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International and Domestic integration among Islamic investment: Is there any co-movement?

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Abstract

This paper aims to examine the benefits that Islamic investors can gain through international diversification as they are restricted to investing in sharia-compliant funds only compare to conventional investors who have no restrictions. The study investigates the co-movement of Pakistan's Islamic funds with the regional Islamic funds of Asia Pacific, North America, Europe, MENA and aggregate of all global Islamic funds. Additionally, the study determines the cointegration of Pakistan's Islamic funds with the Pakistan conventional and Islamic stock market. The study applied unit root, cointegration and Granger causality test on monthly index prices from the period of Jan 2009 to Dec 2018. The analysis revealed that there is no co-movement of Pakistan's Islamic funds with the Islamic fund's markets of North America, Europe, and MENA regions. Therefore, investors of these regions can reduce risk through investment in Pakistan's Islamic funds and local investors can benefit from investing in these countries. Whereas Islamic fund of Pakistan have co-movement with the Islamic funds of Asia Pacific region so, investors cannot minimize risk through maintaining international portfolio in these countries. Furthermore, it is found that there is a co-movement of Pakistan Islamic funds with Pakistan's stock market, both conventional and Islamic. The findings are helpful for fund managers and investors as they can maximize returns by diversifying investment in these markets and secondly the research qualify Pakistani market

as an attractive diversification tool for international portfolio managers, and thirdly low integration among Islamic funds justify the promotion of Islamic investment in Pakistan.

Key words: International diversification, Co-movement, Islamic Investments Funds, Cointegration analysis, Stock Market

INTRODUCTION

Background of the study

Primarily Muslim investors have look for avenues to invest in non-interest paying securities coherent with their religious belief, this push market forces and Islamic banking came as a market response to fulfill these financial needs. Today not only in Islamic countries but also in western countries as well, Islamic finance is a worthwhile substitute to conventional finance. Islamic finance is a fast-growing $2.2 trillion industry, and over the past decade it has grew at yearly pace of 10%–12%. Experts have predicted that total Islamic assets will reach to $3.5 trillion by 2021 (Domat, 2018). A recent report pointed out that Asia is the largest market for both Sukuk and Islamic funds. Asia's asset management industry has made commendable progress. The size of Asia's Asset under management has grown more than triple since 2008. Liberalization, deepening capital markets and private wealth growth has paved the way for the region to be a significant part of the global fund's industry. Of total Asia's Islamic Asset under management, Malaysia held (85.2%) market share, followed by Pakistan (7.2%) and Indonesia (5.7%). Malaysia also sustained its lead in terms of the number of Islamic funds with 394 funds; Pakistan with 147 funds and Indonesia with 143 funds (Malaysia world Islamic finance marketplace, 2018). Mutual funds industry of Pakistan began in 1960s and today it is a

booming segment of the financial sector, with a surprising growth in both numbers and volumes. Mutual Funds industry has closed the year 2018 with Net Asset Value (NAV) of PKR 584 billion. In funds market the share of Shariah-compliant funds and pension funds is improving as they have gained popularity among the investors. Pakistan mutual fund industry is heading towards further development as today mutual funds can also make overseas investments; State Bank of Pakistan (SBP) has recently allowed funds to invest overseas and this permission has been greeted by the mutual fund's sector as it would empower them to medicate risk through diversifying investments outside Pakistan (Nisar, 2017).

Problem Statement

According to theory if different markets are not perfectly correlated therefore gains can be achieved through international portfolio diversification. Moreover, modern portfolio management and investment strategies are based on the principle that rational investors seeking to maximize their returns and minimize risk should hold a well-diversified portfolio which includes securities that have low correlation with one another to reduce risk. Investors can reduce risk even more substantially through international portfolio diversification if returns in the different markets are not perfectly correlated. A global portfolio has stocks and bonds from different regions or countries to get a greater return at the same level of risk or carry less risk for the same level of return from a non-diversified portfolio. The philosophy of diversification is also applied to the domestic-only portfolio as the fund manager/investors can reduce risk by investing in low integrated avenues and investment plans.

