Impact of National Savings Profit Rates, Inflation Rates and Discount Rates on Capital Markets of Pakistan: Empirical Evidence from KSE-100 Index

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Abstract:

   This study is aimed at bringing on surface the impact of interest rates announced by National Savings Centers, discount rates offered by State Bank of Pakistan and inflation rates on Pakistan Stock Exchange KSE-100 index. This will provide an insight to decision making implication for Asset Management Companies, Real Estate Management Companies, risk management practices, Government Agencies towards Fiscal decisions and equity participants. This study ratifies evidence supporting the existence of stock market efficiency based on yearly interest rates offered by NSC on their 7 schemes of investment and discount rates announced by State Bank of Pakistan during 2007-08-to 2012-13. Historical inflation rates are collected from the website of the world bank and Market Capitalization in terms of Pak Rupees of KSE is taken from KSE for the said period. The impact of these variables is checked individually on KSE-100 index through simple ordinary least square (OLS) Regression performed in SPSS. It is found that variables under study notably affect the KSE – 100 index. NSC interest rates are significantly negatively affect KSE-100 index viz-a-viz discount rates and inflation rates have also negative effect. The investment in capital

market is affected by prevailing interest rates, discount rates and inflation and by controlling these variables, the efficiency of market is evident.

Key words: National Savings Centers, Asset Management Companies, Karachi Stock Exchange, Interest Rates.

INTRODUCTION

Stock market faces oscillation depending upon the inflation, interest and discount rates and investors make their investment decision depending upon the variability in prevailing of these factors. The stock exchanges of the Pakistan are considered to be a barometer of economy and are affected by various macro-variables and micro-variables. Among these variables, interest rates, discount rates and inflation rates plays significant role and are chosen as independent variables and Karachi Stock Exchange as dependent variable. Interest rates offered by a National Savings Centers owned by the Government of Pakistan. This study observes how interest rate offered by national saving schemes, discount rates announced by the state bank of Pakistan and inflation rates affect the KSE100 index in the stock exchange of Karachi both in investor's and statistics perspective. Pakistan Stock Market formerly KSE 100 reached an all time high of 36228.88 in August of 2015 and a record low of 538.89 in June 1990.

Stock market provides a place where buyers and sellers of securities are met and make their transactions at an agreed price. In the mobilization of capital, stock market plays an important role in developing and developed countries, in turn this movement of capital leads to the industrial and commerce growth of a country, in result of globalization and liberalization of policies adopted by the most emerging and developed countries. Many factors are the determinants of return on stock, among these factors interest rate, discount rate and inflation are of crucial and important nature that effect the investment decisions. A little change in these variables can be the cause of greater change in the stock return.

These above mentioned variables are of macroeconomic nature and effect overall stock market performance, so investors consider these variables in the valuation process of equity stocks. Interest rate in this study are the profit rates offered by the national saving schemes, discount rates are the cost of borrowings of and also used in discounting future cash flows of the securities. Increase in the interest rate may decrease the stock prices, because when profit rates offered by the saving schemes increase investor move their money to the saving deposits due to high return and low risk.

An increase in inflation negatively affects the stock market performance. Growing inflation is a bad signal for the investor because of the negative effect on the overall economy of the country and investor feel insecurity about their money invested in the stock market. Investors expect strict monetary policies by the federal government to control the inflation that in turn controls the supply of money in the market, that in turn effect the firms suffer to get finance from lending institutes due the increasing cost of borrowing with tight credit terms. In line with the above discussion interest rate, discount rate and inflation has relationship with the stock market performance. This piece of research is basically undertaking with the purpose

to empirically test the said relationship. For this purpose the KSE 100 index is taking into consideration because KSE is the largest stock market of Pakistan, and KSE 100 index is the leading and representative index of overall capital market because the 80% market capitalization is captured by these 100 companies.

The economy of any country is encouraged by savings of its people, by adhering to high ethical standards offered by all industry participants through providing services that improve the regulatory framework. The savings play a significant role in determining the attitude of people towards investment based on rate of interest rates offered by National Savings Centers and other available opportunities of equity investment. The availability of money in the market gives the direction for monitoring the money circulation existing in contraction and extraction periods of inflation. It helps the central bank to adjust the interest rates in accordance with the supply of money and demand of money. In Pakistan, State Bank of Pakistan announces Discount rates every quarter which remain effective for that quarter. The fluctuation in Discount rates ultimately affects the rates of profit offered by National Savings schemes and resultantly changes the priorities of the investors. In case of declining National Savings rates and people prefer to invest their savings in other available opportunities like capital market, investment through equity participation and in real estate.

In the days of recession, interest rates offered by National Savings are likely to be on higher side and investors prefer to park their savings with fixed rates of return. While on the other hand, Capital market offers return in the shape of annual dividend and growth in equity stocks which is neither guaranteed nor fixed. The capital markets squeeze and expand depending on the fluctuation of rates of interest prevailing in the country. When interest rates are higher the investor don't opt to borrow the money but in case interest rates are declined the investor feels comfortable in borrowing and taking the advantage of lower interest rate by capitalizing that investment in equity stocks. In economic terms investment is an activity that produces capital goods like building. The equity investments offer lucrative returns to the individual as well as to the corporate but are not without risk because most of the individuals as well as corporate clients may suffer who do not possess the professional expertise to manage their savings in profitable ventures by investing in common stocks of companies listed at the stock exchanges. In Pakistan, three Stock exchanges namely Karachi Stock Exchange, Lahore Stock Exchange, Islamabad Stock Exchange, were existing, prior to formal launching of Pakistan Stock Exchange on January 11, 2016, which provide opportunities for the investors to become part of industry through equity investment. Equity investment is subject to various market risks which may vary from time to time in different circumstances, especially in countries where fixed income investment opportunities exist.

