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## **IMPACT OF MACROECONOMIC VARIABLES ON STOCK MARKET RETURNS**

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#### ABSTRACT

The relationship between stock market and various macroeconomic variables has always been divisive. Studies indicate that stock market is influenced by changes in macroeconomic variables. Some of which affect the stock market returns and index positively while others have an adverse impact on stock market returns and index. This paper examines the impact of macroeconomic variables like GDP per capita, gross domestic savings, inflation and interest rate on stock market returns. Studies included in this paper published during 2000-2011. These studies revealed that macro economy's effects on stock exchange are not in one direction only. Some macro economic variables like GDP, gross domestic savings influence positively while some other like inflation and interest rate influence negatively the stock market returns. Based upon these studies, it is also suggested in the end of this paper that governments should take remedial measures to control inflation and to improve GDP. Also it should work on maintaining appropriate interest rates. There should be a balance between excessive high and low interest rates. It will boost investments in stock markets and consequently the stock returns.

#### **KEYWORDS**

Inflation, GDP, Interest Rate, Gross Domestic Savings, CPI.

#### INTRODUCTION

tock markets play vital role in development and growth of any modern economy. It is hard to imagine a prosperous economy in the absence of stock markets. Role of these markets is important in the way that they mobilize the domestic resources of the economy and channel them to productive investment. The performance of stock market is gauged through movements in its index which is influenced by many factors such as companies' specific factors, domestic factors (macroeconomic, social & political) and international factors.

The focus of this study is to determine the impact of certain macroeconomic variables on stock market returns. There are many macroeconomic variables that can affect stock market index such as exchange rates, inflation, foreign exchange remittances, domestic & international oil prices, gross domestic products (GDP), interest rates, money supply, trade balances, country reserves, foreign direct investment etc. Most important and crucial economic variables that may affect the developing countries like Bangladesh, Pakistan are inflation, interest rate, exchange rate, GDP per capital and gross domestic savings. Massive number of studies reveals the relationship of these variables with stock market index. The relationship between macroeconomic variables and stock market index has always been of immense attraction for finance practitioners since many years. Relationship between stock market returns and macro economy is not entirely in one direction. Some macro-economic variables positively influence while some other negatively influence the market returns. Studies show that inflation and interest rates have negative relationship with stock market index whereas GDP growth has a positive relation with stock market index (Sohail and Hussain, 2011).

### RELATIONSHIP OF DIFFERENT MACRO-ECONOMIC VARIABLES ON STOCK MARKET

Inflation is defined as the upward movement in prices of goods and services in an economy due to excessive demand of goods and services exceeding their money supply. It affects the purchasing power of the people and results in less saving which consequently results in increased money supply. Condensed saving reduces the economic growth by limiting investment in the economy. For measuring the effect of inflation on the economy, Consumer Price Index (CPI) can be used. Consumer Price Index is the weighted average of prices of consumer goods and services. It is calculated by taking changes in prices for each item and then averaging them.

Interest rate is the interest rate charged by central banks from commercial banks on the provision of credit/loan to commercial banks. It is used as a tool of monetary policy to control inflation i.e. in the regime of higher inflation; central bank increases this rate for commercial banks. It is for the purpose of controlling excessive money supply in the country. With limited funds, banks will trim down provision of loans to the customers which will ultimately affect further investments and businesses. This study will determine how interest rate can affect investment in stock market as stock market plays vital role in economic growth and how it is related to stock market index.

Gross Domestic Product Per Capita is a measure to gauge the standard of living of people in a country. It is among one of the major macroeconomic variables used to access total goods produced per person by a country. It is an indicator of economic financial condition.

Gross Domestic Savings (% of GDP) are calculated by subtracting final consumption expenditure (total consumption) from GDP. Higher GDP per capita and gross domestic savings indicates economy growth meaning by higher investment in capital and money markets. This study will counter check this concept in context of impact of GDP per capita and gross domestic savings on Stock Exchange index.

The motive of this study is to explore the influence of major macroeconomic variables like inflation (measured through CPI), interest rate, gross domestic product per capita (GDPPC) and gross domestic savings as %age of GDP on stock market returns. Various studies have been carried out in the past to study such relationships by using different macroeconomic variables according to researchers' choice like Taulbee (2001), Nishat & Shaheen (2004), Ali (2011) and Sohail and Hussain (2011).

It is enduring discussion whether macroeconomic variables significantly affect the stock market index or not. However, studies reveal that there is not much divergence among the researchers. Inflation has a negative impact on stock market prices and has causal relationship explored by Nishat & Shaheen (2004) & Ali Bazeed (2011). Stock market index is positively affected by growth in real GDP and consequently in GDP per capita and it is the largest determinant of stock prices (Taulbee, 2001).

