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Impact of Interest Rate and Inflation on Stock Market Index: A case of Pakistan

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Abstract

The multidimensional impact of inflation has been widely investigated empirically. In continuation of the same, it is argued that inflation has a strong influence over stock market indexes. In this discussion influence of interest rate on stock market index have also a prime importance. This paper attempts to study the impact of interest rate and inflation on stock market index. We have taken KSE100 as dependent variable and CPI, REER, and WALR as independent variables. We have found CPI and WALR statistically significant at 95% level. Our results show the value of R^2 coefficient of determination as 0.70, which means that 70% variation in KSE100 index is being explained by CPI, REER, and WALR (independent variables). The beta coefficient of inflation shows its positive relationship with KSE100, which means that an increase in inflation can raise the KSE 100 index value. However, persistent inflation will eventually build high future expectations about higher inflation, resulting in a negative impact on KSE100 index. The coefficient of WALR shows a significant and negative relationship of WALR with KSE 100.

Keywords: inflation; stock market indexes; interest rate; KSE100; CPI; REER; WALR

Introduction

The impact of inflation and interest rates on the stock market has been of great importance. Persistent increase in current inflation results in increased share prices whereas increase in future expectations of inflation gives opposite results (Feldstein, 1980). The interest rates have different relationships with the stock market depending on their term structure. According to the FED model, the Treasury bond yields and the yield on earnings and dividends on stocks are either equal or highly correlated.

Literature Review

According to the FED model, the Treasury bond yields and the yield on earnings and dividends on stocks are either equal or highly correlated.

Academics have concluded that the model is inconsistent with a rational valuation of the stock market (see for instance, Asness (2003), Feinman (2005), Campbell and Vuolteenaho (2004), Cohen, Polk and Vuolteenaho (2005), Ritter and Warr (2002) and Sharpe (2002)), while some confirmed the viability of the Fed model (see the references in Estrada (2005).

Adams et al (2004) found a negative relationship between unexpected inflation and stock prices. They found that any unexpected change PPI and the CPI influences the stock prices negatively. Explaining the time lag between increase in inflation and stock prices reaction they highlighted a time lapse of 10-20 minutes. It means when inflation news is received in the market right after 10-20 minutes of that, stock prices start responding it. He further maintained that the effect of inflation will be deeper if the economy is larger and it will directly vary with the size of economy.

Importance of economic uncertainty is discussed by Bansal and Yaron (2004, BY henceforth) and a model of external habit is built by Campbell and Cochrane (1999, CC henceforth), leading to a measure of time-varying risk aversion that can be constructed from current and past consumption data and is countercyclical.

Bekaert, Engstrom and Xing (2009) combine both measures in one model. Consequently, a rational channel explains why the Fed model "works:" high expected inflation coincides with periods of high risk aversion and/or economic uncertainty. Fama (1981), in proxy hypothesis, argues that the strong negative

relationship between stock returns and inflation is due to stock returns anticipating future economic activity and inflation acting as a proxy for expected real activity.

Vuolteenaho and John Y (2004) identify that almost 80% time-series variation in stock-market is explained by inflation. Fama (1981) empirically depicts a negative relationship of inflation with stock prices in post 1953 period. He explains that the forecasting in stock prices may be done with the help of change in inflationary expectations.

Flannery and Christopher M. James (1984) found that a bidirectional effect of stock returns and interest rate which is further influenced by the size of the firm's nominal assets and liabilities. Cohn and Lessard (1981) have also found a significant and negative relationship between stock prices and inflation in case of USA.

The research conducted by Amihud (1996) shows a significant linkage of daily stock returns with CPI inflation news. The study was conducted on Israel. Joyce and Read (1999) have conducted research to find relationship between stock returns and Retail Price Index inflation. They have not found any link between these two variables. Sidrauski's (1967) has also found a neutral effect of inflation on stock prices.

Schwert (1981) has analysed that how stock prices react to the information about inflation. He took the composite portfolio from 1953 to 1978. This composite portfolio was based on daily returns of the Standard and Poor's composite portfolio. He concluded that a small unexpected change in CPI inflation is reacted negatively by the stock prices.

Data

The annual 15-year time series data of Karachi Stock Exchange 100 index (KSE100), Consumer Price Index (CPI), Real Effective Exchange Rate (REER), and Weighted Average Lending Rate (WALR) were used in analysis. The sources of the data were World Bank and State Bank of Pakistan.

Methodology

Ordinary Least Squares (OLS) method was used in this study to study the impact of CPI and WALR on KSE100. Following equation was used to estimate the results.

$KSE100 = \beta_1 INF + \beta_2 REER + \beta_3 WALR + \varepsilon$

Where;

CPI is the consumer price index for measuring inflation

REER is the weighted average of a country's currency relative to an index or basket of other major currencies adjusted for the effects of inflation. The weights are determined by comparing the relative trade balances, in terms of one country's currency, with each other country within the index.

WALR is Weighted Average Lending Rate to measure the impact of interest rates.

Empirical Analysis

The data were analysed by using econometrics software (E-views) and the results are presented in Table-1.

Table 1:

Dependent Variable: KSE100				
Method: Least Squares				
Date: 03/12/12 Time: 19:49				
Sample: 1995 2010				
Included observations: 16				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CPI	92.68989	16.95834	5.465742	0.0001
REER	48.49743	43.23403	1.121742	0.2823
WALR	-714.4777	336.4836	-2.123366	0.0535
R-squared	0.696317	Mean dependent var		5033.689
Adjusted R-squared	0.649596	S.D. dependent var		4419.603
S.E. of regression	2616.179	Akaike info criterion		18.74418
Sum squared resid	88977107	Schwarz criterion		18.88904
Log likelihood	-146.9534	Hannan-Quinn criterion		18.75160
Durbin-Watson stat	0.799813			

The coefficient of determination is R^2 is around 0.70. It shows that approximately 70% of the movement in dependent variable is being explained by the explanatory variables.

The coefficient of CPI and WALR are statistically significant at 95% confidence interval. The results tell us that one unit increase in CPI results in 93 units increase in KSE100. The coefficient of one unit increase in Weighted Average Lending Rate (WALR) shows that 714 units decrease in KSE100 increases stock prices by one unit.

Conclusion

We tested the influence of interest rate and inflation over stock market index. By keeping KSE100 as dependent variable and CPI, REER, and WALR as independent variables, we applied D.W. Regression. The results show a significant and positive relationship of CPI with KSE 100 index and a significant and negative relationship of KSE100 index with interest rate at 95% level. The inflation seems to influence the KSE100 positively, whereas the interest rate appears to influence it negatively. Inflation, though, has been found to result in an increase in Stock market index, it should not be too persistent since it will eventually it will give rise to expectations of higher inflation in future, resulting in a negative impact on KSE100. Interest rates seem to impact the KSE100 negatively since it results in attractive bond market.

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