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The Determinants of Stock Prices in Pakistan

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Abstract

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Stock Investment is always a risky proposition and investors are reluctant to invest in Stock Market. If they came to know about the exact factors influencing the stock prices, they will invest in stocks confidently. This study examines the empirical relationship between the stock prices, financial fundamentals and macroeconomic factors in Karachi Stock Exchange. By applying the dynamic panel Generalized Method of Moments (GMM) technique on the data of 221 firms during 1995-2006, the analysis attempts to obtain efficient parameter estimates and to check the consistency of the link between stock price behavior, company fundamentals and macroeconomic factors. Several studies have been conducted to identify the factors of stock prices for a variety of countries, and the results have been mixed. It is found that previous behavior of stock prices, company size, previous earnings per share are the most important factors. In addition, macroeconomic indicators like, GDP growth, rate of interest and financial depth have significant relationship with the stock prices. Market to book value, share turnover ratio and inflation can also influence the stock price behavior. The corporate reforms of 2002 are responsible of increase in stock prices from 2002 to 2006. Investors in Pakistan have to decide which stock should be purchased. The results of this study will provide guideline to the investors in stock selection. While taking decisions they should take into account company informations as well as macroeconomic situation of the country simultaneously. The companies can set their policies and strategies in the light of relatively important factors, for business survival and success. The possible impact of macroeconomic factors may help the policy makers while setting monetary and fiscal policies.

Introduction

The stock market plays an important role in economic development by promoting capital formation and raising economic growth. Trading of securities in this market facilitates savers and users of capital by fund pooling, risk sharing, and transferring wealth. Economic activities can be created by flow of reserves to the most productive investment. Investors take decisions to invest in particular shares of companies, keeping in view their share prices. Theories suggest that there is an association between changes in share prices and changes in financial fundamental variables.

Fluctuations in Stock prices can be observed in stock market on a daily basis. Moreover, during certain times of the year, it is easy to notice that stock prices appreciate every morning, and this may take place many times in one day for some stocks. This means that stock prices are determined by supply and demand forces. There is no foolproof system that indicates the exact movement of stock prices. However, the factors behind increases or decreases in the demand and/or supply of a particular stock fall into three categories: fundamental factors[1], technical factors and market sentiments.

In emerging stock markets the trading pattern in stock market is day-trading. This type of trading is speculative in nature. To maximize the gain from trade they usually consider the both types of factors. Firstly, the fundamental factors that are the level of the earnings base[2,] and a valuation multiple[3], expected growth in the earnings base, discount rate[,] and risk of the stock.

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[1] Company specific factors
[2] represented by earning per share, cash flow per share, dividend per share
[3] price to earning ratio

Secondly, technical factors include external conditions that influence the supply of and demand for a company's stock. Some of these indirectly affect fundamentals i.e. economic growth indirectly contributes to earnings growth. Inflation, economic strength of market, substitutes[4], incidental ransactions[5], demographic trends and liquidity represents the technical factors.

The present value of the stock is determined by the future cash flow stream arising from the underlying assets and discount rate. As these two factors are quite sensitive to changes in macroeconomic conditions, it is reasonable to assume a fairly close relationship between changes in asset prices and changes in macroeconomic variables. This relationship should be especially close for stock prices since the future cash flow of listed companies is strongly influenced by general economic activity, and discount rates. After economic reforms, the identification of relationship between stock prices and macro variables was not important in the case of developing countries. From the beginning of the 1990s number of measures has been taken for economic liberalization, privatization, and relaxation of foreign exchange controls, and in particular opening of the stock markets to international investors. Due to these measures the size and depth of stock markets in developing nations has been improved and these facts started to play their role.

Usually, stock prices are determined by fundamental macroeconomic variables such as the interest rate, the exchange rate and the inflation. Investors believed that monetary policy and macroeconomic events have large influence on the volatility of the stock prices. This means that macroeconomic variables can influence investors' investment decision and motivates researchers to investigate the relationships between share price and macroeconomic variables. There is a need to do further econometric studies to seek out new determinants of stock prices. If we believe that stock market is efficient, then any attempt to explain stock prices based on current and past information will be fruitless.

The determinants of stock prices can be identified from different points of view. A line of researchers have found the relationships between stock prices and few factors which could be either internal or external. The findings were different depending on the scope of the study. Some authors concluded that company fundamentals such as earning and valuation multiple are major factors that affect stock prices. Others indicated that inflation, economic conditions, investor behavior, the behavior of the market and liquidity, are the most influencing factors of stock prices. Additionally, the effect of interrelated factors has been covered in some other studies. This study is the first attempt to deal with two types of factors effecting stock prices, one is internal factors (company fundamentals), and the other is external factors (Macroeconomic). The focus of the study is on the combined analysis of both types of factors. Thus the analysis is being done in the closed economy, keeping constant the external impact. The identification of the factors is important for investors particularly and for policy makers and officials generally.

The paper is organized as follows: Section two presents the review of literature. Section three presents the model and methodology, and section four and five presents results and conclusion respectively.

Growth of Karachi Stock Market
To examine the degree of growth of the market, it is necessary to examine the historical trends of the market in terms of market capitalization, share turnover and movement of the KSE-100 index. The market trend can be compared to the economic growth of Pakistan. Table-1 below highlights the increase in market capitalization, annual turnover, KSE-100 index and GDP growth between 1992 and 2007. The values of almost all indicators are increasing rapidly after 2002 to 2006. Only GDP growth shows rising trend from 1994 to 1996 then it falls from 1997 to 2001. Again, there is rapid increase in GDP growth since 2002. While all stock market indicators first increases with small changes from 1992 to 2001, afterwards a rapid increase from 2002 to 2006.

[4] corporate bonds, government bonds, commodities, real estate and foreign equities
[5] Insider transactions, buying or shorting a stock to hedge some other investment.

