.202	-11.995	-12.405	-11.734
j12k12	-12.517	12.492	-11.37	-10.927	-11.636
j12k18	-13.322	-14.977	-11.574	-10.622	-11.583
j12k24	-15.002	-11.554	-12.538	-10.328	-13.288
j12k30	-14.985	-14.958	-12.36	-10.015	-14.971
j12k36	-14.21	-14.192	-12.766	-9.511	-15.357
Average	-14.134	-14.124	-12.193	-10.967	-13.095

Table 4.41 reports that mean Sharpe ratio of -10.967 represents better performance of loser portfolios among all other momentum, contrarian, and winner portfolios as well as against market index in Shari'ah market of Turkey. Strategy j9k36 shows the highest Sharpe ratio of -9.428. Subsequently, winner portfolios are performing well in comparison to momentum and contrarian portfolios. There are evidences of both significant momentum and contrarian profits in Shari'ah market of Turkey as reported by hypothesis testing. J12k24 is best performing contrarian strategy with ratio of -11.554 and j12k6 is momentum strategy with -11.560 ratio.

TABLE 4.28: Sharpe Ratios of Selected Conventional Stocks Portfolios of Borsa Istanbul (Turkey)

Strategy	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	BIST 50
j3k6	-13.616	-13.634	-11.446	-11.907	-15.034
j3k12	-14.266	-14.245	-10.7	-11.321	-15.003
j3k18	-12.569	-12.587	-11.139	-13.116	-14.678
j3k24	-13.847	-13.863	-11.709	-11.502	-15.059
j3k30	-13.474	-13.473	-10.375	-12.031	-16.136
j3k36	-13.326	-13.325	-9.775	-11.595	-16.268
j6k6	-11.972	-12.016	-11.574	-10.974	-15.034
j6k12	-13.239	-13.207	-10.485	-12.098	-15.003
j6k18	-12.02	-13.008	-10.525	-11.817	-14.678
j6k24	-12.337	-13.353	-11.1	-11.503	-15.059
j6k30	-11.978	-11.973	-10.297	-11.652	-16.136
j6k36	-13.582	-13.583	-10.497	-11.599	-16.268
j9k6	-13.676	-13.69	-11.173	-11.408	-15.034
j9k12	-12.285	-12.272	-10.57	-11.634	-15.003
j9k18	-11.676	-12.681	-10.57	-12.755	-14.678
j9k24	-11.536	-12.546	-10.22	-12.185	-15.059
j9k30	-12.485	-12.49	-9.81	-12.299	-16.136
j9k36	-13.461	-13.465	-9.959	-12.396	-16.268
j12k6	-12.826	-12.841	-10.885	-11.547	-15.034
j12k12	-12.5	-12.476	-10.916	-12.342	-15.003
j12k18	-11.835	-11.829	-10.414	-13.041	-14.678
j12k24	-12.62	-12.624	-10.535	-12.339	-15.059
j12k30	-11.637	-11.643	-9.569	-11.739	-16.136
j12k36	-14.001	-13.993	-9.739	-12.712	-16.268
Average	-12.782	-13.784	-10.583	-11.98	-15.363

Table 4.42 shows that mean Sharpe ratio of -10.967 represents better performance of winner portfolios among all other momentum, contrarian, and loser portfolios as well as against market index in conventional market of Turkey. Strategy j12k36

shows the highest Sharpe ratio of -9.739. There are evidences of both significant momentum profits in conventional market of Turkey as reported by hypothesis testing. J9k24 is best performing momentum strategy with ratio of -11.536.

TABLE 4.29: Sharpe Ratios of Selected Shari'ah Stock Portfolios of QSX

Strategy	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	Al Rayan Index
j3k6	-1.817	-1.811	-1.413	-1.357	-1.536
j3k12	-1.866	-1.849	-1.546	-1.361	-1.517
j3k18	-1.927	-1.925	-1.401	-1.477	-1.482
j3k24	-1.85	-1.833	-1.419	-1.451	-1.461
j6k6	-1.64	-1.545	-1.384	-1.394	-1.536
j6k12	-1.603	-1.584	-1.542	-1.295	-1.517
j6k18	-1.991	-1.975	-1.412	-1.423	-1.482
j9k6	-1.661	-1.657	-1.507	-1.221	-1.536
j9k12	-1.739	-1.712	-1.525	-1.294	-1.517
j9k18	-1.89	-1.846	-1.469	-1.451	-1.482
j12k6	-1.631	-1.629	-1.43	-1.244	-1.536
j12k12	-1.79	-1.754	-1.623	-1.294	-1.517
j12k18	-1.78	-1.741	-1.351	-1.529	-1.482
Average	-1.783	-1.759	-1.463	-1.369	-1.508

Table 4.43 shows that mean Sharpe ratio of -1.369 represents better performance of loser portfolios among all other momentum, contrarian, winner portfolios as well as against market index in conventional market of Qatar. Winner portfolios are next to loser portfolios in the performance. Furthermore, contrarian portfolios are performing better than momentum ones having mean Sharpe ratio of -1.759 with j6k6 having highest ratio of -1.545.

TABLE 4.30: Sharpe Ratios of Selected Conventional Stock Portfolios of QSX

	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	QE All Shares
j3k24	-0.78	-0.755	-1.476	-0.711	-1.72
j3k30	-0.72	-0.69	-1.074	-0.741	-1.758
j6k24	-0.796	-0.76	-1.908	-0.747	-1.72
j6k30	-0.799	-0.76	-1.24	-0.795	-1.758
j9k24	-0.712	-0.687	-1.833	-0.699	-1.72
j9k30	-0.799	-0.756	-1.323	-0.77	-1.758
Average	-0.768	-0.735	-1.476	-0.744	-1.739

Table 4.44 shows that mean Sharpe ratio of -0.735 represents better performance of contrarian portfolios among all other momentum, loser, winner portfolios as well as against market index in conventional market of Qatar. Strategy j9k24 shows the highest Sharpe ratio of -0.687. Loser portfolios are next to contrarian portfolios in the performance with highest ratio of -0.699 of J9k24 strategy. However, no evidence of significant results are there for any momentum or contrarian strategies.

TABLE 4.31: Sharpe Ratios of Selected Conventional Stock Portfolios of NGX

Strategy	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio	NSE
j3k6	-9.579	-9.573	-12.359	-9.746	-12.291
j3k12	-10.509	-10.519	-11.026	-10.678	-12.135
j3k18	-8.944	-8.373	-9.72	-9.742	-11.888
j6k6	-10.229	-10.256	-9.349	-10.25	-12.291
j6k12	-9.516	-9.488	-12.325	-9.44	-12.135
j6k18	-9.891	-9.903	-10.662	-10.315	-11.888
j9k6	-10.64	-10.671	-11.172	-10.828	-12.291
j9k12	-9.057	-9.044	-11.9	-8.901	-12.135
j9k18	-8.006	-8.605	-11.82	-9.004	-11.888
j12k6	-10.555	-10.569	-12.339	-10.234	-12.291
j12k12	-10.421	-10.4	-12.295	-10.261	-12.135
j12k18	-10.575	-10.574	-13.496	-9.42	-11.888
Average	-9.827	-9.831	-11.539	-9.902	-12.105

Table 4.45 reports that mean Sharpe ratio of -9.827 represents better performance of momentum portfolios among all other contrarian, loser, winner portfolios as well as against market index in conventional market of Nigeria. Momentum strategy j9k18 shows the highest Sharpe ratio of -8.006. Contrarian portfolios are next to momentum portfolios in the performance having mean ratio of -9.831. Strategy j3k18 is best performing contrarian strategy with ratio of -8.373.

4.5.1 Summary of Performance of Portfolios

Overall analysis of portfolio performance by using Sharpe ratio validates the hypothesis results presented in section 4.4. It is also observed that in most of the cases investments in either winning or losing stocks portfolios provides better returns then investing in momentum or contrarian portfolios. It means that abnormal returns can be earned in the markets (Shari'ah and conventional) where

performance ratio gives better returns then market index returns but investor has to look for optimum investment. Summary table shows that loser portfolios are overall performing better and followed by winner portfolios, hence undermining the performance of momentum/ contrarian strategies. Furthermore, it is noticed that in none of the country Shari'ah and conventional stocks behave same in terms of portfolio performance.

TABLE 4.32: Summary of Portfolios Performance in Shari'ah and Conventional Markets

Country	Stocks	Momentum Portfolio	Contrarian Portfolio	Winner Portfolio	Loser Portfolio
Pakistan	Sharia'ah	2nd	4th	1st	3rd
	Conventional	4th	2nd	3rd	1st
Bangladesh	Shari'ah	3rd	2nd	4th	1st
	Conventional	No significant returns			
Indonesia	Shari'ah	No significant returns			
	Conventional	2nd	1st	3rd	4th
Malaysia	Shari'ah	No significant returns			
	Conventional	2nd	3rd	1st	4th
Turkey	Shari'ah	4th	3rd	2nd	1st
	Conventional	3rd	4th	1st	2nd
Qatar	Shari'ah	4th	3rd	2nd	1st
	Conventional	No significant returns			
Nigeria	Shari'ah	No significant returns			
	Conventional	1st	2nd	4th	3rd

4.6 Momentum/ Contrarian Premium Time Varying Behavior

In this study, the stability of a time-series model is evaluated by rolling-window analysis. In order to capture the any instability of the parameters change at any point in study sample, rolling window analysis is used with whole sample of 10

years divided into five sub samples of 2 years each, which rolls every six months throughout the study period. For complete 10 years' data of returns, 13 windows are created because they satisfy the requirement of maximum formation period of 12 months and maximum holding period of 36 months.

