THE ROLE OF RISK AND MACROECONOMIC ENVIRONMENT ON STOCK RETURNS: EVIDENCE FROM BANKING SECTOR OF PAKISTAN

Tazeen Arsalan[1] and Misbah Iqbal[2]

Abstract

Performance of efficient stock market is dependent upon company's risk as well as macroeconomic factors. The research inspects the association of stock returns with risk and macroeconomic factors for the period of 2005-2015. All private commercial banks operating in Pakistan during this period were taken in the study. The study used key macroeconomic factors namely, inflation, exchange rate, money supply, interest rates and foreign direct investment. The research adopts quantitative methodology and employed pooled OLS, random and fixed effect model specifications. For a given sample, our findings indicate that stock returns are significantly influenced by risk and all macroeconomic factors except exchange rate. Additionally, we also found risk, money supply and foreign direct investment had a direct relationship with stock returns while inflation, GDP and exchange rate showed negative association with banking sector returns.

Keywords: Stock Returns, GDP, Inflation, Exchange Rate, Risk.

JEL Classification: G210

Introduction

Financial instruments with competitive price are an important aspect of financial markets (Amadeo, 2016). Money and capital markets are two broad categories of financial markets. Capital market has an important role in the economy. It not only provides a platform which connects savers and investors but also plays an essential role towards economic growth, savings and investments. This is accomplished by making security prices efficient and logical and helping investors in reaping profits (Börsenwissen, 2013). This creates importance for capitaland other financial instruments markets.

One of the major economic indicators of a country is stock market performance. It plays a

[1]Institute of Business Management (IoBM), Karachi, Pakistan. Email:tazeen.arsalan@iobm.edu.pk
[2]Institute of Business Management (IoBM), Karachi, Pakistan. Email: misbah.iqbal@iobm.edu.pk

dual role of creating investment opportunities for investors and simultaneously providing solution to corporations for raising capital. The first stock exchange in Pakistan was established in 1947 in Karachi. The second stock exchange was named as LSE (Lahore stock exchange) which was established in 1970 while third stock exchange was established in 1992 in Islamabad. To make stock market more efficient and less speculative all the three stock exchanges were demutualized in 1992.

In 2017, the regulatory authority established a three floor stock exchange namely, Pakistan stock exchange (PSX) which has more than 554 listed companies. Pakistan's capital market succeeded in achieving high performance despite facing massive challenges.The phenomenal performance of Pakistan stock exchange is due to multiple economic and political factors (Poornima, 2016). It was acknowledged as Asia's best performing stock exchange and world's fifth best performing stock exchange.

Investor base in Pakistan is very limited as compared with other developing countries. Even the extraordinary performance was Pakistan stock exchange was not able to increase the investor base in Pakistan. The possible reason could be the investor's reluctance originating from less awareness about the risk and return on stock exchange.Based on the efficient market hypothesis (EMH), the stock prices are logical as investors only make investments based on facts. It also stipulates that number of optimistic investors are same as number of pessimistic investors. Multiple empirical researches prove that stock prices as dependent on economic indicators including micro as well as macro factors (Pilinkus, 2009). The relationship betweenmacro-economic factors and stock exchange is associated with the nature of the market. The macro economic factors which directly influences stock market performance includes money supply, stock prices of other countries, interest rates, enterprise performance, exchange rates, GDP, current account etc. (Kurihara, 2006).Asian stock markets mostly are inefficient and therefore many studies pointed out that macroeconomic indicatordo not have a significant impact on stock performance.

According to the capital asset pricing model (CAPM), it claims that there is a direct relationship between risk and return. This signifies that an investor is more concerned for high returns in a risky security. Investment is only made by investors if higher risk results in higher returns. Past studies also argued thata directly relationship between risk and return can be established in the context of efficient markets (Pal, 2011).