The rationale of international integration and diversification should apply to all type of investment and more noticeably to those funds and investments that are subject to some specific screening criteria like Islamic investments.

Because these investors are constrained to only invest in certain industries or categories of companies, these portfolios are at risk of being relatively undiversified. Specifically, Islamic funds investors are constrained because they can only invest in Shari'a-compliant funds. Each of these investment strategies, therefore, gives up some diversification benefit relative to an unconstrained investor.

Gap Analysis

Yusof, (2014) analyzed the extent of co-integration among four regional Islamic funds. The study uses an Autoregressive-Distributed Lag (ARDL) approach for testing the long-run relationships among these funds. The results revealed that if Asia Pacific Islamic funds and MENA region Islamic funds are invested simultaneously so this international diversification can help reduce risk. Trichilli, (2015) investigated integration across developed and emerging Islamic stock markets. Contrary to this it was identified that Islamic stock markets from different economic grouping are partially segmented. Similarly, (Saidi, 2000) investigated the integration of the equity market of Pakistan with other countries seven major equity markets, that is, the markets of USA, UK, France, Germany, Japan, Hong Kong, and Singapore. The co-integration analysis was used to find integration through using weekly country indices from January 1988 to December 1993. The analysis provides little evidence of integration of the Pakistani market with international markets.

Further there are many studies conducted on the investigation of stock market whether Islamic or conventional on both international level and locally in Pakistan. However, there is no study conducted to examining the integration of Islamic funds with regional and domestic Islamic investments. Keeping in view the significance of Pakistan mutual fund industry, SBP permission for international investment, the present study will focus on identifying integration of Pakistan

Islamic funds' investments with the regional Islamic funds, i.e., Asia Pacific Islamic funds, North America Islamic funds, Europe Islamic funds and Pakistan conventional and Islamic stock market. The study would examine benefit to Islamic investors or fund manager who manage a local and international portfolio and can gain benefit through international diversification of investment.

Research Objectives and Significance

The aim of this study is to investigate cointegration of Pakistan Islamic funds with regional Islamic funds and domestic stock markets.

Overall, this paper has great significance as it intends to contribute the literature by filling the gap by extending from the previous literature regarding diversification benefits between conventional investment to Islamic investment as the market of Islamic investment is gaining more popularity. The study is useful for policy makers in making diversification decision related to Islamic investment as it identifies the correlations between the Pakistan's Islamic funds returns and the global Islamic funds returns that is MENA, Asia, North America and Europe (Masih, 2016). As an additional input, we also tested the integration Pakistan Islamic funds with the domestic Islamic and conventional stock market. In short, the study intends to fulfil the needs of Islamic investors who want to diversify their portfolios with respect to the different regions around the world considering both the shariah compliance and less dependency of returns previously ignored.

Research Questions

1. To what extent Islamic fund investments of Pakistan are correlated with different regional Islamic funds (MENA, Asia, North America, and Europe) of the world?
2. To what extent Islamic fund investments of Pakistan are correlated with global Islamic funds of the world?

3. To what extent Islamic fund investments of Pakistan are affected by Pakistan conventional and Islamic stock market?

Literature Review

Global diversification in investment management can help in gaining greater returns if different markets are not or low correlated. For a brief preview of subject matter combination of a few related type of researches is provided below to give readers a brief review of market integration.