TABLE 4.33: Time Varying Behavior of Momentum/ Contrarian Premium in Shari'ah Markets of Selected Countries

Country Strategy	Pakistan (j6k6) Momentum	Bangladesh (j6k6) Contrarian	Turkey (j9k24) Contrarian	Qatar (j6k6) Contrarian
Full sample July 2013- Jun 2022	1.35%	2.11%	1.26%	0.12%
	1.859*	3.265***	1.7820*	1.1925**
Jul 2013-Jun 2015	2.67%	1.19%	0.21%	0.96%
	2.867***	0.603	0.23	0.713*
Jan 2014-Dec 2015	2.59%	2.02%	0.86%	0.22%
	2.154**	1.7315*	0.744	1.173**
Jul 2014- Jun 2016	1.62%	2.46%	0.81%	-0.61%
	0.951*	2.240**	0.784	-0.466
Jan 2015-Dec 2016	2.57%	0.55%	1.71%	0.58%
	2.759**	0.5291**	1.387	0.4042
Jul 2015- Jun 2017	-0.54%	0.87%	0.90%	-0.42%
	-0.227	0.7983	0.5982	-1.3727**
Jan 2016-Dec 2017	0.68%	1.12%	1.55%	-0.18%
	0.527	0.8828	1.02	-0.1451
Jul 2016- Jun 2018	2.18%	0.80%	2.48%	0.60%
	1.499	0.5665	1.499	0.5312**
Jan 2017-Dec 2018	2.07%	1.25%	2.03%	-0.01%
	1.1546	0.769	1.19041	-0.0048
Jul 2017- Jun 2019	2.27%	2.54%	2.76%	-1.02%
	1.313	1.5645	1.736*	-1.9916**
Jan 2018-Dec 2019	1.41%	2.12%	0.707	0.29

Continued Table 4.33: Time Varying Behavior of Momentum/ Contrarian Premium in Shari'ah Markets of Selected Countries

Country Strategy	Pakistan (j6k6) Momentum	Bangladesh (j6k6) Contrarian	Turkey (j9k24) Contrarian	Qatar (j6k6) Contrarian
	0.791	1.342	1.4567*	0.2485
Jul 2018- Jun 2020	1.07%	2.07%	0.4421	0.94
	0.5228	1.385	1.3058*	0.8095
Jan 2019-Dec 2020	-0.92%	3.30%	-	0.64
	-0.443	2.773**		1.5791*
Jul 2019- Jun 2021	0.07%	2.42%	-	1.72
	1.043*	2.120**		1.696*
Evaluation	Adaptive	Adaptive	Adaptive	Adaptive

Note: ***, **,* represents t values are significant at less than 1%, 5% and 10%

In this way momentum and contrarian returns behavior can be studied for changing market conditions as claimed by AMH. Momentum/ contrarian strategies having significant existence and highest Sharpe ratios and selected to evaluate that whether these anomalies follow pattern of significant and insignificant performance throughout the study period to elucidate their adaptive behavior.

Table 4.47 represnts mean value of momentum/ contrarian premium for the Shari'ah markets. In top row mean and t values of full sample are mentioned. Rolling window of 24 months which rolls for next 6 months are also mentioned. This analysis shows that in Shari'ah market of Pakistan, momentum returns are adaptive in nature. For different time windows these returns are having periods of significant and insignificant performance thus elucidates AMH. Furthermore, Shari'ah markets of Bangladesh, Turkey and Qatar has contrarian profits that are of adaptive nature. There are time windows in the complete period where performance of contrarian profits are significant followed by the windows where these profits do not exist significantly. In study sample, all Shari'ah markets with significant momentum/ contrarian premium are adaptive in nature.

Table 4.34: Time Varying Behavior of Momentum/ Contrarian Profit in Conventional Markets of Selected Countries

Country Strategy	Pakistan (j3k36) Contrarian	Indonesia (j3k30) Contrarian	Malaysia (j9k24) Momentum	Turkey (j9k24) Momentum	Nigeria (j6k6) Contrarian
Full sample July 2013-Jun 2022	1.50%	1.53%	0.85%	2.22%	0.07%
	2.456**	1.9204*	1.505*	2.143**	1.0655*
Jul 2013-Jun 2015	0.65%	2.39%	1.60%	1.42%	2.51%
	0.5173	1.785*	0.756	0.644	1.882*
Jan 2014-Dec 2015	0.31%	1.54%	1.45%	-0.14%	0.95%
	0.2868	1.069	0.4712	-0.0702	0.6262
Jul 2014-Jun 2016	0.58%	2.19%	2.45%	-1.80%	1.26%
	0.5019	1.567	0.8018	-0.8443	0.6454
Jan 2015-Dec 2016	1.14%	1.12%	2.46%	0.71%	2.23%
	0.908	0.803	0.8224	0.488	1.0766
Jul 2015-Jun 2017	1.61%	0.64%	1.79%	0.55%	1.74%
	1.991**	1.350*	0.643	0.3253	0.859
Jan 2016-Dec 2017	1.79%	0.75%	1.73%	0.28%	2.43%
	1.0913	0.3842	0.993	0.172	1.6892*
Jul 2016-Jun 2018	2.07%	1.54%	-1.02%	-0.06%	1.43%
	1.6937*	1.748**	-0.0333	-0.0452	0.784
Jan 2017-Dec 2018	1.52%	3.55%	-0.95%	-0.79%	-0.09%
	1.0455	1.342	-0.237	-0.491	-1.654*
Jul 2017-Jun 2019	1.51%	2.34%	-	-1.33%	-1.60%
	1.3619	1.385		-0.8702	-0.6962
Jan 2018-Dec 2019	-	-	-	-1.03%	-1.583
				-0.7181	-1.6964**
Jul 2018-Jun 2020	-	-	-	0.94%	-1.062
				-0.6615	-0.7805
Jan 2019-Dec 2020	-	-	-	-	-3.787
					-1.7259*
Evaluation	Adaptive	Adaptive	Not Adaptive	Not Adaptive	Adaptive

*Note: ***, **,* represents t values are significant at less than 1%, 5% and 10%*

Table 4.48 represents mean value of momentum/ contrarian premium for the conventional markets. In top row mean and t values of full sample are mentioned. Rolling window of 24 months which rolls for next 6 months are also mentioned. This analysis shows that in conventional market of Pakistan, Indonesia and Nigeria contrarian returns are adaptive in nature. For different time windows these returns are having periods of significant and insignificant performance thus elucidates AMH.

Furthermore, conventional markets of Malaysia and Turkey have momentum profits that are of non-adaptive nature. Throughout all the time windows of complete period performance of these momentum premium remain insignificant. In study sample of conventional markets, contrarian premium are adaptive in nature and momentum premium are not having adaptive behavior.

It can be concluded that contrarian premium remain adaptive for Shari'ah as well as conventional markets but momentum profits behave differently in both settings. In Shari'ah market, momentum premium keeps on evolving over the time period but in conventional markets the momentum profits have static behavior thus does not support AMH.

4.7 Momentum/ Contrarian Premium Behavior and Market Sentiments

In pursuance of AMH explanation, it is very important to study momentum and contrarian premium time varying behavior as well as to observe their behavior across the different market sentiments. For this purpose, GARCH (1,1) dummy regression analysis is conducted. Momentum and contrarian premium of significant strategies have to be regressed on conditions of Bull, bear, market crash and market bubbles. However, when Price dividend ratios are used to identify the market bubbles by GSADF test it was discovered that none of the Shari'ah and conventional markets have market bubble during the study period.

TABLE 4.35: Results of GSADF Test in Shari'ah Market

		Pakistan	Bangladesh	Qatar	Turkey
GSADF t stat		-1.03319	-0.48944	-2.3489	-0.4894
Critical value @95\%		2.0658	2.01992	2.065921	2.044196
Critical value @90\%		1.74626	1.70534	1.74626	1.72955

Results in **Table 4.49** for Shari'ah shows that GSADF t stat values are less then critical values at (95% and 90%) so the null hypothesis of no bubbles in to be accepted.

Graphical representation of GSADF tests are presented in this section
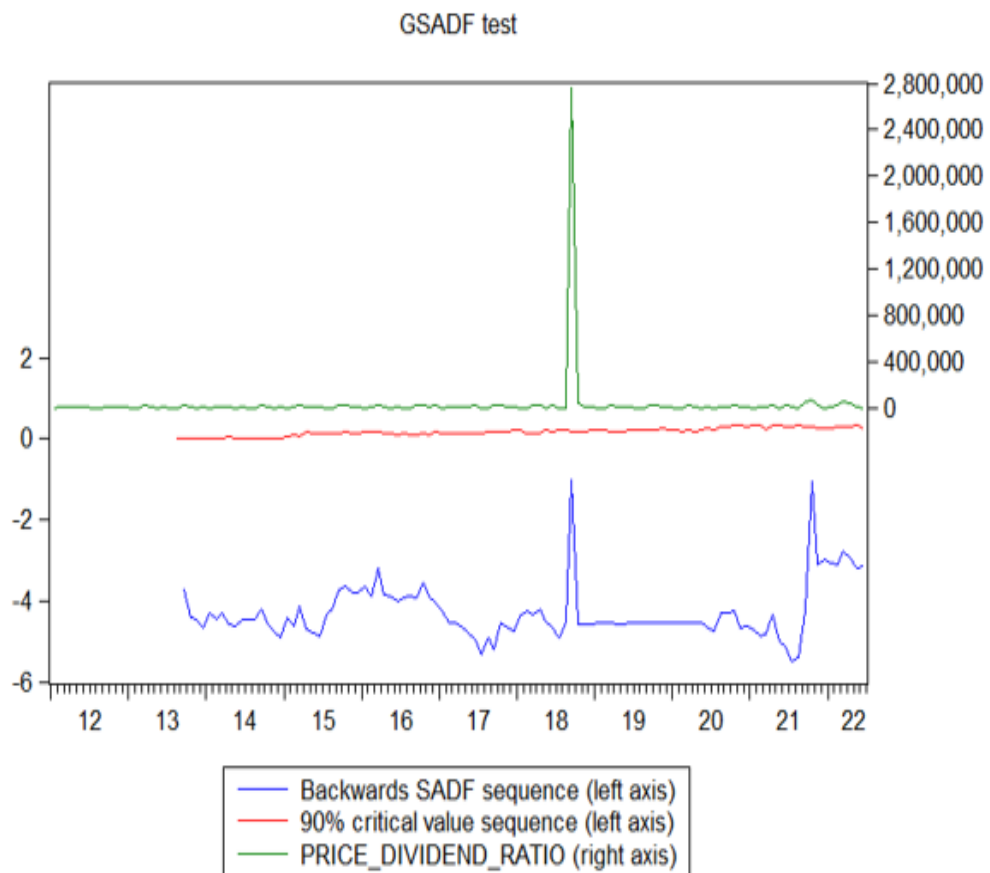

