



An Analytical Study of Relationship of Macroeconomic Indicators on Movement of KSE (Karachi Stock Exchange) Prices

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1. Introduction

A stock market or equity market is place which provides sellers of the securities and buyer of the securities a place to transact and sell and buy securities of particular organization. These securities may be derivative securities. When brokers and traders come together for trading a particular security when it is listed in the stock exchange this function is basically function of the stock market or stock exchange. Stock exchanges provide facilities to investors and seller a platform where they can sell shares and other financial instruments and also for the investors and buyer who can invest and buy these financial instruments. Shares issued by different organizations, unit trust are traded along with the derivative securities, bonds and mutual funds. Listing is mandatory for any company to sell its securities. World has become global and because of this reason now days exchanges without having central locations still can operate online. When any institution or organization issue stocks first time usually it is known as initial public offering which is considered as a primary market function. When these securities are again purchased or sold in the stock market they are known as a function of the secondary market. The price of the stock and other financial instruments basically depends upon the supply and demand of particular product.

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Karachi stock exchange (KSE):

Pakistan has three major stock exchanges in which Karachi stock exchange is largest stock market. American journal announced KSE as best performing stock market world. But in recent past it passed through a very rough time because of the worse political situations. And now it is again on the path of recovery. The Karachi Stock Exchange trades the KSE-100 Index. KSE 100 is very spread index and it includes many industries which could be very useful for any investor who want to minimize the risk and also get much return of his investment. Total market capitalization was represented by the KSE-100 Index in 2005 was 88% which shows the importance of KSE 100 index in overall performance of the Karachi stock exchange. The membership in Karachi stock exchange can only be availed by 200 members only who could be individuals or corporate entities. Members who traded actively in the stock market in 2005 were 162. KSE also gives membership to the foreign corporation with some terms and condition.

Financial position of KSE:

Now a day the importance of stock market is growing. This growing importance is attracting many economists to do research on the development of stock market and economic growth. A lot of succeeding studies have adopted to use the growth regression framework in which the standard growth rate in per capita output across countries is regressed on a set of variables controlling for initial conditions and country characteristics as well as measures of financial market development (see King and Levine (1993a), Atje and Jovanovic (1993), Levine and Zervos (1996), Harris (1997), and Levine and Zervos (1998) among others). For any country now a day the working of the capital market has to be active and efficient for its economic growth and development. Globalization is going to be very useful for the countries as now well performing stock exchanges can attract a pool of foreign investors. Foreign investors can now get more information about the stocks and even they can compare returns also.

When KSE 100 index was launched in 1991 in a very short time became very popular and also became reflector of KSE performance. Karachi Stock Exchange has been stated as the “Best Performing Stock Market of the World for the year 2002”, owing to most excellent performance and liquidity. As on June 01, 2009, number of companies listed was 651 and their market capitalization was \$ 26.48 billion. This great performance of the KSE took made it possible that now KSE is known as best performing market in the world, “Best Performing Markets” of the world as approved by the international magazine “Business Week”. Likewise, the US newspaper, US Today, named Karachi Stock Exchange as one of the “Best Performing Exchange” of the world. The representations of the companies come from all industries and sectors working in the country. In 2009-2010 there were two positive developments for Government of Pakistan. One was successful agreement of NFC awards and passage of 18th constitutional amendment. But still country was not able to meet standards of

IMF set for country. Inflation was high than expectations though there were some expectations that inflation may go up due tariff in electricity. The management of fiscal year was more challenging as there were low inflows of tax revenues and also there was a delay in the external financing. So to overcome from this deficit government arranged funds from SBP also it has to reduce budget and become rationale in giving subsidies.

But decrease in the external current account deficit and also increase in remittances make it possible for State bank to strengthen the position. Foreign institutions hold significant part of KSE as it is a global equity market now. However KSE have seen large decrease in the 2008. Local investors lost trust on KSE thus results were decrease in the volume. Uncertainty about security and governance also was reason to reduce interest of the investors. But with passage of time KSE 100 was able to gain trust of investors and it started to go up market. KSE 100 index which was opened at 7162.18 at beginning of year 2009-2010 closed at 9721.91 which show gain of 35.7%.Market capitalization increased from Rs.2, 121 billion to Rs.2, 732 billion which shows rise of 28%.Also net foreign inflow of US \$ 567 million was recorded during July 2009 to June 2010, which was very helpful to strengthen the overall performance of the KSE 100.