International portfolio diversification

The connection between stock market linkages with globalization frequently is studied both theoretically and empirically. A substantial interest also exists among academics and policy-makers on the effects of the integration of stock markets regionally and internationally (Narayan P. B., 2016). (Yusof, 2014), investigated international diversification by examining the co-integration among regional Islamic funds and by estimating long-term structural and short-term dynamics of these funds. The long-run relationships among these funds are tested using autoregressive distributed lag (ARDL) approach and results confirmed that diversification could help reduce risk if Asia Pacific Islamic funds and MENA region Islamic funds are invested at the same time. Contracted to this Europe and North American funds are vastly co-integrated in both the short and long run. (Deepika Goel, 2013) Emphasized that higher risk-adjusted return can be achieved in an internationally diversified portfolio an investor opt for. The finding confirms that different countries' stock returns are considerably independent, this shows that international diversification can help in attaining large gains. Compare to domestic stocks portfolio, internationally diversified portfolios do certainly provide evidence to have lesser volatility than portfolios of domestic stocks. Of-course in terms of risk, there is

a risk associated with changes in the exchange rate exist in international diversify portfolio. The benefits from global diversification indeed out-weight the cost and risk associated, the unfamiliarity with the environment in the foreign countries and various measures of exchange control adopted by the governments are matter of concern. It is seen that despite no hedging of exchange rate risk, lower volatility compare to domestically diversified portfolio exist. (Trichilli, 2015) Investigated integration between developed and emerging Islamic stock markets. Multivariate cointegration test has been employed, the finding indicated the presence of relationship in long-run amongst Islamic stock markets of related economic group. Whereas, it was also revealed that Islamic stock markets are partially segmented among different economic grouping. The research was undertaken Vector Error Correction analysis to estimate empirical results. In short run, lowest level of integration is identified among European-Asian emerging markets, MENA-Latin American and European-Latin American Islamic stock markets. Moreover mainly during periods characterized by financial crises, the level of integration and causality relations among Islamic stock markets have a propensity to modify over the period of time. The research concluded that Shariah-compliant stocks might perhaps offer potential diversification benefits unless developed and emerging countries are considered accordingly.

(Campbell, 1992) shows that the US and Japan stock markets are perfectly integrated. (De Jong, 2005) Examine the integration of emerging stock markets with the world market. They develop a factor asset pricing model and find that emerging stock markets are less segmented from world stock markets. Moreover, the integration with the world tends to decrease the cost of capital. Hunter, (2006) investigates the interdependence among three Latin American markets: Argentina, Chile and Mexico using a multivariate GARCH-in-Mean asset-pricing model. Empirical results suggest that after

liberalization those markets have not become integrated into the world equity market. Imam, (2013) show that economic integration between developed and Middle Eastern countries constitutes a factor that contributes to the development of the Islamic finance system. Saiti (2014) investigate whether Islamic stock indices provide potential diversification benefits for the US-based investors. Using the DCC- GARCH model, they found that the Islamic indices offer better diversification opportunity compared to the Far East countries. The second approach examines the correlation coefficients among stock markets over a certain period. Highly correlation coefficients provide evidence that stock markets are integrated. In this sense, Chelley-Steeley (2005) examines the market relationships among several equity markets of Eastern Europe. He models the movement of bivariate equity market correlations as a smooth transition trend. Results show that Hungary is the country which is becoming quickly integrated. Johnson and Soenen (2002) analyzed the equity market co-movements between the Japanese stock market and other twelve equity markets in Asia. Also, they examine the factors that affect economic integration. They conclude that the equity markets of Malaysia, New Zealand, China, Australia, Singapore and Hong Kong are highly integrated with the stock market in Japan. Majdoub, (2013) investigate the volatility spillovers between the US stock market and five Islamic emerging stock markets. By considering three multivariate GARCH models named BEKK, CCC, and DCC, they find that the US and Islamic emerging equity markets are weakly correlated over time. Abd Majid (2005) studies the interrelationships among the Asian, Japanese and US stock markets. Results of this study suggest that the stock markets in the Asian region are highly integrated among them and with the Japanese and US stock markets. Rangvid (2001) examine the degree of stock market integration among France, Germany, and the UK during the period 1960e1999. They find that the three major

European stock markets have been increasingly integrated in 1990s. This finding has been confirmed by Erdinc and Milla (2009).

