FACTORS AFFECTING STOCK PRICES: A CASE STUDY OF KARACHI STOCK EXCHANGE (KSE)

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ABSTRACT

This study examines the company internal factors and macro-economic variables affecting stock prices in the Karachi Stock Exchange of Pakistan. Internal factors are earnings per share and dividend per share. The macro-economic variables are represented by the money supply, consumer price index, interest rates, and gross domestic product. A sample of 15 companies is selected from the financial sector in KSE. Eight years data is employed in this study which extends from the year 2001 to the year 20008. A Panel Data Regression with its two types: Random Effects and Fixed Effects models is used. Further, Weighted Least Squares (WLS) Regression is used for analysis in order to remove the problem of Autocorrelation. The results indicate the positive and statistically significant relation of money supply and earning per share with stock prices. The positive result of earning per share is consistent with the study of Chang, Hsu-Ling, Yahn-Shir Chen, Chi-Wei Su, and Ya-Wen Chang, (2008) while the positive result of money supply is consistent with the studies of Gan, C., M. Lee, H. H. Au Yong and J. Zhang (2006), Husain, Fazal and Mahmood, Tariq (1999) and Al-Tamini, Hussein A. (2007). The results for GDP are positive, and for interest rates are negative but not statistically significant. Future work in this area should quantitatively analyze and explain the influence of political events on the Karachi Stock Exchange.

Keywords: Panel Data Regression Models, Macro-Economic Variables, Internal Factors (EPS, DPS). Karachi Stock Exchange (KSE)

1. INTRODUCTION

Factors affecting stock price has been an issue of concern for the researchers in the past[4]. The inquisitiveness of researchers has been increasing over the years to know the connection between stock prices and the macro-economic variables. They have explained the interaction between these variables and stock prices through different approaches and models. So the significance of the study of stock market and macro-economic variables has increased manifold over the years.

The stock market plays an important role in the economic growth of any country by accumulating domestic resources and directing them to productive investment. Stock market is a place where secondary trading of the publicly owned shares and bonds takes place. It performs the role of transferring of funds from those having surplus income to those having deficit income. So the stock exchange is playing the role of a middleman or intermediary between these two parties. Besides this, it provides liquidity to the investors, which means that investors can readily and easily trade their securities in this market. It, increases the economic growth by increasing the liquidity of assets and sharing risk of the investors.

Price variations in the Stock market are the most closely monitored economic phenomena among the policy makers, companies, investors and researchers. Stock prices are determined by the forces of demand and supply. There is no clear evidence that tells us, exactly which factors are responsible for the variation in the stock prices. But academicians and researchers do know a few things about the forces that move a stock up or down. These forces fall into three categories: fundamental factors, technical factors and market sentiments (behavior).

Noted Financial Management authors Brigham and Houston state that "Shareholders care about all dividends, both current and those expected in future." They also note that growth in EPS is the primary reason for the growth in dividends. Similarly Zacks (1979) is of the view that many investors pay attention to companies' earnings prospects when selecting stocks. Therefore, we can state that fundamental factors such as earning per share (EPS) and the dividend per share (DPS) do affect the stock prices Investors take them into account when trading stocks. It would have been easier if only fundamental factors set stock prices, but the role of

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technical factors cannot be ignored. Technical factors are the mix of external conditions that alter the supply and demand for a company's stock. These factors are the gross domestic product, money supply, consumer price index and Interest rates etc.

In Pakistan Karachi Stock Market is susceptible to many factors, which affect its performance. Mostly these factors are macro-economic factors and up to some extent political events also affect Karachi Stock Exchange. In the context of Pakistan there is no such study on the factors affecting the stock prices. This study is the extension of the study by Al-Tamini, Hussein A. (2007) on the UAE Financial Markets. The objective of this study is to find the relationship of stock price with the macro-economic variables and the company internal factors. The results of this study will serve as a guideline for researchers, investors, policy makers, and academicians. Rest of the paper is divided in the following sections: Section 2 discusses the relevant literature review, Section 3 describes the methodology, results are discussed in Section 4, and conclusion is presented in section 5.

2.   LITERATURE REVIEW

A lot of work has been done on the factors and determinants which affect the stock prices. These factors can be classified as fundamental, technical or external and investor's behavior. Fundamental factors are the company internal factors as price to earning ratio (P/E), earning per share (EPS), dividend per share (DPS), book value and book to market ratios .The technical factors are the macro-economic variables like consumer price index (CPI), money supply (MS), interest rates, gross domestic product (GDP), exchange rates and industrial production etc are the key economic indicators that can effect stock price.