Aims of the study are to determine and ascertain correlation and causal relationship between Stock Market returns and macroeconomic variables by conducting content analysis. It is intended:

To ascertain the dependency of stock index and its returns on macroeconomic variables

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• To determine the positive/negative relationships between macroeconomic variables and stock index

### HOW INFLATION EFFECT STOCK MARKET RETURNS AND ITS INDEX

Ali (2011) explored the relationship between some macroeconomic variables on stock market return in Dhaka. Multi Regression Model was used to trace down the relationship between stock market return and macroeconomic variables. Inflation, foreign remittances, market PE and industrial production index were repressors whereas stock market return was dependent variable in the study. Only one unilateral causal relationship was revealed between stock market return and market PE by Granger Test. Inflation and foreign remittances were having negative relation; on the other hand, industrial production index and market PE were having positive influence on stock market return. Less information efficient market was also proved by the result of less causality relationship among variables through Granger Test.

Another study conducted by Hosseini, Ahmad and Lai (2011) on stock markets indices of China and India. The selected macroeconomic variables in the study were crude oil price, money supply, industrial production and inflation rate of China and India. Findings disclosed that in long run, crude oil price, money supply and industrial production have positive impact on China stock market index but negative in case of India. However rise in inflation rate negatively affect the stock market index in case of both countries

On other hand, in short run, crude oil price has positive impact on Bombay stock market (India) while it is negative but also insignificant when considered the Shanghai stock market (China). Money supply has positive impact on Chinese stock market index and negative on Indian stock market index, however, in both countries, these effects are insignificant. Inflation has positive significant effect on Chinese stock market but has negative insignificant relation with index of Indian market

Sharma and Mahendru (2010) studied the impact of macroeconomic variables on Bombay stock exchange (BSE). The explanatory variables included in study were inflation rate, foreign exchange reserves, exchange rates and gold prices. Explained variable was the stock prices of BSE. Simple regression analysis had been applied to study the relation. Results of the study revealed that exchange rates have high negative correlation with stock prices; inflation rate has low negative correlation with stock prices and does not affect the stock prices. Foreign exchange reserves have positive correlation while the gold prices have moderate correlation with stock prices.

Research by Boyd, Levine and Smith (2000) supported the impact of inflation on financial sector performance. Financial sector performance was measured through banking sector performance and equity market returns. Research showed that there is negative relationship between inflation (being measured through changes in CPI on aggregate) and financial sector performance. Also their relationship is nonlinear. It also showed that when inflation rate exceeds the threshold rate, the marginal impact of inflation on stock market returns and banking sector performance diminishes.

### IMPACT OF GDP ON STOCK MARKET

One of the studies to find out the impact of Macroeconomic variables on stock market index was conducted by Hsing (2011). Exponential GARCH (Nelson, 1991) model was used to study the impact of various economic variables that cause fluctuation in South Africa's stock market index. Findings of the study were that index of South Africa stock market has positive relation with growth in real GDP, US market index and the ratio of M3 money supply to GDP but has the negative relation with government deficit to GDP ratio, the domestic real interest rate and the inflation rate, the nominal effective exchange rate and the U.S. government bond yield.

Gan, Lee, Yong and Zhang (2006) studied the relationship and interactions between stock market returns and macroeconomic on New Zealand stock market for 1990-2003. They used co-integration tests for determining the relationship among variables, Johansen Maximum Likelihood and Granger-causality tests to determine whether stock return is leading factor for changed in macroeconomic variables and innovation accounting analysis to check the linkages among the variables. The seven macroeconomic variables under study included Inflation rate, GDP, Exchange rate, Money supply, Long term interest rate, Short term interest rate and Domestic Retail Oil price (ROIL). Results of the study showed that there is a significant relationship (positive as well as negative) between macroeconomic variables and stock returns. Also it revealed that stock return is not a leading factor for changes in macroeconomic variables

Taulbee (2001) explored relationship of interest rate, unemployment, real GDP and fisher effect on S&P 500 index. The study also revealed some effects of other indexes in the S&P500 like transportation index, utility index etc. The paper also examined the relationship in economy and four types of industry i.e. defensive, growth, cyclical and interest sensitive. In the paper, S&P 500 Index (sp500) was dependent variable and Real GDP, unemployment fisher effect were independent variables. The paper used Double Log (GLS) regression model and it showed that Real GDP was the largest determinant of stock prices and it was having positive influence on stock index. During boom, economy's maximum return was possible by investing growth industry. Investor might get best return by investing in defensive industry during good economic condition.

### EFFECT OF INTEREST RATE ON STOCK MARKET

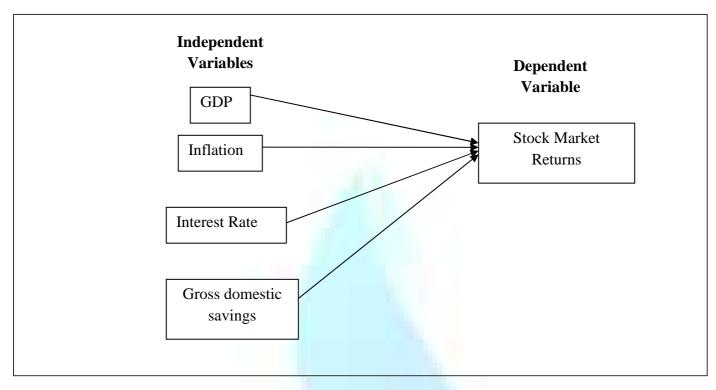
Khan, Ahmad & Abbas (2011) studied the impact of macro-economic variables on stock return in Pakistan. Macro economy's variables like exchange rate, inflation, T-Bill rate, money supply and Interest rate were selected as independent variables in their study while stock market return was the dependent variable. Ordinary least square method was used to study this impact and the results revealed that exchange rate has negative significant influence on stock returns because when local currency devalued as compared to dollar, foreign investors withdraw their funds that result in decreased stock returns. Interest rate also has negative but T-Bills have the positive significant influence on stock returns.