Germany and United Kingdom are co integrated with the world capital market and with each others'. Recently, Abd Majid and Haj Kassim (2010) examine the integration among five Islamic stock markets Malaysia, Indonesia, Japan, the UK and US. They find that investors can gain benefits by diversifying in the Islamic stock markets among economic grouping such as developed and developing markets. Abdul Karim, Akila Mohd. Kassim, & Affendy Arip (2010) investigate the effects of the global financial crisis on the integration and co-movements of Islamic stock markets. They use cointegration techniques over the period spanning from February 15, 2006 to December 31, 2008. Empirical results provide the absence of cointegration among the Islamic stock markets in both periods. Therefore, there is no influence of the 2007 subprime crisis on the long-run co-movements among the Islamic stock markets. Use the VAR estimation technique to study the integration among Islamic stock markets in Malaysia, Indonesia and World. They show that there is no co-integration relationship between these Islamic indices implying that the Malaysian Islamic stock markets constitute a profitable destination for both local and international investors to diversify their Islamic investment portfolios. Using a misspecification-robust causality-in-variance test, (Tasdemir, M., & Yalama, A, 2014) study the volatility transmission between the Turkish and Brazilian stock markets. They found that financial crises add an additional channel of volatility transmission from Turkey to Brazil which increases the volatility spillovers between the two markets.

International diversification benefits vary in time

One of the many studies regarding this issue was carried out by Paramati, (2012) which investigated whether foreign trade

matters for the stock markets integration by segmenting Australian trade partners into three groups based on bilateral trade relations. Asymmetric generalized DCC-MGARCH models were employed to examine the time-varying correlations of pairwise stock market returns. Results from the AGDCC-GARCH model revealed that during crisis periods, correlations were time-varying and significantly increased. Findings then confirm that foreign trade intensity does matter for stock market integration which may have implications for investors in their portfolio selection process to obtain benefits of diversification (Ibrahim, 2015). Celik, (2012) also applied the M-GARCH DCC model but not the asymmetric version of it to test the existence of financial contagion between foreign exchange markets of several emerging and developed countries during the United States subprime crisis. Findings show that there was contagion effect during the US subprime crisis for most of the developed and emerging countries but most of the effect was directed towards the emerging countries. Again, findings from this study will be of interest to international investors and portfolio managers since the level of correlations between the markets will affect the portfolio diversification benefits (Narayan P. B., 2016). Similarly, (Aloui, 2014) examined the short term and long term dependencies between stock market returns for the Gulf Cooperation Council (GCC) countries which was based on wavelet squared coherence which allows co-movements in time frequency spaces to be assessed. Results of the study revealed that the linkage among the GCC stock markets during the financial crisis increased and the portfolio benefits for short term investors were enhanced relative to the long-term investors which faced reduced diversification benefits. Reboredo, (2014) examined the connection between oil price and European stock markets returns by decomposing original time series through wavelet to characterize the connection at different time scales which can reveal the interdependence between stock prices and oil prices

and together with analyzing the oil lead and lag effects on stock prices through wavelet cross correlation. Findings of this study reveal that during the crisis period, oil price led exchange rates but this is not the case during post crisis periods and contagion and interdependence was discovered after the crisis that happened at the aggregate and sectorial levels. Therefore, oil price lead stock prices and vice versa for higher frequencies after the onset of the financial crisis (Reboredo J. R.-C., 2013). Interestingly, the methodology of CWT and MODWT can be combined together in a study in order to test for robustness of the results which was done by (Tiwari, 2013) to investigate the inflation output gap relationship in France. Through the MODWT analysis, the short- and medium-term fluctuations of both variables tend to be more correlated, while the CWT analysis states that the output gap leads inflation in short and medium run. In brief, both methodologies demonstrate that the output gap represents a good predictor of the inflation in the short and medium run.