Researchers suggest that EPS and DPS are the two main fundamental determinants which affect stock prices. Chang, Hsu-Ling, Yahn-Shir Chen, Chi-Wei Su, and Ya-Wen Chang (2008) conducted a research study on the Taiwan Stock exchange (TSEC) in order to know the relationship between EPS, DPS, and the stock prices. They selected 75 firms, collected data for these firms from 1997 to 2006, and used panel co-integration methods for their analysis. Their study reveals that EPS has a positive effect on the stock price while DPS does not affect stock prices in the long run. According to Docking and Koch (2005) any surge or decline in dividend can modify the investor reaction based on the nature of news when it is revealed. In the real world, however, a change in the dividend policy is often followed by a change in the market value of shares.

Studies by Walter (1956), and Gordon (1962) promoted the dividend relevancy idea, which has been formalized into a theory, suggesting that current stock price would reflect the present value of all expected dividend payments in the future. In addition, stock market studies demonstrate that share prices respond to dividend news; dividend increases tend to be associated with share price increases while dividend cuts are usually associated with share price falls.

Macroeconomic variables such as exchange rate, interest rate, industrial output and inflation have been suggested to be the determinants of stock prices. The effect of monetary and fiscal policies cannot be disregarded in stock market analysis. It is believed that government financial policy and macroeconomic events have large impact on general economic activities in an economy including the stock market. This prompts many researchers to investigate the vibrant connection between stock returns and macroeconomic variables.

Inflation affects the stock price in a negative manner. Ralph & Eriki (2001) did a study on the Nigerian Stock Market and concluded that the relation between the stock prices and inflation has a negative effect on the investor behavior. Same study was done on the Chinese Economy by Zhao (1999) and the study suggested that the relation between inflation and industrial production is negative. Geske and Roll (1983) also conclude that inflation negatively effects the stock prices. The relation of inflation with stock prices is negative because a rise in inflation increases the cost of living and the propensity to save is affected, which leads to reduction in the trading of stock.

Ibrahim, Mansor H. and Yusoff, Wan (2001) conducted a study on the Malaysian Stock Market in order to know the relation of the three macro economic variables (real output, price level, and money supply) with exchange rate, and equity prices using time series techniques of co integration and Vector Auto regression model (VAR) in the Malaysian Market.. They concluded that the stock prices have positive reaction to money supply in the short run while the relation between stock prices and money supply is negative in the long run. Sprinkle (1964) did a study in the U.S to know the relation between the money supply and stock prices. His sample period was from 1916 to 1960. He concluded that a strong relationship exists between these two variables. Same study was conducted by Husain, Fazal and Mahmood, Tariq (1999) on the Pakistan Economy to know the causal relation between money supply and the stock prices. They concluded that money supply affects stock prices in the long run.

Adam, Anokye M. and Tweneboah , George (2008) examined the macro-economic variables and their role in the stock market of Ghana form January 1991 to December 2006. The variables they took in to account were Databank Stock Index (DSI) which represents the Ghana stock market, interest rate, inflation, foreign direct investment and exchange rate. They used Co integration analysis in order to examine the long term relationship between these variables. The results of their study sug-

gest that stock price relation with inflation and interest rates are negative while its relation with exchange rates is positive because fall in the exchange rates rises the price of production which decrease the cash flows. Also, net foreign direct investment has positive effect on the stock market of Ghana.

The study conducted by Gan, C., M. Lee, H.H. Au Yong and J. Zhang (2006) on the New Zealand Stock Market examines the relationship between New Zealand stock index and the seven macro-economic variables. These variables were selected for the study: Share price index (NZSE40), Inflation rate (CPI), Exchange rate (EX), Gross domestic product (GDP), Money supply (M1), Long term interest rate (LR), Short term interest rate (SR) and Domestic Retail Oil price (ROIL). Johansen multivariate co integration test was conducted in order to check the co integration of macroeconomic variables with the stock index in long run. They conclude that a long term relationship exists between NZSE40 and the macroeconomic variables.