Commercial banks can only endure adverse economic conditions only if they are highly efficient and productive (Amadeo, 2016). In the last few years Pakistan's banking industry witnessed substantial growth. It was one of the largest contributors to GDP. The industry is classified by central bank under public, private, foreign, specialized and Islamic banks in State Bank of Pakistan, 2016. The maximum number of banks falls under private bank's category with seventeen private banks among thirty nine total numbers of banks in Pakistan.These private banks contribute more in terms of taxes as

well as revenues than other categories of banking sector. A flourishing banking sector is significant for Pakistan as advancement in the banking sector directly results in economic development. A flourishing bank sector is able to lend money which can result in successful businesses leading to reduction in balance of payment.

A developed and efficient stock market provides various opportunities for investors as well as corporations. It biggest advantage is that it provides investment avenues for small investors and equity based opportunities for corporations to raise capital. These advantages has positive economic impact (Hussain, 2016). Conventional finance established relationship of risk and return but researchers still argue regarding the relationship of systematic risk and return. This research tries to study the impact of systematic risk arising from macro-economic factors on return.

Literature Review

Numbers of researchers explored the relationship among the different factors, affecting the expected returns using the Asset Pricing Model (APM). In 1960's, following the principles of Fama (1973),different models were developed for the estimation of stock returns by(Geetha, 2011). The study of Sharpe explored the relationship of market returns, unsystematic risk (beta) and stock returns. Some additional studies were also investigated by different researchers on CAPM model(Fama, 1973).

Pal (2011) studied five different sectors including pharmaceutical, infrastructure. Information technology, banks and automobile industry for the assessment of risk and return factors. Two years data of 2013 and 2014 were collected from 3 listed companies from CNX100 index. Return calculation made through ROA, while risk was calculated by beta. Statistical tools applied for the study were, correlation, standard deviation and sharp ratio. The conclusion extracted that inconsistent performance showed by all sectors whereas, no relationship found between the variables of returns and systematic risk.

Wickremasinghe (2011) studied five selected sectors of Indian economy and used a sample data from 2010 to 2014 on risk and return. The sampledata comprised of automobile, banking, pharma, FMCG and information technology (IT). From each of the sectors, on the basis of judgmental sampling five different companies were again selected. Standard deviation and variance were calculated along with Risk assessment. The result explored that long term investment generated more returns for investors instead of short term investment. It is also found that sectors of (IT), FMCG and pharmaceutical gave more returns than automobile and banking sector.

Anwar (2011) presented a comparative analysis between risk and return for banking and non-banking equity. For performance measurement, 8 Banking Companies, listed on Bankex was selected as study sample over a period of July 2012 to December 2012. Descriptive and t-test statistical tools were applied for the analysis of the results. The results explored no significant changes of returns in

banking and non-banking equity firms.

Another study from Mahedi (2012), found a long and short run association between macro-economic such as interest rates, consumer price index (CPI), money supply, industrial productions, exchange rates and stock returns in United Kingdom and Germany. The study used a sample data from 1999 to 2011. The study employed various statistical tools namely, co-integration, impulse response functions, error correction model and variance decomposition method. The results concluded that there exist a causal relationship between macro-economic factors and stock prices. Results obtained from co-integration tests suggest that the German and United Kingdom stock returns are co-integrated with the macro economic factors in the long run.

Pal (2011) assessed the relationship between stock returns and macroeconomic variables in India over a sample period of 1991 to 2008. The study explored the positive relationship between exchange rate and stock returns. However, inflation, interest rates and money supply showed negative association with the stock returns.

Wickremasinghe (2011) investigated the relationship between macroeconomic variables and stock prices. Five different companies were selected, which were listed on Columbian Stock Exchange. The variables of macroeconomic chosen for the study were interest rate, exchange rate, balance of payment, GDP and inflation. The researcher applied the correlation and regression test for the statistical analysis. The results depicted the estimation of regression model and established positive relationship among the variables of stock prices, GDP, exchange rate and interest rates. The results also concluded negative relationship found between stock price and inflation and insignificant with balance of payment.