Methodology

Data and data sources

The study uses monthly closing index prices and returns during the period from Jan 2009 to Dec 2018 which consisted of 120 observations extracted from the website of Mutual fund association of Pakistan, investing.com and Eureka hedge. For the purpose of Pakistan Islamic funds' returns the study uses average monthly returns of all the Islamic funds available on Mufap website. Moreover, for the Pakistan stock market, KSE 100 index and KMI 30 index are selected as a proxy of conventional and Islamic stock market. The data for regional and global Islamic funds' returns were taken from Eureka hedge database, which is the world largest Islamic fund database. There are more than 260 Islamic funds in this database. The regional Indexes selected are, Europe, MENA

(The Middle East and North Africa), North America and the Asia Pacific that is a good illustration of the global Islamic fund industry.

The reason behind choosing monthly data was to avoid false correlation problem usually incur in quarterly and annual data. While not compromising on the availability of data, daily data contains too much noise that is why it was avoided as it and this kind of data is also affected by the day of the week effect. In examining Islamic investments co-movement across regions and domestically missing observations was the significant difficulty which arises. This study overcomes missing observation problem by adopting the Occam's razor method by taken previous day price. This method is justified as any information about stock market on bank holidays is the information of the previous day over to the succeeding day (Searat Ali, 2011).

Statistical Technique and Analysis

This study considered statistical techniques after reviewing previous literature to investigate Islamic investments integration. Initially, after extracting monthly closing index prices of the selected Islamic fund indices from the period Jan 2009 to Dec 2018, returns during the study period were calculated as the logarithmic difference between the two consecutive prices. Later on, to find out the basic properties of the data, descriptive analyses were performed.

Test of stationarity

Data nonstationary issues usually found in financial time series data analysis. Using non stationary time series for regression and drive any statistical inference from this data is uncertain and doubtful (Liu, 2008). Two most widely used tests for testing whether the series are stationary or not are, Augmented Dickey and Fuller (ADF) and the Philips-Perron (PP). ADF statistics were chosen over PP test for the reason that it measured

superior for time series with autoregressive composition and more consistent since it makes certain white noise residuals in the regression. The first step includes employing Augmented Dickey-Fuller Statistics (ADF) by testing variables for unit root to establish the order of integration. For all funds' indexes ADF test, was applied both at log level and first difference. Unit root of all data series at their log level i.e. non-stationary and first differenced i.e stationary. The significance of all data series at log level and difference level were checked. ADF statistics should be significant for all variables at first difference and it will conclude that whether time series under study were integrated to the order I (Searat Ali, 2011).

Cointegration test

In line with the objective of understanding the integration among the selected Islamic funds and domestic stock market, we examine this co-integration by applying Johansen and Juselius (1990) cointegration test. Although all the market indexes were individually non-stationary, their linear grouping might be stationary. It is the most popular and suitable technique to examine long run relationship between variables having big number of observations. The cointegration test in the study is based on two tests, Trace test and Eigen value test (Khalil Jebran, 2017).

Granger Causality test

The last step in statistical analysis is the Granger causality test. To trace causal linkages between the regional, global and domestic Islamic funds, this study applies Granger causality method between the return series of the different indexes. Granger causality test check variables cause and effect with each other. This examination essentially states which variable effect to which variable and which are just cause. This test can help in finding out the relation between our variables varies

easily so that we can better understand them. (Khalil Jebran, 2017).

Result and Discussion

Descriptive statistics

Table 1

Funds/Indexes	Mean	Min	Max	Standard Deviation
Pakistan Islamic Funds	0.024838	-0.031211	0.084011	0.024875
Europe Islamic Funds	0.004011	-0.038771	0.042209	0.013386
Global Islamic Funds	0.003691	-0.048686	0.052838	0.020812
North America Islamic Funds	0.008481	-0.093517	0.100876	0.025623
Asia Pacific Islamic Funds	0.004762	-0.053305	0.066851	0.017595
MENA Islamic Funds	0.002894	-0.081088	0.062934	0.024296
Pakistan Conventional Stock Market	0.015364	-0.111655	0.180467	0.052676
Pakistan Islamic Stock Market	0.016184	-0.127185	0.135471	0.049341

