

Determinants of Equity Share Prices: Evidence from American Firms

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Abstract

The purpose of this study is to find variables that explain the variance of equity share prices in America. A sample of 333 American firms listed on New York Stock Exchange (NYSE), USA for a period of 3 years (from 2009-2011) was selected. This study applied co-relational and non-experimental research design. The overall findings of this study show that book value per share, earnings per share, dividend per share, price-earnings ratio, the CEO duality, and the internationality of the firm explain the variance of equity share prices in America. The study separated manufacturing firms from service industry firms and found that similar variables explain the share price variance. This study contributes to the literature on the variables that explain variance of equity share prices. The findings may be useful for the investment managers, financial managers, investors, and stock investment/financial management consultants.

Keywords: Firm size, Equity Share Prices, The CEO Duality.

1. Introduction

This study examines the determinants of equity share prices in America. The market price of the share is an important factor that impacts on investment decision of stock market investors. The share price is one of the most important indicators available to the investors for their decision to invest in or not a particular share. Previous theories developed by notable authors (Wilcox, 1984; Rappaport, 1986; Downs, 1991; Sharma and Singh, 2006; Sharma, 2011) suggest that share price changes are associated with changes in fundamental variables that are relevant for share valuation; for example, book value

per share, dividend coverage ratio, dividend per share, earning per share, dividend payout ratio, price-earnings ratio, and firm size.

Fundamental and technical approaches might be of use in predicting share prices. Although both approaches are useful, this study concentrates only on the fundamental analysis. Fundamental approach is more detailed and realistic approach to predict share prices. Fundamental approach predicts share price on the basis of financial, environmental, and managerial factors. Technical approach considers past trends of share prices to predict future prices of shares.

The improvement in the share price is necessary to maximize shareholders' wealth and to create a greater prospect for future opportunities. The CEO duality plays an important role in the improvement of share price, which in turn, helps to maximize stakeholders' wealth. However, in some corporations (e.g., Livent Inc. and Corel Corporation), the CEO has been accused of insider trading by the Ontario Securities Commission (Bujaki and McConomy, 2002; Gill *et al.*, 2008) which is not in the favor of shareholders because of its negative impact on share prices. This process shows lack of accountability by the board of directors. Therefore, good corporate governance is necessary to improve the share price of the firm. Kajola (2008) defines corporate governance as the system by which business corporations are directed and controlled (Kajola, 2008, p. 16).

Understanding of fundamental factors that influence share prices can help corporations, investors, and government. By understanding the factors that influence share prices, executives and managers of corporations can make sound financial decisions and formulate policies related to dividend payment and rights issues. Investors can make sound investment decisions in the stock market. Although the knowledge of financial factors is useful, the calculations of these financial factors are in no sense final determinants of value. However, these financial factors are convenient indicators about the performance of equity shares in market (Dixit, 1986, p.86; Sachdeva, 1994, p.5; Sharma and Singh, 2006, p. 22).

The research on the determinants of equity share prices goes back to Collins (1957) who identified dividend, net profit, operating earnings, and book value as the factors that influence share prices in USA. Since that study, many scholars have conducted research studies using data from different countries. To name a few: i) USA (Collins, 1957), ii) Greece (Karathanassis and Philippas, 1988), iii) Kuwait (Midani, 1991; AL-Omar and AL-Mutairi, 2008), iv) Pakistan (Irfan and Nishat, 2002; Nisa and Nishat, 2012), v) Nepal (Pradhan, 2003), vi) India (Sharma and Singh, 2006; Nirmala, Sanju, and Ramachandran, 2011; Sharma, 2011), vii) Bangladesh (Khan, 2009; Uddin, 2009), and viii) Nigeria (Somoye *et al.*, 2009).

The literature cites a number of variables that are potentially associated with the equity share price. In this study, the selection of explanatory variables is based on previous empirical work. The choice of proxy variables was somewhat limited due to data limitations. The set of proxy variables includes eleven factors: book value per share, earnings per share, dividend coverage ratio, dividend per share, dividend payout ratio, price-earnings ratio, firm size, CEO duality, internationality of the firm, industry, and share price.

This study contributes to the literature on the relationship between book value per share, earning per share, dividend coverage ratio, dividend per share, dividend payout ratio, price-earnings ratio, firm size, the CEO duality, internationality of the firm, industry, and share price in at least two ways. First, it focuses on American firms while a very limited research has been conducted on such firms recently. Second, this study validates some of the findings of previous authors by testing the relationships between book value per share, earnings per share, dividend coverage ratio, dividend per share, dividend payout ratio, price-earnings ratio, firm size, CEO duality, internationality of the firm, industry, and share price of the sample firms. Thus, this study adds substance to the existing theory developed by previous authors.

