Impact of Interest Rate and Exchange Rate on Stock Returns

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Abstract

Stock Market is the best indicator of any country's growth. If stock market of any country perform better it means, the economy of that country is growing. At the same time Interest Rate is the biggest enemy of any country's economy. Any economy with the higher interest rate faces the problem of devaluation in their currency which means increase in the exchange rate. So in this way interest rate and exchange rate becomes very important factor for any economy. In this project, I want to study how stock market reacts to interest rate movements and exchange rate movements. To examine this reaction, I have used the data of Interest rate, exchange rate and Stock returns for the time span of 1998 to 2009 in Pakistani Perspective. By applying the multiple Regressions, my findings indicate that interest rate and exchange rate have significant impact on stock returns with the alpha 10%. Interest rate is negatively correlated with the stock returns while exchange rate is positively correlated with the stock returns.

Key Words: Stock Market, Interest Rate, Exchange Rate.

1. Introduction

The relationship between stock market, interest rate and exchange rate is being continuously studied by various academics, economists (e.g. Oguzhan et al 2009, Md. Mahmudul Alam et al 2009, Mohamed Essaied Hamrita et al 2011, and Reza Tahmoorespour et al 2012) over the years. It is believed that interest rate has very important factor for the performance of the stock markets.

Interest rate refers to price charged by the lender to borrower and normally expressed by the percentage of the total amount. Interest rate may be charged on yearly basis, semi annually, quarterly or monthly basis depends upon the agreement between the lender and the borrower.

Stock markets are considered to be the best indicator of any country's economy growth. There are number of factors which affect the performance of the stock market. The importance of the interest rate is explained in two ways as mostly companies use debt (loan) for their capital expenditure, for that loan they have to be paid rent of the debt in the form of interest expense, so whenever interest rate goes up their interest expense goes up which resulted in decrease in the profits. Decrease in the profits leads to decrease in the price of shares.

Secondly when interest rates goes up, the investor required rate of return goes up which tends to decrease in the profits of that particular company. Normally there are two types of investors. One is debt holder's means who provides funds to company in the form of debt (loans). Mostly the return of debt holders is fixed by the name of interest rate. Other type of investors, are equity investors (owners) who provides funds to company which is typically known as shareholders of the company. They are the owners of the company so whenever company generates profits they share profits in the form of dividend. On the other hand if the companies incur losses, shareholders also share the losses of the firms.

So in this way equity investment becomes very risky because no can predict whether the company generates profits or losses. For this risk shareholders require some premium which is also known as equity risk premium. So whenever interest rate increase the probability of profits becomes very low and shareholders demands more premium, due to this the required rate of the equity becomes higher which again resulted in decrease in share prices.

The importance of this study stems from the fact that performance of stock markets plays a vital role in the growth of economy any country. As Pakistani market is not much studied, this is the contribution to the existing literature enlightening the relationship between these macro variables on stock market performance in Pakistani perspective. In this study I use the interest rate volatility, exchange rate vitality and stock exchange (KSE 100 Index) vitality instead of interest rate and exchange rate. This study consists of three parts. First part explains the prior studies of relationship between interest rates, exchange rate and stock returns. Second part will discuss the data and econometric model. Finally third part explains the result of the study.

2. Literature Review

Scholars, economists and practitioners have examined the relationship between macroeconomic variables (interest rate, exchange rate) and stock volatility in different ways for different countries for different time spans. As closer to our study, Md. Mahmudul Alam and Md. Gazi Salah Uddin (2009) concluded interest rate has negative significantly impact on the stock Prices for six countries. Mohamed Essaied Hamrita and Abdelkader Trifi (2012) examined US markets for the time span of 1990 to 2008. By applying maximum overlap discrete wavelet transform (MODWT), found that the interest rate returns and stock index returns is significantly different from zero only at large scales. There is positive relationship between treasury interest rate, industrial production with stock returns examine by Muhammed Monjurul Quadir (2012).

Nousheen Zafar et al (2008) examined the relationship between 90 days treasury bills interest rate and stock return for the time period of 2002 to 2006 in Pakistan perspective. By applying the GARCH, they argued there is negative but insignificant relationship between interest rate and stock returns. Reza Tahmoorespour and Aref Mahdavi Ardekani (2012) examined 14 international markets. By running regression, they concluded the banks behavior towards interest rate depends on the markets in which they are operated.

Stock market performance based upon the signals given by the economy. They took information form the economy and shows reaction against that information. As Greg Adams et al (20040 examined how stocks returns respond to inflationary news and come up with the conclusion that concluded that such news not only have significant impact on stock markets there is also decreasing trend in the stock returns. There is negative relationship between inflation and stock returns for the time period of 1954 to 1981 examined by Jason Benderly and Burton Zwick (1985). Similarly Bruno Solnik (1983) found negative relationship between stock movements and inflation.

Interest rate is combination of five factors, which are real return, Inflation premium, default risk premium, liquidity risk premium and maturity risk premium. This is reason why debt holders (Investment in fixed income securities like Bonds in which you earn fixed income, fixed interest rate) are less risky as compared to investment in equity securities(investment in shares of different companies in which return is not fixed but depends upon profit and loss of that particular company). Theoretically, when interest rate increases, people withdraw their investments from shares risky investments and invest in fixed income securities less risky investments. The same relation is found by Mark j. Flannery and Christopher M. James (1984). They concluded, interest rate has negative impact on stock returns for the United States markets.