In order to explore the basis characteristics of the data, descriptive analysis was performed. All the original time series were transformed taking logarithmic difference except for Pakistan Islamic funds, as the data is originally in transform form which is monthly returns. Table 2 presents the descriptive statistics of time series data, standard deviation, min and max.
Summary of descriptive statistics of the different regional Islamic funds and Pakistan stock market returns are presented in Table 1. During 10-year period from 2009 to 2018, among different regional Islamic funds which earned positive return Pakistan's Islamic funds earned highest average monthly return of 0.024838, followed by North America Islamic funds 0.008481, Asia Pacific Islamic funds 0.004762, Europe Islamic funds 0.004011, Global Islamic funds 0.003691 and MENA Islamic Funds 0.002894. In addition to this among the two Pakistan stock markets, Islamic stock market earned highest average monthly return of 0.016184, followed by conventional stock market 0.015364. However, it is observed that among the funds that earned maximum average monthly return North America Islamic funds reported the highest 0.100876, followed

by Pakistan Islamic funds 0.084011, Asia Pacific Islamic funds 0.066851, MENA Islamic Funds 0.062934, Global Islamic funds 0.052838 and Europe Islamic funds 0.042209. In addition to this among the two Pakistan stock markets, conventional stock market earned highest average monthly return of 0.180467, followed by Islamic stock market 0.135471.

Furthermore, the result clearly indicates that Pakistan Islamic funds had the highest returns among all the Islamic funds validate the theory of finance (riskier the market, higher would be the returns). The evidence is supported by standard deviation, where the Pakistan Islamic funds recorded the highest i.e. 0.024875.

Unit Root test

Table 2 presents the results of ADF test. It is apparent that index prices are non-stationary at level as ADF statistics is not significant for all the indexes in terms of p value and critical value. However, after taking first difference of all the indexes the ADF statistics are significant for all the index prices at 5 % level of significance. The results specify that all indexes included are of order one, I (1). Therefore, we can step forward to the cointegration analysis because all the indexes are in the same order as essential for cointegration.

Table 2

Funds/Indexes	**Level**		**1st Difference**	
	Critical Value	P Value	Critical Value	P Value
Europe Islamic Funds	-2.072737	0.5016	-8.315367	0.0000
North America Islamic Funds	-1.032592	0.7400	-11.68580	0.0000
Asia Pacific Islamic Funds	-2.060945	0.0880	-5.624311	0.0000
MENA Islamic Funds	-2.156233	0.2235	-8.858537	0.0000
Global Islamic Funds	-2.225248	0.1986	-11.11403	0.0000
Pakistan Conventional Stock Market	-1.201012	0.6725	-10.72988	0.0000
Pakistan Islamic Stock Market	-1.200683	0.6727	-10.97677	0.0000

*Critical Value at 5% is -2.886074.

Cointegration test

Since the objective of the study is to examine the integration among the selected Islamic funds and domestic stock market, we examine this co-integration by applying Johansen and Juselius (1990) cointegration test. The results of Johansen and Juselius cointegration tests are reported pair wise in Table 3. The test is based on two statistics, the trace statistics and Eigen value. The results reveal that there is no cointegration between Pakistan Islamic funds and Islamic funds of North America, Europe and MENA as trace statistics do not exceeds the critical value at the significance level of 5%. This indicates that there is potential of international portfolio diversification in the Islamic funds of Pakistan for the investors of North America, Europe, MENA and Global Islamic funds. Additionally, the investors of Pakistan can also minimize the risk and take benefit through international portfolio diversification in these Islamic fund markets. These results are similar with the study of (Searat Ali, 2011) who identified that Pakistan stock market has no co-movement with other stock markets of UK and USA. Saidi, (2000) also appealed that there are chances of international portfolio diversification in Pakistan, as the equity markets of USA, UK, France and Germany have no cointegration with the Pakistani market. Thus, the market may offer an attractive opportunity to international investors for diversifying risk. Other studies which provided the evidence of no integration among markets of the world and Pakistan includes the study of (Majdoub, 2013) who examine conditional correlations across the US market and a sample of five Islamic emerging markets, namely Turkey, Indonesia, Pakistan, Qatar, and Malaysia. The estimation results show that the US and Islamic emerging equity markets are weakly correlated over time. Yosuf (2014) identified that international diversification can be beneficial if Asia Pacific, North America, Europe and MENA Islamic funds are invested contemporaneously.