Geeta (2011) explored the connections of unexpected inflation rate, expected inflation rate, exchange rate, GDP and stock market for three countries of United States, China and Malaysia. The research tested the long run relationship through co-integration test and short-run relationship by using the VECM. The study explored that macro-economic variables and stock returns showed the long run co-integration, while in the short run insignificant relationship existed between macro-economic variables and stock returns.

Mahedi (2012) explored the relationship of stock returns, micro and macro-economic variables in Bangladesh on monthly data taken from the time frame of 2002 to 2009. He tested multivariate regression model on the variables of foreign remittances, price to earnings ratio, inflation, growth in market capitalization and stock returns. The study explored the positive relationship of P Ratio and growth market on stock returns while negative influence of foreign remittance and inflation stock returns.

Kyereboah-Coleman(2008) examined the influence of industrial production and interest rate

on stock prices in Vietnam. Seven years data from January 2001 to April 2008 collected for ordinary least square regression analysis. The study confirmed that tested variables have a positive influence of interest rates and industrial production on stock returns. The study also concluded that significance of industrial production is more on stock returns than the interest rates.

Kurihara(2006) investigated the relationships of stock returns and macro-economic variables. The research was based on quarterly data taken from Ghana Stock Exchange for the time period 1991 to 2005. The research tested the error correction model techniques and co-integration. The study resolved that inflation, exchange rate and deposit rate have a negative influence on returns of stock. The study also concluded that investment shifts were due to the increase of exchange rate and increase in deposit rate, while increase of inflation rate firstly decreases the saving which subsequently decreases the investments in stocks market.

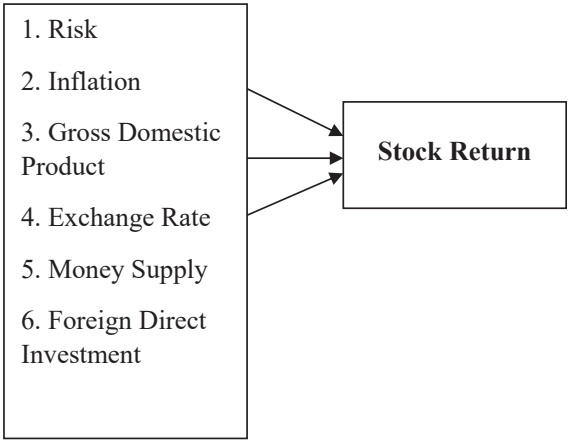

Figure 1: Theoretical Framework - Banking Industry

Hypotheses

Following hypothesis are tested for the current study:

H1: Impact between Risk and Stock Returns has exist positive relationships.
H2: Impact betweenExchange Rate (ER) and Stock Returns has exist positive relationships.
H3: ImpactbetweenInflation and Stock Returnshas exist positive relationships.
H4: Foreign Direct Investment (FDI) and Stock Returnshas exist positive relationships.
H5: Money Supply (MS) and Stock Returnshas exist positive relationships.
H6: GDP(GDP) and Stock Returnshas exist positive relationships.

Methodology

The current research is quantitative in nature. The research is based on secondary data collected from all 12 banks of the Pakistani banking sector, operating since 2002 for the period of eleven years from 2005-2015.Statistical analytical tool of Regression analysis was applied for Model fitness followed by the Descriptive Analysis of all variables used for the study.

Regression Model:

$$Yt = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_4 t + \beta_5 X_5 t + \beta_6 X_6 t + ut$$

Regression Equation:

Stock Returns = f (Risk, inflation, money supply, foreign exchange rate, foreign direct investment)

To find the relationship of risk and return, regression analysis tested by pooled, fixed and random basis. For the assessment of reliability of the results between pooled and fixed effect regression, F-test was used. To assess biasness and reliability of pooled and random effect regression, the Breush Pagan (LM Test) was also applied. All the data analysis was done through Stata software. World Bank was the data source for the collection of yearly Macroeconomic data, whereas risk data denoted by beta was gathered from Bloomberg.