Table-1 KSE Historic Record

year	% GDP growth	KSE 100 index	Rs. Million Market capitalization	Times Annual Turnover
1992	7.71	1243.71	218357.2	724.9
1993	2.27	2164.26	214428.7	893.62
1994	4.51	2049.11	404578.3	1830.96
1995	5.26	1497.76	293326.8	2293.16
1996	6.6	1385.06	368213.8	5232.46
1997	1.7	1849.7	469595.9	8023.13
1998	3.5	879.62	259284.7	15004.19
1999	4.2	1054.67	286220.3	25532.82
2000	3.9	1520.74	391860.3	48108.64
2001	2	1366.44	339249.5	29165.33
2002	*3.1*	*1770.12*	*407637.7*	*29140.66*
2003	4.7	3402.48	746434.5	53076.88
2004	7.5	5279.18	1357475.2	96957.75
2005	9	7450.12	2013202.8	88301.19
2006	6.6	9989.41	2766407.2	79454.54
2007	7	13772.46	3980783.4	540422.38

Source: Annual Report KSE
Statistical Bulletin, SBP
Economic Survey, Govt: of Pakistan.
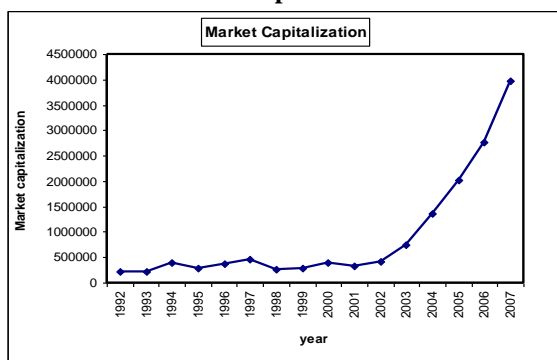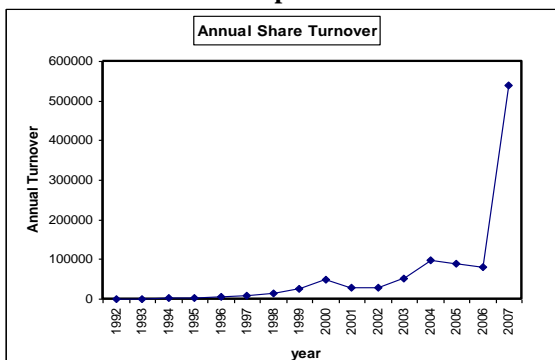
Graph-1
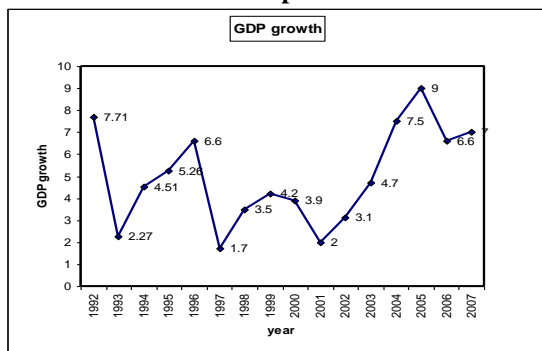
Graph-2
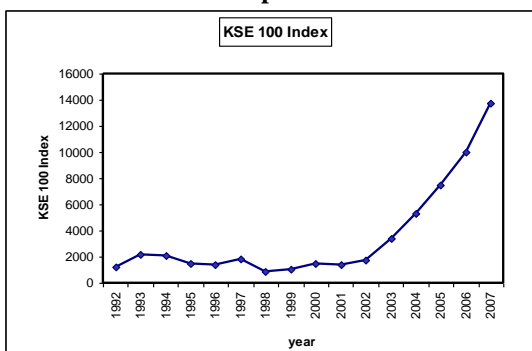
Graph-3

Graph-4

This increase is an indicator of the level of investor interests and profitability available in the stock market.

The graphical trends of GDP growth, KSE-100 Index, market capitalization and annual turnover are shown in graphs 1,2, 3 and 4 respectively. During the sixteen years time span GDP growth shows fluctuations in graph 1, while all stock market indicators[6] after reaching at very low level in 1998, starts rising trend from 2002 and continuous onward.

Growth During 1992 to 1997

In 1992, the market had a downward trend and a series of political change affected the market in later years. So there was not substantial growth.

Growth During 1998

The KSE-100 index was as low as 765 in 1998 due to;

1. Sanctions imposed after nuclear testing in 1998
2. Freeze on foreign exchange accounts
3. Political instability
4. Poorly structured Corporate Law Authority(CLA)
5. Poor reporting standards
6. Tight monetary policy
7. High borrowing Cost
8. Excess capacity of key sectors

All above reasons created burden for the market as a whole.

Reforms in 1999

President Pervez Musharraf presented Economic Reforms Agenda in 1999. The objectives were to stabilize country's debt situation by restoring Macroeconomic Stability, to revive economic growth, to reverse the trend of increasing poverty and to improve Governance. These reforms caused positive impact on stock market growth after 1999.

Reforms in 2002

KSE declared as the Best Performing Stock Market of the world for the year 2002[7] for numerous reasons including;

1- Strong economic fundamentals
2- Stability of the Rupee/Dollar parit
3- Expansionary monetary policy

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[6] Graphs,2,3,4
[7]Business Week, USA Today

In addition to the above reasons, it was the impact of Corporate Reforms, which caused a rapid growth of stock market. Followings were the major reforms:

1- Central Depository Company (CDC) formed in 1997 and its role in creating a transparent, efficient and secure environment for the exchange of securities.

2- Nearly 61% of Oil and Gas Development Corporation (OGDC) and 37% of Southern Sui Gas Corporation's (SSGC) Initial Public Offerings (IPO) were subscribed using the CDS highlights their continues effort towards revolutionizing the financial market.

