Inflation's Impact on Stock Return A Study from Pakistan

[1]Muhammad Sadam Bin Tayyab, [2]Rao Tahir Anees
[1]Student, [2]Ph.D Research Scholar
[1]NCBA & E Lahore Pakistan
[2]Limkokwing University of Creative Technology Malaysia

ABSTRACT

This study provides an analysis of whether stock market in hedge against inflation or not. As there were very few studies conducted on this area in Pakistan in recent time so this study will help the investors and other stakeholder to get a better understanding about the market whether they are investing their money in the right basket or doing wrong decision by putting their capital into the market where time value of money matters a lot. Whether stock market hedge against inflation in Pakistan. The study applied few analyses for better understanding and interpretation of the results which includes descriptive statistics, the Augmented Dickey Fuller (ADF) Unit Root test in which we used Durben Watson Stat and LM test for auto correlation of the variables and Granger-causality test. We used E-Views 10 statistical package for data analysis. Results of the analysis interpret that in Pakistan we have found negative relationship between Inflation and Stock Returns. The overall results of the study oppose the Fisher Hypothesis that suggested the stocks give the fence against the Inflation and the connection among the stocks and the expansion is positive. So it could be expect that there is a noteworthy connection among stocks and the Inflation and furthermore the negative connection among Inflation and return. Therefore the higher inflation is related to the lower expected future returns. Few of the reason of this relation are decline in value of money, deficit in budget, energy crises, increment in tax and interest rate as Government policy plays an important role in fluctuation of both of these variables.

Key Words: *Stock Market, Inflation, Correlation, Cointigration*

I. INTRODUCTION

Statement of Topic and Aims

Stock exchange plays out an exceptionally crucial part in the financial progress of a country. Stock market is also denoted as stock market where the security prices refers to Stock prices, for economic success and development and capital accumulation it plays a vital role (Charles and Adjasi 2008) (Hamrita 2009) (Quayes 2010). Various researchers have studied cointergation of stock markets in various economies (Masih and Masih 1999) (Fraser and Oyefeso 2000) (Pascual 2002).

Security values in stock exchange depend on demand and supply they vary on daily basis. The market forces, organizations principles and external events are some of the reasons resulting reduction or elevation in stock prices. One of the external factors is inflation. Usually the growth in general prices denotes the inflation. Although the inflation raises the individual income but it also elevates the prices of the consumer products resulting in the purchase of fewer commodities by the consumers. The inverse relation between supply and demand, growth in money supply, decline in value of money, deficit in budget, energy crises, increment in tax and interest rate, remittance and rise in wages that results in inflation. The consumer price index presents inflation rate as per financial theory, it highlights the general arise in the costs of merchandises and Services. When the prices of goods increases or additional quantity of money are required to buy same commodity causes inflation. It is believed by the researchers the rate of inflation have impression on the volatility securities exchange and the risk it have on economy. Two kinds of inflation are there, the expected and sudden inflation. Inflation rate is important for economy and people plan every year in expected inflation. People are unlikely to keep money tight in expected inflation as the value of money declines in expected inflation. While is outside the expectation of the economists and the consumers. The effects of sudden price rise are more disastrous than the probable inflation. The major impact of sudden inflation is the reallocation of money to the lenders from debtors. Long term evaluation of stock market returns is made difficult through inflation. Due to the higher inflation time or hyperinflation the stock's value and the financial assets fails to stay in level with commodity prices and at the end become the cause of instability in stock market returns and most of the world's economies has suffered economically due to this.

The stocks could decline 95% of their original worth if the government could not control the inflation. Apart from that historically it is observed that the dividends hardly kept in pace with consumer prices and the dividend decreased that further declined the total returns for investors (Taylor 1996) during high inflation. The returns on assets are effected by inflation in two ways; firstly the economic activity could be slow down by inflation cutting down the profits for organizations that effect negatively the assets returns. Secondly, with higher inflation the risk also become higher that results in returns beyond the expectations of investors.

Previously very few investigates have been led to contemplated the effect of Inflation on the stock exchange of Pakistan thus the goal of this study is to observe PSX-100 index in Pakistan are effected in long run by the inflation and any casual relation among inflation and share returns exists.