Table 3

Funds/Indexes	Eigen Value	Trace	P Value
Pakistan Islamic Funds-Global Islamic Funds	0.123352	10.13098	0.0041
Pakistan Islamic Funds-Europe Islamic Funds	0.140171	10.88136	0.1048
Pakistan Islamic Funds-Asia Pacific Islamic Funds	0.135959	15.49471	0.0062
Pakistan Islamic Funds-North America Islamic Funds	0.129868	15.03536	0.0585
Pakistan Islamic Funds-MENA Islamic Funds	0.063040	10.14271	0.2699
Pakistan Islamic Funds-Pakistan Conventional Stock market	0.192261	23.77713	0.0023
Pakistan Islamic Funds-Pakistan Islamic Stock market	0.186863	23.90500	0.0022

Note: Critical value at 5% is 15.41, ** means significant at 5%

However, the Islamic funds of Pakistan is co integrated with the Islamic funds of Asia Pacific and global Islamic funds as trace statistics exceeds the critical value at 5 % significance value. This means that the investors of Pakistan cannot minimize risk with the investment in the markets of Asia Pacific region and vice versa. Pakistan is a part of Asia pacific counties therefore it is clear that for co-movement of Islamic fund markets there is a vital role of economic and geographical similarity. Because If the economic structure has no a role in the co-movement, then the Pakistan Islamic funds market should not have co-movement with the Islamic fund of Asia pacific or it should have co-movement with non-similar economic fund markets like USA, Europe and Austria etc. Previous studies which provided related findings of integration between Asian countries and Pakistan includes, (Park, 2013) whose study indicated that in recent years the pace of regional integration of financial markets in Asia's emerging economies has accelerated. Asia's domestic local-currency bond markets integration with their regional and global counterparts is low in terms of integration pace of its equity markets. Present study is further supported by the study of (Anil Perera, 2012), whose findings show that major South Asian financial markets; Bangladesh, India, Pakistan and Sri Lanka are co-integrated in terms of both stock and bond returns. Moreover, the Islamic funds of Pakistan is co integrated with the stock market of

Pakistan both conventional and Islamic as trace statistics exceeds the critical value at 5 % significance value. The result indicate that the Islamic fund investors of Pakistan can be affect by the performance of stock market, as prices and mutual fund returns are tied to the index so theoretically it has a strong positive relationship with them (Siddiqui, 2018).

Granger causality test

The result of Granger causality test is presented in Table 4. The test is based on F-statistics and P value. The result presented in table 4 revealed that there is no causal relationship of Pakistan's Islamic funds with the Islamic funds of North America, MENA, Europe and global Islamic funds. This entail that any variation in Pakistan Islamic fund market does not cause a change in the Islamic fund markets of North America, MENA, Europe and global Islamic funds or any change in the Islamic fund markets of these countries do not lead to change in Pakistan's Islamic funds market. There is causality coming from Asia Pacific Islamic funds to the Islamic funds market of Pakistan. This implies that any change in the returns Asia Pacific Islamic funds can Granger cause the returns of Pakistan Islamic funds. There is also no unidirectional causality between conventional and Islamic stock market of Pakistan to Islamic funds of Pakistan which means that any change in Pakistan's stock market can not affect the returns of Islamic funds in Pakistan.