FIGURE 4.1: Pakistan Shariah Market GSADF

Figure 12: Bangladesh Shariah Market GSADF
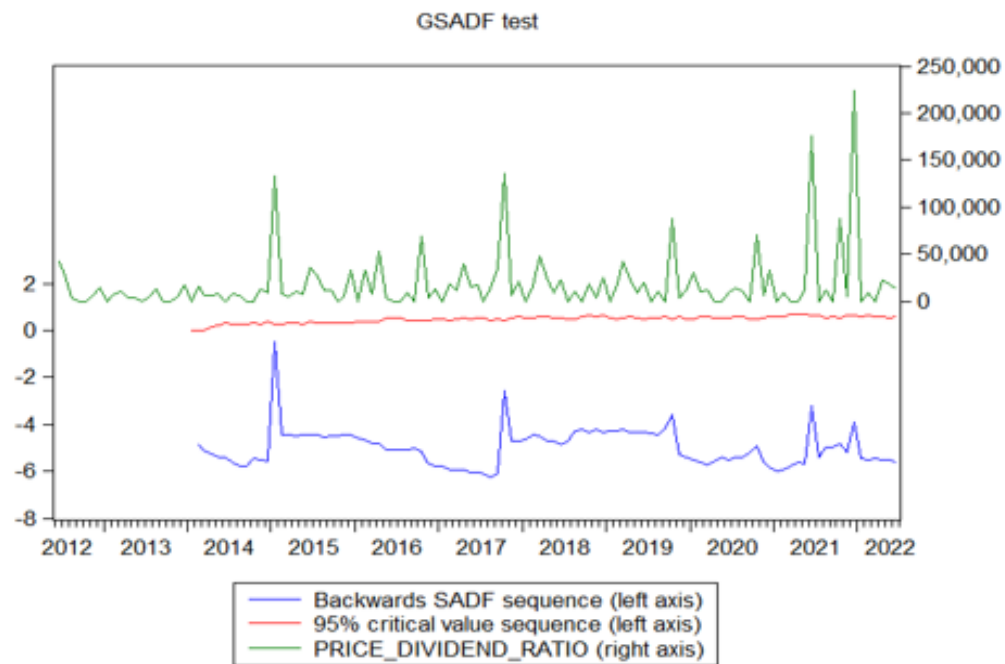
FIGURE 4.2: Bangladesh Shari'ah Market Having no Market Bubbles in the Period July 2012 to June 2022

Figure 13: Turkey Shariah market GSADF
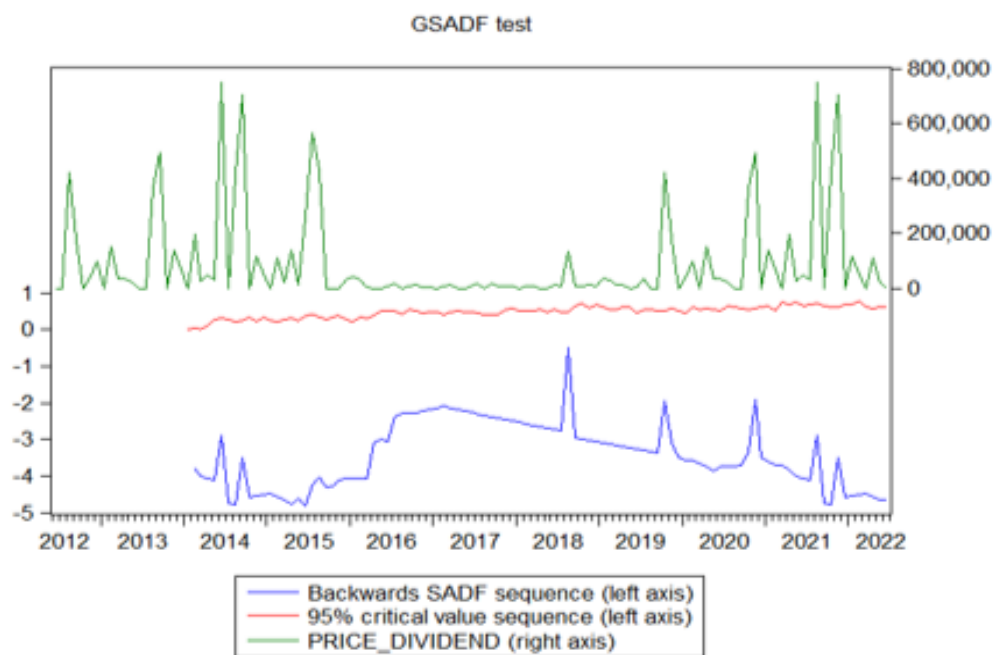
FIGURE 4.3: Turkey Shari'ah Market Having no Market Bubbles in the Period July 2012 to June 2022

Figure 14: Qatar Shariah Market GSADF
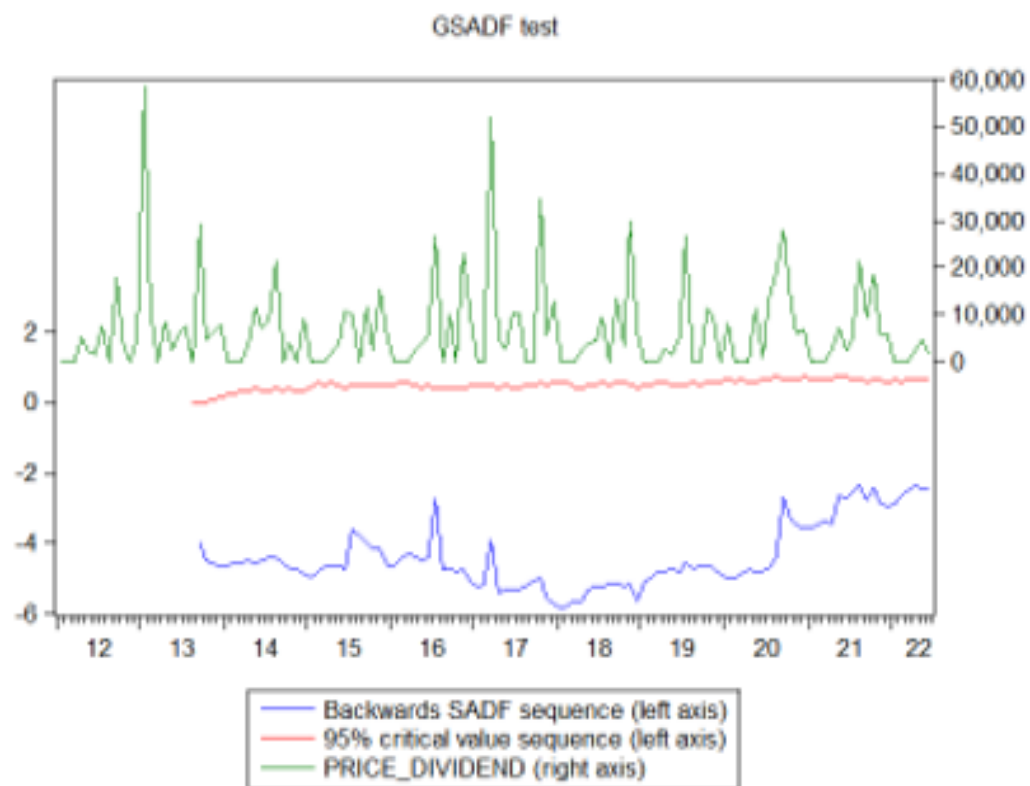
FIGURE 4.4: Qatar Shari'ah Market Having no Market Bubbles in the Period
July 2012 to June 2022

TABLE 4.36: Results of GSADF Test in Conventional Market

	Pakistan	Malaysia	Indonesia	Turkey	Nigeria
GSADF t stat	-2.9025	-2.16912	-2.02955	-2.03	-3.1963
Critical value @95%	2.0655	2.0199	1.99974	2.0658	2.06582
Critical value @90%	1.7462	1.70534	1.70075	1.7463	1.746266

Results in **Table 4.50** for conventional markets shows that GSADF t stat values
are less then critical values at (95% and 90%) so the null hypothesis of no bubbles
in to be accepted.

FIGURE 4.5: Pakistan Conventional Market GSADF

Figure: 15 Pakistan Conventional Market Having no Market Bubbles in the Period July 2012 to June 2022

FIGURE 4.6: Indonesia Conventional Market GSADF

Figure 16 Indonesia Conventional Market Having no Market Bubbles in the Period July 2012 to June 2022
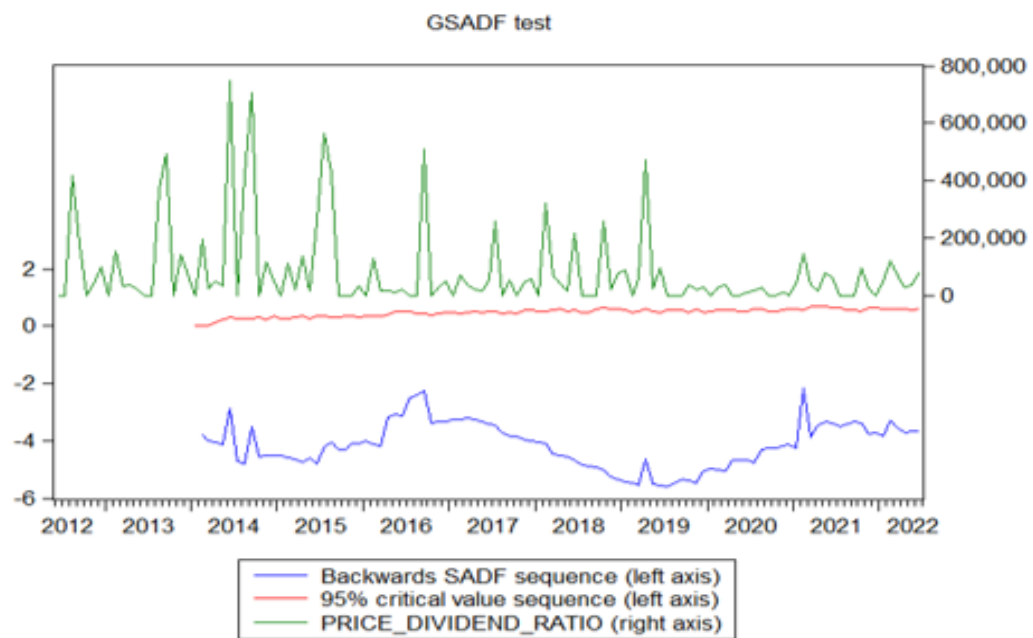
FIGURE 4.7: Malaysia Conventional Market GSADF