Background of the Topic

Thought processes after this research was that, in the writing there is an absence of accord on the experimental relations among Stock Return and Inflation. While there are various researches in advanced economies that evaluates the relations among the Stock Return and Inflation like in other part of the world such as in USA and European nations and discovered negative or positive relationship however a few researches have testified no relation. As per my best learning this relation has investigated in Pakistan by very few researchers and this research study likewise has redesign dataset. For a significant lot of time numerous economists accepted that profits and Inflation ought to be absolutely or at any rate non-contrarily connected. A few researchers assumed that profits for security relies on upon expected Inflation. Be that as it may, a considerable measure of analysts directed an exploration and originated that the profit do not have a direct connection among Inflation and profit after the war the in US and additionally many of advanced economies like nations in Europe and other created economies in the whole world discovered inverse relationship among Investment return and Inflation. This relationship is additionally tried in SAARC nations; consequences of that study likewise help the Fisher Hypothesis. The target of this study is to do examination of the relation among Inflation and Stock return. In the writing the riddle exist that some place on the planet provides direct relation and some researches gives opposite connection among Inflation and Stock return, so it is decidedly needed to know the connection among Inflation and Investment returns in Pakistan whether it help the Fisher hypothesis or not. The third and extremely paramount commitment is that this study will be providing assistance to the financial specialists of Pakistan who need to contribute on the premise of climate Investment return increment or not on account of Inflation. Faiza Saleem,et al. (2013) & Fama (1981) theorize that there is inverse connection among Inflation and Stock Return. Bong Soo Lee (1992) demonstrates that no causal association exists between stock returns and Inflation. Muhammad Shahbaz Akmal (2007), Gultekin (1983) and Titman and Warga (1989) also acknowledge that there is a "measurably dependable positive connection between returns and future Inflation and investment rate changes." Positive connection: all else steady, as Inflation rate builds, firms' aggregate income increments. An increment in Inflation will result in Inflation in firm’s net pay for a few years making present characteristics of net profit to grow. Late studies from Nelson (1976), Jaffe and Mandelker (1976), Bodie (1976), Fama and Schwert (1976), and various have exhibited that the association among Stock benefits and Inflation is negative in the U.S. moreover have contemplated that the Fisher hypothesis does not hold in the stock exchange. Many have extended the above studies for a huge example of nations furthermore the U.S. His time arrangement Results for the entire example additionally are not steady with the Fisher Hypothesis. While expected return and expected Inflation in the USA have been found to be conversely related, Firth (1979) in a late research paper exhibited that in United Kingdom the outcome are the perfect inverse of those in USA. The perceived Return and Inflation has been dependably positive which comprises of Fisher Hypothesis. It is fitting to inspect this relationship outside USA and UK. Madsen (2004) utilized Fisher's theory to gauges the relation among offer profits and Inflation. Many studies were observed that impart profits are not supported in contrast to projected Inflation and have deciphered this as proof against the Fisher speculation. Wei in 2007 analyzes the association between sudden Inflation and returns. Fisher model for real assets possesses high financial importance. The deviance from the fisher model is having important effects for the asset allocations in international capital markets where the nations have different budget /monetary/fiscal policies and business cycles are not aligned as a whole (Solnik and Solnik, 1997).

Following are the three categories for the classification of the empirical outcomes for stock market profit inflation connection.

1- Positive relation in share market profits and price rises which is in accordance with the wide-ranging fisher hypothesis. Through wide prospect of global Fisher hypothesis commonly could not be over ruled “Muhammad Shahbaz Akmal (2007), Jaffe and Mandelker (1976) for US; Firth (1979), and Boudoukh and Richardson (1993) for UK; Rapach (2002) for 16 developed nations; Spyrou (2004) for nine of 10 developing marketplaces (Chile, Mexico, Brazil, Argentina, S.Korea, Malaysia, Hong Kong, Philippines and Turkey); Horobet and Dumitrescu (2009) for 4 states from Central and Eastern Europe(Czech Republic, Hungary, Poland and Romania”.

2- Inverse relation among stock market revenue sand inflation that are in accordance with general fisher hypothesis “Faiza Saleem et al. (2013), Lintner (1975), Bodie (1976), Nelson (1976), Fama and Schwert (1977), Fama (1981), Geske and Roll (1983), Hu and Willett (2000) for the US; Gultekin (1983) for twenty-six countries; Solnik (1983) for nine countries; Mandelker and Tandon (1985) for six major industrial countries; Kaul (1987) for US, Canada, UK and Germany; Solnik and Solnik (1997) for the pooling of data for several countries; Erb et al. (1995) for 41 developed and emerging equity markets; Zhao (1999) for China; Choudhry and Toufiq (2001) for Argentina, Chile, Mexico and Venezuela; Spyrou (2001) and Ioannides et al. (2005) for Greece”.