The objective of the research is to find out the connection among Pakistan Stock Exchange (formerly Karachi Stock Exchange) profit rates of national savings schemes, discount rate of State Bank of Pakistan and inflation rates. This research has been a good source of encouragement for new researcher in this area since profit rates offered by national saving centers give fixed income returns with no risk of loss and changes with the change in discount rates and investors consider these factors while investing in either stock market or in such fixed return schemes.

NATIONAL SAVINGS CENTRES

In 1953, the Pakistan Savings Control Bureau was re-named as Central Directorate of National Savings and it carried out the functions on the lines of National Savings Bureau Simla and Central Directorate of National Savings was given the status of an Attached Department in September, 1960, and was made responsible for all policy matters and execution of various National Savings Schemes. Till December, 1971, the National Savings Organization functioned as a Publicity organization and its activities were merely promotional in nature. But in early 1972, the scope of its activities was enlarged as the Central Directorate started selling II-Rupee Prize Bonds, and subsequently engaged in the operations of other savings schemes. This resulted in considerable expansion of the National Savings Organization.

DEFENCE SAVINGS CERTIFICATE

Defense Savings Certificate scheme was introduced in the year 1966 with minimum invest of Rs.500/- with no maximum limit. The scheme has specifically been designed to meet the future

requirements of the depositors with 10 years' maturity scheme with built in feature of automatic reinvestment.

SPECIAL SAVINGS CERTIFICATES (REGISTERED)

Since some investors look for cumulative profit to be paid after a certain period, a 3 years' maturity scheme was introduced in February, 1990 in different denomination starting minimum amount of investment from Rs.500/- with no maximum limit and profit is disbursed on the completion of each period of six months. However, no profit is accrued if the encashment is made before completion of six months.

REGULAR INCOME CERTIFICATES

In Pakistan, there are number of persons belong to Pensioners who look for a regular stream of profit every month, this 5 years' maturity scheme was launched on 2nd February, 1993 in the range of investment of Rs.50,000/- with Rs10,000,000/- maximum limit and disbursement of monthly profit calculated from the date of issue of certificates.

BAHBOOD SAVINGS CERTIFICATES

In view of the difficulties confronted by the widows and elderly, the maturity profile of ten years by the Government was launched on 1st July, 2003. Originally the scheme was destined for widows only, however, the Govt. later decided to extend the facility for elderly aged 60 years and above with effect from 1st January, 2004. The eligibility of monthly profit starts from the investment with minimum investment of Rs.5,000/- and multiple thereof to the extent of Rs.4 million of investment for a single investor and for Joint investor (Category A or B) is Rs.8 million.

ACCOUNTS

SAVINGS ACCOUNT
This is the oldest scheme among the National Savings instruments. The scheme has been designed to encourage the small savers and to meet their day to day needs. This is an ordinary account and frequent withdrawals (thrice a week) can be made through this account. The minimum investment limit is Rs.100/- in the scheme with no maximum limit.

SPECIAL SAVINGS ACCOUNT
A three years maturity scheme introduced in February, 1990. The deposits are maintained in form of an account. Profit is paid on the completion of each period of six months. The minimum investment limit in this scheme is Rs.500/-. There is not maximum limit, however, the deposits are required to be made in multiple of Rs.500/-.At the prevailing rates the profit is paid @ 6.00% p.a. for 1st five profits and the last profit @ 6.80% p.a.

PENSIONERS BENEFIT ACCOUNT
Pensioners can benefit by using this profile maturity of ten years launched by the Government on 19 January, 2003. The deposits are held in the form of accounts with minimum limit of Rs.10,000/- and maximum Rs4 million, the benefit is paid on monthly basis from the date of opening the account. At the current monthly benefit of Rs.800/- is paid on investment of each Rs.100,000/- which works out to 9.60% profit per annum.

ASSET MANAGEMENT COMPANIES
An asset management company invests its clients' pooled funds into securities that match its declared financial objectives and provide investors with more diversification and investing options than they would have by themselves. AMCs offer their

clients more diversification because they have a larger pool of resources than the individual investor. Pooling assets together and paying out proportional returns allows investors to avoid minimum investment requirements often required when purchasing securities on their own, as well as the ability to invest in a larger set of securities with a smaller investment. These Asset Management companies also run hedge funds and pension plans and earn income by charging service fees to their clients. In Pakistan there are 23 Assets Management companies managing a portfolio of Rs= 446.80 billion in Open-end Schemes, Rs=15.40 billion under Voluntary Pensions Funds, and Rs=16.01 billion in Closed-end Schemes of portfolio management as on March 18, 2016.(MUFAP).

PAKISTAN STOCK EXCHANGE

Karachi Stock Exchange (KSE) was constituted in 1947 and it is announced as the largest and most liquidity exchange in Pakistan apart from Islamabad Stock Exchange and Lahore Stock Exchange. A new integrated national bourse, the Pakistan Stock Exchange began functioning on January 11, 2016 replacing the stock markets of Karachi, Lahore and Islamabad and formally inducted into the unified PSX. Because of its outstanding achievement, it was in the year 2002 declared as the best stock exchange of the world. As outstanding achievements of KSE, some 654 companies were affiliated on December 8th, 2009, with the largest amount of capitalization of Rs. 8.561 trillion (US $120.5 billion) addition to listed capital of Rs. 2805. 83 billion (US$ 40.615 billion). On May 16th, 2011 KSE-100 index windup at 11967, on July 30, 2011optimal capitalization of KSE attained to Rs. 2.95 trillion (US$ 35 billion). The business initiated in KSE with 50 point and after some time market growth also be considered in points. The KSE 100 index begin on November 1st, 1991 and till to date is considered as most familiar stock exchange. KSE-100

index is used as parameter to predict the overtime for the companies that are registered in KSE as they showing their full market participation with reference to highest capitalization.

