

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 the stock market of any country performs 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 its currency, which means an increase in the exchange rate. So, in this way interest rate and exchange rate become very important factors for any economy. In this project, we want to study how the stock market reacts to the interest rate's and exchange rate's movements. To examine this reaction, we have used the data of interest rate, exchange rate and stock returns for the period of 2007 to 2017 in Pakistani perspective. By applying the multiple regressions, our findings indicate that interest rate and exchange rate have a significant impact on stock returns with the alpha 10%. The interest rate is negatively correlated with the stock returns while the exchange rate is positively correlated with the stock returns.

Keywords: stock market, interest rate, exchange rate

INTRODUCTION

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

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Interest rate refers to the price charged by the lender to the borrower and normally expressed by the percentage of the total amount. The interest rate may be charged every year, 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 economic growth. There is some factors that affect the performance of the stock market. The importance of the interest rate is explained in two ways as most 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 also goes up, which resulted in a decrease in the profits. Decrease in the profits leads to a decrease in the price of shares.

Secondly, when interest rates go up, the required investor 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 a debt holder's means who provides funds to the company in the form of debt (loans). Mostly the return of debt holders is fixed by the name of interest rate. Another type of investors are equity investors (owners) who provide funds to a company which is typically known as shareholders of the company. They are the owners of the company so whenever a company generates profits they share profits in the form of a 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 an equity risk premium. So whenever interest rate increases, the probability of profits becomes very low and shareholders demand more premium; due to this, the required rate of the equity becomes higher which again resulted in a decrease in share prices.

The importance of this study stems from the fact that the performance of stock markets plays a vital role in the growth of the economy any country. As the 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, we use the interest rate volatility, exchange rate vitality and stock exchange (KSE 100 Index) vitality instead of interest rate and exchange rate. The study

consists of three parts. The first part explains the prior studies of the relationship between interest rates, exchange rate, and stock returns. The second part will discuss the data and econometric model. Finally, the third part explains the results of the study.

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 in different periods. As close to our study, Md. Mahmudul Alam and Md. Gazi Salah Uddin (2009) concluded interest rate has a significant negative impact on the stock prices for six countries. Mohamed Essaied Hamrita and Abdelkader Trifi (2012) examined US markets from 1990 to 2008. By applying maximum overlap discrete wavelet transform (MODWT), we found that the interest rate returns and stock index returns are significantly different from zero only at large scales. There is a positive relationship between treasury interest rate and industrial production with stock returns, which are examined 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 period of 2002 to 2006 in Pakistan perspective. By applying the GARCH, they argued there is a negative but insignificant relationship between interest rate and stock returns. Reza Tahmoorespour and Aref Mahdavi Ardekani (2012) examined 14 international markets. By running the regression, they concluded the bank's behavior towards interest rate depends on the markets in which they are operated.

Stock market performance is based upon the signals given by the economy. They took information from the economy and showed a reaction against that information. As Greg Adams et al. (2004) examined how stocks return to respond to inflationary news and come up with the conclusion that such news not only has a significant impact on stock markets; there is also decreasing trend in the stock returns. There is a negative relationship between inflation and stock returns for the period of 1954 to 1981 examined by Jason Benderly and Burton Zwick (1985). Similarly, Bruno Solnik (1983) found a negative relationship between stock movements and inflation.

The interest rate is a combination of five factors, which are: real return, inflation premium, default risk premium, liquidity risk premium and maturity risk premium. This is the 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 risky shares 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 the interest rate has a negative impact on stock returns for the United States markets.

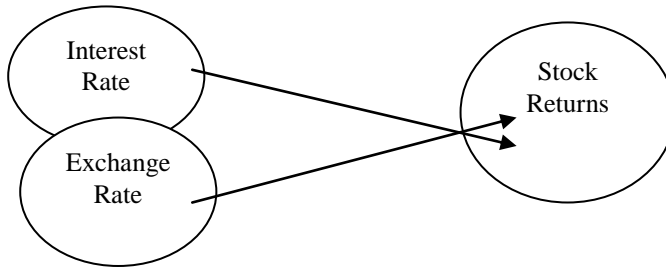
Sheridan Titman and Arthur Warga (1989) examined very interesting relationship as stock returns predictor of future inflation changes and interest rate changes. By running a regression analysis, they concluded that there is a significant positive relationship between stock returns and future inflations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

The exchange rate has great influence in the performance of firms as these 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 these receipts in domestic currency, if exchange rate is high, their profits become high, too. 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 become high just because of the exchange rate. As Gaurav Agrawal and Ankita Srivastava (2011) concluded, there is a positive relationship between exchange rate and stock returns. Similarly, Yutaka Kurihara (2006) examined the Japanese markets and concluded that interest rate has no influence on stock prices, but exchange rate has a significant influence on stock prices.

Firms engaged in imports and exports protect themselves from exchange rate by using different hedging techniques, which include future contracts, forward contract, options, etc., as Fuat Sekmen (2011) studied the US markets for the period of 1980 to 2008. He argued that the exchange rate affects the stock returns even though the firm uses

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

DATA AND METHODOLOGY



The model mentioned above explains the relationship among variables. Stock returns depend on interest rate expenses and exchange rate movements.

Whenever interest rates increase, companies' interest expenses are supposed to be increased and resulted in a decrease in the profits. On the other hand, if the 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. We took the Karachi Stock Exchange Index (KSE 100 INDEX). For interest rate and exchange rate, we consulted with the printed sources by the government of Pakistan.

As interest rate is controlled by the central bank of any country, we took the data of interest rate from the State Bank of Pakistan for the period of 2007 to 2017.

For the data of exchange rate, we used business recorder database, to examining the relationship through multiple regression as follows: $SR = \alpha + \beta_1 \Delta Int + \beta_2 \Delta ER + \varepsilon$ - SR means Stock returns (KSE 100 index); Int means Interest Rate; and ER means the Exchange rate.

RESULTS AND DISCUSSION

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

Table 1: Model Summary

Multiple R	0.74
R Square	0.55
Adjusted R	0.45
Standard Error	0.44
Observations	2860

The regression model results show that R square is 55%, which means 55 percent variation in stock returns, 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 a significant relationship with stock returns (Sheridan Titman and Arthur Warga 1989, Bruno Solnik 1983, etc.).

Table 2: 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 the exchange rate is significant at alpha 5%. Interest rate co-eff shows that there is a negative relationship between stock returns and interest rate (Bruno Solnik 1983, Mark J. Flannery and Christopher M. James 1984, etc.). On the other hand the co-eff exchange rate shows there is positive relationship between exchange rate and stock returns (Gaurav Agrawal and Ankita Srivastava 2011).

Table 3: ANOVA Results

	ss	Ms	f	Significance
Regression	2.09	1.04	5.44	0.03
Residual	1.73	0.19		
Total	3.82			

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

CONCLUSION

There is no doubt on the importance of interest rates and stock exchange in any economy and Pakistan has no exception. The role of these two variables is quite important in the emerging economies like Pakistan. Due to higher political instability of the country and higher inflation, we were motivated to study the influence of interest rate and exchange rate on the stock market of the country.

Pakistan stock exchange is considered among the well performing markets in the region. Our study empirically revealed that there is negative relationship between the stock returns and interest rates. This relationship is obvious for the fact that as the costs of doing business get expensive they discourage the business that ultimately influence negatively to the stock market. However, we found that exchange rate has significant positive impact on the stock market. Undoubtedly, higher exchange resulted increasing in the operating expenses but the offset once firms received their receipts from abroad. The nutshell above stated both variables have significant role in the performance of the country stock market.

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