Returns of the stock were calculated through CAPM model using the following equation:

$$\text{Expected Return} = Rf + \beta\,(Rm - Rf)$$

Where; Rf is risk free rate

β =beta

Rm=Market rate

Rf= Risk free rate

Definitions of Variables:

Risk

Risk is denoted by Beta, which is a volatility of the financial assets in comparison of the market as a whole. Beta is used in the CAPM model, which computes the expected return of an asset and expected market returns.

Inflation

It is also denoted by CPI, is theaverage change of price of a specific pool of goods. The assignment of weightage to the pool of goods made on the basis of their importance.

GDP

GDP is the value of total goods and services produced in a country in a specific time period.

Exchange Rate (ER)

It is the comparative value of one currency with respect to the other currency.

Foreign Direct Investment (FDI)

Foreign Direct Investment is the investment in any respective country from another country for controlling the ownership of the company in the invested country.

Money Supply (MS)

It is the amount of total money in circulation or present in the country's economy.

Stock Return (ST)

It is the returns on the financial assets through increase in the price in comparison of the market value (capital Gain) and returns in the form dividend received on investments.

Results

Descriptive records consist of statistics on complete eleven years statistics from 2005 – 2015 regarding return of stock, exchange rate, risk (beta) inflation, money supply, FDI and GDP. The vivid information encompass mean, minimum, maximum, standard deviation of all the banks covered in the research. The sample includes twelve private business banks because the period over eleven years make between amount some hundred yet 30 couple observations over each macroeconomic aspect as properly so risk or profitability. The descriptive concerning the variables used between the research are presented below:

Table 1
Descriptives

	Return	Risk	Exchange Rate	Inflation	Foreign Direct Investment	Money Supply	Gross Domestic Product
Overall							
Mean	0.218	0.973	0.055	0.101	0.115	0.084	0.041
Maximum	0.787	1.388	0.161	0.203	0.969	1.594	0.077
Minimum	-0.752	0.000	-0.005	0.025	-0.570	-0.711	-0.711
Std. Dev	0.347	0.256	0.575	0.045	0.529	0.565	0.565
Observations	132	132	132	132	132	132	132
Within							
Maximum	0.761	1.451	0.161	0.203	0.969	1.594	0.077
Minimum	-0.785	0.016	-0.005	0.025	-0.570	0.711	0.016
Std. Dev	0.346	0.217	0.057	0.045	0.529	0.565	0.018
Observations	11	11	11	11	11	11	11

Table 2
Regression Results

	Pooled Regression				**Fixed Effect**				**Random Effect**			
	Adj R square		0.73		R square				R square			
	F test		60.76		Within		0.74		Within		0.74	
					Overall		0.74		Overall		0.74	
					F test		55.61					
Independent Variables	**Coef.**	**Std. Err.**	**T**	**P>t**	**Coef.**	**Std. Err.**	**t**	**P>t**	**Coef.**	**Std. Err.**	**z**	**P>z**
Risk	0.231	0.696	3.31	0.001	0.261	0.092	2.85	0.005	0.231	0.070	3.31	0.001
Inflation	-3.757	0.765	-4.91	0.000	-3.690	0.807	-4.57	0.000	-0.301	0.457	-4.91	0.000
Exchange Rate	-0.301	0.457	-0.66	0.511	-0.321	0.477	-0.67	0.502	-3.757	0.765	-0.66	0.501
Foreign Direct Investment	0.474	0.056	8.42	0.000	0.473	0.059	8.05	0.002	0.474	0.056	8.42	0.000
Money Supply	0.557	0.037	14.86	0.000	0.556	0.039	14.24	0.000	0.557	0.037	14.86	0.000
GDP	-9.137	2.122	-4.31	0.000	-8.844	2.278	-3.88	0.000	-9.137	2.122	-4.31	0.000
_cons	0.668	0.173	3.87	0.000	0.621	0.200	3.10	0.002	0.668	0.173	3.87	0.000

It observed in the given table above as the estimated worth about R square is about 73% into pooled regression and is 74% yet 74% among significant impact then around impact respectively. The value over F also shows the satisfactory results used in the models.