REVIEW OF EMPIRICAL EVIDENCE

Ramlal (2007) observed the association between the stock market and macroeconomic factors including discount rate, interest rate on savings account, inflation and industrial production. Vector autolatregressive models (VAR) used to find out the relationship between stock market and macroeconomic indicators. According to the results of the study long run relationship was observed between the stock market and above mentioned macroeconomic indicators in Barbados, Trinidad and Tobago but in Jamica not only long term relationship but also short run relationship found between the stock market and macroeconomic indicators. According to Khrawish et al (2010) positive significant relationship was found between the stock market capitalization and interest rate. In his study data from the period from 1990 to 2008 used from the Aman Stock Exchange. To find out the relationship between the stock market capitalization and interest rate ordinary least square (OLS) regression model used. According to the finding of the study strong positive association was observed between the stock market capitalization and interest rate in Aman Stock Exchange. A negative relationship also found between the market prevailing interest rate and stock rate offered by the Government with reference to development.

According to the study of Alam and Uddin (2009) negative association between the interest rate and sock price was observed in 15 underdeveloped countries. For this study data from the period from 1998 to 2003 was used. Ordinary Least Square (OLS) models used in this study to find out the intensity between the interest rate and stock market price. According to the results of the study negative relationship

between the interest rate and stock market price was observed it means an increase in interest rate leads to decrease in stock market capitalization whereas in decrease in interest rate leads to increase in stock market price. Negative relationship between stock market price and interest rate observed in Malaysia but positive association between the interest rate and stock market capitalization was observed in Japan. Ali et al (2010) observed the examined the association between the stock market capitalization and macroeconomic factors in Pakistan. In this study data from the period from 1990 to 2008 collected from Karachi Stock Exchange (KSE) for further analysis. Granger Causality test used in this study to observed the relationship between the observed variables. According to the study a positive significant association between the stock price and inflation rate was observed. He further added that no association between the stock price and other macroeconomic factors was observed. Other factors including exchange rate, money supply and balance of trade.

Bhattacharya and Mukherjee (2005) conducted the study to find out the relationship between stock market price and macroeconomic indicators. For this study data from the period from 1992 to 2001 was collected from the Bombay Stock Exchange India. Granger Causality test and cointegration test techniques used to observe the association among the observed mentioned variables of the study. According to the final result of the study negative association was found between the KSE and macro-economic indicators including interest rate, discount rate, inflation and industrial production. Campbel and Amer (1993) conducted a correlated study between stock return and bond return with reference to stock dividend expectations, interest rate, and inflation rate. According to the finding of the study variance in stock market capitalization was observed due to the stock dividend expectations, interest rate and inflation rate. Negative correlation between the stock price, inflation

rate and interest rate was observed whereas positive association between the expected dividend and stock market price was observed.

Cifter and Ozun (2008) conducted a study to observe the dynamic relationship between the stock price and interest rate by using the data from the period from 2003 to 2006 in Istanbul Stock Exchange. Johansons co-integration test and Granger Causality test used to measure the intensity amid the stock market price besides interest rate. According to the finding of the study negative significant relationship between the stock market price and interest rate observed in Istanbul Stock Exchange. Ologunde et al (2006) conducted a study to find out the relationship between interest rate and stock market capitalization. For this study data was collected from the Nigeria Stock Exchange from the period from 1981 to 2000. Ordinary Least Square (OLS) model used in this study to observe the relationship between interest rate and stock market capitalization. Results of the study indicated that positive significant relationship between the interest rate and stock market capitalization was observed whereas negative relationship between the stock market price and development stock rate was observed in this study.

According to Maysami et al (2004) negative association was found between the stock market capitalization and macroeconomic indicators including interest rate, discount rate, inflation rate and industrial production. For this study data was collected from Singapore stock market. Cointegration test used in this study to observe the cointegration between the stock market price and macroeconomic indicators. Nishat and Shaheen (2008) conducted a study to observe the impact of macroeconomic variables on stock market price of Karachi Stock Exchange (KSE) by using the data from the period from 1973 to 2004). Vector error correlation model was used to measure the association between above mentioned variable.

According to the result of the study Granger cause of stock price changes observed due to the various macroeconomic indicator such as interest rate, discount rate, inflation and exchange rate in Karachi Stock Exchange (KSE). Dristaki (2005) conducted a casual study to observe the association between the stock market capitalization, interest rate and inflation rate. In this study he used cointegration and Granger Causality test to observe the causality between the observed variables of the study. According to his findings negative relationship between stock market capitalizations was observed with reference to interest rate and inflation.

