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Determinants of Share Prices, Evidence from Oil & Gas and Cement Sector of Karachi Stock Exchange (A Panel Data Approach)

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Abstract
The aim of the study is to explore & examine the determinants of share price in Karachi Stock Exchange`s (KSE) oil & gas and cement sector. The study has employed a panel data approach on oil & gas and cement sector of Karachi Stock Exchange (KSE) over the period of 2008 to 2013. The fixed effect and random effect model has been used to determine the research objective. The study reveals that earning per share and book value per share are positive and significant determinants of share price in both sectors while dividend yield is negatively significant in cement sector. Overall, the conclusion indicating that model is significant and random effect model is appropriate in both sectors of Karachi Stock Exchange (KSE)
Keywords: Share price, earning per share, book value per share, dividend yield

JEL Classification Codes: G30, G32

Introduction:
The determinants of share price are a debatable topic among financial researchers for more than five decades. Stock market is major capital markets which is the biggest source of finance to corporation and provide investment opportunities to the investor in form of share and bonds. Investment in shares contains two types of returns; first one is capital gain and second is dividends but the returns on share investment contain high risk because they are unconfirmed and fluctuations in share price are not explanatory. It depends on internal factors such as dividend per share, earning per share, book value, dividend yield as well as external factors that are interest rate, inflation rate, government policy etc.

The initial work on determinants of share price done by Collins (1957) in context of U.S banks, he reveals that dividend, basic earning power and profits affect the stock prices. Empirical studies reveal that various factors in different markets determine the share price.

The present study deals with an attempt to study the determinants of share price on the basis of selected accounting formulas. The present study consists of four sections. Section I deals with objective and review of empirical studies. Section II explains data collection and research methodology. Section III is related with descriptive statistics, correlation matrix and regression result which divided into two parts oil & gas and cement sector respectively. Section IV is devoted to the discussion of conclusion.

Section I:

I.1 Objective of the Study
Objective of the present study is to demonstrate the determination of share price in Karachi Stock Exchange`s (K.S.E) oil & gas and cement sector by consideration of basic financial ratios as an explanatory variables.

I.2 Review of Empirical Studies
There is a lot of literature available about investigation of determinants of share price. Review of literature has been taken from different research journals in context of different countries. Zahir & Khanna (1982) examined the share price determination during the financial year 1976 to 1978. They have used multiple linear regression models. Their study showed that dividend yield and dividend per share has significant impact on share price.

Irfan & Nishat (2003) presented a study over a period of 1981 to 2000 on K.S.E. They identified that firm size, payout ratio and dividend yields are major determinants of stock prices. Uddin (2009) used linear

regression model and logarithmic model to find out determinants of share prices in Dhaka Stock Exchange`s insurance & bank leasing companies. He found both linear and non-linear relationship of share price with earning per share, net asset value per share and dividend percentage.

Nirmala (2011) presented a study over a period of 2000 to 2009 by using fully modified ordinary least squares techniques. The study identified the empirical relationship between share price determinants and dividend, leverage and price earnings ratio have significant impact of share price. Sharma (2011) employed linear multiple regression model and concludes that earning per share, dividend per share are positive & dividend yield is negative determinants of share prices in Bombay Stock Exchange.

Nisa & Nishat (2011) explained the determinants of share price by employing panel generalized method. It was found that earning per share and size are important factors of share price determination in context of K.S.E`s two hundred & twenty one non financial companies during 1995 to 2006.

Sirinivasan (2012) attempted to explain determinants of share price by using panel data fixed effect & random effect model, over a period from 2006 2011 on six different sectors of Indian stock exchange namely Pharmaceutical, Heavy and Manufacturing, IT and ITES, Energy, Infrastructure and Commercial Banking. The study found that earning per share, price earnings ratio are important factors of determination stock prices in pharmaceutical, energy, manufacturing, banking and infrastructure. Variable of size is also significant in all sectors except in manufacturing sector while book value is positively significant in all sectors except in banking and manufacturing industry.