3- The divestment policy of the Government of Pakistan by public offer of shares of state owned enterprises termed "Privatization for People" have kept investors interests alive in the equity market.

Literature Review

Some studies have supported the idea that company fundamentals such as earning and dividend are major factors that affect stock prices. Others indicated that inflation, economic conditions, interest rate, monetary policy, investor behavior, the behavior of the market and liquidity, are the most influencing factors of stock prices. Very few studies captured the effect of interrelated factors. The following literature comprises on two types of studies. First, studies analyzing firm specific factors. Second, studies analyzing macroeconomic factors. In the emerging markets, S.Kumar and Manmohan(1975), Arif(1994), Lee(1998), Rashid et al.(2002) have analyzed the significant role of very few, firm specific factors in determining the stock prices. Nishat(1995) estimated the impact of dividend, retained earning, size, variability in earning distribution and lag share prices on share prices. He also found that multinational and private sector firms have higher share prices. Irfan and Nishat(2002) explained the impact of payout ratio, size, leverage and dividend yield on the share prices in the long run. The explanatory power of these factors varies before and after reforms.

A growing body of literature has explored the link between macroeconomic indicators and stock prices. Sprinkel (1964), Rozeff (1974),

Kraft and Kraft (1977) explored the strong relationship between stock prices and money supply. Ho (1983) has found uni-directional causality from money supply to stock prices for Japan and Philippines but bi-directional causality for Singapore. Brown and Otsuki (1990) have analyzed the strong effect of short term interest rates, money supply, exchange rates, crude oil prices, and industrial production on share prices in Japan. Bhattacharya (1994) does not confirm any impact of macroeconomic factors on stock prices in India, while in another study[8] they identified the two way causation between stock price and rate of inflation also Index of industrial production lead the stock price. Mukherjee and Naka (1995) confirm the impact of six macroeconomic factors on stock prices. Bagliano (1997) has found strong evidence of a long run relationship between real stock prices and inflation in Italy. Ralph and Eriki (2001) have shown that stock prices are also strongly driven by the level of economic activity, interest rate and money stock. Tsuyoshi Oyama (1991) examined the impact of Treasury Bill rate and money growth on stock returns during the partial capital market liberalization. Zhao (1999) studied the relationship among inflation, output and stock prices in the Chinese economy. The results indicated a significant and negative relation between stock prices and inflation. The findings also indicated that output growth negatively and significantly affect stock prices. Mansoor H.Ibrahim (1999) investigated the dynamic causal link from the official reserves to stock price changes in Malaysian stock market . It is also concluded that stock prices can act as an informational variable for the movements of industrial production, M1, and the exchange rate. Fazal Husain and Tariq Mahmood (1999, 2001) examined the causal relationship between money supply and stock prices in Pakistan. The co-integration analysis indicated a long run relationship between stock prices and money supply. While in another study[9] they check the causal relationship between stock prices and macroeconomic variables: consumption expenditures, investment spending, and GDP in Pakistan; however, reforms resulted in significant improvement in the behavior of stock market and its linkages to the economy. Maysami and Koh(2000), chaudhuri and Coo(2001), Bhattacharya and Mukharjee(2002). Osama M.Al-Khazali(2003), Dimirious Tsoukalas(2003) Habibullah et al(2005), A. humpe and Peter

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[8] In 2002
[9] Conducted in 2002

D(2005), Nishat and Shaheen(2004), Sangeeta chakravarty(2005), Desislava Dimitrova(2005), C.Erdem et al(2005) examined the impact of various macroeconomic factors on stock prices in emerging markets.

The first objective of the study is to find the most influencing factors of stock price behavior in Pakistan. The second objective of the study is to find out the impact of the factors during two sub periods, i.e.1995 to 2001 and 2002 to 2006, to assess the Stock Market reform and economic reform impact. Thus the Hypothesis is as: Is stock prices associated with the company fundamentals and macroeconomic factors in the long run, after controlling the external factors that normally influence the stock price behavior in Pakistan?

Model and Methodology

Econometric Model

$$SP_{it} = \alpha_o + \alpha_1 LR_{it} + \alpha_2 KS_{it} + \alpha_3 MB_{it} + \alpha_4 DPR_{it} + \alpha_5 EPS_{it-1}$$
$$+ \alpha_6 SIZE_{it} + \alpha_7 TOR_{it} + \alpha_8 GDP_t + \alpha_9 INF_t + \alpha_{10} MMR_t +$$
$$\alpha_{11} \ln M2_t + \alpha_{12} SZ_t + \alpha_{13} FD_t + \alpha_{14} D + \varepsilon_{it}$$

$$(1)$$

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8, \alpha_{11}, \alpha_{12}, \alpha_{13}, \alpha_{14} > 0$
$\alpha_9, \alpha_{10} < 0$

SP_{it}	= Share prices
LR_{it}	= Liquidity ratio
KS_{it}	=Capital structure
MB_{it}	=Market to book value.
DPR_{it}	= Dividend Payout ratio
EPS_{it-1}	= previous year's Earning per share
$SIZE_{it}$	= Size of Firm
TOR_{it}	=Share turnover ratio
GDP_t	=GDP growth
INF_t	=Inflation Rate
MMR_t	=Interest Rate
$\ln M2_t$	= Money Supply
SZ_t	=Size of stock market
FD_t	= Financial Depth.
D	=Dummy variable for time effect
ε_{it}	=Error term

Equation (1) is an econometric model. There might be a long list of factors affecting stock prices, yet few of those are being selected for the analysis. Stock price (SP) is the dependent variable and liquidity ratio, capital structure, market to book value, dividend payout ratio, earning per share, firm size, share turnover ratio, GDP growth, inflation, interest rate, money

supply, size of stock market and financial depth, are all explanatory variables under this study. The whole set of variables are of two broad types i.e. company fundamentals and macroeconomic indicators. One dummy variable has been included in the model to care the impact of corporate reforms in 2002. The residual term is included in the equation (1). The expected direction of relation of each explanatory variable with stock price is positive except inflation and interest rate. The relation of stock price and capital structure is ambiguous.