According to Rehman (2009) negative association between the market capitalizations was observed with reference to various macroeconomic indicators including interest rate, inflation rate, discount rate and saving rate offered by the savings banks under different savings schemes. Barnes et al (1999) regression analysis techniques used to observe the relationship between stock market capitalization with reference to inflation and others explanatory including discount rate and real production. He regressed inflation, discount rate and real production on stock market capitalization. According to the results of the study negative association was observed between the observed variables, it means negative changes in inflation, discount rate and real production leads to increase in stock market capitalization whereas a positive changes in inflation, discount rate and real production intends to decrease in market capitalization. As discussed by the Bodie (1976) market capitalization are being hedged by inflation, discount rate, interest rate offered by the savings banks and real production. He further added that firms can estimates their profit margins by observing the market capitalization through the various above mentioned macroeconomic variables of the study. He further mentioned

that the study resulted in positive significant relationship amongst the inflation and market capitalization was observed.

Boudoukh and Richardson (1993) conducted a study to find out the dynamic relationship between the stock market capitalization and inflation. In their study negative direction of relationship was observed between the market capitalization and inflation. As discussed by the Fama (1981) negative association between the stock market capitalization and inflation rate was observed. He further added that this negative relationship incurred due to the relationship between the real production and inflation. According to the study of Spyrou (2001) in Greece from the period from 1990 to 1995 inverse relationship between the stock market capitalization and expected inflation was observed at long run relationship. He further added that in various countries relationship between the inflation and stock market capitalization was positively influenced.

According to Amidhud (1996) negative association among the stock market capitalization and inflation in short run but positive association between the market capitalization and inflation was observed in long run relationship. The basic purpose of this study is to access the suitability of stock market for investors by using the financial data regarding Karachi Stock Exchange (KSE) from the period from 1971 to 2006. In this study ARDL research techniques used to observe the relationship between the mentioned variables of the study. As discussed by the Chen et al (1986) that negative association between the macroeconomic variables and equity market capitalization predict by using the Odrinary Least Square (OLS) model by taking macroeconomic indicators including interest rate offered by the savings bank, discount rate, inflation and discount rate as independent variables whereas stock market capitalization as dependent variable. Shin and Smith (2001) observed association between the inflation,

industrial production, oil prices, short term interest rate, exchange rate, foreign portfolio investment, money supply taking as independent variables and stock market price as dependent variables by using the data from the period from 1990 to 2001 through Ordinary Least Square (OLS) model. The results of this study indicate negative relationship between the stock market price and others mentioned above macroeconomic variables of the study.

Akmal (2007) conducted a study to investigate the association among the stock market return and inflation in Pakistan. For this study data from the Karachi Stock Exchange (KSE) collected from the period from 1971 to 2006. To observe the relationship between mentioned variables autoregressive distribution approach was adopted. Stock market capitalization was taken as dependent variables whereas various macroeconomic factors was taken into consideration as independent variables including real industrial production, interest rate offered by the savings banks and discount rate besides the inflation rate. According to the final results negative correlation between the market capitalization and others mentioned macroeconomics variables was observed. Paul and Malik (2001) conducted a study and used multivariate co-integration analysis techniques to observed the association between the macroeconomic variables like inflation, exchange rate, interest rate and stock market capitalization. In this study quarterly data from the period from 1980 to 1998 used. According to the final results of the study negative significant relation between the above mentioned independent and dependent variables was observed. According to the study conducted by the Pesaran and Shin (1995) significant inverse relationship between the interest rate and equity price was investigated whereas positive significant relationship between the Gross Domestic Product (GDP) and stock market capitalization investigated in this study. However observation

showed no noteworthy relationship amid inflation and market capitalization. Fazal and Mahmood (2001) conducted a study to find out the relationship between equity market capitalization and economic activity, investment spending and consumption expenditure by using the data from the period from 1990 to 2000. In this study co-integration analysis technique was used to observe the trend of connection amid the above mentioned variables. In this study unidirectional causality was observed between the equity price and others mentioned macroeconomic variables. However no relationship between the aggregate demand and stock market capitalization was observed.

Maysami et al (2004) conducted a research study to investigate the association between the macroeconomic variables including property index, finance index, hotel index and stock market capitalization. According to the results of the study long term negative and significant association was observed between the stock market capitalization and others macroeconomic variables like industrial production, exchange rate, interest rate offered by the savings bank, inflation rate was observed. But in different countries mixed results with reference to inflation and market capitalization was observed.

According to the research study conducted by the Ioannidis et al (2004) an existence direct relationship among the inflation and equity market capitalization was observed by collecting data from the period from 1985 to 2003 in Greece whereas in most of countries like Pakistan, India, Bangladesh and Turki negative significant association between the stock market capitalization and inflation was observed, it means in above mentioned countries stock market capitalization tends to decrease as the inflation rate increase whereas stock market capitalization shows increasing trend if the inflation rate tends to decrease. Spyrou (2001) conducted a study regarding correlation of market capitalization and inflation in Greece for taking five year data from the period from 1990 to 1995. The

results of the study indicated that inverse relation between the inflation and stock marked capitalization was observed as stock market capitalization enhance as the inflation decrease whereas market capitalization showed decreasing trend if the expected inflation increase. Mark (2001) conducted a research study to observe the relationship between the stock market capitalization and inflation. According to the finding of the study negative significant relationship between the market capitalization and inflation rate was investigated in this study.

As discussed by the Akmal (2007) the relationship between the stock market capitalization and inflation in Pakistan. To find out the relationship between the above mentioned variables data regarding Karachi Stock Exchange (KSE) was collected from the period from 1971 to 2006 was taken into consideration. To observe the direction of relationship between the market capitalization and inflation autoregressive distribution lag approach techniques used. Finding of the study indicated that stock market capitalization negatively react as the inflation rate increase whereas stock market capitalization positively react as the expected inflation tends to decrease.