Macroeconomic indicators and stock prices:

Macro-economic factors have major impact on stock prices and its return. Any change in macro-economic factors causes a great change in the stock price movement and its returns. These variables are the most important indicator of stock returns. Binder and Merges (2001) explains in their study that unpredictability of the return on the market portfolio has inverse relationship to the ratio of predictable profits to predictable revenues for the economy. Nardari and Scruggs (2005) deduce that high vagueness concerning prospect returns is largely linked with recessions. However, More (1983) and Schwedt (1989) point out stock prices as most important indicators, reporting that the twist in stock prices takes place earlier to the turn in business activity.

Macroeconomic variables such as inflation, money supply, GDP, and capital gain tax, interest rate are used to determine the effect. When prices of the goods and services in a particular area start to increase it means the purchasing power of the money is decreasing which shows inflation in particular country. Money is used as a medium of exchange in a country and when the value of the unit decreases then inflation in a country occurs. A principal calculation of price inflation is the inflation rate, the annualized proportion modify in a general price index over time. Inflation in a specific country affects the economy of that country in both ways whether it is negative or positive. Major negative affect is decrease in the value of the money people have more money and this causes to decrease in the value of the money people have more money and purchasing power of the money to buy any unit of the product is decreased. This thing causes to decrease in supply of the products while Positive

effects comprise ensuring central banks can regulate nominal interest rates and support investment in non-monetary capital projects.

When investment in a particular country starts to decrease in the country one of the most important reason is increase in the capital gain tax imposed. This capital gain tax discourages not only domestic investors but also the foreign investors. For example this tax decreases return on the investment for the investors which if kept high discourage the investors to invest in that asset.

Stock prices behave in a different way for different macroeconomic factors. When money supply is increased it causes to increase in the inflation as people have more money to buy things and this increase in demand will take prices up. But this inflation has negative impact on the stock prices. But if we consider same case in a different way like when there is monetary growth in the economy there is increase in the corporate earnings and this thing will increase the stock prices. It can also be considered that money supply has negative impact on the interest rate and hence the prices of the stock will go up.

The relationship between interest rates and stock prices is well established, that suggest that increase in interest rates can increases the opportunity cost of holding the money and so substitution between stocks and interest securities, hence falling stock prices. Moreover, any change in an asset's cash flows (CF) have a direct impact on its price, the asset's expected growth rates influence its predicted cash flows that will affect its price in the same direction.

2. Research methodology

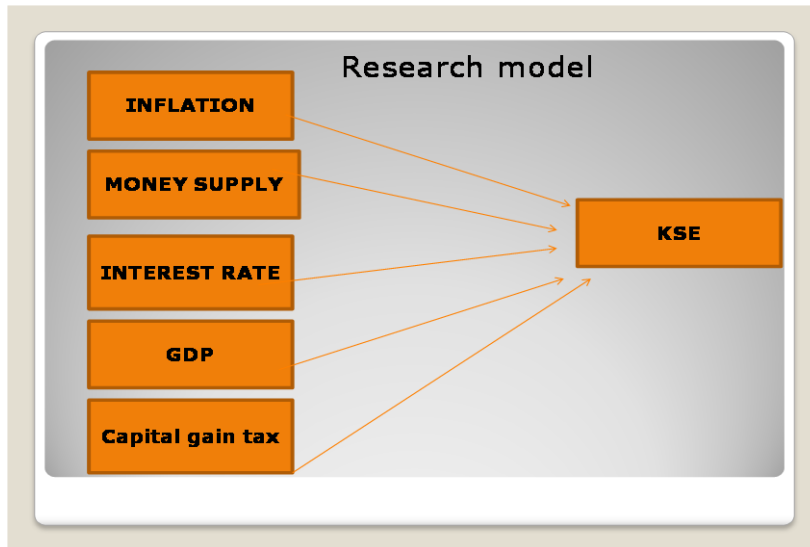
Research objectives:

Objective the research is to find relationship between stock price movement and macroeconomic indicators. Different indicators like interest rate, inflation rate, capital gain tax, money supply and GDP has been used in the research. The objective is to find how stock market behaves with change in these macroeconomic indicators. Whether there is any positive or negative relation between these macroeconomic indicators and stock price movement. This research could also be useful for the investors they can use the information to predict the stock price movement.

Dependent variables:

In this research two types of variables has been used one dependent variable and other independent variable, here dependent variable is stock price movement while Independent variables are inflation, interest rate, GDP, capital gain tax, money supply.