First Differenced Generalized Method of Moments (GMM)

We propose the Application of the dynamic panel Generalized Method of Moments (GMM) technique (Arellano and Bond, 1991; Arellano and Bover, 1995) to obtain efficient parameter estimates and to check the consistency of the link between stock price behavior and explanatory variables. This technique is Applied by Levine, Loayza and Beck (2000) and Beck and Levine (2004).

The first-differenced GMM approach controls for unobserved firm-specific time-invariant effects that are correlated with the explanatory variables and results in consistent estimates of the coefficients on the lagged stock price (SP$_{t-1}$) and the lagged explanatory variables. By inserting the lagged stock price (SP$_{t-1}$) in the model, this method controls for serial dependence of the variable, also by using lagged variables as instruments, it controls for the endogeneity of stock price and company fundamentals.

There are a number of advantages of GMM method; it exploits the time series element of the data; it controls firm specific effects, also includes lagged dependent variable as regressor; it uses instrumental variables for all regressors; and controls for the endogeneity of all explanatory variables. The GMM form of equation (1), is as under;

$$SP_{it} = a + \alpha_o SP_{it-1} + \alpha_1 LR_{it} + \alpha_2 KS_{it} + \alpha_3 MB_{it}$$
$$+ \alpha_4 DPR_{it} + \alpha_5 EPS_{it-1} + \alpha_6 SIZE_{it} + \alpha_7 TOR_{it} \quad \textbf{(2)}$$
$$+ \alpha_8 GDP_t + \alpha_9 INF_t + \alpha_{10} MMR_t + \alpha_{11} \ln M2_t$$
$$+ \alpha_{12} SZ_t + \alpha_{13} FD_t + \alpha_{14} D + \psi_t + v_{it}$$

Where $v_{it} = \varepsilon_{it} + u_{it}$, i=1,......N, t = 1,....T, and i represents the cross-sectional units, t represents the time period, also SP_{it-1} included in

the equation as regressor. Furthermore, ψ_t is the time-specific effect, and assuming fixed effects, the cross-section error term, v_{it} contains the following two effects (1) the unobserved time invariant, firm-specific effects, ε_{it} and (2) a stochastic error term, varying across time and cross-section. The time specific effect is included to capture aggregate shocks, which may appear in any year. The firm specific effect, ε_i, is included to capture firm-specific differences like unobserved factors. The unobserved firm-specific effect, ε_i, is correlated with the explanatory variables but not with the changes in the explanatory variables. Arellano and Bond (1991) show that the following moment conditions hold for the equations in first differences, under the assumption that u_{it} is not serially correlated and explanatory variables are endogenous.

$$\mathrm{E}\,(\Delta u_{it}\, y_{it-r}) = 0 \; ; \; \mathrm{E}\,(\Delta u_{it}\, x_{it-r}) = 0 \quad (3)$$
Where r = 2,.......t-1   and   t = 3,.......T

These conditions make it possible to use, as instrumental variables for the equations in first differences, lagged values of endogenous variables dated t-2.

This method can be applied if, number of observations (N) is large but T is small; the explanatory variables are endogenous; and unobserved firm specific effects are correlated with other regressors. The application of this method with a small number of cross-sectional units would create problems for difference estimators as shown by Arrellano and Bond (1991) and Blundell and Bond (1998).

The first differenced GMM estimator is a more efficient estimator than the Anderson and Hsiao (1981) estimator, according to Arellano and Bond (1991). The persistent lagged dependent variables and explanatory variables causes to weak the lagged levels and internal instruments, also causes a large finite sample bias and weak accuracy.

After estimating the parameters using GMM, we must use the Sargan test of over identifying restrictions proposed by Arellano and Bond (1991) to assess whether the instrumental variables are associated with the dependent variable beyond its ability to explain the independent variables.

Data Sources

This study is based on secondary data. The financial data of individual companies has been collected from Balance sheet analysis of joint stock companies listed on Karachi stock exchange published by the State Bank of Pakistan. Data on the most of the variables has been collected from this publication. As different firms have different financial year endings, year end stock prices for all firms has been recorded from Index numbers of stock exchange securities, also published by the State Bank of Pakistan. The time series macroeconomic data has been collected from the, Annual Economic survey of Pakistan (1995-2006), International financial Statistics (IFS) (1995-2006) and Banking statistics of Pakistan. The sample covers the period from 1995 to 2006 pooled for 12 years. All 221 non financial firms out of 654 are included, which are continuously listed in Karachi stock exchange since 1995 to 2006. As this is the balanced panel sample, one advantage of this technique is to get a larger degree of freedom. Also by pooling the data, we may be able to remove the influences of transitory effects from the relationships under consideration (Kuh & Mayer, 1957).

Estimation Results

Descriptive Statistics

In Appendix-B (2) Table-1 and 2 presents the descriptive statistics. It shows that behavior of all variables during the post reform era (2002-2006). After corporate reforms of 2002, the stock prices move upward, as average growth is 42% to 57%. GDP growth is also high, inflation and rate of interest remained low as compare to the whole model, money supply remained almost stable.

Correlation Analysis

The correlation metrics has been given in Appendix-A. Explanatory variables exhibits very low degree of association and maximum 37% and below this, this is the sign of no multicollinearity in the model. We concluded that we are ready to run our constructed model to get estimation results.

