Impact of Inflation on Stock Exchange Market Returns

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Abstract:

The aim of the study is to investigate the impact of inflation on stock exchange market return. For this we use the Augmented Dickey Fuller (AFU) unit root test to find the stationary level of data and find that both variables are stationary at first difference. As the level of integration is the same, we applied the Johansen Co-integration test and concluded that there is significant negative and long run relationship between the inflation and stock exchange market returns. Increase in inflation adversely affects the stock prices that leads towards stock market as a whole.

Key words: inflation, stock exchange market return, negative relationship, stock prices.

Introduction

Generally, stock market is the organized exchange where the shares of companies listed on stock exchange are traded. Stock market movement depends on the rational as well as the irrational behavior of the investor. The returns in the stock

market is because of dividend announce, price to earnings ratio, profit and growth which are pertaining to a particular company. Overall, return is also affected by the Macroeconomic variable such as Inflation and GDP (Reddy 2012). Securities prices should be determined by the market conditions of the stock market and change in the prices take place on daily basis. Some of the factors behind fluctuation in the demand and supply of stock prices could consist of market behavior, company rudiments and uncontrollable factors (Kurihara 2006). General rise in the prices of goods and services is the inflation, which has an impact on the whole economy either positively or negatively and is composed of different variables.

According to Muhammad et al. (2011), inflation is the macroeconomic variable and serves as the indicator of the economic stability of any country. It can hurt the country in a number of ways such as reducing the purchasing power of the domestic consumer. Unexpected increase or decrease in the inflation rate from its actual level disturbs the investor's expectations and increases the uncertainties about the expected stock returns. So it raises a question in the investor mind regarding the nature and direction of the relationship between inflation and instability of stock exchange.

In the case of Pakistan, Khan and Schimmelpfennig (2006) concluded that excess money supply in the long run is the major cause of inflation; however they also point out that the rate of inflation is also influenced by other factors, including structural problems. Faiza, Lariba and Bisma (2013) suggest that high inflation can affect the assets return by reducing the corporate profit and decelerate the future economic activities. Further inflation and risk are interrelated with the rise in inflation; the risk is also increased so that the investors will get higher returns, beyond their expectations.

So the purpose of this research study is to investigate the impact of inflation on the KSE 100 index returns in Pakistan and to find out if there is any long term equilibrium

relationship between inflation and stock Market returns.

The rest of this paper is arranged as the literature review, methodology, results and discussion, conclusion & recommendations, limitations and future research.

Literature Review

Previous studies (Charles et al. 2008) justify that the emergence of inflation in a country will affect the stock return and prices, which will ultimately affect the stock exchange market. The stock market plays an important role in the growth of economy so fluctuation in consumer goods prices will affect either positively or negatively the returns of the stock market. The stock market returns may not be affected by these fluctuations in the prices sometimes due to other factors.

Caroline et al. (2011) applied the Johansen Cointegration Test technique to find the long run relationship between the inflation (both expected and unexpected) and stock returns of three countries: Malaysia, United States and China. Their result shows that there is a long run relationship between inflation (both expected and unexpected) and stock returns of Malaysia and USA. Thus the investors who seek to invest in the stock of these countries may not get any benefit from portfolio diversification because the inflation affects the share prices. Due to this, the returns of stock decline so that ultimately affects the stock market.

Faiza, Lariba and Bisma (2013) investigated the negative and significant relationship between inflation and KSE- 100 index return. They applied the Augmented Dickey Fuller (ADF) test to find out the variables' significance and nature of relationship, also using the Johansen Cointegration technique and Granger causality tests. According to their research both variables have negative, significant and long run relationship. So any upward movement in inflation of Pakistan badly affects the country as a whole and also the stock prices

that will ultimately affect the stock return.

D. Michael, J. Michael and Dueker (2008) used a multivariate Vector Autoregressive (VAR) to find the impact of inflation and other macroeconomic variables on stock market index conditions and found out that inflation and interest rate have negative and long run impact on stock market conditions, apart from their effects on real stock prices. This evidence supports the view that unexpected fluctuation in inflation has played important roles in major movements of the U.S. stock market since World War II.

The annual report of State Bank of Pakistan (2005) shows that inflation and stock prices are negatively related. Share prices declined in September and October 2003, but share prices increased continuously through most of the first ten months of fiscal year 2004, while on the 19th of April 2004 the Karachi Stock Exchange (KSE)-100 index reached at peak 5,621 points. Afterward, due to fluctuation in the inflation the share prices declined and the KSE-100 index also declined to 5,297 points on the 30th of June 2004.

Daferighe and Charlie (2012) investigated the impact of inflation on various measures of stock market performance such as market capitalization, change in All-share Index and the total value traded ratio in Nigeria. For this purpose they used the sample of data for twenty years, which is from 1991 to 2010. After finding variable significance, they applied the regression analysis technique and found out that all of these measures were negatively related to inflation.

Muhammad and John (2001) examined the impact of the inflation on the performance of the Egyptian stock market, in terms of market activity and market liquidity. They concluded that inflation is negatively related to stock market both in short and long term. In the case of Egypt the tight monitory and fiscal policies help to control the inflation and inflation rate decreases after the economic reforms. Decrease in the inflation rate gives a good sign to investors to invest in the stock market;

as a result of this investment, the business sector expands and returns of the companies are likely to increase.

Muhammad et al. (2011) studied the relationship between stock exchange volatility and inflation in Pakistan by using the standard linear GARCH model. This study finds out that inflation and stock market volatility are positively related. High inflation in the country attracts more investment to be channelized through stock exchange in business sector and the business sector will expand, therefore they will get higher returns on their investment. But if the inflation has great predictive power for the investors about the stock exchange volatility then it can create uncertainties in the investor's mind about the expected returns and causing difficulties for the economy to attract more investments.