Figure 17 Malaysia conventional market having no market bubbles in the period July 2012 to June 2022
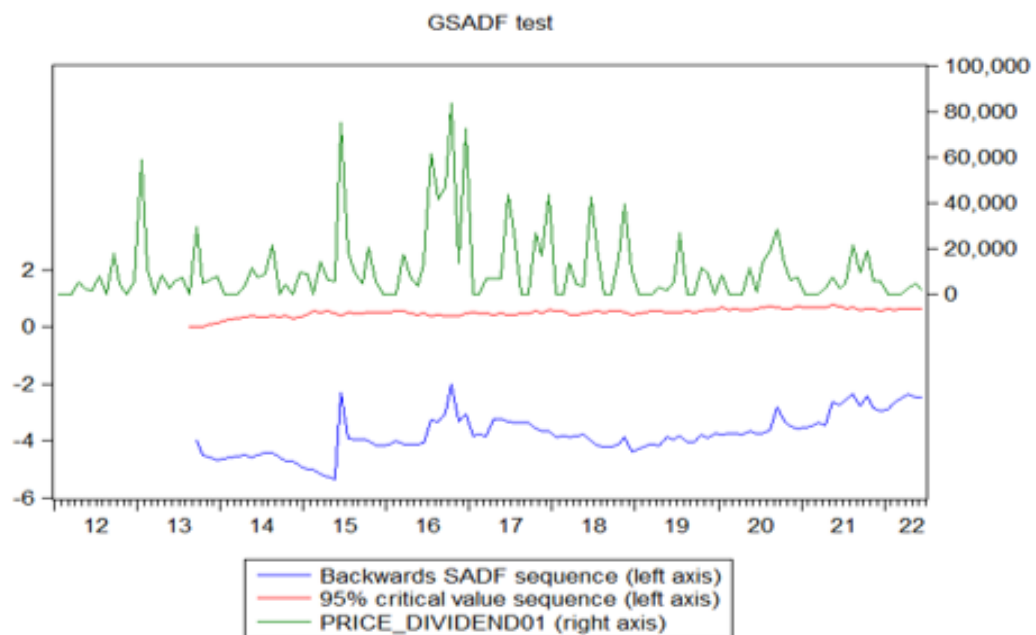
FIGURE 4.8: Turkey Conventional Market GSADF

Fig 18 Turkey conventional market having no market bubbles in the period July 2012 to June 2022
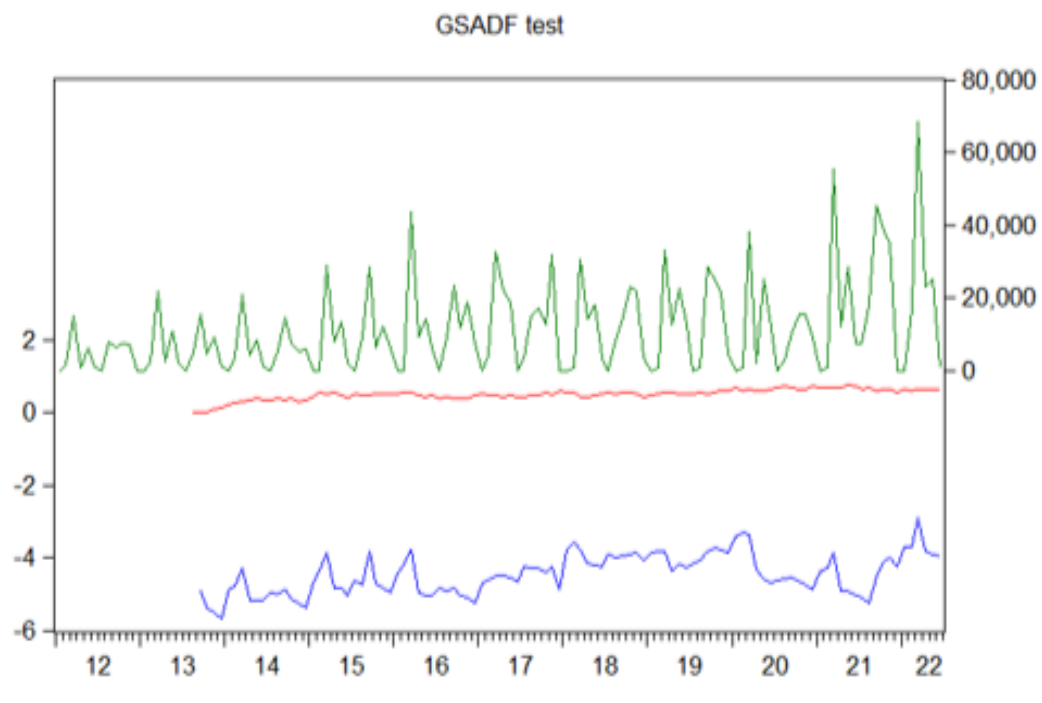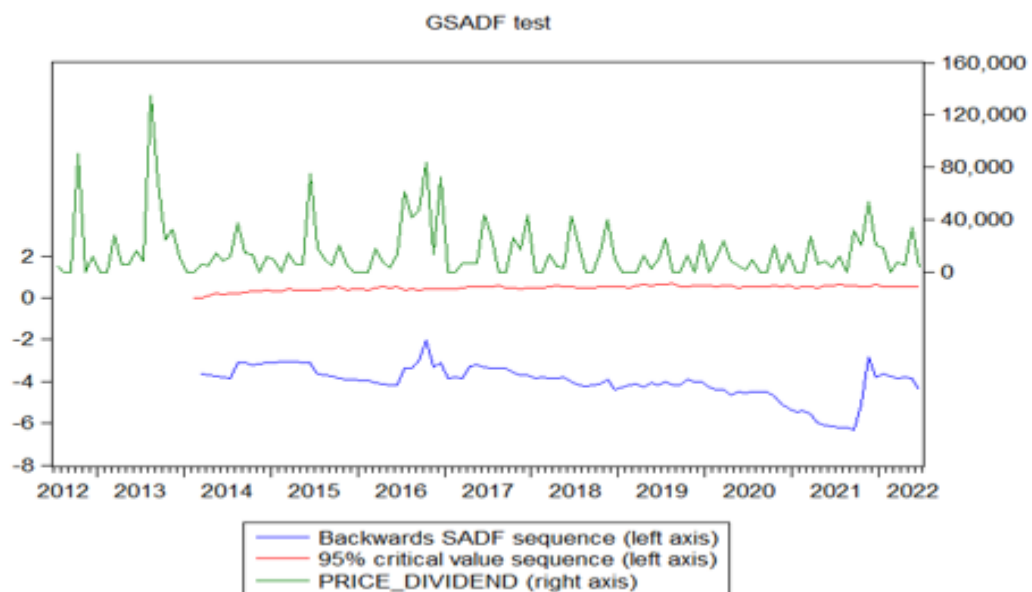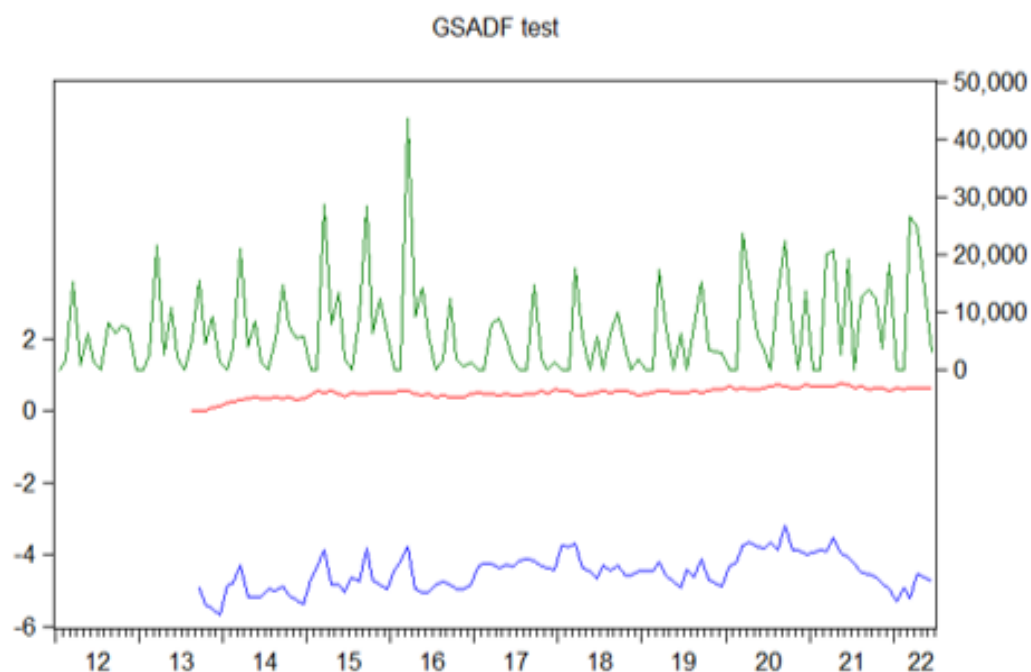
FIGURE 4.9: Nigeria Conventional Market GSADF

Fig 4.18 Nigeria conventional market having no market bubbles in the period July 2012 to June 2022.

The estimated price dividend ratio of Shari'ah and conventional stocks of selected countries are plotted through Fig. 4.10 -4.18 based on the findings of the GSADF tests. The GSADF statistic is represented by the bottom curve. The 95 percent critical value is represented by the center curve. The price dividend ratio is shown by the upper curve. In all these figures it was observed that there are no bubbles that form and break over the course of the entire sample period. GSADF test detects explosive behavior with a wider sample size and rarely yields false positives. Further data subsamples are covered by the GSADF test which allowed to further pinpoint the many bubbles and their origins in the selected Shari'ah and conventional markets. Results of GSADF hence supported absence of market bubbles and busts throughout the study period of 2012 to 2022.

Table 4.51 represents that in Shari'ah market for different countries, momentum and contrarian profits behave differently under bull and bear market sentiment. In Bangladesh, Turkey and Qatar contrarian profits performance decreases in bull phase of market. Similarly, in these countries bearish market has positive impact

TABLE 4.37: Market Sentiments and Momentum/ Contrarian Profits in Shari'ah

Market Sentiment	Pakistan (mom)	Bangladesh (cont)	Turkey (cont)	Qatar (Cont)
Bull	0.00240**	-0.004*	-0.00314*	-0.0054*
Bear	-0.00240**	0.004*	0.00314*	0.0054*
Crash	-0.03508**	0.01257**	0.010064*	0.01217*

*Note: Values in boxes represents the β1, β2 and β4 at 95% and 90% significance level represented by ** and * respectively*

on contrarian profits. In Pakistan prevalence of bull market sentiment have positive impact on momentum profit. This is supported by findings of (Cooper et al., 2004) and (Huang, 2006). For all Shari'ah markets, sentiment of market crash has influence on both momentum and contrarian profits. Presence of market crash negatively effects the momentum profit but in case of market crashes contrarian profits perform better.

4.7.0.1 Impact of Market Sentiments on Momentum and Contrarian Profits in Conventional Market

Results of Dummy regression GARCH (1,1) model for conventional markets are presented in the table below. Eviews 8 is used to run the regression.