3- There is no relation among share market profits and price rise as per Pearce and Roley (1988) for 84 US firms; Patra and Poshakwale (2006) for Greece, Jung et al. (2007) for Germany, Italy, UK and France.

The relation among share market profits and inflation for USA and various nations is found inverse in most of the empirical researches. The inverse relation among stock market profits and price increase is usually said stock profit-inflation riddle in literature for economy and finance. The adjustments in inflationary prospects on stock prices are focused for the theoretically explaining this inverse short run relationship amid stock market profits and inflation.

This study indicated associations among sudden Inflation and alleged value profit of Fama-French book-to-market and dimension selections over the business cycle. Reconsideration of Fama’s substitute speculation by Merika and Anna (2006) that says those value rises were adversely identified with genuine monetary action and the negative connection among returns and Inflation. Few researchers have examines the effect of unanticipated Inflation on profits in five MENA countries: Bahrain, Egypt, Jordan, Oman, and Saudia Arabia. Result of that study indicates that unforeseen Inflation had an inverse effect on Investment returns in all the MENA nations. Al-Khazali and Pyun C. (2004) examined this field in Jordanian economy and illustrated the negative association among true profits and predictable Inflation. This research inspects whether these two variables have inverse relation which satisfactorily demonstrate by substitute impact. Diaz and Jareno (2005) examine this relationship in Spain. The fact was to think about the connection between unforeseen Inflation and returns. No affirmation of an immense connection among Inflation and return was found.

II. LITERATURE REVIEW

Investments Return

Investment Return means gain that investors gets out of their investment in stock market. These returns could be in the shape of profit by share trading or these could be dividend given by the company to its shareholders every period. The stock returns could also be in a form of the gain over the value of the stocks. The stock profits are vulnerable against the marketplace risks and these profits are not settled. They could positive or negative. The stock returns are not same for all it could vary from investor to investor the reason behind it is the risk aversion of the investor and the stock market analysis quality they underwent. In contrast to the fixed returns given by the bonds stock markets returns are subject to variation. The theme behind the stock market returns is to buy cheap stocks and sell them at higher prices. Along this risk is also embedded as investors have to face negative returns in case of wrong investment. The previous studies has shown whenever the inflation raises the stock market returns would be affected as the stock market in a nation show a vital part in the financial development and emergent that's why the stock price is affected positively or negatively by the increase or decrease in inflation. The addition or misfortune of a security in a specific period. The return comprises of the wage and the capital additions relative on a financing. It is typically cited as a rate. Investment Return is the sum that the financial specialists get from their investment in any tasks. These returns might be influenced by a few variables which may diminish the measure of returns. Moguls dependably request more come back from his ventures and dependably expect higher rate of return by tackling issues which influences its return. Bodie (1976) said, "Financing profits depends for expected perceived return and additionally sudden perceived return, it likewise relies on upon expected Inflation rate and likewise unexpected Inflation rate." The Fisher theory attests that perceived investment rates climb with ascents in expected rate of Inflation. Fama (1981) recommended substitute assumption' which is based on the money demand theory share markets profits are having inverse relation with inflation as real activity is having inverse relationship with the prices level and the genuine action is positively relevant with the market returns. Geske and Roll (1983) and Kaul (1987) likewise gave a counter-cyclic finance related justification. Any increment in the expected value of inflation could create a fear of strict monetary policy that inversely impacts the share prices.

Inflation

Inflation is for the most part used to disseminate a circumstance of fast, relentless and unsatisfactory elevated structures as a rule value level in an economy, bringing about general misfortune of obtaining influence of the coin, Asogu (1991). As indicated by him, Inflation reasons genuine uneasiness for buyers, financial specialists, makers and the administration. Forcing inflation ranks up evolving markets predominantly those in Asia, where grains are consumed the most, have been normally influenced . Less developed nations like Pakistan, Afghanistan and India are the most to a great degree dreadful hit as it includes that the general population there now need to utilize a gigantic measure of their constrained wage on sustenance, living little else to buy diverse things which can urge budgetary advancement. Tried and true way of thinking proposes that Investment return ought to be moderately high at the point when Inflation is by and large high and low when Inflation is decently low. Why? Since Investment speak to claims on true possessions that ought to expand in quality with inflation. Lion's share of past studies certainly accept that expands and reductions in Inflation symmetrically affect apparent return.