Research Model



Research formulation:

Many researchers have been done to find relationship between stock price movement and macroeconomic indicators in many stock markets because of growing importance of the stock markets in the development of the country. It is important discussion that whether financial development causes economic activity. There is not much research done in the Pakistan to find relation between macroeconomic indicators and stock price indicators the less availability of the literature shows this thing. World has become global and everyone is looking to find new ways to invest in new markets and new ways. Investors want to reduce risk by diversifying their investment in different portfolios. They want to invest in different markets and portfolios with confidence. This is only possible when there is proper information available and there is proper research is available for the investors. This research and information is not only important for domestic investors but also very important to attract foreign direct investment in the country. So this is important to find that how stock prices behave for different macroeconomic indicators. This research is not only helpful for the investors but also it is very important for the regulators too as if there is any instability in the market it can be adjusted by different models used by regulators. Because its duty of the regulators to maintain integrity of the stock market. To find relation between macroeconomic indicators and stock price movement is very helpful to minimize risk. Now stock exchange for development of any economy is as important as other players operating in the stock exchange. So this increasing importance is now creating importance of the stock exchanges. Adjasi and Biekpe (2006) declared that stock

exchanges permit firms to obtain capital rapidly, due to the ease by which securities are traded. Stock exchange movement, thus, plays significant task in helping to establish the effects of macroeconomic actions.

A fine performing stock exchange is supportive for economic action through growth and saving, well-organized allocation of investment and attracting FDI (foreign direct investment). The stock market gives assurance to savers by providing domestic house-hold discount investable means, modernization in financial instruments, which expand their risk and improved division in investment projects.

Hypothesis development:

In this study some macroeconomic indicators have been used to find their relation with stock price movement. Different hypothesis has been developed to check their relation with stock price.

H₀: There is correlation between interest rate and stock price.

H₁: There is no relation of interest rate and stock price.

H₀: There is correlation between money supply and stock price.

H₂: There is no correlation between money supply and stock price.

H₀: There is correlation between inflation and stock price.

H₃: There is no correlation between inflation and stock price.

H₀: There is correlation between capital gain tax and stock price.

H₄: There is no correlation between gain tax and stock price.

H₀: There is correlation between GDP and stock price.

H₅: There is no correlation between GDP and stock price.

These hypothesis has been has been and developed tested by using different test. Results for this hypothesis have been explained in further section.

Research method:

The secondary data has been used in the research which is collected from KSE website and also from other sources and previous researches to show any relation between macro-economic indicators and stock price movement and to justify research hypothesis.

Annual data ranging from 1999-2009 has been taken is the research to prove the hypothesis. This data is collected from KSE website and some other valid sources. Annual stock price movement has been taken for above given period along with different macroeconomic indicators like inflation, money supply, GDP, capital gain tax, interest rates. Though this sample size was small as within the findings could more accurate if sample size should kept large. This time frame for choosing the sample is taken under consideration because during this time period index went to its

highest level since its start and also it went to its lowest level within this time period. This was main reason to choose this time frame for choosing the sample.

The co-relation test has been used to show any relation between these macroeconomic indicators and stock price movement. Co-relation usually measure relationship between different indicators. Co-relation check that whether there is any relation between different indicators and also check whether they have direct relation or indirect relation like in given research it is used to check that inflation, money supply, interest rate, capital gain tax, GDP have any relation with stock price movement and if they have relation then it is checked that whether it is direct relation or indirect relation. In co-relation non parametric test has been used to prove study. Level of significance is 5% in this research.

Limitations:

The study was limited to Karachi stock exchange only. Though there were other stock exchanges in Pakistan but Karachi stock exchange is major and most liquid stock market from other stock markets in Pakistan. KSE 100 index came into operation in 1991 which shows it is not too much old it started just to decades back so on the basis of available data it was very difficult to get accurate result. If sample size would be increased we could get more accurate results about the given research. In Pakistan there is not much research conducted on the given topic of study also the available data is not enough to give more accurate results. One reason could be that KSE 100 index is not too much old. Capital gain tax as a macroeconomic indicator is showing relation with the stock price movement but is not significant. For two indicators used is the research the distribution is bit skewed.