Sheridan Titman and Arthur Warga (1989) examined very interesting relationship as stock returns predictor of future inflation changes and interest rate changes. By running regression analysis, they concluded that there is significant positive relationship between stock returns and future inflations changes and interest rate changes. Ndri. Konan Léon (2008) examined the Korean market for the time period of six years (1992 to 1998).By using GARACH, comes with the results, there is significant negative relationship between stock returns and interest rate. Oguzhan Aydemir and Erdal Demirhan (2009) examined the same relationship in Turkish perspective. They concluded the negative relationship between stock returns and exchange rate.

Exchange rate has great influence in the performance of firms. As firms are engaged in imports and exports of raw material as well as finished product. If a firm engages in exporting activities, they receive their receipts in foreign currency. When they convert theses receipts in domestic currency, if exchange rate high their profits becomes high. On the other hand if they engaged in importing activities, they are supposed to pay their payments in foreign currency. When they convert domestic currency into foreign currency, their payments becomes high just because of exchange rate. As Gaurav Agrawal and Ankita Srivastava (2011) concluded there is positive relationship between exchange rate and stock returns. Similarly Yutaka Kurihara (2006) examined the Japanese markets and concluded that interest rate has no influence eon stock prices but exchange rate have significant influence on stock prices.

Firms which are engaged in imports and exports, they protect themselves from exchange rate by using different hedging techniques, which includes like Future Contracts, Forward Contract and Options ect. As Fuat Sekmen (2011) study the US markets for the time period of 1980 to 2008.

He argued that exchange rate affect the stock returns even though firm uses hedging instruments for exchange rate movements. Adaramola Anthony Olugbenga (2012) examined the Nigerian market for the time period of 1985 to 2009 and found that there is significant relationship between exchange rate and stock market. Parham Parsva (2011) found that exchange rate explains the vitality of stock for Egypt, Iran and Oman.

3. Data and Methodology:
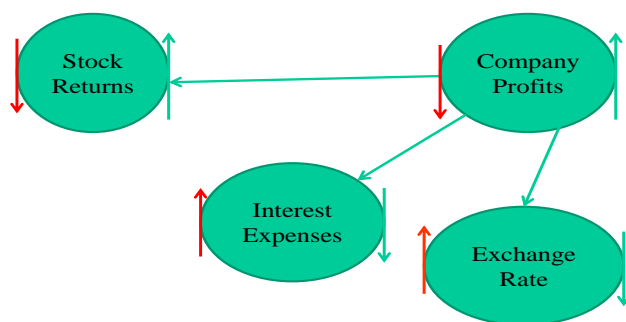
The above mentioned model explains the relationship among variables. It states that company profits and stock returns moves in the same direction. Furthermore company profits depend upon interest rate expenses and exchange rate movements. Whenever interest rates increases, companies interest expenses are supposed to be increased, and resulted decrease in the profits. On the other hand if exchange rate increases firms have receipts in foreign currency, their profits increased in conversion. Increase in profits ultimately resulted in good stock returns.

For the completion of this study, primary variables are Stock returns, Interest rate and exchange rates. For the completion of study, I took the Karachi stock Exchange Index (KSE 100 INDEX) as proxy of stock returns. For the purpose of interest rate and exchange rate I consulted with the printed sources.

As interest rate is controlled by the central bank of any country, I took the data of interest rate from State Bank of Pakistan, central bank of Pakistan for the time period of 1998 to 2009. For the data of exchange rate, I use business Recorder database.

To examined the relationship, I uses multiple regression as follows

$$SR = \alpha + \beta_1 \Delta Int + \beta_2 \Delta ER + \varepsilon$$

Here

SR means Stock returns (KSE 100 index)

Int means Interest Rate

ER means Exchange rate

III   Results and Discussion

The results we report in this section are based on the regression analysis

Table I

Multiple R	0.74
R Saqure	0.55
Adjusted R	0.45
Standard Error	0.44
Observations	12

The regression model results shows that R square is 55%, which means 55 percent variation in stock returns is explained by the interest rate and exchange rate. Remaining 45% variation in stock returns is explained by other factors, so we can say that interest rate and exchange rate have significant relationship with stock returns as (Sheridan Titman and Arthur Warga 1989, Bruno Solnik 1983 ect).

Table II   *t Statistics*

	Co-eff	SE	t-Test	P-Value
Intercept	0.26	0.13	2.04	0.07
Δ ER	2.62	0.82	3.18	0.01
Δ Int	-1.65	0.68	-2.29	0.05

The p value of interest rate and exchange rate is significant at alpha 5%. Interest rate co-eff shows that there is negative relationship between stock returns and interest rate as examined by (Bruno Solnik ,1983, Mark j. Flannery and Christopher M. James ,1984 ect).on the other hand the co-eff exchange rate shows there is positive relationship between exchange rate and stock returns as (Gaurav Agrawal and Ankita Srivastava 2011)

Table III   ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2.09	1.04	5.44	0.03
Residual	9	1.73	0.19		
Total	11	3.82			

From the ANOVA table we can say that overall model is significant at alpha 5% and 10%. In nutshell we can say that our study results support the literature, that these macro variables have great influence on the stock performance.

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