Shahid (2008) conducted a study to explore the association between the market capitalization and macroeconomic indicators including interest rate, interest rate offered by the savings banks, discount rate, industrial output, supply of money, exports, imports, exchange rate, foreign direct investment by using data regarding above mentioned variables from the period from 1995 to 2007. Quarterly data was used and Vivariate Vector Autoregressive Model for variance used to find out the relationship at short run. The finding of the study indicated stock equity capitalization depends on general activity. Findings of the study indicated that negative association between the market capitalization and interest rate, discount rate and inflation rate was observed whereas positive

association between the all others above mentioned variables and market capitalization was investigated in this study.

Altay (2005) conducted a study in Germany and Turkey to find out the relationship between market capitalization and inflation rate. Findings of the study indicated that significant relationship between the above mentioned variables was observed in Germany whereas insignificant relationship between the market capitalization and interest rate was observed in Turkish stock market. Fabozzi and Tunaru (2004) conducted a study and applied GARCH-M, IGARCH and TAGARCH in Shenzhen and Shanghi stock market by taken into consideration the market capitalization (Dependent variable) and macroeconomic variables including interest rate, discount rate and inflation rate (independent variables). According to the findings of the study negative significant relationship between the dependent and independent variables was observed in this study.

Gen et al (2006) conducted a study to observe the association between the macroeconomic indicators and stock market capitalization in New Zealand. Results of the study indicated that no association between macroeconomic indicators and market capitalization. Beltratti and Morana (2006) conducted a study to observe the relationship between stock market capitalization and macroeconomic variables including discount rate, inflation rate, money supply and interest rate offered by the savings banks. To observe the relationship between the observed variables causality test techniques used to access the directions of relationship. The findings of the study indicated that negative significant relationship between the observed variables. Puah and Jayaraman (2007) mentioned a study to check the impact of macroeconomic variables on stock market capitalization. In this study negative association between the stock market capitalization and macroeconomic variables including discount rate, interest rate on savings

accounts, inflation and money supply were found. Shrestha (2008) conducted a study to observe the relationship between the interest rate, inflation and stock market capitalization. Data was collected from the period from 2000 to 2007. Ordinary Least Square (OLS) research techniques used to observe the directions of relationship. The results of the study indicated that negative association between the stock market capitalization and interest rate and inflation was observed in stock market of China.

According to Gay (2008) in Brazil, India, Russia and China negative association between the stock market capitalization and inflation rate was observed. George (2008) conducted a research study to observe the relationship between macroeconomic variables and stock market capitalization. To observe the association between the observed variables multivariate co-integration test used. According to the study negative direction of relationship between the stock market capitalization and macroeconomic variables was observed in Ghana. Yilmz (2008) conducted a study to investigate the relationship between the macroeconomic variables and stock market capitalization in African and Asian developing countries. In this study stock market capitalization was regressed on Gross Domestic Product (GDP) per capital and negative relationship between the GDP and stock market capitalization was observed. The study observed that stock market capitalization granger cause Gross Domestic Product (GDP) whereas Gross Domestic Product (GDP) does granger cause stock market. Butt et al (2010) conducted a study to observe the relationship between the market capitalization and macroeconomic variables including interest rate offered by the savings banks, discount rate, inflation and supply of money by using the data from the period from 1999 to 2009 from the Karachi Stock Exchange (KSE). According to the findings of the study negative significant relationship between the stock

market capitalization and interest rate and inflation was observed where as positive relationship between the supply of money and market capitalization was observed.

Sabetfar et al (2011) mentioned in his study there are four groups of macroeconomic variables that put its impact on stock market capitalization including interest rate offered by savings banks, discount rate, inflation and Gross Domestic Product (GDP). According to the findings of the study negative direction of relationship between the interest rate and inflation rate was observed whereas positive association between the discount rate and Gross Domestic Product (GDP) was observed with reference to stock market capitalization. According to the study conducted by Sohail and Hussain (2011) positive impact of inflation, Gross Domestic Product (GDP) and exchange rate was observed whereas negative significant relationship between the supply of money and stock market capitalization was observed in Pakistan.

Singh et al. (2011) conducted a study to observe the association between the macroeconomic variables with reference to exchange rate, GDP, inflation and supply of money. Findings of the results reveal that negative impact of exchange rate and GDP was observed on market capitalization where as positive impact of inflation and money supply was observed on the market capitalization. According to Oseni and Nwosa (2011) conducted a study to observe the impact of macroeconomic variables on stock market capitalization in 16 developed and 16 developing countries. According to the findings of the study negative significant relationship between the macroeconomic variables and market capitalization was observed in developing countries whereas no relationship between the market capitalization and macroeconomic variables were not existing in developed countries. So it is observed that stock market of developing countries affected by the macroeconomic variables as compare to the developed countries. Ozlen and Ergun (2012)

in this study to find out the relationship between the stock market capitalization and macroeconomic variables including interest rate, exchange rate. According to the findings of the study negative significant relationship impact interest rate and exchange rate on market capitalization was observed.

Sulaiman et al (2012) conducted a study by using the data from the period from 2000 to 2010 through Karachi Stock Exchange (KSE). According to the findings of the study negative significant relationship between the stock market capitalization and inflation was observed. Results of the study indicated enhancement of inflation tends to decrease in market capitalization whereas decrease in inflation tends to increase in market capitalization. According to Akbar (2012) positive significant relationship between the stock market capitalization was observed with reference to money supply and interest rate. For this study data from the period from 2001 to 2011 was used and gathered from Karachi Stock Exchange (KSE). Okali (2012) conducted a study in Nageria to check the impact of macroeconomic variables on stock market capitalization. Macroeconomic variables used in this study including interest rate, exchange rate and inflation. According to the findings of the study only relationship of exchange rate and stock market capitalization was observes whereas no relationship of market capitalization and others mentioned variables was found in this study.