Regarding the value regarding single variables, all variables in whole the models are huge except exchange rate. There are the positive relationships in between the variable with stocks returns barring the inflation then GDP.

Since F check likelihood between constant effects is insignificant, it is inferred up to expectation pooled regression effects are better than constant impact regression results. Insignificant probability regarding chi square within Breush Pagan check concludes up to expectation pooled regression consequences are more dependable than random effect regression results.

Discussion

The Capital Asset Pricing Model studies the relationship between risk and return and validates a positive relationship between the two. Results of this study are consistent with the findings of (Fama, 1973).

The study also depicts negative impact of inflation on stock returns. This is consistent with the outcomes of the studies by (Kyereboah-Coleman, 2008). In times of increasing inflation, new as well as existing businesses reduce their investments and expansion projects. Costs are controlled to mitigate the effect of high prices, leading to lower bank borrowings, hence reduction in profits and returns of the banking sector. Pakistan has witnessed high times of inflation several times, resulting from increased interest rates and taxes. During periods of high interest rates, companies prefer to raise funds by issuing right shares. These funds can then be used to pay back loans and avoid high interest rates. Reduction in interest income due to low borrowing activity eventually leads to lower profits earned by banks, hence lower dividend payouts.

This study found a negative relationship between stock returns and exchange rate and supported by Hussainey (2009). However, this negative relationship contradicts the findings from Siddiqui (2013) work, who reported an insignificant relationship between exchange rate and stock returns. Thus, our results imply that as the exchange rate increases, the investors are likely to invest in currency due to high expected returns. This asserts a sharp decline in stock prices and hence, lowers returns. Past literature also suggests that the exchange rate and stock returns may be insignificant in different markets.

This study further found that a positive influence of foreign direct investment on stock returns. The result is supported by research of Sinha (2013). The possible implication of this result could be that the increase in foreign direct investment will lead to an increase the confidence level of

investors, hence more investment and return will be expected in the stock market.

Similarly, this study found a positive relationship between money supply and stock returns and showed agreement with prior research of Ali (2011). Past literature also suggests that money supply may also increase the investment patterns and economic activity (Poornima, 2016). To this note, our result indicates that the demand for borrowing and profits is based on the investment due to the increase in the money supply.

GDP on the other side showed a negative impact on stock returns. It is a noteworthy point that Pakistan stock exchanges reflect a weak form of efficient market. In the absence of the bond market, the role of banks converted into monopolistic nature and become a central pint for debt borrowings. Due to this, the banking sector of Pakistan performed well during weal economic conditions. Sharpe (1964) highlighted that stock returns and GDP may have a positive relationship when the economy comes under the recovery phase. However, economic recession or slow growth declines investment patterns and leads to lower interest rates in the market. Thus, the demand for stocks increases due to lower interest rates.

Conclusion

This study aims to examine the relationship between stock returns and macroeconomic environment in Pakistan. For this purpose, we used stock prices and dividends to measure stock returns. Our results indicate that the macroeconomic environment had a significant impact on stock returns except for the exchange rate that showed an insignificant influence on stock returns. This study further found that inflation and GDP had a negative impact on stock returns while foreign direct investment, money supply, risk and exchange rate had a positive impact on stock returns.

The findings suggest that banks in Pakistan create a monopoly in the market due to limited financial opportunities for the investors. This increase and transfer the cost to the investors and perform well under tough economic conditions.

Limitations and Future Researches

This study used private banks of Pakistan with a limited time period of 10 years. It is therefore suggested to future studies to consider longer time series and include sectoral wise analysis of financial institutions. Moreover, future studies may also consider short term and long term dynamics of stock returns and macroeconomic factors.

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Appendix

List of Private Sector Banks Included the Research

1. Askari Bank
2. Allied Bank
3. Alfalah Bank
4. Al Habib Bank
5. Faysal Bank
6. Habib Bank
7. Habib Metropolitan Bank
8. MCB
9. Soneri Bank
10. UBL
11. Samba Bank
12. Silk Bank