TABLE 4.38: Market Sentiments in Conventional Market and Momentum/ Contrarian Profits

Market Sentiment	Pakistan (cont)	Indonesia (cont)	Malaysia (mom)	Turkey (mom)	Nigeria (cont)
Bull	-0.0059**	-0.00173*	0.0073*	0.0118*	-0.00172*
Bear	0.0059**	0.00173*	-0.0073*	-0.0118*	0.00172*
Crash	0.0172*	0.011810*	-0.007827	-0.0053	0.00962*

*Note: Values in boxes represents the β1, β2 and β4 at 95% and 90% significance level represented by ** and * respectively*

Table 4.52 represents that in different conventional markets, momentum and contrarian profits behave differently under bull and bear market sentiment. In Pakistan, Indonesia and Nigeria contrarian profits behave significantly positive in bearish market and significantly negative in a bullish market. However, Malaysia

and Turkey support that bull market has positive impact on momentum profits. In Pakistan, Indonesia and Nigeria market crashes has positive impact on contrarian profits but crash has no significant impact on momentum profits. Narayan and Phan (2017) also has shown that Islamic stocks experience momentum profit and these profits are effected by market up and down state. Results of (Danila & Bunyamin, 2021) show that market sentiments impact performance of conventional stocks to great extent then Shari'ah stocks in Bursa Malaysia.

The above analysis supports AMH as it reveals that in both Shari'ah and conventional markets, market sentiments play a pivotal role on performance of momentum and contrarian profits. Investors' investment decisions are influenced by past and current market sentiments and they also influence the return earned on the investments.

4.8 Under Reaction Hypothesis Testing in Shari'ah and Conventional Market for Momentum and Contrarian Premium

Among various behavioral instincts, which are responsible for irrational behavior of investors under reaction is one of the most common and discussed behavior. In this study under reaction hypothesis is tested to identify under reaction as cause of momentum/ contrarian profits in Shari'ah and conventional market.

4.8.1 Descriptive Stats of Pakistan Market

Annual data from 30 companies included in Shari'ah screened companies and are part of KMI is used to calculate Earning, Assets and SUE for Shari'ah market of Pakistan. Similarly, annual data from 30 companies which are part of KSE 100 index but are not Shari'ah companies is used to calculate Earning, Assets and SUE for conventional market of Pakistan

TABLE 4.39: Annual Earnings, Annual Assets and SUE Data of Pakistan

Market	Shari'ah			Conventional		
	Annual Earnings	**Annual Assets**	**SUE**	**Annual Earnings**	**Annual Assets**	**SUE**
	(Million Pkr)	**(Million Pkr)**		**(Million Pkr)**	**(Million Pkr)**	
Mean	12.98	1,025	0.0059	13.57	1,352	0.0072
Median	5.228	150.208	0.0203	5.738	158.354	-0.2843
Min	-150.284	0.895	-0.2168	-162.352	0.975	1.182
Max	175.579	10,835.45	1.875	183.45	11,563.20	0.0245

Table 4.53 shows that average earning of Pakistani Shari'ah firm is 12.980 Million PKR. Average asset holdings of Shari'ah company in Pakistan is 1025 million PKR and over the study period the average surprise unexpected earnings are 0.0059. Furthermore, average earning of Pakistani conventional firm is 13.570 Million PKR. Average asset holdings of conventional company in Pakistan is 1352 million PKR and over the study period the average Surprise unexpected earnings are 0.0072.

4.8.2   Descriptive Stats of Turkey Market

Annual data from 30 companies included in Shari'ah screened companies and are part of BIST Participation is used to calculate Earning, Assets and SUE for Shari'ah market of Turkey. Similarly, annual data from companies which are part of BIST index but are not Shari'ah companies is used to calculate Earning, Assets and SUE for conventional market of Turkey.

TABLE 4.40: Annual Earnings, Annual Assets and SUE Data of Turkey Market

Market	Shari'ah			Conventional		
	Annual Earnings (Million TL)	Annual Assets (Million TL)	SUE	Annual Earnings (Million TL)	Annual Assets (Million TL)	SUE
Mean	10.54	988.36	0.0048	9.68	960.65	0.008
Median	4.763	137.63	-0.735	3.853	123.23	0.025
Min	-95.76	0.918	1.434	-58.645	0.824	-0.216
Max	163.372	11,435.21	0.0195	120.243	9800.55	1.328

Table 4.40 shows that average earning of Turkish Shari'ah firm is 10.540 Million TL. Average asset holdings of Shari'ah company in Turkey is 988.36 million TL and over the study period the average surprise unexpected earnings 0.0048. Furthermore, average earning of Turkish conventional firm is 9.680 Million TL. Average asset holdings of conventional company in Pakistan is 960.65 million TL and over the study period the average surprise unexpected earnings are 0.0082.

TABLE 4.41: Empirical Results of Excess Returns and Surprised Earnings for Shari'ah Market of Pakistan

Months	SUEt1	t values	SUEt2	t values	SUEt3	t values	SUEt3- SUEt1	t values
-11	-1.35%	-1.65	-0.98%	-1.235	1.58%	1.856	2.93%	1.630
-10	-1.27%	-1.80	-0.94%	-1.321	1.64%	1.652	2.91%	1.655
-9	-1.29%	-1.902	-0.85%	-1.457	1.850%*	1.963	3.140%*	1.998
-8	-1.020%**	-2.450	-0.94%	-1.786	1.900%*	1.980	2.920%*	2.037
-7	-1.130%*	-1.963	-0.93%	-1.396	1.920%**	2.477	3.050%*	2.163
-6	-1.100%**	-2.453	0.96%	-1.658	1.820%**	2.840	2.920%*	2.273
-5	0.987%**	-2.602	-0.87%	-1.356	1.850%**	2.986	0.863%**	2.895
-4	-0.956%*	-2.036	-0.90%	-1.02	1.900%**	2.563	2.856%**	2.936
-3	-1.020%**	-2.550	-0.85%	-1.89	1.950%**	3.025	2.970%**	2.571
-2	-1.085%**	-2.63	-0.88%	-1.36	2.020%**	3.100	3.105%**	2.653
-1	-1.025%**	-2.69	0.91%	1.46	1.030%**	2.752	2.055%**	2.715
0	-1.020%**	-2.449	0.99%	1.56	2.055%**	2.665	3.075%**	2.845
1	-1.080%**	-2.532	1.20%	1.902	2.195%**	2.895	3.275%**	2.963
2	-1.230%**	-2.980	-1.50%	-1.863	2.275%**	2.856	3.505%**	2.461
3	-1.296%*	-2.056	-1.89%	-1.652	2.260%**	2.936	3.556%**	2.798
4	-1.220%*	-2.25	-1.25%	-1.362	2.350%**	2.900	3.570%**	2.848
5	-1.468%**	-2.689	-1.66%	-1.457	2.370%**	2.63	3.838%**	2.636
6	-1.425%*	-1.986	-1.42%	-1.563	2.580%**	2.571	4.005%**	2.550
7	-1.386%**	-2.963	-1.20%	-1.77	2.230%**	2.963	3.616%**	2.63
8	-1.441%**	-2.856	-0.98%	-1.34	2.242%**	2.875	3.683%**	2.69
9	-1.369%*	-1.966	-0.85%	-1.25	2.450%*	1.998	3.819%**	2.449
10	-1.528%*	-2.25	0.78%	1.232	2.639%*	2.037	4.167%**	2.583
11	-1.644%*	-2.36	0.96%	1.634	2.258%*	2.163	3.902%*	1.963
12	-1.890%*	-2.28	0.80%	1.892	2.642%*	2.273	4.532%*	1.980

In **Table 4.55** Businesses in the SUEt1 category had an average excess return of -1.02percent on the date of announcement, which dropped to -1.890 percent after a full year. On the announcement date, the average excess return for companies in the SUEt3 category was 2.055 percent; after a year, this amount grew to 2.642 percent. It is evident that SUEt1 and SUEt3 reacted slowly to the earnings announcement. It demonstrates that equities need a full year to modify their prices for both positive and negative SUE. Additionally, the aggregate excess returns of SUEt3 and SUEt1 demonstrate that, for a 12-month holding period, statistically significant gains can be obtained by purchasing favorable news SUE portfolios and selling negative news SUE portfolios, with the latter's returns increasing from 3.075 to 4.532 percent which are in line with (Jegadeesh & Titman, 1993) research results.

In **Table 4.56** aggregate cumulative average excess returns for 10 years data for Pakistan conventional market is reported among three SUE categories. Very less of CAERs have statistical significance. Firms in SUEt1 category has average excess return of -6.775% on announcement date which after 12 months of announcement date is -5.027%. Firms in SUEt3 category has average excess return of 4.095% on announcement date which after 12 months is increased to 8.773%. In case of SUEt1 there is weak evidence of slow reaction towards earnings announcement. It shows that in very less time stocks adjust to their prices for negative SUE. SUEt3 has very less significant values, however it shows the delayed response of good news firms towards excess returns Furthermore, negative significant value SUEt3-SUEt1 aggregate excess returns shows that selling favorable news SUE portfolio and buying unfavorable news SUE portfolios have statistical significant returns but do not have delayed response towards unexpected earning news. Hence, for Pakistan conventional market contrarian profits are there, as excess returns can be enjoyed by buying SUE negative and selling SUE positive portfolio. Therefore, under reaction to news cannot be identified as a reason of contrarian profit in this market.

TABLE 4.42: Empirical Results of Excess Returns and Surprised Earnings for Conventional Market of Pakistan

Months	SUEt1	t values	SUEt2	t values	SUEt3	t values	SUEt3-SUEt1	t values
-11	-0.82%	-1.586	0.32%	1.235	0.60%	1.256	1.41%	1.243
-10	-2.532%*	-1.986	-0.21%	-1.321	-1.88%	-1.658	0.653%**	2.658
-9	-2.660%*	-2.03	-1.49%	-1.457	-2.75%	-1.356	-0.093%*	-1.988
-8	-1.960%*	-2.23	-2.69%	-1.786	-2.11%	-1.02	-0.152%**	-2.896
-7	-2.298%**	-2.449	-2.31%	-1.396	-1.00%	-1.56	1.295%*	2.056
-6	-3.138%**	-2.532	-2.05%	-1.658	-0.88%	-1.658	2.263%*	-1.986
-5	-4.270%**	-2.980	-2.95%	-1.356	-1.25%	-1.356	3.022%*	2.12
-4	-4.492%**	-2.845	-0.84%	-1.02	-2.07%	-1.02	2.427%*	2.245
-3	-5.215%**	-2.963	0.17%	1.89	-1.73%	-1.44	3.49%	1.56
-2	-5.437%**	-2.461	-0.49%	-1.36	-0.12%	-1.658	5.32%	1.63
-1	-6.393%**	-1.44	0.59%	1.46	2.08%	1.56	8.47%	1.42
0	-6.775%*	-1.944	2.98%	1.56	4.095%**	2.89	10.87%	1.586
1	-7.17%	-1.58	1.96%	1.902	4.923%*	1.988	12.10%	1.523
2	-7.023%**	-2.89	-2.47%	-1.863	5.448%**	2.896	12.47%	1.325
3	-5.355%**	-2.952	-1.66%	-1.652	5.227%**	2.87	10.58%	1.320
4	-5.763%*	-1.963	-2.09%	-1.362	5.36%	1.956	11.12%	1.28
5	-5.53%	-1.78	-2.02%	-1.457	6.88%	1.986	12.41%	1.456
6	-6.078%*	-1.8	-2.85%	-1.563	6.113%*	1.946	12.19%	1.636
7	-6.382%*	-1.986	-3.59%	-1.77	6.207%*	1.456	12.59%	1.74
8	-5.95%	-1.65	-5.14%	-1.34	6.79%	1.632	12.74%	1.786
9	-4.70%	-1.56	-5.16%	-1.25	6.76%	1.892	11.46%	1.86
10	-4.88%	-1.42	-3.29%	-1.232	7.49%	1.645	12.37%	1.693
11	-5.09%	-1.58	-3.17%	-1.634	7.945%*	2.335	13.03%	1.602
12	-5.03%	-1.50	-1.60%	-1.892	8.773%*	2.298	13.80%	1.656