Malhotra & Tandon (2013) used linear regression model for determination of share price by taking the data of 95 companies of National Stock Exchange for the period of 2007 to 2012. They found that earning per share, book value and price earnings ratio have a significant positive impact on share price although dividend yield has negative effect on share price.

Uddin et al. (2013) in their study used regression model to analyze determinant of share price in Dhaka Stock Exchange in financial sector over a period of 2005 to 2011. They identified that net asset value, earning per share and price earning ratio has positive relation with stock prices

Iqbal et al. (2014) studied impact of dividend on share price by using ordinary least square technique. They used data of K.S.E (Karachi Stock Exchange) 30-index companies during the period of 2002 to 2012. The study revealed that return on equity, dividend payout, earning per share and profitability ratio have significant positive impact on share price, while dividend yield and price earning ratio have significant negative impact on share price.

Section II

Data Collection & Research Methodology

In order to identify a basic determinants of share`s market price, the fixed effect and random effect model has been employed on oil & gas and cement sector of K.S.E.

Hence, it's panel data approach on time series data for the period ranging from 2008 to 2013. Two sectors of K.S.E namely Oil & Gas and cement sectors are studied consist of twelve and nineteen companies respectively. Data used in study compiled from annual reports of relevant companies belongs to their respective sectors. In order to identify determinants of share price base on selected accounting variables, model can be constructed as follows:

$$MP = \beta_{0+} \beta_1 EPS_{it} + \beta_2 BVPS_{it} + \beta_3 DPSit + \beta_4 PER_{it} + \beta_5 DYLD_{it} + \beta_6 Siz_{it} + uit$$

$i=1,\ldots\ldots\ldots,n \qquad t=1,\ldots\ldots\ldots,t$

Description of Variables used in the Model:

Market Price (MP):

Market price is taken as controlled variable in above equation collected on closing date of a particular year.

Earning Per Share (EPS):

Earnings per share is an explanatory variable. It illustrates the proportion of company`s income distributed to single common share. It can be calculated as net income less dividends on preferred shares divided by number of issued shares.

Book Value Per Share (BVPS):

It measures value on one share based on its equity. Instantly used by investors by comparing BVPS with MV to check whether the said share is overvalued or undervalued. Book value derived as total common share holders equity divided by number of outstanding shares.

Dividend Per Share (DPS):

It's a financial measure that shows the amount of dividend paid by the company on a single share. It can be determined as total dividend declared (in one year) divided by an outstanding shares.

Price Earning Ratio:

It relates with the comparison of market value with its earnings per share. Price earnings ratio is measured by division of market value with dividend per share.

Dividend Yield (DYLD):
It depicts the percentage of dividend declared in a financial year with respect to its market price. In order to derive dividend yield, we divide dividend per share with market value then multiply the answer with hundred.
Siz (Size):
Size is an important financial measure used to represent the volume of the business. There are various methods used to measure size of the firm such as log of total assets, total asset turnover, amount of sales, market capitalization, paid up capital etc. In this study firm size has been measured by total asset turnover.

Explanatory variables used in the study are explained by their expected signs in Table, while dependent variable is market value of share.

Variables	Description	Expected Signs
MV	Market Value of Share	+
EPS	Earning Per Share	+
BVPS	Book Value Per Share	+
DPS	Dividend Per Share	+
PER	Price Earning Ratio	+/-
DYIELD	Dividend Yield	-
SIZ	Size	+

In order to analyze a significance of variables, following hypothesis will be tested.
H_1: There is a positive relation between market price and earnings per share
H_2: There is a positive relation between market price and book value per share
H_3: There is a positive relation between market price and dividend per share
H_4: There is a positive /negative relation between market price and price earnings ratio
H_5: There is a negative relation between market price and dividend yield
H_6: There is a positive relation between market price and size

A Hausman test is used to check which model is appropriate. A random effect model illustrates distinction sn error variances, while A fixed effect model depicts distinction in intercept beyond companies or time. As per Hausman test if Ho is rejected, a random effect model is not reliable due to the fact that random effects are probably correlated with one or more than one independent variable**.** If Ho is not rejected and it is insignificant so random effect model is appropriated.