Al-Tamimi, Hussein A. (2007) carried out a research on the UAE stock market to explore the main macro-economic factors that determine the stock prices. A set of variables selected that determine the stock prices are: earning per share (EPS), dividend per share (DPS), narrowly defined money supply (M1), consumer price index (CPI), oil prices, interest rate (lending rate) and gross domestic product (GDP). They select a sample of 17 companies comprising of banking and non-banking sectors from 1990 to 2005. Stock prices are taken as the dependent variable. They used Multicollinearity test and least square regression. The findings suggest that EPS has a positive impact on the prices of UAE stock market. Money supply, and GDP also have positive effect on stock prices but their relation is insignificant. While the CPI and the interest rate affect stock prices negatively.

3. METHODOLOGY

3.1 Sampling

Following the sampling strategy of Al-Tamimi, Hussein A. (2007) who conducted study on the UAE financial market, a sample of 15 companies from the Insurance and banking sectors of KSE are selected based on the availability of data from the period 2001-08. Description of the data used in this study is given as:

â   For stock prices, price weighted average method is used.

â   Narrowly defined money supply (M1) in billions is taken.

â   Percentage change of interest rates (lending) and GDP while actual figures of CPI are used.

â   For EPS and DPS ,average of their annual figures are taken.

The sample consists of following companies: MCB Bank, My Bank (formerly Bolan Bank), Askari Commercial Bank Limited, KASB Bank, Faysal Bank, Bank Al-Habib, Bank of Punjab, Soneri Bank, Orix investment bank and First Dawood bank (Formerly Dawood Leasing). While the Insurance sector consists of IGI Insurance Company, New Jubilee Insurance, Adamjee Insurance, EFU General Insurance and EFU Life Insurance Company.

3.2 Data Collection

A set of macro-economic variables used are: money supply narrowly defined (M1), gross domestic product (GDP), interest rate (lending rates), consumer price index (CPI), dividend per share (DPS), earning per share (EPS), and stock prices of 15 companies for eight years.

Mainly secondary data has been used and the sources from which data are collected are the State bank of Pakistan, Federal Bureau of Statistics and the Official web portal of Karachi Stock Exchange.

3.3 Hypothesis

The following hypotheses have been developed for this study based on the literature review:

1.   Stock price has a positive relation with earnings per share.

2.   Stock price has a negative relation with inflation and interest rates.

3.   Stock price has positive relation with gross domestic product.

4.   Stock price has positive relation with money supply (M1).

3.4 Variables

The following variables have been employed as independent variables in this study: money supply (M1), interest rates (lending), consumer price index, gross domestic product, earning per share, dividend per share. While the dependent variable is stock prices of the 15 selected companies.

3.5 Analytical Techniques

Panel Data regression with its two types Fixed Effects Model and Random Effect Model is used. Additionally, WLS Regression is also applied in order to nullify the effects of Autocorrelation.

4. ANALYIS AND DISCUSSION

This study focused primarily on the factors affecting the stock prices of the insurance and banking sector of Karachi Stock Exchange. From the results of the random effects (see table 1) and fixed effects model (see table 2) it is clear that variables that are selected for

Table 1: Random Effects GLS Regression

	COEF	STD.ERR	t	P > |t|	
Constant	-3.09467	6.11761	-0.5059	0.61392	
GDP	0.51099	0.901663	0.5667	0.57201	
MS	0.00357111	0.00113187	3.1551	0.00205	***
INT	0.000707655	0.0503481	0.0141	0.98881	
EPS	0.277389	0.107811	2.5729	0.01136	**

Table 2: Fixed Effects Regression

	COEF	STD.ERR	t	P > |t|	
Constant	-3.09467	5.35419	-0.5780	0.56456	
GDP	0.51099	0.901663	0.5667	0.57216	
MS	0.00357111	0.00113187	3.1551	0.00211	***
INT	0.000707655	0.0503481	0.0141	0.98881	
EPS	0.277389	0.107811	2.5729	0.01154	**

study have some sort of relationship with the stock prices in the long run.

Due to multi co-linearity problem between EPS and DPS, and between CPI and Interest rates, we drop DPS and CPI. The results are summarized in the table 1 and 2. GDP, having coefficient value of 0.51099, and interest rate (INT) having coefficient value of 0.000707655, are found to be statistically insignificant. While money supply (M1) with a coefficient value of 0.0042145, and earnings per share (EPS) with a coefficient value of 0.3002534 are reported to be statistically significant.