TABLE 4.43: Empirical Results of Excess Returns and Surprised Earnings for Shari'ah Market of Turkey

	SUEt1		SUEt2		SUEt3		SUEt3-SUEt1	
-11	-1.23%	-1.586	0.37%	1.235	0.89%	1.256	2.12%	1.243
-10	-3.798%*	-1.986	-0.25%	-1.321	-2.82%	-1.658	0.980%**	2.658
-9	-3.990%*	-2.03	-1.72%	-1.457	-4.13%	-1.356	-0.140%*	-1.988
-8	-2.940%*	-2.23	-3.10%	-1.786	-3.17%	-1.02	-0.228%**	-2.896
-7	-3.448%**	-2.449	-2.66%	-1.396	-1.51%	-1.56	1.943%*	2.056
-6	-2.708%**	-2.532	-2.36%	-1.658	-3.31%	-1.658	-0.605%*	-1.986
-5	-6.405%**	-2.980	-3.40%	-1.356	-1.87%	-1.356	4.533%*	2.12
-4	-6.738%**	-2.845	-0.96%	-1.02	-3.10%	-1.02	3.640%*	2.245
-3	-7.823%**	-2.963	0.19%	1.89	-2.59%	-1.44	5.23%	1.56
-2	-8.155%**	-2.461	-0.56%	-1.36	-0.18%	-1.658	7.98%	1.63
-1	-9.59%	-1.44	0.68%	1.46	3.12%	1.56	12.71%	1.42
0	-10.163%*	-1.944	3.43%	1.56	6.143%**	2.89	16.31%	1.586
1	-10.76%	-1.58	2.26%	1.902	7.385%*	1.988	18.14%	1.523
2	-10.535%**	-2.89	-2.84%	-1.863	8.173%**	2.896	18.71%	1.325
3	-8.033%**	-2.952	-1.91%	-1.652	7.840%**	2.87	15.87%	1.320
4	-8.645%*	-1.963	-2.40%	-1.362	8.033%*	1.956	16.68%	1.28
5	-8.30%	-1.78	-2.33%	-1.457	10.325%*	1.986	18.62%	1.456
6	-9.118%*	-1.8	-3.27%	-1.563	9.170%*	1.946	18.29%	1.636
7	-9.573%*	-1.986	-4.13%	-1.77	9.31%	1.456	18.88%	1.74
8	-8.93%	-1.65	-5.92%	-1.34	10.19%	1.632	19.11%	1.786
9	-7.05%	-1.56	-5.93%	-1.25	10.13%	1.892	17.18%	1.86
10	-7.31%	-1.42	-3.78%	-1.232	11.24%	1.645	18.55%	1.693
11	-7.63%	-1.58	-3.64%	-1.634	11.918%*	2.335	19.55%	1.602
12	-7.54%	-1.50	-1.84%	-1.892	13.160%*	2.298	20.70%	1.656

Note: ACAER are reported under designated category of Surprise unexpected earnings. *, ** represents 90% and 95% confidence level. Associated t values are also reported, Source: ACAER are calculated by using Event study (Python package)

In **Table 4.57** Aggregate cumulative average excess returns for 10 years data for Turkey Shari'ah market is reported among three SUE categories. Very less of CAERs have statistical significance. Firms in SUEt1 category has average excess return of -10.163% on announcement date which after 12 months of announcement date is -7.540%. Firms in SUEt3 category has average excess return of 6.143% on announcement date which after 12 months is increased to 13.160%. In case of SUEt1 there is weak evidence of slow reaction towards earnings announcement. It shows that in very less time stocks adjust to their prices for negative SUE. SUEt3 has very less significant values, however it shows the delayed response of good news firms towards excess returns Furthermore, negative significant value SUEt3-SUEt1 aggregate excess returns shows that selling favorable news SUE portfolio and buying unfavorable news SUE portfolios have statistical significant returns but do not have delayed response towards unexpected earning news. Hence, for Turkey Shari'ah market contrarian profits are there as excess returns can be enjoyed by buying SUE negative and selling SUE positive portfolio.

In **Table 4.44** Aggregate cumulative average excess returns for 10 years data of Turkish conventional market is reported among three SUE categories. Most of the CAERs have statistical significance. Firms in SUEt1 category has average excess return of -4.08% on announcement date which after 12 months of announcement date is -10.395%. Firms in SUEt3 category has average excess return of 9.248% on announcement date which after 12 months is increased to 15.852%. In case of both SUEt1 and SUEt3 there is evidence of slow reaction towards earnings announcement. It shows that 12 months are required by stocks to adjust their prices for both positive and negative SUE information. Furthermore, SUEt3- SUEt1 aggregate excess returns shows that by buying favorable news SUE portfolio and selling unfavorable news SUE portfolios statistically significant returns can be earned for 12 month holding period as its returns improves from 13.328% to 26.247%. Therefore, under reaction hypothesis or delayed response confirms presence of momentum in Turkish conventional market.

TABLE 4.44: Empirical Results of Excess Returns and Surprised Earnings for Conventional Market of Turkey

Months	SUEt1	t values	SUEt2	t values	SUEt3	t values	SUEt3- SUEt1	t values
-11	-3.04%	-1.63	-2.11%	-1.63	5.53%	1.356	8.57%	1.232
-10	-3.24%	-1.2635	-2.03%	-1.45	5.74%	1.486	8.98%	1.653
-9	-3.68%	-1.256	-1.82%	-1.396	6.475%*	1.986	10.15%	1.752
-8	-3.213%*	-1.986	-2.03%	-1.658	6.650%*	2.786	9.863%*	1.978
-7	-3.899%**	-2.567	-1.99%	-1.356	6.720%**	2.900	10.619%*	1.998
-6	-4.813%**	-2.668	2.06%	1.02	7.280%**	2.63	12.093%*	2.056
-5	-3.456%**	-2.963	-1.87%	-1.89	7.400%**	2.571	10.946%*	2.352
-4	-3.346%**	-2.856	-1.94%	-1.36	7.600%**	2.963	10.946%**	2.895
-3	-3.570%*	-1.992	-1.82%	-1.53	7.800%**	2.875	11.370%**	2.936
-2	-3.798%**	-2.689	-1.89%	-1.66	8.080%**	2.715	11.878%**	2.571
-1	-4.100%*	-1.987	1.946%*	1.652	4.635%**	2.845	8.735%**	2.653
0	-4.080%**	-2.982	3.109%*	1.362	9.248%**	2.963	13.328%**	2.715
1	-4.320%*	-1.987	3.780%*	1.457	9.878%**	3.023	14.198%**	2.845
2	-4.920%*	-2.037	-4.73%	-1.563	10.238%**	3.10	15.158%**	2.963
3	-5.184%**	-2.69	-5.94%	-1.77	10.170%**	2.986	15.354%**	2.461
4	-6.100%**	-2.449	-3.94%	-1.34	11.750%**	2.665	17.850%**	2.798
5	-7.340%**	-2.532	-5.23%	-1.25	11.850%**	2.986	19.190%**	2.848
6	-7.125%*	-1.930	-4.47%	-1.232	12.900%*	2.032	20.025%**	2.636
7	-6.930%**	-2.930	-3.78%	-1.634	11.150%*	2.352	18.080%**	2.550
8	-7.205%**	-2.568	-3.09%	-1.892	11.210%**	2.432	18.415%**	2.63
9	-7.530%*	-1.986	-2.68%	-1.856	13.475%*	2.045	21.005%*	1.975
10	-8.404%*	-1.963	2.46%	1.789	15.834%*	1.956	24.238%*	1.988
11	-9.042%*	-2.045	3.02%	1.652	13.548%*	1.986	22.590%*	2.345
12	-10.395%*	-2.137	2.52%	1.854	15.852%*	1.965	26.247%*	2.250

Note: ACAER are reported under designated category of Surprise unexpected earnings. *, ** represents 90% and 95% confidence level. Associated t values are also reported, Source: ACAER are calculated by using Event study (Python package)

Summary of under reaction Hypothesis results: In reality, if the market were efficient, stock prices would accurately represent both positive and negative surprise earnings news on the day of release, and as a result, patterns like those discussed above shouldn't occur. The under-reaction hypothesis explain the momentum profits by pointing to the market's delayed response in the same direction of the surprise earnings announcement in Shari'ah market of Pakistan and conventional market of Turkey. It shows that momentum profits are described by under reaction in both Shari'ah and conventional markets. Additionally in these two markets during the twelve months after the announcement date, purchasing the companies with the highest earnings and selling the ones with the lowest earnings provide positive returns. The findings are in line with those made by (Ball & Brown, 1968; Rendleman Jr, Jones, & Latane, 1982; Hew, Skerratt, Strong, & Walker, 1996; Booth, Kallunki, & Martikainen, 1996).

However in case of markets (Pakistan conventional market and Turkey Shari'ah market) where investment in contrarian portfolios provides more significant returns evidence of SUEt1-SUEt3 positive excess returns are there and there is no support for delayed response to such excess returns. It can be inferred here that under reaction to news is not a reason for contrarian profits.

4.9 Over Reaction Hypothesis Testing in Shari'ah and Conventional Market for Momentum and Contrarian Premium

An emotional reaction to news about a security that is either driven by greed or fear and causes it to become overbought or oversold is called an overreaction. In the literature over reaction is considered to be one of important reasons for abnormal returns. Over reaction influences investors decisions of investment for

different motives. By using Pandas environment of Python different portfolios based on OvR defined earlier in the methodology are made. Overall firms are grouped together on basis of quintiles, ranking above 20% firms as winners and below 20% are losers. Returns of such portfolios are reported for holding periods of 6 months to 36 months in order to capture the long term reversal effect as well.

