



Relationship between Macroeconomic Variables and Net Asset Value (NAV) of Islamic Equity Funds: Evidence from Pakistan

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Abstract: Islamic equity funds witnessed high growth in portfolio size, performance, regulations and general acceptability in Pakistan; however it faces issues like insufficient understanding, trends in long term investments, etc. This study aims to investigate the long-run relationship between the chosen macroeconomic factors and the Net Asset Value (NAV) of Islamic Equity funds. This study is based on Vector Auto Regression (VAR) model over the period of ten years from 2005 to 2014. A long-run relationship is found among chosen macroeconomic variables and NAV of Islamic funds in Pakistan capital market.

Keywords: Islamic finance, Islamic equity funds. net asset value. VAR. Pakistan.

1. Introduction

The core essence of Islamic finance is the actual economic activity in the society. It varies with conventional stream of banking and finance in number of ways and mainly relies on the actual trade activity among two or more parties, on the basis of physical possession and transfer of existing goods among the dealing parties, because it does not consider money as a commodity (Ghauri & Masood, *The Rightful Way of Banking*, 2015). Islamic finance provides complete range of alternate financial solutions to the conventional financial products and services, though Islamic financial products have limitations due to its based jurisprudence (Ghauri & Ramzan, *Islamic Banking: The Philosophy and Fundamentals*, 2012). Islamic funds comprises of sukuk, REITs (real estate), commodity funds, etc. rather based on simple debt agreement among two parties (Ghauri S. M., *Sukuk - the Islamic Bonds: Risks and Challenges*, 2012). Islamic funds yield lucrative returns (Ghauri & Masood, *The Rightful Way of Banking*, 2015) and higher spread (Ghauri & Qambar, 2012) as compared to conventional ones. The technical challenge faced by Islamic funds is the calibration with the defined standards (Ghauri, Zaidi, Shah, & Ashraf, 2015).

The Islamic funds generate from the pool of various investors for a specific purpose of investment. Pooled funds are then, invested in a way it was pre-agreed among investors. Whether the funds are pooled for any transaction like takaful, equity funds, investment funds, etc. the basic thumb rule is profit and loss sharing. Difference comes in the structure of funds pool and its management. Different economies have structured these funds with bit differences to operate its basic idea. These funds are either assets based, or on the basis of ventures. Islamic finance urges the economic value addition concept where business venture or assets is the base of financial product (Ghauri & Masood, *The Rightful Way of Banking*, 2015).



Pakistan's financial system is in a transitional phase of conversion from conventional to Islamic. So far Islamic finance has taken over more than 10% proportion to the financial base. Objective of this paper is to ascertain the relationship between the macroeconomic variables and Islamic funds operated in Pakistan, which has not been explored earlier. A similar study was conducted in Malaysia where relationship of macroeconomic variables was studied with Islamic equity funds (Othman, Kameel, & Aziz, 2015). To achieve the stated objectives, the study aims to answer the following research questions:

1. Do the chosen macroeconomic variables share long-run relationship with the NAV of the Islamic equity unit trust funds in Pakistan?
2. Does the global financial crisis give significant impact in the long-run on the NAV of the Islamic equity unit trust funds in Pakistan?

Section 2 of the paper is related with literature review regarding our research, section 3 is related to methodology applied for research, section 4 is related to collection of data for conducting research, section 5 is related to empirical analysis, and finally section 6 concludes the findings and suggests recommendations for the research problem.

2. Literature review

It has been observed that macroeconomic and fiscal fluctuations further impact on the growth and output of funds and financial sectors. Economic segments are interlinked with each other and establish a cobweb interlinking relationship among all segments. When, one sector fluctuates, it affects rest, and resultantly impact on the financial sector. Sims (1992) tested the disequilibrium theory on France, Germany, Japan and UK and found interest rate shocks consistently effect prices, and monetary contraction reduces aggregate demand, thus lowering the output, and affecting the return on equity funds (Sims, 1992). Research in financial economics is generally based on the dependency and relationship of macroeconomic variables on the dependent variable. Common macroeconomic variables that influence the funds are inflation, economic growth, investment, money supply, and the foreign exchange (Masood & Ashraf, 2012) (Othman, Kameel, & Aziz, 2015).

Islamic Equity Funds: Islamic finance is based on real time assets and business ventures. Islamic economic system considers three factors of production: land, labor and entrepreneurship. Main difference with capitalism or socialism is that it considers entrepreneurship and capital owner as a same factor of production (Ghauri & Ramzan, *Islamic Banking: The Philosophy and Fundamentals*, 2012). Pricing of Islamic funds is based on the benchmark which is contemporarily based on a conventional standard. A long debate exists over the consideration of conventional benchmark for Islamic products pricing, or not (Ghauri S. M., *Why interest-rate cannot benchmark for Islamic financial product pricing?*, 2013).