Correlation analysis

Relationship between KSE and macroeconomic variables in Pakistan:

	KSE	Inflation	Interest	Money supply	GDP	Tax
KSE	1.000	.617	.624	.832(**)	.654(*)	-.088
Inflation	.617(*)	1.000	.380	.262	.006	-.447
Interest	.624(*)	.380	1.000	.753(*)	.497	-.317
Money supply	.832(**)	.262	.753(*)	1.000	.698(*)	-.228
GDP	.654(*)	.006	.497	.698(*)	1.000	-.402
Tax	-.088	.447	-.317	-.228	-.402	1.00

** Significant correlation at the 0.01 level (two tailed)

* Significant correlation at the 0.05 level (two tailed)

Analysis:

Basic objective of the data analysis is getting feel of the data, testing the goodness of data and testing hypothesis developed for research. Basically feel of the data will give how good coding and data entering have been done. Testing is done by submitting the data for factor analysis. In current study SPSS has been used to analyze the data in given study. Non parametric test has been used in this study as the sample size is small. Non-parametric methods extensively used for studying populations that are on ranked order. The use of non-parametric methods become essential when information have a position but no clear numerical explanation, such as when assessing preferences; in terms of levels of measurement. As non-parametric methods make less assumptions, its applicability is wider than the matching parametric methods. In particular, they may be practical in situations where fewer are recognized about the application in question. Also, the dependence on fewer assumptions, non-parametric methods are robust. An additional reason for the use of non-parametric methods is straightforwardness. In certain cases the use of parametric methods is right, non-parametric methods may be easier to use. Due both to this ease and to their greater strength, non-parametric methods are seen by some statisticians as leaving less room for unacceptable use and misapprehension.

Pearson's r	Indication
Between $\pm .80$ to ± 1.0	High correlation
Between $\pm .60$ to $\pm .79$	High moderately correlation
Between $\pm .40$ to $\pm .59$	Moderate correlation
Between $\pm .20$ to $\pm .39$	Low correlation
Between $\pm .01$ to $\pm .19$	Negligible correlation

Inflation and KSE:

In given study the value of the r is .617 which as per above given table lies in range from .60 to .79 which is highly moderately correlated. So we can conclude that inflation and KSE are moderately highly correlated in the given time period. So the null hypotheses for inflation and stock price which was they are positively correlated is accepted and it has two tailed significance value.

There is negative correlation between inflation and stock prices are contended because of raise in the rate of inflation is accompanied by both minor predictable earnings growth and greater required real returns. (Fame 1990)

Interest rate and KSE:

Above table shows that value of r is 0.624 which as per above Pearson's table lies in range of moderately high correlation. So given study conclude that interest rate and KSE are moderately highly positively correlated for given sample size and time

period. So null hypotheses is accepted which states that interest rate and stock price are positively correlated, they have two tailed significance value.

In literature, negative association among interest rates and stock prices is hypothesized due to numerous reasons. In an equity assessment procedure, at first a discount rate is determined. A selected discount rate reflects both the time value of money and the riskiness of the stock. The risk free rate represents the time value of money. A risk premium explains compensation for risk, calculated in relation to the risk free rate. A determined discount rate is supposed by an sponsor as a required rate of return (Stowe et al. 2007, p. 47).

Money supply and KSE:

Above table shows that value of r is 0.832 which as per Pearson's table lies in range of high correlation. So study concludes that money supply and KSE are positively correlated for given sample size and time period. Null hypothesis is accepted which states that money supply and stock price are positively correlated. Money supply is most significant among all other factors and it is 99% accurate. They have two tailed significance value.

The results of Muradoglu and Metin (1996) point to that money supply has positive relation with stock returns in short run dynamic model.

GDP and KSE:

Correlation table shows that value of r for GDP is 0.654 which as per Pearson's table lies in range of moderately high correlation. So study concludes that GDP and KSE are positively correlated. Null hypothesis for given study which states that GDP and KSE are positively correlated is accepted. It has two tailed significance value.

Capital gain Tax and KSE:

Value of r for capital gain tax is -0.088 they are negatively correlated because as per Pearson's table it lies in negligible correlation value range. KSE and capital gain tax are correlated with each other. But their correlation for current study in given sample size is negligible correlation.

Some other researches may show some different results from current study this may be because of other economic indicators and other indicators operating in the market and they put influence on stock price movement. Sample size taken in the given study was 10 years and within this time period some other indicators may have impacted the stock market and the results in the given study may vary from them.

Future Recommendation

- Some other macroeconomic indicators also taken under consideration to make broader research. Current study only included only five indicators but other indicators can be included in the research to check their correlation with KSE stock price movement.

- If more data collected from other sources the study could be improved. Current study only taken a sample size 10 years but if in future the sample size is increased more accurate results can be obtained.
- Some other test like regression can also be applied to get new results and information. Current study used only correlation test which tells relation of different indicators but if regression is used affect of the different indicators on KSE stock price movement can be obtained.
- Some other indicators which are operating in the market which can influence stock price movement can be considered for further study.

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