Saryal (2007) also studied the impact of inflation on conditional stock market volatility by using nominal stock return series and wanted to investigate how the relation between both variables differs with the different rate of inflation in Turkey and Canada. For comparison purpose these countries were selected because Turkey was an emerging market country with a high inflation rate and Canada a developed country with a low inflation rate. The result shows the consistency with the simple Fisher effect; with the increase in inflation the nominal stock returns also increase. This study results are consistent with the Muhammad et al. (2011) study that stock market volatility and inflation are positively related.

We conclude from the literature that inflation and stock returns are negatively related with one another. Rise in the inflation of the country affects the stock prices that affects the stock market and the return of the investor as whole. Inflation is considered as a strong macroeconomic factor that surely influences the return of the asset. Thus mostly inflation impacts the stock market negatively and rarely impacts positively.

Methodology

The study used the secondary data on an annual basis from 1991 to 2012, containing a total of 21 observations. The data on KSE 100 index and inflation was collected from the Karachi stock Exchange and State Bank of Pakistan website respectively. For analysis E views 7 has been used. Augmented Dickey Fuller (ADF) unit root test (Dickey and Fuller 1979) (Dickey and Fuller 1979, 1981), applied to find out any trend in the data as it is necessary for good analysis and then Johansen Cointegration (Johansen 1990) test applied to find the equilibrium long run relationship between both variables.

Results and Discussion

Augmented Dickey Fuller Test Results

Augmented Dickey Fuller Test was used to find the trend in data or if data is stationary at level or not. This analysis shows that both returns and inflation are stationary at first level by showing the values of probabilities, for both variables are 0.000 & 0.000 and t test values are -5.61 and -5.46 respectively as shown in the Table 1. As both variables probabilities values are less than 0.5 and t test values are greater than 2, both variables are significant.

	Variables	Coefficient	T test	P value
Dickey Fuller test	Return	-1.260826	-5.616176	0.0000
	Inflation	-1.283923	-5.468589	0.0000

Table 1

Johansen Cointegration Test-Results

Johansen Cointegration test was applied to find the long run equilibrium relationship between the two variables, that is inflation and stock market returns. The results of the Unrestricted Cointegration Ranking test (Trace) & Unrestricted Cointegration Rank Test (Maximum Eigenvalue) in the table

(2) show that both Trace statistic & Max-Eigen statistic values are greater than the critical values at 5 % significance level, indicating 2 cointegrating equations at 5 percent significance level. This means that there exists a long run relationship between the variables.

The results of Normalized Cointegrating Coefficients show that there is negative relationship between inflation and stock prices in Pakistan. The negative sign explained that inflation has a negative impact on the stock market, as it shows in table that 1 % increase in inflation leads to the stock prices being decreased by 1.54%, while Coefficient value shows that it has bigger impact on stock market.

Hypothesized Number of CE(s)	Eigenvalue	Trace Statistics	Max-Eigen Statistics	5 Percent Critical Value
None *	0.945751	61.21533	43.71247	20.26184
At most 1 *	0.688656	17.50286	17.50286	9.164546

Table 2

Trace test and Maximum Eigen value indicates 2 cointegrating equations at the 5% level and *denotes the rejection of null hypothesis at the 0.05 level of significance (E-views 7)

Inflation	Return	c
1.000000	-1.536002	-1.710104
	(0.55531)	(0.07072)

Normalized Co integrating Coefficients

Results show that there is a significant negative and long run relationship between the inflation and stock market returns. Inflation in Pakistan increases unexpectedly, so increase in inflation causes decline in the stock prices; in this way, overall stock market will be affected. Our results are consistent with the study of Caroline et al (2011) who investigated the long run relation between the inflation (both expected and unexpected) and stock returns of three countries. Faiza, Lariba and Bisma (2013) investigated the negative and significant relationship

between inflation and KSE- 100 index return. D. Michael, J. Michael and Dueker (2008) investigated both the negative and long run relationship between the inflation and stock market condition.

Conclusion & Recommendations

The objective of the study is to investigate the impact of the inflation on the stock exchange market return of Pakistan. For this we used the annual data for the inflation and KSE 100 Index and applied the Augmented Dickey Fuller (ADF) unit root test to find the stationary level of data and we found that both variables are stationary at first difference. Then we applied the Johansen Cointegration test to find the long run relationship between inflation and KSE 100 index returns. Our results are consistent with the literature above and show that there is significant, negative and long run relationship between both variables. The results from this test indicate that the null hypothesis is rejected because the value of both Trace statistics and Max-Eigen statistic is greater than the critical value at five percent level of significance. Inflation is the major problem of the country so any upward movement in inflation will adversely affect the prices and returns of the stock market.

Faiza, Lariba and Bisma (2013) assert that capital markets in a country also act as a backbone of any country. So there must be a strong relationship between capital market and inflation, as literature also suggested that increase in inflation in economy has a negative impact on the performance of capital market in that country.

Performance of the capital market can be made better by controlling the inflation of the country. This can be achieved by tightening the monitory policy of Pakistan. An investor who actively invests in the stock market should consider the macroeconomic factors like inflation, because they face the risk of investing in these securities, inflation affecting the stock

prices that lead to stock market and their returns.   As inflation is growing at a high rate and no important growth seen in the economy, there is reduced market returns.

Limitation and Future research

We have had a short span of time while conducting this research and availability of resources is limited. We can enhance our research by adding more variables like GDP, stock exchange rate and Interest rate. It is also suggested that there should be more focus on the monthly or quarterly data that help to increase the number of observation in order to ensure its authenticity or the data of two or three countries could be used to increase the generalizability of the research.

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