Monetary policy and Stock Returns: Subhani & Osman (2011) examined that monetary shocks ($\Delta M2$) and fluctuations in share prices (ΔY_{t-k}) by using unit root test on time series for 12 years, and found the interrelationship of both (Subhani & Osman, 2011). Mustafa, Ahmed & Siddiqui (2013) revealed that increase in stock price attracts the equities to investors as compared to other assets; thus result a shift from money market to equity market. Money supply does not determine the stock price in long run. However, during the short run, broad money M2 has significant causal effect on stock prices. Thus stock market, in the long run, is inefficient with respect to money supply. Moreover, income and interest rate do affect the stock prices, which suggest that tight monetary policy may be used more effectively to check the movement in stock prices (Mustafa, Ahmed, & Siddiqui, 2013). Seong (2013) revealed short run and long run linkages between monetary policy instruments and Singapore stock exchange (Seong, 2013). MacFarlane & West (2013) examined that whether macroeconomic variables drive future stock market returns in South Africa. Where such a relationship can be found,



the macroeconomic variables are useful predictive information for future equity index returns. Data was examined over the 45 year period from 1965 to 2010. The macroeconomic variables were selected based on international and local precedent of influential macroeconomic factors. Through the use of Johansen multivariate cointegration, Granger causality and innovation accounting, it was found that the selected South African macroeconomic variables do not significantly influence future FTSE/JSE All Share Index returns (MacFarlane & West, 2013).

Herwartz & Kholodilin (2014) studied country-specific chronologies of price bubbles for 10 OECD economies, by means of alternative filter approaches, and found that financial ratios are more informative in comparison with monetary aggregates, macroeconomic processes or stock return characteristics. They found that stock market returns lagged by one or two quarters carry specific ex ante content, and suggested that instances or periods of excess asset pricing, might be the result of some heterogeneous coincidence of monetary or macroeconomic states, stock market or capital valuation characteristics (Herwartz & Kholodilin, 2014). Choi and Yoon (2015) examined the potential relationships between changes in the money supplies of Korea and the United States and volatility of the Korean stock market using the GARCH, GJR-GARCH, and EGARCH models. They found that the asymmetric effect of bad news on volatility was higher when contemporaneous changes in Korean and US money supply variables were included in the models. It reveals that changes in money supply did not affect Korean stock volatility directly. Finally, the results based on a variance model indicated that the money supply of the two countries had no effect on the Korean stock market. This formal study suggests that there is no significant forecasting power of past changes in money supply. Although stock returns and volatility are not directly affected by changes in the money supply, the influence of supply on macroeconomic activity should not be disregarded (Choi & Yoon, 2015).

Economic consequences into Equity funds: Ernst & Koziol (2009) provide a theoretical foundation for the controversial debate about the economic consequences of private equity transactions by applying simple model framework of comparing both the maximum acquisition prices of private equity investors. They compared both the maximum acquisition prices of private equity and standard investors for the takeover of a target firm as well as the subsequent optimal investment volumes, and found that higher target return, investment perspective, risk aversion or operational improvements do not explain an inefficient behavior by private equity firms, but a high amount of leverage and informational advantages of private equity firms can result in inefficient outcomes (Ernst & Koziol, 2009).

Foreign Exchange and Equity Funds: Bekaert & Hodrick (1992) characterized excess rate of return on major equity and foreign exchange markets using lagged excess returns, dividend yields and forward premium through Vector auto regression (VAR). They found that nominal foreign money markets and stock markets jointly impact on equity returns (Bekaert & Hodrick, 1992). Hau & Rey (2006) developed an equilibrium model in which exchange rates, stock prices, and capital flows are jointly determined under incomplete foreign exchange risk trading. Higher returns in the home equity market relative to the foreign equity market are associated with home currency depreciation. Net equity flows into the foreign market are positively correlated with a foreign currency appreciation. They observed that exchange rate dynamics is indeed related to equity market development (Hau & Rey, 2006).