The Fisher speculation proposes that Investment ought to serve as a hedge against Inflation on the grounds that they speak to claims on true stakes. Starting endeavors to relate comes back to Inflation relapsed (genuine and perceived) ex post returns on contemporaneous Inflation, for the most part discovering negative connections. In economy with no Inflation an offer speaks to the right of responsibility for on business and net wage that it generates. The negligible result of capital is additionally pretax income for every offer. Inflation changes the net yield on Investment.

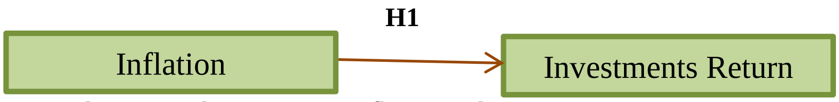
Each change is a response of any activity. Same happen in Inflation case, Inflation is influenced by distinctive components like Tax, investment rate and profit of the organizations. On the off chance that Tax rate build by representing body then the cost of each ware and administrations will expand which make Inflation in the economy. Premium rates assume an essential part in any economy as it build working expense increment of those organizations which obtained cash for its operation. Firms charge investments add up to the client by raising the costs of item. Costs of the items influences if interest for the item is higher than its supply. So it is clear that when gainfulness influences its Inflation in that segment. Higher Inflation does not have a tendency to bring about proportionately higher perceived investment rates, high Inflation brings about more level true return against investment (Barnes et al. 1998). Smith and van Egteren (2003) propose an alternate instrument that can affect true yield by Inflation. This model suggests, Inflation brings down the genuine quality of inside trusts utilized by firms to make venture. Inflation rate is separated into two classes which includes expected Inflation and unexpected Inflation. Expected Inflation is an occurred that financial analysts and buyers envision year to year. In the event that Inflation is normal, individuals are more averse to hold money, about whether the cash loses esteem because of inflation. While, the sudden Inflation is past what was normal by money making concerns and purchasers. By and large, the impacts of surprising Inflation are fundamentally are even destructive as compare to the effects of predictable Inflation. Significant impact of surprising Inflation is a reallocation of money each from debtors to moneylenders or interestingly. Inflation makes a critical issue for separating returns over a long term of time. Since World War II, Inflation in United States is in between 2% to 5% for most of its year. The Inflation makes a trademark inclination in the performance of the share trading framework.

III. METHODOLOGY

Secondary data was used for analysis on this topic as monthly data was collected from PSX-100 Index Consumer Price Index from State Bank of Pakistan for the duration of January 2011 to December 2017.The study applied few analysis for better understanding and interpretation of the results which includes descriptive statistics, the Augmented Dickey Fuller (ADF) Unit Root test projected by (Dickey and Fuller 1979) (Dickey and Fuller 1979, 1981) in which we used Durben Watson Stat and LM test for auto correlation of both variables and (Granger 1988), (Engle and Granger 1987) and (Granger, et al. 1998) have proposed Granger-causality test. We used E-Views 10 statistical package for data analysis. These test analysis techniques were used earlier by (Faiza Saleem et al. 2013) for assessment of long runs causal connection among Stock Market and Inflation for the instance of Pakistan in past.

Hypothesis Development

This investigation will look at the connection between Investment return and Inflation. This model help us that whether Investment return and Inflation have any association or not, if there is a relationship then is that a positive or not. In this model Investment Return is a dependent variable and Inflation is a free factor.



H1: There is a relation among Inflation and Investment return.

Motivating Variable

Fisher Hypothesis suggest Stock Investment serve as hedge against inflation. And some Scholars prove a relationship between these variable but some accepts there is a positive connection among both factors and some believes negative relation between these variable. There are some factors which affect the relationship between these variables like Tax rates, Monetary Policy, and Interest Rate etc.

Procedure

Information of CPI & PSX-100 Index gathered on monthly basis and entered into MS-Excel working sheet which was then imported to E-Views - 10 for examination and further analysis. Initially mean, median, Jarque-Bera, Kurtosis, Skewness, standard deviation and the like statistics was calculated by applying descriptive analysis on E-Views. Stationery status of information accumulated was checked by using unit root (ADF) test, just to have extraordinary investigation. To measure causal association among both dependent and independent variable Stock return and Inflation respectively in Pakistan the Granger causality test was used.

IV. RESULTS AND DISCUSSION

The outcomes got from these investigation (Descriptive Analysis, Unit Root Test (ADF Test) and the Granger causality test) are appeared and interpreted well in detail in this segment.