According to Tangjitprom (2012) there is no association of macroeconomic variables and stock market capitalization was observed in this study. However he also found significant relationship between the macroeconomic variables and stock market capitalization in Thailand. Hussin et al. (2012) conducted a study by collecting data from Kuala Lumpur Sharia Index (KLSI) to observe the direction of stock market capitalization with reference to macroeconomic variables including inflation and industrial production. The results of the

study indicated that significant relationship between the stock market capitalization was observed with reference to inflation and industrial production. Ray (2012) conducted a study to observe the relationship between the market capitalization and macroeconomic variables of the study. For this study data from the period from 2001 to 2011 collected. Findings of the study indicated that negative impact of oil prices and gold prices was observed on market capitalization whereas positive impact of balance of trade, interest rate, foreign exchange reserve and Gross Domestic Product (GDP) was observed on the market capitalization.

As discussed by the Hussain et al. (2012) observed positive and significant direction of relationship between the money supply and Gross Domestic Product (GDP) whereas negative impact of exchange rate and imports on market capitalization was observed during the study period. It means enhancement of money supply leads to increase the market price on stock market where as an stock market capitalization showed increasing trends as the value of exchange rate and imports tends to decrease. Beetsma and Giuliodori (2012) mentioned in this study the association between the macroeconomic variables and stock market capitalization. They concluded that negative significant association between the stock market price and macroeconomic variables including interest rate offered by savings banks, discount rate and inflation found in this study. Tokmakcioglu and Tas (2012) mentioned that stock market capitalization found no variance due to the variance in macroeconomic variables of the study such macroeconomic variables including interest rate offered by the savings banks, discount rate and supply of money whereas they further added that negative significant relationship between the stock market capitalization and inflation was observed in this study.

According to Rudd (2009) people have to face a loss of approximately US$32 trillion to the variance in macroeconomic variables including inflation rate, discount rate, interest rate charged by banks for inter banks transactions, interest rate offered by the savings banks, oil prices, exchange rate, oil prices and supply of money. Sharma (2011) conducted a study and suggested that there are two different approaches including fundamental and technical approach for estimation of stock market prices. He observed the market capitalization through various macroeconomic variables including interest rate, inflation and discount rate. He added that negative significant relationship between the market capitalization and above mentioned macro-economic variables was observed in this study and further added that an inverse relationship between the dependent variables (stock market capitalization) and independent variables (Macroeconomic indicators) was observed in this study. Das and Pattanayak (2009) planned a research study by collecting data form Bombay Stock Exchange making 30 index as base for study. According to the findings of the study earning, return on investment, growth perspective and suitable valuation have positive significant relation with market capitalization whereas inverse impact of interest rate, discount rate and inflation was observed in this study.

Nirmala et al. (2010) conducted a study and used panel data to examine the relationship between the macroeconomic indicators and stock market capitalization. For this study data form the period from 2000 to 2009 was gathered. To observe the relationship between the observed variables Ordinary Least Squares (OLS) methods used for analysis. According to the findings of the study inverse relationship between the market capitalization and macroeconomic variables was observed. Khan et al. (2011) mentioned in study impact of dividend policy on market capitalization by taken into consideration the various controlling factors in Malaysia. Data was collected from

55 companies from Karachi Stock Exchange (KSE) 100-Index from the period from 2001 to 2010. According to the findings of the study dividend yield, per share earning, return against equity and stock prices significantly explain the variance in stock market prices. He concluded that negative relationship between the macroeconomic indicators and market capitalization was observed in this study. Chaudhuri and Smiles (2004) conducted a study to observe the long-run association amid the stock values and variations in real macro-economic bustle in Australian bourse by collecting data for the period from 1960 to 1998. Independent variables used in this study including real Gross Domestic Product (GDP), real private consumption, real money and oil price. The outcomes indicated significant relationship was observed in above mentioned variables of the study at a long run relationship in America, New Zealand and Australian markets.

Wongbangpo and Sharma (2002) planned a research study in ASEAN-5 countries to observe the relationship between the stock market capitalization with reference to inflation and moneysupply. The findings of the study indicated that positive significant relationship between the market capitalization and money supply was observed it means increase in supply of money leads to enhancement of market capitalization whereas negative significant relationship between the inflation and market capitalization was observed it means increase in inflation leads to decrease the market capitalization of different countries stock markets including Singapore, Thailand and Malaysia. According to the study conducted by Kim (2003) stock prices have a positive association with the industrial production as the increase in production tends to increase in stock market capitalization where as negative significant impact of exchange rate, interest rate and inflation was observed it means if the value of exchange rate, interest rate and inflation rate increase then the

market capitalization tends to decrease whereas if the value of exchange rate, interest rate and inflation decrease its leads to enhancement of market capitalization.