4.9.1 (a) Empirical Results of Portfolio Returns on Basis of OvR for DIFFERENT Holding Periods in Shari'ah Market of Pakistan

TABLE 4.45: OvR Winner, Loser and Momentum/ Contrarian Portfolio in Pakistan Shari'ah Market

Portfolio	k	6	12	18	24	30	36
Winner	mean	0.11%	0.45%	0.92%	0.80%	0.67%	-0.14%
	t stat	1.1576	1.7295	1.6762	1.0776	0.9568	-0.1368
	p value	0.08752*	0.04674**	0.0968	0.2843	0.3416	0.8916
Loser	mean	-0.48%	-0.30%	-0.03%	-0.35%	-0.78%	-0.50%
	t stat	-0.5547	-0.4282	-0.0321	-0.3792	-1.1702	-0.6894
	p value	0.5804	0.6694	0.9744	0.7055	0.2455	0.4927
winner-loser	mean	0.59%	0.75%	0.94%	1.15%	1.46%	0.36%
	t stat	0.6597	1.0582	1.1925	1.1204	1.432	0.3527
	p value	0.5111	0.2926	0.2359	0.2657	0.1556	0.7253

K represents the holding periods from short term 6 months to long term period of 36 months. *, ** represents t values at 90% and 95% confidence level.

Table 4.59 presents that winner portfolios have significant returns up till 12 month time period showing no impact of overconfidence for longer period of time. Furthermore, it is seen that for no winner – loser we have significant positive return. Over longer period of time returns start diminishing as well. It shows that overconfidence hypothesis fails to explain existence of momentum in Shari'ah market of Pakistan.

TABLE 4.46: OvR Winner, Loser and Momentum/ Contrarian Portfolio in Pakistan Convention Market

Portfolios	k	6	12	18	24	30	36
Winner	mean	0.85%	-0.88%	-0.66%	-0.42%	0.74%	-0.37%
	t stat	0.894	-1.0006	-0.6363	-0.5195	0.8636	-0.5271
	p value	0.4104	0.3199	0.5265	0.6048	0.3904	0.5996
Loser	mean	2.76%	1.11%	0.88%	0.88%	1.66%	0.43%
	t stat	2.2146	1.4468	1.0783	1.0961	2.0946	0.5471
	p value	0.0372**	0.1517	0.2845	0.2762	0.0394**	0.5858
winner-loser	mean	-1.91%	-2.00%	-1.53%	-1.29%	-0.92%	-0.80%
	t stat	-2.898	-2.515	-1.9204	-2.0335	-2.498	-1.9195
	p value	0.0343**	0.0138**	0.0759*	0.0852*	0.0467**	0.0866*

TABLE 4.47: OvR Winner, Loser and Momentum/ Contrarian Portfolio in Turkey Shari'ah Market

Portfolio	k	6	12	18	24	30	36
Winner	mean	1.36%	1.24%	2.75%	2.63%	2.92%	2.89%
	t stat	1.4018	1.2467	3.337	3.2746	3.337	3.2746
	p value	0.1644	0.216	0.0013***	0.0016***	0.0013***	0.0016***
loser	mean	2.58%	3.27%	3.73%	3.17%	3.43%	3.17%
	t stat	2.9584	3.5938	3.1346	2.6146	3.1346	2.6146
	p value	0.0039***	0.0005***	0.0024***	0.0109**	0.0024***	0.0109**
winner-loser	mean	-1.23%	-2.03%	-0.97%	-0.54%	-0.51%	-0.28%
	t stat	-2.075	-3.1909	-1.6556	-1.3174	-1.6556	-1.3174
	p value	0.0408**	0.002***	0.0814*	0.07519*	0.0814*	0.07519*

4.9.2 (b) Empirical Results of Portfolio Returns on Basis of OvR for Different Holding Periods in Conventional Market of Pakistan

Table 4.46 shows significant loser portfolios are there. Furthermore, it is observed that portfolios based on over confidence has great tendency to earn contrarian profits. Over buying of loser stocks and over selling of winners leads to earn excess returns in conventional market of Pakistan. In the long-term decrease in the contrarian profit shows that investors tend to correct their over confidence behavior in long run. Contrarian results increase to 2% from 1.91% for 12 months and then tends to decrease to 0.80% after 36 months. Hence, in Pakistan convention market contrarian profits presence can be attributed to overconfidence.

4.9.3 (a) Empirical Results of Portfolio Returns on Basis of OvR for Different Holding Periods in Shari'ah Market of Turkey

Table 4.61 shows significant winner and loser portfolios are there. Furthermore, it is observed that portfolios based on over confidence has great tendency to earn contrarian profits. Over buying of loser stocks and over selling of winners leads to earn excess returns in Shari'ah market of Turkey. In the long term, decrease in the contrarian profit shows that investors tend to correct their over confidence behavior in long run. Contrarian results increase to 2.03 % from 1.23% for 12 months and then tends to decrease to 0.28% after 36 months. Hence, in Shari,ah market of Turkey contrarian profits presence can be attributed to overconfidence.

4.9.4 (b) Empirical Results of Portfolio Returns on Basis of OvR for Different Holding Periods in Conventional Market of Turkey

Table 4.62 presents that winner portfolios have significant returns up till 12 month time period showing no impact of overconfidence for longer period of time.

TABLE 4.48: OvR Winner, Loser and Momentum/ Contrarian Portfolio in Turkey Conventional Market

Portfolio k		6	12	18	24	30	36
Winner	mean	0.51%	0.94%	0.71%	0.65%	0.57%	0.56%
	t stat	0.9294	1.6861	0.6069	0.7284	0.6216	0.6082
	p value	0.06685*	0.04942**	0.5453	0.4681	0.5361	0.5446
Loser	mean	-0.62%	-0.68%	-0.30%	-0.71%	0.31%	-0.11%
	t stat	-0.6949	-0.7144	-0.3491	-0.6791	0.3392	-0.1157
	p value	0.4887	0.4767	0.7277	0.4986	0.7354	0.9081
winner-loser	mean	1.13%	1.62%	1.00%	1.37%	0.26%	0.68%
	t stat	0.842	1.0752	0.7637	1.1127	0.2478	0.6033
	p value	0.4018	0.2849	0.4469	0.2685	0.8049	0.5478

Furthermore, it is seen that for no winner – loser we have significant positive return. Over longer period of time returns start diminishing as well. It shows that overconfidence hypothesis fails to explain existence of momentum in conventional market of Turkey.

The findings of Overreaction hypothesis testing reveals that overreaction hypothesis testing reveals that over reaction of investors is cause of contrarian premium despite of the nature of market. It means that in both conventional and Shari'ah market of Pakistan and Turkey overreaction leads to abnormal returns of contrarian portfolio. However, no connection between overreaction hypothesis and momentum premium is observed in any of the market either Shari'ah or conventional one. It shows that investors overreaction bias over shadows their preference for Shari'ah stocks. These results are also in line with results of (Kashif, Saad, Chhapra, & Ahmed, 2018) research which has shown that overreaction bias of investors is the reason behind contrarian strategy's positive abnormal returns in Pakistan market. Similarly, results of (Bildik & Gülay, 2019) supports that contrarian profits arises for shorter period of time and it reverses soon which shows that reason for contrarian profit is overreaction by investors in Turkish market as well.

Chapter 5

Conclusion, Limitations, and Future Directions

This thesis's conclusion, which will wrap up the current analysis, is presented in this last section. Research questions are first repeated and then will be answered in this section through the methodology used and the analysis will then be given. Finally, the analysis's conclusions and limitations will be revealed, and some recommendations for further research will be made.

5.1 Conclusion

The purpose of this study is to contribute to the comparative literature of Shari'ah and conventional markets in terms of market efficiency and existence of market anomalies. To accomplish this data sample of 7 Islamic Frontier countries were selected which includes Pakistan, Bangladesh, Indonesia, Malaysia, Turkey, Qatar and Nigeria. On the basis of general Shari'ah compliance rules and specific country wise Shari'ah compliance codes, the firms' stock as Shari'ah compliant which represent Shari'ah market of that particular country are segregated from the conventional stocks. This study collectively presents the answers of research questions on basis of Shari'ah and conventional markets as well as it serves as the individual study on country basis. Firstly, evaluation of markets are done for efficiency level, then looked for existence and performance of momentum/ contrarian premium.

Adaptive market behavior of the selected markets was analyzed and impact of market sentiments on momentum/ contrarian profits were elucidated. Furthermore, under reaction and over reaction were tested to identify them as a determining factor of momentum/ contrarian premium. To continue with this comparative study these specific questions were asked and then answered throughout this research.

1) Does EMH holds in both Shari'ah compliant stock markets and their conventional counterparts? To answer this question, daily stock return data of Shari'ah indices and conventional indices were used. Altogether 14 indices were used. 7 of them are Shari'ah index (KMI 30, DSE Shari'ah 30, JKI Islamic 30, FTSE Hijrah 30, BIST Participation 50, QE Al Rayan and Lotus Islamic) and 7 are conventional market index (KSE 100 Index, DSEX30, Components JKILQ45, FT-SEKLCI, BIST 50, QE ALL SHARES and NSE 30. Test these markets for weak form of efficiency linear and non-linear tests were used. In order to evaluate markets linearly The Unit root testing was done through Augmented Dicky fuller test and Phillip Peron test. Variance Ratio test was also conducted to get more robust results. Results of ADF, Phillip Peron and BDS declares that none of our Shari'ah and conventional markets are weak form efficient. However, according to VR (linear test) Bangladesh (Shari'ah and conventional market) and Turkey (Shari'ah and conventional market) are weak form efficient markets.

2) Does existence of momentum/ contrarian premium in both Shari'ah compliant stock markets and their conventional counterparts elucidates AMH? In order to answer this question three approaches were used. Firstly, by taking monthly closing return data of Shari'ah companies and conventional companies, Jegadeesh and Titman (1993) J K overlapping strategy was used to make momentum and contrarian portfolios which were then evaluated through simple hypothesis testing. Strategies of different formation and holding period were formed which includes (J=3, 6, 9 and 12) and (k=6, 12, 18, 24, 30, and 36). 9 out of 14 markets in our study sample showed presence of significant momentum and contrarian profits. Shari'ah markets of Pakistan, Bangladesh, Turkey and Qatar had evidence of momentum and contrarian profits. Conventional markets of Pakistan, Indonesia, Malaysia, Turkey and Nigeria has shown presence of momentum and contrarian profit. Secondly, performance of momentum and contrarian profits were evaluated

in the markets where these profits exist significantly by using Sharpe Ratio. It was observed that in Shari'ah markets performance of contrarian portfolios was better than momentum portfolios. There was evidence of momentum profit in Pakistan Shari'ah market and evidence of contrarian profit in Bagladesh, Turkey and Qatar Shari'ah market. In conventional market of Pakistan, Indonesia, and Nigeria contrarian profits performed well and momentum performed good in Malaysia and Turkey. It concludes that no differentiation can be drawn between Shari'ah and conventional markets in terms of existence and performance of both momentum and contrarian profits. Thirdly, to elucidate AMH in Shari'ah and conventional markets through momentum and contrarian profits, behavior of these momentum and contrarian profits were analyzed during different time of study period. Rolling window analysis with 2 year fixed window which rolls over next 6 months was conducted on momentum and contrarian profits of both Shari'ah and conventional markets. It was inferred that four Shari'ah markets of Pakistan, Bangladesh, Turkey and Qatar which had significant momentum and contrarian profits were all Adaptive in nature and supports AMH. However, conventional markets of Pakistan, Indonesia and Nigeria have significant contrarian profits are adaptive but conventional market of Malaysia and Turkey which had significant momentum profits are not adaptive in nature. So, it is concluded that differentiation can be drawn between Shari'ah and conventional markets on basis of their Adaptive behavior. All Shari'ah markets either having significant momentum or contrarian profits are all adaptive in nature. However, conventional markets are adaptive for contrarian profits but not adaptive for momentum profits.