3. Model application and Data collection

Vector Auto Regressions (VAR) model is applied to test the hypothesis. Similar model was used by Othman et al. (2015) while their study on relationship between macroeconomic variables and Islamic equity unit trust funds in Malaysia (Othman, Kameel, & Aziz, 2015). Based on literature review and



the theory of assets pricing, the proposed model established to explain the estimated behaviors of Net Assets Value (NAV) of Islamic funds as illustrated below.

$$Y = \alpha + \beta_1(\text{CPI}) + \beta_2(\text{TBR}) + \beta_3(\text{M3}) + \beta_4(\text{FER}) + \varepsilon$$

Whereby:

| | | |
|-----|---------|------------------------------|
| Y | denotes | NAV of Islamic funds |
| CPI | denotes | Consumer Price Index |
| TBR | denotes | 3 months Treasury Bills Rate |
| M3 | denotes | Money Supply, and |
| FER | denotes | Foreign Exchange Rate |

Whereas α , β and ε are coefficient intercepts (slope of the dependent variable), coefficients of the independent variables the error term, respectively. Multivariate VAR is used, in which multivariate time-series regression of each dependent variable on lags of itself and on lags of all other dependent variables. It also fits a variant of VAR models known as VARX model, which also includes exogenous variables.

Net Assets Value (NAV) of Islamic Equity funds is extracted by mean of top 14 shariah compliant open ended funds. Return on all of these selected funds is on annualized basis. NAV of these open ended shariah based funds is from Mutual Funds Association of Pakistan. Rest of the macroeconomic variables data is extracted from the reliable sources of The World Bank dataset. Consumer Price Index (CPI) is based on the value of 2010. For lending rate, risk premium is selected, which is valued by subtracting Treasury bill rate from lending rate. Real Effective exchange rate is taken from PKR to US dollars. Selected data is taken for ten years, from 2005 to 2014.

4. Empirical analysis

All the obtained data is analyzed by using Stata version 13. Table 1 reflects the output generated by Stata through VARX (Multivariate Autoregressive) Model by data setting on yearly basis. NAV of Islamic funds is endogenous variable while all other variables are set as exogenous ones. Resultantly, we applied VARX on these variables to analyze the relationship of macroeconomic variables with NAV of funds. Thus, it is observed that sample was taken from the year 2006 to 2014 (i.e. 9 years), and log likelihood is -16.60755. Further, coefficients of lag1 of NAV of funds valued .4688729, and lag2 as 1.591468, p-value above |Z| is 0.087 for lag1 to 0.038 for lag2. Similarly, the coefficients of CPI and TBR are .2136096 and 4.275019 respectively, but -.7933376 for FER. However, p-value above |Z| are 2.44, 2.63 and -1.90.

Table-1: VARX analysis of variables

| Vector autoregression | | | | | | |
|-----------------------|-------------|------------|--------|----------|----------------------|----------|
| Sample: | 2006 - 2014 | No. of obs | = | 9 | | |
| Log likelihood | = -16.60755 | AIC | = | 5.023899 | | |
| FPE | = 11.72973 | BQIC | = | 4.740159 | | |
| Det(Sigma_ml) | = 2.345946 | SBIC | = | 5.155382 | | |
| Equation | Parms | RMSE | R-sq | chi2 | P>chi2 | |
| NAV_funds | 6 | 2.65289 | 0.5915 | 13.03327 | 0.0231 | |
| NAV_funds | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] | |
| NAV_funds | | | | | | |
| L1. | .4688729 | .2737948 | 1.71 | 0.087 | -.067755 | 1.005501 |
| L2. | 1.591468 | .7679648 | 2.07 | 0.038 | .086285 | 3.096652 |
| CPI | .2136096 | .0876058 | 2.44 | 0.015 | .0419054 | .3853138 |
| TBR | 4.275019 | 1.626055 | 2.63 | 0.009 | 1.08801 | 7.462027 |
| FER | -.7933376 | .418371 | -1.90 | 0.058 | -1.61333 | .0266545 |
| _cons | -56.74323 | 60.1781 | -0.94 | 0.346 | -174.6901 | 61.20367 |



The analysis of above table reflects that FER is conversely related with NAV-funds whereas all other variables are divergently correlated.

5. Conclusion and recommendations

The purpose of this study was to investigate the long-run relationship between chosen macroeconomic variables and the NAV of Islamic funds operated in Pakistan. The major finding of the study indicated that NAV of Islamic funds cointegrated with chosen macroeconomic variables, which suggested direct long-run equilibrium association with those variables. In particular, normalizing the cointegrating vector in the system on the NOV of Islamic funds will increase awareness and knowledge of these relationships with Islamic equity markets, thus local and international investors would be able to enhance their long-term investment decisions since the finding provides them the necessary information on the trends and prospects of different economies' indices and their sign effect on the funds' performance. Possible extension of the macro level analysis is to consider the impacts of other information from the public sector, such as, the government's spending and tax policy as well as the Gross Domestic Product (GDP).

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