The relation of money supply and earning per share is positive. The positive result of earning per share is consistent with the study of Chang, Hsu-Ling, Yahn-Shir Chen, Chi-Wei Su, and Ya-Wen Chang, (2008) on the Taiwan Stock Exchange, that there is a significant positive relation of EPS with the stock price in the long run. In this study, money supply exhibits positive relation with the stock pries in long run as suggested by Gan, C., M. Lee, H. H. Au Yong and J. Zhang (2006),

Table 3: Test Statistics

Statistic	Value
R^2	0.566261
P-value(F)	1.18e-11
Durbin-Watson	1.009344

Husain, Fazal and Mahmood, Tariq (1999) and Al-Tamini, Hussein A. (2007). The relation with interest rates, and gross domestic product is positive but not significant (see table: 4.3 and 4.4). This is inconsistent with the study of Al-Tamini, Hussein A. (2007), Adel, Al-Sharkas A. (2004) and Adam, Anokye M. and Tweneboah, George (2008).

The coefficient of determination (R^2) for fixed effects model is 0.566261 (see table 3). Since P value (F) is very low i-e 1.18e-11 so the overall model is significant. But there is a problem of Autocorrelation in the data as shown by the value of Durbin-Watson statistic which is reported to be 1.009344. So the higher value of R^2 may be because of Autocorrelation problem. Therefore, next we have applied the Weighted Least Squares (WLS) Regression.

By applying WLS Regression, the sign of interest rate coefficient changes to negative (see Table 5), which is now in accordance with the literature. Still, interest rate and GDP are statistically insignificant, with interest rate having negative relationship with stock prices and GDP exhibiting positive relationship with stock prices. Once again, money supply and EPS are reported to be statistically significant and exhibiting positive relationship with the stock prices. The problem of Autocorrelation is also removed with the help of WLS Regression. As the Autocorrelation problem is removed by applying WLS Regression, the value of R^2 goes down to 0.102914 (see table 6). But again the overall model is significant with P value (F) being 0.013425.

Table 4: Correlation Matrix

	SP	CPI	GDP	MS	INT	EPS	DPS
SP	1						
CPI	0.2431384	1					
GDP	0.1316999	0.15358816	1				
MS	0.28824357	0.77519569	0.2911312	1			
INT	0.14570754	0.83809351	0.12467366	0.47637789	1		
EPS	0.22129471	0.31325199	0.12306189	0.18009832	0.13301159	1	
DPS	0.13678746	0.01003048	0.1036585	-0.1234699	-0.1295778	0.83788774	1

Table 5: Weighted Least Squares (Wls) Regression

	COEF	STD.ERR	t	P > |t|	
Constant	0.111283	3.95081	0.0282	0.97758	
GDP	0.0490008	0.66533	0.0736	0.94142	
MS	0.00182479	0.000835198	2.1849	0.03093	***
INT	-0.00026787	0.0371515	-0.0072	0.99426	
EPS	0.162989	0.0795526	2.0488	0.04276	**

Table 6: Test Statistics

Statistic	Value
R^2	0.102914
P-value(F)	0.013425

5. CONCLUSION

This paper examines the relationship between a group of macroeconomic variables and the stock prices of the insurance and banking sectors of Karachi Stock Exchange. The macroeconomic variables are represented by the money supply (M1), interest rates (lending), and gross domestic product (GDP) and the fundamental factor is earning per share (EPS). Two econometric models i.e. Panel Data Regression and Weighted Least Squares (WLS) Regression are employed in the study. The analysis suggests that the relation of earning per share and money supply is positive and statistically significant and the hypothesis of positive relation is confirmed and these results are consistent with the previous researches. The reported positive relation of gross domestic product is statistically in-significant. The reported negative relation of interest rate is also statistically insignificant.

Hence it is proved that money supply and earning per share has positive relation with the stock prices.

Investor evaluate the stock by it earnings per share and the companies in Pakistan should give more consideration to those factors which affect EPS. The results of this study can provide investors and security analysts a method to predict the variation for stock prices under long-run strategy of investment. Positive relation of money supply showed that monetary policy set by the State bank of Pakistan (SBP) also affects the stock prices. So investors and security analysts should also give consideration to the current monetary policy when investing or giving advice on investing in the KSE. Looking at the current scenario and performance of KSE, easing the monetary policy is recommended.

Future work in this area should make an effort to understand the factors responsible for fluctuations in the overall stock market, and not just a particular sector or two. In particular, the influence of political events on the Karachi Stock Exchange should be quantitatively analyzed and explained in the future study.

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