Ahmed et al. (2007) observed the long run relationship to check the impact of macroeconomic variables on stock market capitalization. In this study macroeconomic indicators like money supply, treasury bills, interest rate, inflation, Gross Domestic Product (GSP) and industrial production was taken into consideration as the independent variables whereas market capitalization was taken as dependent variables. The co-integration test used to observe the direction of relationship between the dependent variable and independent variables. According to the findings of the study negative significant relationship between the dependent variable and independents variables was observed. According to the study Ratanapakorn and Sharma (2007) conducted a research study to observe the direction of relationship between the stock market capitalization and inflation. In this study it is observed negative significant relationship between the market capitalization and inflation rate. Humpe and Macmillan (2009) planned a research to access the impact of inflation on stock market capitalization by taking into consideration the monthly data regarding stock prices, inflation, exchange rate, consumer price index and industrial production from the period from 1993 to 2008. The results of the study indicated that negative significant relationship between the market capitalization and macroeconomic variables was observed during the study period. Mahmood and Dinniah (2009) conducted a study to observe the dynamic relationship between the stock prices and economic variables in various countries including Malaysia, Korea, Thailand, Hong Kong, Japan and Australia. The findings of the study indicated that in four countries including Japan, Hong Kong, Japan and Australia negative relationship between the market capitalization was observed whereas in Thailand and

Korea positive significant association between the observed variables was found. Ali M. B. (2011) conducted a study to check the impact of selected microeconomic and macroeconomic variables on market capitalization. Multivariate Regression Model and standard Ordinary Least Square (OLS) model used to osbserve the direction of relationship between the observed variables. Findings of the study indicated that inflation and remittance have negative significant relationship between the market capitalization and above mentioned macroeconomic variables of the study. Maysami and Koh (2000) conducted a study to observe the impact of interest rate and exchange rate on market capitalization. The results of the study reveal that negative impact of interest rate and exchange rate was observed on stock market capitalization. It means enhancement in interest rate and exchange rate leads to decreasing trend in stock market capitalization. Morelli (2002) gathered monthly data from the period from January 1967 to December 1995 to observe the relationship between macroeconomic indicators and market capitalization by using the GARCH research model. The results of the study indicated that there is not association between the macroeconomic variables and market capitalization was observed during the study period.

Beltratti and Morana (2006) planned a research study to observe the connection between the stock-market and macro-economic variables comprising interest rates, inflation and discount rates. According the findings of the study negative relationship between the above mentioned variables of the study and market capitalization was observed. It means enhancement of inflation, interest and discount tends to decrease in market capitalization whereas enhancement in market capitalization was observed as the value of interest rate, discount rate and inflation rate decrease. Shrestha (2008) observe the negative significant relationship between the market price and macroeconomic indicators like inflation,

discount rate and interest rate offered by the savings banks. The result of the study indicated that negative relationship between the above mentioned variables was observed during the study period.

Butt et al. (2010) conducted a study in Pakistan to observe the impact of discount rate, inflation and interest rate on market capitalization. Ordinary Least Square (OLS) model used in this study to observe the direction of relationship among the above mentioned variables of the study. For this study data was collected from Karachi Stock Exchange (KSE) from the period from 2000 to 2009. The results of the study indicated that negative impact of interest rate, discount rate and inflation was observed on market capitalization. Singh et al. (2011) study findings reveal that exchange rate and GDP seem to have negative impact on portfolios and inflation, and money supply has negative impact on returns of different size companies in Taiwan's stock market.

DATA, MODAL AND METHODOLOGY

The sample includes yearly interest rates offered by National Savings Centers on their 7 schemes offered fixed income returns, Discount rates announced by State Bank of Pakistan, during the period from 2007-08 to 2012-13. Consumer Price Index is used as proxy to Inflation rate and dated for the period is collected from the web site of world bank. KSE 100 index is used as the proxy of Market Capitalization since KSE 100 index is the leading index of Pakistan capital markets. It contains almost 80% market capitalization means that out total 100% capital 80% is captured by the companies included in the KSE 100 index.

The Stock market is taken as dependent variable, profit rates, discount rate and inflation rate is used as independent

variables and in order to check the relationship among these variables four hypotheses are developed.

Null Hypothesis (H0): There is no significant relationship between interest rates and stock market.

Hypothesis (H1): There is significant relationship between interest rates and stock market.

Hypothesis (H2): There is significant relationship between discount rates and stock market.

Hypothesis (H3): There is significant relationship between inflation and stock market.

Simple Ordinary Least Square Regression analysis is performed in SPSS to check the effect of individual variables on the KSE 100 index.

Regression Equation:

- **YK = α + β1 (X1) + β2 (X2)+ β3 (X3) + β4 (X1)(X2)(X3)+ ε i**

Where:

- **YK = Karachi Stock Exchange (Market Capitalization during the study period)**
- **X1 = Interest Rate during the study period (independent Variable).**
- **X2 = Discount Rate during the study period.**
- **X3 = Inflation**
- **β1-4 = coefficients of the study variables**
- **εi = error term**

Empirical Results and Analysis

The Statistical Techniques have been applied for testing hypothesized relationships and Regression models are implemented to elaborate the impact of interest rates, discount rates and inflation on the KSE 100 index.

Table 1

	Market Capitalization	Interest Rate	Discount Rate	Inflation
Market Capitalization	1.00			
Interest Rate	-0.3164	1.0000		
Discount Rate	-0.9017	0.3960	1.0000	
Inflation	-0.3318	-0.1635	0.0776	1.0000

Intensity of Relationship

Correlation < 0.20	Weak relation
Correlation ≥ 0.2 but < 0.5	Moderate relation
Correlation ≥ 0.5 up to 1	Strong relation

Sources: Ali (2014)

In the above given variables market capitalization is dependent variable and interest rate offered by NSC on different schemes, Discount rate announced by the SBP and inflation rate are independent variables. Correlation between MCAP and interest rate is .3164 and direction of relationship is negative means that if interest rate increases market capitalization will decrease the intensity of relationship is moderate. Discount rate also negatively related to market capitalization and there exist strong relationship between these two variables. Inflation rate also negatively related to market capitalization and relationship intensity is moderate.