GMM Results

By applying the first differenced GMM technique to control the endogeneity, the coefficients and their corresponding t-values in parenthesis are presented in column 2 of table 3. The major property of this method is that this includes the lag of dependent variable in the model as explanatory variable. The results indicate that when last year stock prices (SP_{t-1}) increase by one percent, this increases current year's stock prices by 0.704 percentage points. This reveals that Pakistani investor's expectation of current prices based on earlier prices is rational. The overall stock market environment has very strong impact on individual company's stock prices. When liquidity ratio (LR) increases by one percent, it increases stock prices by 0.009 percentage points. This variable is consistent with our expectations, but its impact on stock prices is insignificant. This implies that investors in Pakistan do not give importance to company's liquidity position, while taking decisions about purchasing stocks. When there is one percent increases in debt to equity ratio of company $(KS)^{10}$, this increases stock prices by 0.000 percentage point. Although the coefficient magnitude is very small, yet it is positive and significant at five percent level. This implies that investors have understanding that high debt firm, will grow in future, company value will be high accompanied with high stock value. Thus the demand of share increases, that push up the prices. When market to book value of share (MB) increases by one rupee, the stock prices increase by 0.417 times. This has positive and significant impact on stock prices, and indicates that investor's response towards the company's stock in market is not very substantial. When dividend payout ratio (DPR) increases by one percent, it does not influence stock prices, as coefficient value is 0.000 percentage point, and also insignificant. This indicates that companies registered in Karachi Stock Market, are not dividend paying, or have paid in small amount, only for few years. Thus the influence of dividend is not substantial. When last year's earning per share (EPS_{t-1}) grow by one percent, this increases current year's stock prices by 0.156 percentage points. The impact of this factor is positive and very highly significant. This significant and positive impact reveals that Pakistani investor's expectations of current prices based on earlier earnings is rational. When there is one million increase in shareholder's equity $(SIZE)^{11}$, stock price increases by 0.006 million on average. This factor influences stock prices positively and significantly. This implies that investors are likely to have more confidence in larger firms. As large firms are better diversified and less risky. When share turnover ratio (TOR) increases by one percent, stock prices increases by 0.000 percentage

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[10] Capital structure
[11] Firm size

points. This factor determines stock prices positively and significantly. The magnitude of this variable is very small due to high value of volume. One percent growth of real gross domestic product (GDP) raises stock prices by 0.870 percentage points. This has positive and very strong impact on stock prices. The impact of GDP growth implies that real sector growth do influence the stock prices indirectly, by raising income, saving and investment in Pakistan. As concluded by Husain and Mehmood (2001), Nishat and Shaheen (2004). When inflation rate (INF) increases by one percent, stock prices fall by 0.729 percentage point. The inverse and high significant impact of inflation on stock prices is consistent with the expectations, as concluded by Mukharjee and Naka (1995) in case of India. this implies that high rate of inflation reduces saving and investment, this force investors to sale out the securities and shares, thus supply of shares in stock market will exceed the demand for shares, this pressure pull down the prices.

One percent increase in rate of interest (MMR)[12] reduces stock prices by 1.432 percentage points. The impact is inverse and highly significant, that is consistent with our expectation and same as concluded by Mukharjee & Naka (1995). This indicates that high rate of interest in Pakistan will contract money supply, and also reduces money circulation. Some investors may stop investment due to lesser cash in hand; others may reallocate their investment to gain from the high rate of interest. They would prefer to purchase interest bearing securities. As a result due to sale of stocks in market by the investors, supply exceeds the demand of stocks. Ultimately, stock prices tend to fall. When money supply (lnM2) increases by one percent stock prices increases by 40.319 percentage points. The monetary expansion determines stock prices positively and significantly. This result is according to our expectation and proved by theories and tested by other researchers.

When one percent increases in size of stock market (SZ), this increases stock prices by 0.004 percentage points. The sign of this variable is according to the expectation, yet the impact is insignificant. This implies that stock market size depends only on few major groups in Pakistan. A large number of companies are trading in stock with low market share. The one percent growth in

financial intermediary development (FD) increases 0.015 percentage points in stock prices. This indicates the positive and significant impact of financial development on stock prices. This implies that after implementation of financial reforms in 2001, the financial sector developed, and this growth has positively influence the stock market development, as a result overall stock prices tends to move upward. The result is consistent according to the theory and our expectation. It also proves that the financial sector and corporate sector are complements to each other, thus the development of one sector has positive influence on the other in Pakistan. The dummy variable has positive and significant effect on stock prices, which indicates that the economic and corporate reforms of 2002, plays an important role in determining stock price behavior in Pakistan.

After discussion of estimated parameters using GMM, we use the Sargan test to determine any correlation between instruments and errors. For an instrument to be valid there should be no correlation between instruments and errors. We fail to reject the null hypothesis of this test, thus providing evidence of the validity of lagged levels. In table (4), Sargan test value, and instrumental rank has been reported. The J-static is 142.142, and instrument rank is 69. This shows that J-statistic is greater than the instrument rank. The J-statistic is the value of GMM objective function, and represents Sargan statistics. The Sargan test value is larger than the value of instrumental rank for first differenced GMM. The result fails to reject the null hypothesis of this test, thus providing evidence that valid instruments are used. It indicates that the GMM technique controls the firm-specific effects in the model.

Summarizing the GMM results, the most significant factor is previous behavior of stock prices that affects current year's stock price. Next most significant factors are rate of interest, previous years earning per share and money supply. Real GDP growth, size of firm and financial depth have also significant impact on stock prices All signs of coefficients are according to the expectations. The least significant factors are market to book value, share turnover ratio and inflation rate. The liquidity ratio, dividend payout ratio and size of stock market are insignificant factors, while signs are according to the prediction except dividend payout ratio.