Descriptive Statistics

Descriptive statistical Examination was conducted on E-Views statistical software; results of that analysis are in Table 1 given below. Inflation (CPI) data for the duration of 2011~2017 has the mean of 6.71% with standard deviation of 3.43%. On the other side PSX-100 index Return has the mean of 1.52% and standard deviation of 4.67%.The values of median, maximum, minimum, skewness, kurtosis, jarque-bera, probability and observations are also given for these two variables in the Table 1.

Table 1:- Descriptive Statistics

Detail	PSX 100 Index Return	CPI
Mean	1.52%	6.71%
Median	1.99%	6.21%
Maximum	12.17%	13.91%
Minimum	-10.44%	1.32%
Std. Dev.	4.67%	3.43%
Skewness	-0.382296	0.364513
Kurtosis	3.247225	1.91641
Jarque-Bera	2.26002	5.969767
Probability	0.32303	0.050545
Observations	84	84

Augmented Dickey Fuller test (ADF)

Stationary Status at level or at first difference of the data collected on CPI and Stock return as assessed by using Augmented Dickey Fuller Test in E-view. Results in Table 2-1 demonstrate the CPI and Stock return has significant relationship and Chi-Square vale also support the null hypothesis. The Schwarz Info criteria (SIC) are used for these variables Lag length. The value of the Durbin-Watson stat is 1.985561 which indicates there is no auto connection between these factors in Pakistan**.** In Table 2-2 as per LM Test p value is more than 0.05 that also indicate that null hypothesis is not rejected so we can conclude that there is no serial correlation and autocorrelation.

Table 2-1:- Augmented Dickey Fuller Test (ADF Test)

Method	Statistics	Prob.**
ADF-Fisher Chi Square	42.3823	0.0000
ADF- Chai Z-Stat	-5.41896	0.0000

** Probabilities for fisher tests are computed using an asymptotic Chi-Square distribution. All other tests assume asymptotic normality.

Intermediate ADF Test Results D(Untitled)

Series	Prob.	Lag	Max Lag	Obs
D(PSX-Index)	0.0000	3	11	79
D(CPI)	0.0076	11	11	71

Table 2-2: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.09844	Prob. F(2,80)	0.9064
Obs*R-squared	0.206217	Prob. Chi-Square(2)	0.902

Granger Causality Test

GC test enlightens regarding the course of causality. And Table 3 demonstrates the consequence of set wise causality. There are two null hypotheses which are: (a) Does Inflation Rate cause Stock Prices? And (b) Does Stock Prices cause Inflation Rate?

Table: 3 Results of Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
CPI does not Granger Cause PSX-INDEX	82	0.61342	0.5441
PSX-INDEX does not Granger Cause CPI		0.24391	0.7842

The eventual outcomes of Granger causality demonstrate no associations toward any course. This result confirms our past results that no co-integrating connection happens among Investment return and Inflation rate.

V. CONCLUSION

The thought process behind this investigation is to look through the long haul fundamental connection between the stocks returns of PSX-100 Index and Inflation. The examination utilized the month to month information on the stock Market Index for finding their aggregate returns and Inflation that is estimated through Consumer Price Index (CPI). Unit Root Test (ADF Test) along with Granger causality tests was used to assess the associations among Stock Return and Inflation rate.

For the economy of any country inflation is a very critical issue, all the sectors of a nation's economy are affected by the inflation. The capital markets are considered as the back bone of the country's economy therefore there should be a strong relation among capital market (PSX-100 Index) and CPI.

The past investigations have demonstrated that an acceleration in Inflation in Pakistan opposite affect the capital market. The question of this exploration is to evaluate the effect of ascends in price over the division of the share trading Market. Because Pakistan is a developing nation the financial variables like inflation are subject to variations due high deficit in budget that finally effects the entire economic system that also includes the market price of stocks and as well as their returns. The Capital investors are hesitant to put resources into securities exchange due high inflation as the inflation could increase the nominal interest rate which will further increase the discount rate for stock valuation.

The aftereffects of this investigation are in agreement to the writing demonstrating a noteworthy and negative connection between the Inflation and the stock returns of PSX-100 Index. The overall results of the study oppose the Fisher Hypothesis that suggested the stocks give the fence against the Inflation and the connection among the stocks and the expansion is positive. So it could be expect that there is a noteworthy connection among stocks and the expansion and furthermore the negative connection among Inflation and return. Therefore the higher inflation is related to the lower expected future returns.

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