Simple OLS regression
Impact of interest Rate on Market Capitalization
Model Summary
Table 2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.316[a]	.100	.078	2884.55439

ANOVA
Table 3

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	37030710.949	1	37030710.949	4.450	.041[b]
	Residual	332826162.236	40	8320654.056		
	Total	369856873.185	41			

Coefficients
Table 4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16015.791	1968.235		8.137	.000
	Interest Rate	-1425.754	675.838	-.316	-2.110	.041

MCAP= 16015.791-1425.754(Interest Rate)

Above mentioned tables are the output of regression analysis. The model summary table shows the overall correlation and regression of National Saving Scheme rates and market capitalization. R is the correlation between dependent and independent variable that is 31.61%. R^2 is 10% means that 10% variation in market capitalization is due to interest rate offered by the NSS.

The ANOVA table shows the overall significance of model. In the above mention ANOVA table the significance value is .041 that is less than .05 therefore this indicate that this model is good fit.

Coefficient table shows the significance of individual variables. In the above mentioned table the Interest rate has a significance value of .041 and t value is 2.110 this means that interest rate is statistically significant variable. B value under the unstandardized coefficients depicts the extent and direction of change. Means 1 unit increase in independent variable bring about 1425.75 units decrease in the dependent variable. The sign of the coefficient is negative that describe the inverse relationship between interest rate and market capitalization.

Impact of Discount Rate on market Capitalization

Model Summary
Table 5

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.902	.813	.808	1314.42363

This table describes the model summary of regression analysis. R value is the correlation between dependent and independent variable. In the above mentioned table R value is .902 this means that there is a strong relationship between market capitalization and discount rate. On the other hand R^2 value depicts the impact or extent of variation in dependent variable. R^2 value in this table is .813 means that 81.3% variation in market capitalization is due to or explained by the discount rate.

ANOVA
Table 6

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	300748493.911	1	300748493.911	174.074	.000[b]
	Residual	69108379.274	40	1727709.482		
	Total	369856873.185	41			

This table describes the overall model significance. In the above given table the significance value is 0.000 that is less tha.05 which means the model is overall significant.

Coefficients
Table 7

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	34019.544	1683.394		20.209	.000
	Discount Rate	-1750.944	132.711	-.902	-13.194	.000

MCAP=34019.544-1750.944(Discount Rate)

Coefficient table shows the significance of individual variables. In the above mentioned table the Discount rate has a significance value of 0.000 and t value is 13.110 this means that Discount rate is statistically significant predictor. B value under the unstandardized coefficients depicts the extent and direction of change which means 1 unit increase in Discount rate bring about 1750.944 units decrease in the market capitalization. The sign of the coefficient is negative that describe the inverse relationship between Discount rate and market capitalization.

Impact of Inflation on Market Capitalization

Model Summary
Table 8

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.332[a]	.110	.088	2868.50990

This table describes the model summary of regression analysis. R value is the correlation between dependent and independent variable. In the above mentioned table R value is .332 this means that there is a weak relationship between market capitalization and inflation rate. On the other hand R^2 value depicts the impact or extent of variation in dependent variable. R^2 value in this table is .110 means that 11% variation in market capitalization is due to or explained by the inflation.

ANOVA
Table 9

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	40722912.172	1	40722912.172	4.949	.032[b]
	Residual	329133961.013	40	8228349.025		
	Total	369856873.185	41			

This table describes the overall model significance. In the above given table the significance value is 0.032 that is less tha.05 which means the model is overall significant.

Coefficients
Table 10

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15268.882	1547.028		9.870	.000
	Inflation	-255.547	114.870	-.332	-2.225	.032

MCAP=15268.882-255.547(Inflation)

Coefficient table shows the significance of individual variables. In the above mentioned table the inflation Rate has a significance value of 0.032 and t value is 2.225 this means that inflation Rate is statistically significant predictor. B value under the unstandardized coefficients depicts the extent and direction of change which means 1 unit increase in inflation Rate bring about 1750.944 units decrease in the market capitalization. The sign of the coefficient is negative that describe the inverse relationship between inflation Rate and KSE 100 index.

CONCLUSION

The study examines the evidence to vet the existence of impact of Interest rates offered by the national savings center, discount rates announced by the State Bank of Pakistan and inflation rates over the period of six years. Correlation analysis is performed to check the relationship between these variables and stock market capitalization. Regression analysis is used to investigate the impact of Interest rates offered by the national saving center, discount rates announced by the state bank of Pakistan and the inflation rate on the KSE 100 index, that a

change in above mentioned variables has an significant impact on KSE 100 index capitalization.

In the light of analysis done it is established that all the variables are significantly affect the Karachi Stock Exchange 100 index. NSC interest rates are significantly negatively affect the KSE 100 index, because as the profit rates on different schemes increase investors put their money into these saving schemes to earn more return and less than prevails in stock market.

Discount rates and inflation also negatively affect the KSE index 100. When interest rates are rising, investors move their funds to the banks in saving deposits and bond market. On the other hand when interest rate is low people get their money out of banks and invest in stock market to gain higher returns.

Inflation is a significant factor of any country's economy that affects all parts of economy. Stock markets are also a strong and important factor of the economy. So there must be a relationship between these two factors stock market and inflation. According to the literature Inflation has also negative impact on stock market in Pakistan, as inflation by its definition is a persistent rise in price level that in turn raises cost of living this leads to the reduction in savings or the funds that remained after all expenditures to invest in the market.

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