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[12] Money Market Rate

Table-3 GMM Estimation of the Model

Explanatory Variables	GMM Coefficients
SPt-1	0.704* (145.48)
LR	0.009 (1.42)
KS	0.000** (2.086)
MB	0.417* (5.83)
DPR	0.000 (-0.06)
EPS_{t-1}	0.156* (9.91)
SIZE	0.006* (6.40)
TOR	0.000* (-5.42)
GDP	0.870* (6.97)
INF	-0.729* (-4.20)
MMR	-1.432* (-9.98)
LnM2	40.319* (9.75)
SZ	0.004 (0.28)
FD	0.015* (6.08)
D	23.253* (9.89)
Constant	-
R-Squared	-
Sargan Test	142.142
Instrument rank	69
Observations	1926
Number of Firms	221

Time dummy is included in this regression.

*significant at 1%; **significant at 5%;
***significant at 10%

Conclusion and Policy Recommendations

Stock markets in emerging economies are inefficient. Stock trading in these markets is speculative in nature and the investors believe on technical factors argue that technical factors and market sentiments often overwhelm the short run, but fundamentals will set the stock price in the long run. In the absence of sufficient information about these factors they will fail to assess the exact value of stock, resulting low returns from trading. Although the good or bad news develop their impact on stock market, despite this, the fundamental changes in economic structure are more important than the current news.

In Pakistan Karachi Stock Exchange is the major market for stocks trading. Due to the financial and economic liberalization in 1991 and the corporate reforms of 2002, the market has shown its rapid growth. Thus the importance of stock valuation and identification of factor has got much importance. The determinants of stock prices can be identified from different points of view. A line of researchers have found the relationship between the stock prices and selected factors which could be either internal or external. Their findings were different depending upon the scope of the study. Some studies concluded that company fundamentals such as earnings and valuation multiple are major factors that effect stock prices others indicated that inflation, economic conditions, investor behavior and liquidity are the influencing factors of stock prices. This study is the first attempt to deal with the both types of factors: one is the company fundamentals and the other is the macroeconomic indicators. The analysis is being done in the closed economy keeping constant the international influence.

 The impact of selected factors is being analyzed in this study. The results show that previous year's stock prices have strong relationship with current year's stock prices. In addition, previous year's earnings per share and company size are most important factors in determination of stock prices in Pakistan. On the other hand macroeconomic indicators like real GDP growth, rate of interest, and financial development have significant impact. The analysis explains the minor influence of market to book value, share turnover ratio and inflation rate. Yet these are also important for investment decisions. The main reason of insignificant liquidity ratio, is speculative trading of KSE, in such situation investors usually consider stock market liquidity. There is no impact of dividend payout ratio; this implies that a large number of firms in Pakistan do not pay dividends. Stock market size does not play any role in determining the stock prices because there is the large difference in size of firms. The financial and economic reforms as well as corporate reforms of 2002 are responsible for overall increase in stock prices.

On the basis of above findings we can give some specific suggestions. The portfolio managers should

invest in the stock by taking into account the companies annual performance. Investors should focus on the data of the companies showing high prices in previous year, last year earnings per share should be preferred. In addition they should consider the impact of economic situation of the country, because the stock market is the complement, rather than the substitute of the real and financial sectors of the economy. They should keep in record the information related to the real sector as well as financial sector of the country. So the policy makers should set their monetary and fiscal policies accordingly. To avoid risk in the stock investment, there is a need to further reforms for the stock market.

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Appendix- A

Correlation Matrix

Variables	SP	LR	KS	MB	DPR	EPS$_{t-1}$	SIZE	TOR	GDP	INF	MMR	LNM2	SZ	FD
SP	1													
LR	0.04	1												
KS	-0.01	0.00	1											
MB	0.29	0.01	0.12	1										
DPR	0.11	0.00	-0.02	0.03	1									
EPS$_{t-1}$	0.44	0.00	-0.03	0.08	0.04	1								
SIZE	0.19	0.02	-0.02	0.00	0.04	0.12	1							
TOR	-0.01	0.00	0.03	-0.01	-0.01	-0.01	0.18	1						
GDP	0.14	0.01	0.02	0.04	-0.04	0.01	0.11	0.03	1					
INF	0.02	0.06	-0.01	0.00	-0.21	0.04	-0.06	-0.03	0.16	1				
MMR	-0.14	0.00	-0.02	-0.05	-0.07	0.03	-0.15	-0.05	-0.34	0.30	1			
LNM2	0.13	-0.05	0.04	0.07	0.09	0.01	0.17	0.04	0.48	-0.46	-0.24	1		
SZ	0.02	0.02	-0.01	0.00	-0.19	0.07	-0.04	-0.01	0.29	0.25	0.24	-0.27	1	
FD	-0.10	0.01	-0.03	-0.05	-0.08	0.04	-0.13	-0.04	-0.31	0.33	0.34	-0.26	0.37	1