3) Does market sentiments influence momentum/ contrarian profits in both Shari'ah compliant stock markets and their conventional counterparts as established by AMH? In order to answer this question impact of different market sentiments which includes market bull, market bear, market bubbles and market crash was studied by conducting Dummy variable analysis with GARCH (1, 1) specifications. Market bull, market bear and market crashes were identified by using yearly cumulative returns. To locate for market bubbles GSADF was used. However, for the study period no bubbles were found for any of the Shari'ah and conventional market. According to the findings, both Shari'ah market crashes have an impact

on both momentum and contrarian profits.. Presence of market crash negatively effects the momentum profit but in case of market crashes contrarian profits perform better. In case of conventional markets, crashes only affect contrarian profits and have no impact on momentum profits. In both Shari'ah and conventional markets bull market sentiment favors momentum profits and have negative association with contrarian profits. In both Shari'ah and conventional markets bear market sentiment favors contrarian profits and have negative association with momentum profits. It is concluded that no differentiation can be drawn on impact of market sentiments on momentum and contrarian profits in both Shari'ah and conventional markets. However, it is observed that all three market sentiments have impact on performance of momentum and contrarian premium in both Shari'ah and conventional market.

4) Is it an Under-reaction to market news which causes momentum/ contrarian premium in both Shari'ah compliant stock markets and their conventional counterparts? To find out answer of this question markets of Pakistan and Turkey were selected because in the whole sample, these two countries had significant momentum and contrarian profits in both Sharia'ah and conventional markets. Nichols and Wahlen (2004) recommended surprised unexpected earnings were used in the study which can be calculated by current and past year's anuual income and total assets of individual firms. Event study was conducted which considers -11- 0-12 as one window, where 0 is earning announcement date. ACAER are then calculated and are tested to check their significant existence. Results of under reaction hypothesis revealed that momentum profits existence in both Shari'ah and conventional markets can be attributed to under reaction hypothesis. Contrarian profits remained insignificant during this test in both Shari'ah and conventional market. As a result, it may infer that there is no differentiation between Shari'ah and conventional markets based on recognizing under reaction as a cause of momentum profit

5) Is it an Over-reaction to market news which causes momentum/ contrarian premium in both Shari'ah compliant stock markets and their conventional counterparts? In effort to answer this question again Pakistan and Turkey (both Shari'ah and conventional) markets were selected. Signed trading volume of stocks was

used to indicate over confidence or over reaction. Byun et al. (2016) methodology was used to measure over confidence. Then by using Jagdeesh and Titman overlapping strategies were made and analyzed for holding period of 6,12,18,24,30, and 36 months. Top 20% firms are nominated as winners and bottom 20% are losers. It was observed that significant contrarian profits were there for the Overreaction portfolios in both Shari'ah and conventional markets. However, no significant momentum profits are there in both Shari'ah and conventional markets. Reversal effects were also discovered for contrarian profits in both settings. As a result, it may infer that there is no differentiation between Shari'ah and conventional markets based on identifying overreaction as a cause of contrarian profit.

This study collectively presents the answers of research questions on basis of Shari'ah and conventional markets as well as it serves as the individual study on country basis. Firstly, the evaluation of markets for efficiency level are done, then looked for existence and performance of momentum/ contrarian premium. Adaptive market behavior of the selected market

AMH is analyzed and impact of market sentiments on momentum/ contrarian profits were elucidated. Furthermore, under reaction and over reaction were tested to identify them as a determining factor of momentum/ contrarian premium. As claimed by BF, that attitude of investors is effected by different determinants like age, gender, occupation and demographic aspects effects rational decision making of investors. However, this research result proved that religious beliefs is not one of the factors effecting the rationality of the investors.

Since the late 1990s, the Islamic financial markets and institutions has grown at a pace of 10-15% year, and this rate of growth is anticipated to continue for years to come. According to Dewi, Sulaiman, and Ferdian (2010), Islamic financial rules, which forbid the practices of riba, maysir, gambling, and ambiguity, offer the best hope for fixing the problems caused by the financial crisis. One of the primary features of the Islamic stock market is its abstention from speculating and pointless risk-taking (Naughton & Naughton, 2000). These qualities of Islamic financial system are crucial and can help instill more discipline into the system and, as a result, significantly reduce financial instability. Keeping in mind, the importance of Islamic financial markets these markets were chosen in this study. Results has

shown that Shari'ah markets are more adaptive than conventional markets, are more conducive to get benefit from contrarian profits, and have positive impact of bull markets on contrarian profits. It supports that keeping lower performing stocks and selling higher performing stocks can even be source of abnormal returns in Shari'ah markets. Furthermore, presence of reversal effect in case of contrarian profits and over reaction theory suggests that investors in Shari'ah market adjusts to the fundamental prices within period of one year. All these findings further increase the importance of Islamic equity markets. Investors can consider it as investment guideline while operating in Shari'ah stock market.

5.2 Limitations and Future Directions

This research use Shari'ah index as representative for Shari'ah market and conventional index as representative of conventional markets. In conventional index, it is observed that there exists Shari'ah companies as well. So, there is need to make new index which only includes non-Shari'ah stock trading companies' data.

This study is based on only 7 countries as representative of Islamic markets, this sample size should be large enough so that findings can be generalized to all Shari'ah markets.

In stock exchange markets conventional and Shari'ah shares both are traded. It is not possible to identify that does investors buy Shari'ah stocks on his preference of investment in Shari'ah securities or it is just a random stock buy. Lack of this information effects the interpretation of under reaction and overreaction to news analysis of Shari'ah stocks.

Inclusion or exclusion of certain stocks from conventional shares to the Shari'ah stock category should be made more public so that investors with Shari'ah stock performance could take conscious decisions about investments.

Jagdeesh and Titman J-K overlapping methodology was used in study, non-overlapping methodology can be used to study the momentum/ contrarian profit for fixed duration only.

Similarly more combinations of J-k strategy can be studied. 30 Shari'ah and 30 conventional countries are used only, but for more accurate results a greater number of companies can be included for construction of momentum, contrarian, over reaction and SUE portfolios.

Inclusion of some primary data which includes interviews, surveys from investors of both Shari'ah and conventional markets could be added to know their investment rationales and expectations. It will be helpful to elaborate AMH in more detail.

To study under reaction phenomenon only one proxy of Surprised unexpected earnings (which is based on Annual earnings) were used. However, there could be other reasons for under reaction towards market information which should be identified and included in the study.

Similarly, over reaction is tested by using proxy of signed trading volumes of listed shares. There are some other factors also which are responsible for over reaction, so they should be identified and included in the research.

5.3 Policy Implications

Various concerns have been raised over the policy uncertainty regarding to monetary and economic policies since the global financial crisis of 2007–2008. A growing body of research has shown how Shari'ah stock markets differ from traditional stock markets in terms of risk, return, volatility, and liquidity. Since then, as the volatility surrounding traditional stock markets has increased, investors have become more interested in alternative investments, such as Islamic stock markets. Owing to their autonomy from traditional markets, Islamic markets have experienced remarkable growth in the wake of the global financial crisis. But since the COVID-19 outbreak, there has been a global uptick in the unpredictable nature of economic policy, with nearly equal effects on Islamic stock markets.In this context, this study focuses on investigating the ability of Shari'ah as well as conventional stocks to earn abnormal returns by exercising either momentum or contrarian investment strategy during the different market sentiments, which is absent from the literature. Numerous pertinent research conducted in the financial domain

have demonstrated that the adaptive market hypothesis provides a cyclical jus-
tification for the existence of market efficiency and inefficiency, hence permitting
the existence of market anomalies. In an effort to add a comparative study to the
literature, I have compared the performance of momentum and contrarian port-
folios in Shari'ah and conventional stock market settings, using data from seven
frontier Islamic economies.Decision-makers, investors, and policymakers that op-
erate in both the conventional and Islamic stock markets will be affected by the
aforementioned findings in a number of ways.

When creating a portfolio and diversification plan, it is advised to take these
distinctions into consideration because most of the Shari'ah markets have a mo-
mentum premium, whereas most of the conventional markets have a contrarian
premium.

Investors are cautioned, based on rolling window study results, that the conserva-
tive nature of Islamic stocks does not offer superior investment options or hedging
opportunities, especially in periods of financial crisis and economic policy upheaval.

Considerable momentum and a contrarian premium that can entice investors to
invest in Pakistani and Turkish markets. By diversifying their portfolio, they can
optimize their returns, especially in times of notable economic policy uncertainty,
financial instability, market ups and downs, and bull and bear markets.

Finally, investors are given instructions on how to respond to market news by
identifying overreaction and under reaction as causes of contrarian and momen-
tum premiums, respectively. Beyond the narrow confines of religious views, the
study highlights the effectiveness of Shari'ah compliant shares in earning abnor-
mal returns in a non-biased and quantitative manner. As so, it helps to positively
shape public perceptions of Shari'ah compliance by illuminating the application of
theoretical ideas. The need for Shari'ah-compliant investments will rise as public
support for compliance with Islamic law grows.

Similar impact of market states (bull, bear, crash and Bubbles) on the momentum
and contrarian portfolio returns of both conventional and Shari'ah stock preference
will not get any cushion and have to absorb the market shock like conventional
stocks.

Possibility to earn abnormal return by exercising momentum strategy is evident in most of the Shari'ah stock markets. It should be made clear by the panel of Shari'ah Advisory board to the investors with Shari'ah preferences that it is permissible activity as it doesn't follow any hoarding motive but just a speculative activity which might loose value because of substantial risk or may provide significant gain.

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