Section III
Results

Results of study can be described in two selected sectors e.g. Oil & Gas and Cement Sector of K.S.E. Empirical analysis of Oil & Gas sector are as follows:

Oil & Gas Sector

Table 1 depicts the descriptive statistics of oil and gas sector in respect of their mean, median, maximum, minimum and standard deviations of companies. Mean market value of oil and gas sector is 217.79 rupees while the average of book value is 137.81. Standard deviation illustrates the deviation in the data which is very high for market price. Average dividend per share of this sector is 14.45 which is quite stable.

Table 1: Descriptive Statistics (Oil & Gas Sector)

Variables	Mean	Median	Max.	Min.	Std. Dev.
MP	217.79	188.92	561.00	14.80	113.98
EPS	27.47	26.33	86.49	-130.62	37.41
BVPS	137.81	123.98	336.03	0.00	83.99
DPS	14.45	7.75	52.50	0.00	16.47
DYLD	0.04	0.04	0.13	0.00	0.04
SIZ	2.23	1.86	6.14	0.04	1.81
PER	10.01	7.92	53.96	-5.47	9.85

Table 2: Correlation Matrix (Oil & Gas Sector)

Variables	MP	EPS	BVPS	DPS	DYLD	SIZ	PER
MP	1.000						
EPS	0.559	1.000					
BVPS	0.340	0.426	1.000				
DPS	0.587	0.351	-0.118	1.000			
DYLD	0.465	0.420	-0.199	0.758	1.000		
SIZ	0.208	0.111	0.259	-0.076	-0.163	1.000	
PER	-0.060	0.042	-0.045	-0.069	-0.051	-0.061	1.000

Correlation matrix in *Table 2* reveals the degree of association between two variables. Correlation between MP with BVPS, DYLD, EPS, SIZ is less than 0.55, it shows that there is no problem of multicolinearity

with these four variables, while MP has strong negative relationship with PER.Relationship of EPS with BVPS, DPS, DYLD, SIZ and PER reveals that there is no problem of multicolinearity. BVPS contain strong negative relationship with DPS, DYLD and PER while SIZ has weak positive relation. DPS has strong moderate relationship with DYLD while strong negative relationship with SIZ and PER. Relationship of DYLD with SIZ & PER suggest strong negative relationship. Over all multicolinearity is very little in oil and gas sector. Finally, models can be run to get regression results.

Table 3: Regression Results (Oil & Gas Sector)

Variable	Fixed Effects Model	Random Effect Model
C	170.594	138.279
	(0.000)	(0.001)
EPS	0.631	0.565**
	(0.056)**	(0.067)
BVPS	0.387	0.35*
	(0.019)*	(0.017)
DPS	2.896	3.201*
	(0.007)*	(0.002)
SIZ	-11.938	-0.580
	(0.420)	(0.953)
DYLD	-816.997	-596.069
	(0.080)**	(0.181)
PER	-0.207	-0.310
	(0.836)	(0.741)
Hausman Test	6.873	
	(0.333)	
R-square	0.824	0.383
Adjusted R-Square	0.761	0.31
Probability (F-statistics)	0.000*	0.000*
Durbin-Watson	1.307	1.119
*(**) - denotes significance of t value at five & ten percent respectively.		

Table 3 represents the outcomes of fixed effects and random effects model for the oil and gas sector. In order to identify appropriate model Hausman specification test has been used which supports the random effect model because p value is insignificants and accepting the null hypothesis that specific effects are uncorrelated. The regression coefficients results illustrating that EPS, BVPS and DPS are significant positive determinants of market price in case of oil and gas sector. Adjusted R-square explaining that 38.3% overall fitness of model. The F-Statistics indicating that overall model is significant at 5% level of significance.

Cement Sector

Table 4 showing descriptive statistics of cement sector reveal that average market price of this sector is 39.443 for the period 2008 to 2013 while average of dividend yielded is lowest at 5%. Standard deviation depicts the volatility in share price which 43.44 while standard deviation of dividend yield is lowest 0.09. Average earning per share and dividend per share is 6.86 and 1.72 respectively.