List of Companies Appendix- B

Sr.No.	**Textile Sector**		
	Textile Spining		
1	Al-Qadir Textile Mills Ltd.	43	Qayyum Spinning Mills Ltd.
2	Al-Qaim Textile Mills Ltd.	44	Ravi Textile Mills Ltd.
3	Ali Asghar Textile Mills Ltd.	45	Regent Textile Mills Ltd.
4	Annoor Textile Mills Ltd.	46	Saitex Spining Mills Ltd.
5	Apollo Textile Mills Ltd.	47	Sajjad Textile Mills Ltd.
6	Ayesha Textile Mills Ltd.	48	Salfi Textile Mills Ltd.
7	Azam Textile Mills Ltd.	49	Sallly Textile Mills Ltd.
8	Bilal Fibres Ltd.	50	Salman Noman Enterprises Ltd.
9	Brothers Textile Mills Ltd.	51	Shadman Cotton Mills Ltd.
10	Chakwal Spining Mills Ltd.	52	Shahzad Textile Mills Ltd.
11	Chaudhry Textile Mills Ltd.	53	Sind Fine Textile Mills Ltd.
12	Crescent Spining Mills Ltd.	54	Sunshine Cotton Mills Ltd.
13	D.M.Textile Mills Ltd.	55	Tata Textile Mills Ltd.
14	Data Textile Mills Ltd.	56	Zahidjee Textile Mills Ltd.
15	Dewan Khalid Textile Mills Ltd.		**Textile Weaving & Composite**
16	Dewan Mushtaq Textile Mills Ltd.	57	Ashfaq Textile Mills Ltd.
17	Din Textile Mills Ltd.	58	Ayaz Textile Mills Ltd.
18	Elahi Cotton Mills Ltd.	59	Blessed Textile Mills Ltd.
19	Ellcot Spining Mills Ltd.	60	Chenab Ltd
20	Fatima Enterprises Ltd.	61	Colony Textile Mills Ltd.
21	Fawad Textile Mills Ltd.	62	Colony Thal Textile Mills Ltd.
22	Fazal Cloth Mills Ltd.	63	Crescent Textile Mills Ltd.
23	Fazal Textile Mills Ltd.	64	Fateh Sports Wear Ltd.
24	Globle Textile Mills Ltd.	65	Fateh Textile Mills Ltd.
25	Gulistan Textile Mills Ltd.	66	Gul Ahmed Textile Mills Ltd.
26	Gulshan Spining Mills Ltd.	67	Hala Enterprises Ltd.
27	Hajra Textile Mills Ltd.	68	Hamid Textile Mills Ltd.
28	Ideal Spining Mills Ltd.	69	Hussain Industries Ltd.
29	Indus Dyeing & Manu. Co. Ltd.	70	I.C.C.Textile Mills Ltd.
30	Ishtaq Textile Mills Ltd.	71	Ishaq Textile Mills Ltd.
31	Island Textile Mills Ltd.	72	Itti Textile Mills Ltd.
32	J.K. Spinning Mills Ltd.	73	Jubilee Spin & Weaving Mills Ltd.
33	Janana De Malucho Textile Mills Ltd.	74	Khyber Textile Mills Ltd.
34	Karim Cotton Mills Ltd.	75	Kohinoor Industries Ltd.
35	Khurshid Spining Mills Ltd.	76	Kohinoor Textile Mills Ltd.
36	Kohat Textile Mills Ltd.	77	Kohinoor Weaving Mills Ltd.
37	Kohinoor Spinning Mills Ltd.	78	Mahmood Textile Mills Ltd.
38	Maqbool Textile Mills Ltd.	79	Masood Textile Mills Ltd.
39	Nagina Cotton Mills Ltd.	80	Muhammad Farooq Textile Mills Ltd.
40	Noon Textile Mills Ltd.	81	Nina Industries Ltd.
41	Olympia Spining Mills Ltd.	82	Nishat Mills Ltd.
42	Olympia Textile Mills Ltd.	83	Quetta Textile Mills Ltd.

84	Salim Denim Industries Ltd.	120	Quality Steel Works Ltd.
85	Saphire Textile Mills Ltd.		**Automobile Assemblers**
86	Service Fabrics Ltd.	121	Al Ghazi Tractors Ltd.
87	Shams Textile Mills Ltd.	122	Atlas Honda Ltd.
88	Suraj Cotton Mills Ltd.	123	Gandharta Nissan Ltd
89	Taj Textile Mills Ltd.	124	Hinopak Motors Ltd.
90	Usman Textile Mills Ltd.	125	Millat Tractors Ltd.
91	Yousuf Weaving Mills Ltd.	126	Pak Suzuki Motor Company Ltd.
92	Zahoor Textile Mills Ltd.		**Automobile Parts & Accessories**
	Other Textiles	127	Agriauto Industries Ltd.
93	Al-Abid Silk Mills Ltd.	128	Allwin Engineering Ind. Ltd.
94	Colony Woolen Mills Ltd.	129	Atlas Battery Ltd.
95	Dewan Salman Fibre Ltd.	130	Automotive Battery Co. Ltd.
96	Liberty Mills Ltd.	131	Exide Pakistan Ltd.
97	Moonlite Pak Ltd.	132	General Tyre & Ruber Co.
98	Noor Silk Mills Ltd.	133	Transmission Engineering Ltd.
99	Pakistan Synthetics Ltd.		**Cables & Electrical Goods**
100	Rupali Polyester Ltd.	134	Johnson & Philips (Pakistan) Ltd.
	Chemicals & Pharmaceuticals	135	Pak Electron Ltd.
	Fertilizer	136	Pak Telephone Cables Ltd.
101	Dawood Hercules Chemicals Ltd.	137	Siemens (Pak) Engineering Co. Ltd.
	Pharmaceutical	138	Singer Pakistan Ltd.
102	Abbot Laboratories (Pak) Ltd.		**Sugar & Allied**
103	Ferozsons Laboratories Ltd.	139	Adam Sugar Mills Ltd.
104	Glaxo Smithkline	140	Al-Asif Sugar Mills Ltd.
105	Otsuka Pakistan Ltd.	141	Al-Noor Sugar Mills Ltd.
	Chemical	142	Baba Farid Sugar Mills Ltd.
106	BOC Pak Ltd.	143	Chashma Sugar Mills Ltd.
107	Colgate Palmolive (Pakistan) Ltd.	144	Crescent Sugar Mills Ltd.
108	ICI Pakistan Ltd.	145	Dewan Sugar Mills Ltd.
109	Kausar Paints Ltd.	146	Faran Sugar Mills Ltd.
110	Leiner Pak Gelatine Ltd.	147	Fecto Sugar Mills Ltd.
111	Pakistan Gum & Chemicals Ltd.	148	Habib Sugar Mills Ltd.
112	Sitara Chemical Industries Ltd.	149	Husein Sugar Mills Ltd.
113	Wah Nobel Chemicals Ltd.	150	Kohinoor Sugar Mills Ltd.
	Engineering	151	Mehran Sugar Mills Ltd.
114	Bolan Casstings Ltd.	152	Mirpurkhas Sugar Mills Ltd.
115	Crescent Steel & Allied Prod. Ltd.	153	Noon Sugar Mills Ltd.
116	Huffaz Seamless Pipe Ind. Ltd.	154	Pangrio Sugar Mills Ltd.
117	International Industries Ltd.	155	Sanghar Sugar Mills Ltd.
118	KSB Pumps Company Ltd.	156	Shahmurad Sugar Mills Ltd.
119	Pakistan Engineering Co. Ltd.	157	Shahtaj Sugar Mills Ltd.