Table 4

Null Hypothesis	F Statistics	P Value
Pakistan Islamic Funds does not Granger cause Global Islamic Funds	1.37633	0.1938
Global Islamic Funds does not Granger cause Pakistan Islamic Funds	0.31406	0.9851
Pakistan Islamic Funds does not Granger cause Europe Islamic Funds	0.49214	0.9139
Europe Islamic Funds does not Granger cause Pakistan Islamic Funds	1.42097	0.1729
Pakistan Islamic Funds does not Granger cause Asia Pacific	0.22076	0.9970

Islamic Funds		
Asia Pacific Islamic Funds does not Granger cause Pakistan Islamic Funds	1.92401	0.0428
Pakistan Islamic Funds does not Granger cause MENA Islamic Funds	1.37932	0.1923
MENA Islamic Funds does not Granger cause Pakistan Islamic Funds	0.57445	0.8568
Pakistan Islamic Funds does not Granger cause North America Islamic Funds	2.01415	0.8628
North America Islamic Funds does not Granger cause Pakistan Islamic Funds	0.54207	0.8809
Pakistan Islamic Funds does not Granger cause Pakistan Conventional Stock Market	0.53671	0.8847
Pakistan Conventional Stock Market does not Granger cause Pakistan Islamic Funds	1.21513	0.2068
Pakistan Islamic Funds does not Granger cause Pakistan Islamic Stock Market	0.03500	0.4255
Pakistan Islamic Stock Market does not Granger cause Pakistan Islamic Funds	2.17516	0.9990

CONCLUSION

International diversification for Islamic investors is not an easy task as Islamic fund investors are constrained because they can only invest in Sharia-compliant products; therefore, giving up some diversification benefits. Contrary to this a conventional investor is not restricted in terms of his/her choice of funds or investment while diversifying internationally. This study examines the benefit an Islamic investor can get while going beyond domestic Islamic funds and invest globally for diversification. The study uses co-integration approach to test the long-run relationships among different selected funds and use Granger causality to examine the dynamics of the association between these funds. Our analysis suggests that considerable diversification benefits exist among regional funds such as MENA, Europe and North America. However, we find that Asia Pacific funds and Pakistan Islamic funds are co-integrated and therefore diversification benefit is low. Moreover, Islamic fund investors are also affected by the co-movement of both the conventional and Islamic equity market of Pakistan.

The finding of this research is significant for policy makers and investors. Firstly, the evidence and knowledge of the integrations of the markets are important for domestic and international investors for portfolio diversifications. Secondly, the findings may help investors that the Islamic investors, within the limited investment variety of Islamic funds, can benefit from diversification similar to the conventional investor as they can also diversify. These results are also vital, as it provides the way of what action should be carried out by an investor whose goal is to minimize their overall risk while investing in Islamic funds. The ideal diversify portfolio of the Islamic investor will include not only Islamic funds but from different regions. Lastly, the research comprises not only different regional Islamic funds but also a domestic market indicator which can help fund managers predict the behavior of fund and systematic risk of the equity market. Additionally, this analysis validates the promotion of Islamic finance in Pakistan as low correlation across the regional Islamic funds studied will provide better opportunities of investments by local and international investors in diversifying their portfolio and would make Islamic funds more desirable due to their low mutual co-variance.

Limitation and recommendation

The present study has some limitation as usually, by removing the limitation of current work, the future researchers can make benefit. The current research is much general in terms of finding the overall Islamic fund returns integration with the overall Islamic funds of different regions, but in future researcher may research for finding the integration of specific Islamic fund categories like Islamic money market fund, equity fund and asset allocation with the respective funds of these regions. Moreover, the present study uses regions funds as a whole in future the researcher may take different countries funds to deepen the findings of integration. It may also happen

that the results of cointegration vary due to the selection of frequency of observations that can be daily, weekly or monthly. So, the potential area for further research on the issue of cointegration is to use high frequency data (daily, weekly).

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