Table 4: Descriptive Statistics (Cement Sector)

Variables	Mean	Median	Max.	Min.	Std. Dev.
MP	39.43	21.93	209.72	2.06	43.44
EPS	6.86	6.11	30.04	-7.08	9.13
BVPS	37.51	26.43	126.90	13.79	26.91
DPS	1.72	0.35	8.00	0.00	2.27
DYLD	0.05	0.01	0.42	0.00	0.09
SIZ	0.92	0.81	1.94	0.30	0.46
PER	1.10	3.61	17.12	-84.57	14.29

Table 5: Correlation Matrix (Cement Sector)

Variables	MP	EPS	BVPS	DPS	DYLD	SIZ	PER
MP	1.00						
EPS	0.88	1.00					
BVPS	0.89	0.83	1.00				
DPS	0.80	0.87	0.83	1.00			
DYLD	0.08	0.28	0.12	0.25	1.00		
SIZ	0.07	0.23	-0.01	0.15	0.40	1.00	
PER	0.22	0.25	0.19	0.20	0.11	0.16	1.00

Table 5 implies the correlation among selected variables. MP has strong positive relationship with EPS, BVPS and DPS while there is no multicolinearity problem with DYLD, SIZ and PER because there correlation coefficient is less than 0.55. EPS has strong positive association with DPS and negative relation with SIZ. DPS has no multicolinerity problem with DYLD, SIZ and PER. Relationship among DYLD, SIZ and PER has less than 0.55 values depict no muliticolinearity among these variables. Over all, multicolinearity is very little in cement sector. Finally, models can be run to get regression results.

Table 6: Regression Results (Cement Sector)

Variable	Fixed Effects Model	Random Effect Model
C	8.89	-3.082
	(0.774)	(0.733)
EPS	3.126	2.598*
	(0.007)*	(0.001)
BVPS	1.498	0.777*
	(0.031)*	(0.001)
DPS	-4.592	-0.845
	(0.301)	(0.754)
DYLD	-61.342	-62.777**
	(0.158)	(0.090)
PER	0.115	0.064
	(0.638)	(0.993)
SIZ	-39.5	0.067
	(0.218)	(0.739)
Hausman Test	6.009	
	(0.422)	
R-square	0.9	0.867
Adjusted R-Square	0.836	0.844
Probability (F-statistics)	(0.000)*	(0.000)*
Durbin-Watson	1.615	1.647
*(**) - denotes significance of t value at five & ten percent respectively.		

Table 6 is showing the results of fixed effects and random effects model of cement sector. Here also Hausman specification test accept the null hypothesis and support random effect model. Regression coefficients of random effects model reveals that EPS, BVPS are significant positive determinants of share price while dividend yield has significant negative impact in determination of share price.

Adjusted R-square is 84.4% represents overall fitness of model, demonstrating that explanatory power of this model is very high. Durbin-Watson is 1.64 showing that there is no problem of autocorrelation among independent variables. The F-Statistics is significant revealing that overall model is significant.

Section IV
Conclusion

The present study deal with the determinants of share price with an explanatory variable of earning per share, dividend per share, book value per share, dividend yield, price earnings ratio and size. The study employed fixed effects and random effects model on oil & gas and cement sector over the period of 2008 to 2013. The findings of the study depicts that earning per share is positive and significant determinants of share in both sectors. These findings are in line with Sharma(2011), Nisa & Nishat (2011), Srinivasna(2012) and Iqbal et al (2014). Result of book value per share is also positive and significant in both sectors. Irfan & Nishat (2003) and Malhotra &

Tandon(2013) also used book value as an independent variable and found significant positive relationship. Dividend per share is positively significant in oil & gas sector. Results of dividend per share is similar to prior studies of Zahir & Khanna(1982) and Sharma(2011).

Moreover, the evidence reveals that dividend yield has significant negative impact on share price in cement sector. This result is consistent with study of Sharma(2011) and Malhotra & Tandon(2013) and Iqbal et al(2014), that dividend yield is significant negative determinate of share price. Hence, the present study examine that earning per share, dividend per share and book value will be crucial factors and helpful for investors in evaluating stock of said sectors.

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