Gay (2008) studied the effect of macroeconomic variables on stock market returns on four emerging countries namely Brazil, Russia, India and China (BRIC). The independent variables under study included exchange rates and oil prices whereas stock market returns was the dependent variable. Box-Jenkins ARIMA model was applied on moving averages of time series data of exchange rates, oil prices and stock returns comprising a total of 1080 observations. Results of this research found that no significant relationship between exchange rates and oil prices on stock market returns exist. This may be due to the ignorance of domestic and international macroeconomic factors such as inflation, production, dividend yield, interest rates, etc. Also it revealed that there was no significant relationship between present and past stock returns indicating that BRIC have weak form of market efficiency.

Léon (2008) studied the effects of interest rates volatility on stock market returns and volatility in Korea. GARCH model was used in the analysis. Results showed that interest rates have strong predictive force for stock market return but a weak predictive force for volatility. Meaning by that there is a negative relationship between interest rates and stock market returns. A high interest rate leads to increased savings and less investment towards stock market.

#### IMPACT OF INFLATION, GDP AND INTEREST RATE IN DEVELOPING COUNTRIES

Emmanuel and Samuel (2009) studied the impact of real GDP, inflation rate and interest rates (independent variables) on stock market returns (dependent variable) in Nigeria. They applied multiple regression analysis technique for their analysis comprising ten years longitudinal data of the said variables. The results of the study showed that there is significant relationship among these variables. Increase in inflation and interest rates adversely affect the stock market returns whereas there is positive relation between real GDP and stock market returns. About 95.6% of the variations in stock market returns were explained by real GDP, inflation rate and interest rates



## CONCLUSION

Aim of this paper was to analyze the relationship between macro economy and the stock market returns' behavior and studies conducted by different researchers reveal that stock markets' responses are different for different macro economic variables. The economic corollary is that major macro-economic variables like inflation and interest rate have negative relation with stock exchange index and returns.

High inflation reduces the savings per capita and leads to high nominal interest rates (high borrowing cost) that ultimately results in decreased investments in stock markets and reduces the stocks' returns. Similarly, increased interest rate results in higher risk and required rate of return of investments by the investor. Due to this, high required rate of return, profits of the firms are negatively effected which ultimately leads to fall in stock value.

In context of developing countries, economic survey reports reveal that such countries are economically instable and face the issues of high inflation, low GDP etc. Fore example, in Pakistan, inflation is continuously rising and recorded about 14% in 2011-2012. On the other hand, due to political instability, any mega project has not been done during last two decades in this country because of which, Pakistan fails to improve its GDP which was recorded only about 2.4% in 2011-2012. This situation is negatively hitting the investments in stock markets.

Stable inflation and interest rate will lead the investors towards investment in capital markets. On the other hand, increased GDP and gross domestic savings indicate economy growth meaning by higher investment in capital and money markets and thus positively affect stock returns as held by the analysis of literature.

## RECOMMENDATIONS

Many developing countries like Pakistan, Bangladesh are facing the issues of high inflation and interest rates while low GDP and gross domestic savings which negatively effect the investments in stock markets and thus push the stock returns to decline. Some of key recommendations based upon study for policy makers are:

If policy makers control the inflation rate and interest rate in the economy, they can boost the Stock market returns toward defined target. Increase the stock exchange return will lead to the investor willingness to invest in the stock market which is very helpful for monetary and fiscal purposes of the government.

Stock market is very sensitive to the movements in inflation rate. This study indicates that negative relationship exists between Stock market returns and inflation. Higher inflation leads to higher interest rates and subsequently investors require higher rate of return on their equity investments and it lowers the value of the equity stocks. Rational investors avoid investing in a bear market and those who invest require to be compensated for extra risk. Consequently, stock market index fall down. Governments should take measures to control inflation through infrastructural development. There should be stable and low inflationary environment.

Also the studies indicate negative relationship between interest rate and Stock market returns. There should be a balance between extremely high and low interest rate. On one side, reducing interest rate will increase the money supply in the country so more investment opportunities will be available. This is because banks will ascent towards giving loans to the customers. As a result, investors will invest in stock market keeping in view the perception of bull market. It will boost the stock market index. While on the other side, lowering interest rate will cause excessive money supply in the country which in turn will cause inflation. Therefore, special attention should be given by the Government to maintain balance between extremely high and low interest rate. Similarly by increasing the Per capita income and percentage to GDP may also increase stock market returns significantly.

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