158	Thal Industries Co. Ltd.	189	Good Luck Ltd.
159	United Sugar Mills Ltd.	190	Ismail Industries Ltd.
	Paper & Board	191	Murree Brewary Company Ltd.
160	Central Forest Products Ltd.	192	National Food Ltd.
161	Century Paper & Board Mills Ltd.	193	Nestle Milkpak Ltd.
162	Cherat Papersack Ltd.	194	Noon Pakistan Ltd.
163	Merit Packaging Ltd.	195	Shezan International Ltd.
164	Packages Ltd.	196	Treet Corporation Ltd.
165	Pakistan Paper Products Ltd.	197	Unilever Pakistan Ltd. (Lever Brod)
	Cement	198	Zulfiqar Industries Ltd.
166	Cherat Cement Co. Ltd.		**Glass & Ceramics**
167	Dandot Cement Co. Ltd.	199	Baluchistan Glass Ltd.
168	Gharibwal Cement Ltd.	200	Emco Industries Ltd.
169	Javedan Cement Ltd.	201	Regal Ceramics Ltd.
170	Mustehkam Cement Ltd.	202	Shabbir Tiles & Ceramics Ltd.
171	Zeal Pak Cement Factory Ltd.		**Vanaspati & Allied**
	Fuel & Energy	203	Fazal Vegetable Ghee Mills Ltd.
	Refinery	204	Kakakhel Industries Ltd.
172	Attock Refinery Ltd.	205	Morafco Industries Ltd.
173	National Refinery Ltd.	206	Punjab Oil Mills Ltd.
174	Pakistan Refinery Ltd.	207	Universal Oil Mills Ltd.
	Oil & Gas Marketing Companies	208	Wazir Ali Industries Ltd.
175	Pakistan State Oil Company Ltd.		**Others**
176	Shell Pakistan Ltd.	209	Bata Pakistan Ltd.
177	Sui Northern Gas Pipelines Ltd.	210	Gammon Pakistan Ltd.
178	Sui Southern Gas Company Ltd.	211	Grays of Cambridge (Pak.) Ltd.
	Power Generation & Distribution	212	Haji Dossa Ltd.
179	Karachi Electric Supply Corp. Ltd.	213	Hashmi Can Company Ltd.
	Oil & Gas Exploration Companies	214	Haydery Construction Co. Ltd.
180	Pakistan Oilfields Ltd.	215	Khyber Tobacco Co. Ltd.
	Transport & Communication	216	Lakson Tobacco Co. Ltd.
181	Pakistan Int. Airlines Corp.	217	Mandviwala Mauser Plastic Ind. Ltd.
	Miscellaneous	218	Pak Hotels Developers Ltd.
	Jute	219	Pak House International Ltd.
182	Amin Fabrics Ltd.	220	Pakistan Tobacco Co. Ltd.
183	Crescent Jute Products Ltd.	221	United Distributers Pak. Ltd.
184	Latif Jute Mills Ltd.		
185	Mehran Jute Mills Ltd.		
186	Suhail Jute Mills Ltd.		
	Food & Allied		
187	Clover Foods Ltd.		
188	Gillette Pakistan Ltd.		

Appendix- B(2)

Table-1 Descriptive Statistics

Variables	Mean	Maximum	Minimum	Standard Deviation	Observations
SP	41.85	1687.07	0.32	101.55	2343
LR	40.62	8645	0	267.52	2343
KS	464.84	266883.8	-50850	6040.38	2343
MB	1.48	256.73	-125.84	8.59	2343
DPR	18.17	900	-354.5	51.74	2343
EPS	7.49	268.4	-265.7	19.04	2343
SIZE	888.35	38108	-5318.3	2525.04	2343
TOR	354.48	291364.6	0	8272.74	2343
GDP	4.81	9	1.7	2.12	2343
INF	7.29	13.02	3.1	3.30	2343
MMR	8.32	12.1	2.14	3.15	2343
LNM2	14.32	15.11	13.61	0.46	2343
SZ	45.69	79.77	8.06	23.42	2343
FD	126.63	222.38	43.68	66.48	2343

Table-2 Descriptive Statistics after Reforms

Variables	Mean	Maximum	Minimum	Standard Deviation	Observations
SP	57.40	1687.07	0.32	127.08	926
LR	30.88	942.7	0	70.98	926
KS	727.90	266883.8	0	8963.97	926
MB	2.17	256.73	-125.84	12.29	926
DPR	22.34	863.2	-354.5	59.07	926
EPS	7.43	202.7	-265.7	19.44	926
SIZE	1380.10	38108	-1031.4	3424.18	926
TOR	842.44	291364.6	0	13136.54	926
GDP	6.21	9	3.1	2.04	926
INF	5.76	9.28	3.1	2.46	926
MMR	5.18	8.49	2.14	2.39	926
LNM2	14.81	15.11	14.47	0.23	926
SZ	39.57	58.99	15.52	17.26	926
FD	62.59	73.37	50.02	8.52	926