2. Previous Research

One of the major goals of a corporation is to maximize shareholders' wealth. The shareholders' wealth can be maximized by increasing market price of the share. Therefore, it is important to understand the factors that influence market price of the share.

The CEO is a part of corporate governance. Corporate governance, in the context of this study, is described as the process and structure used to direct and manage the business and affairs of the corporation with the objective of enhancing market value of the share. Corporate governance calls for three factors: i) transparency in decision making, ii) accountability which follows from transparency because responsibilities for actions taken or not taken by the board of directors can be ascertained easily, and iii) accountability in the sense of safeguarding the interest of the stakeholders and the investors in the organization (Gill *et al.*, 2008, p. 62). Thus, the CEO duality plays an important role in the improvement of share prices.

Kajola (2008, p. 17) describe that the board of directors delegates responsibilities to the CEO and other management staff who manages "day to day" affairs of the firm. The CEO i) supervises the operations of the firm in an effective and ethical manners and ii) prepares the strategic plans, annual operating plans, and budgets for the board's approval. The CEO is also responsible for the firm's financial reporting to internal and external users by complying with relevant statutory and professional pronouncements. In addition, the CEO is responsible for establishing an effective system of internal controls to give reasonable assurance that the firm's books and records are accurate, its assets safeguarded, and applicable laws complied with. Thus, the CEO plays a major role in the improvement of share prices.

Scholars have collected data from different countries to find the determinants of equity share prices. The empirical studies on the determinants of equity share prices are as follows:

Collins (1957) used data from American banks and found that dividend per share and book value per share influence share prices.

Karathanassis and Philippas (1988) used cross-sectional and time-series data from eight Greek banks listed on the Athens Stock Exchange, Greece from 1977-1983 and found that dividend per share and firm size are the determinants of share prices.

Midani (1991) took a sample of 19 Kuwaiti companies and found earnings per share as a determinant of share prices in Kuwait.

Irfan and Nishat (2002) took a sample of Pakistani companies between 1981-2000 from Karachi Stock Exchange and found payout ratio, firm size, and dividend yields as determinants of share prices.

Pradhan (2003) used Financial Statements of 29 Listed Companies compiled by Nepal Stock Exchange Ltd. for the period 1991-1999 and found dividend per share as a determinant of share prices.

Sharma and Singh (2006) used data from 160 Indian firms between 2001 and 2005 and found that earnings per share, price-earnings ratio, dividend per share, dividend coverage, dividend payout, book value per share, and firm size are the determinants of share prices.

AL-Omar and AL-Mutairi (2008) took a sample of seven Kuwaiti banks to collect data during the period from 1980 to 2004 and found book value per share and earnings per share as determinants of share prices.

Khan (2009) used companies listed in Dhaka Stock Exchange (DSE) for the period from 2000 to 2006 and found dividend per share as a determinant of share prices in Bangladesh.

Somoye *et al.* (2009) used data from Nigeria and found dividend per share and earnings per share as determinants of share prices.

Uddin (2009) used random sampling method to collect data from 62 companies listed on Dhaka Stock Exchange (DSE) from December 2007 to November 2008 and found dividend percentage and earnings per share as determinants of share prices in Bangladesh.

Nirmala, Sanju, and Ramachandran (2011) collected data from India over the period of 2000-2009 and found dividend per share and price-earnings ratio as the significant determinants of share prices.

Gill and Mathur (2011) used a sample of 91 firms listed on Toronto Stock Exchange (TSX) for a period of 3 years (from 2008 to 2010) and found that the CEO duality has a positive impact on the market value of Canadian manufacturing firms.

Sharma (2011) used data from India for the period 1993/94 to 2008/09 and found that i) dividend per share, earnings per share, book value per share, and price-earnings ratio positively impact on the share prices, and ii) dividend payout has a negative impact on the share prices.

Nisa and Nishat (2012) used data from 221 Pakistani firms for the period 1995 to 2006 and found firm size and earnings per share as determinants of share prices.

In summary, literature review shows that the book value per share, earnings per share, dividend coverage ratio, dividend per share, dividend payout ratio, price-earnings ratio, firm size, the CEO duality, internationality of the firm, and industry are the determinants of share prices.

3. Research Method

3.1. Measurement

To remain consistent with previous studies, measures pertaining to:

- (i) Book value per share, earnings per share, dividend coverage ratio, dividend per share, dividend payout ratio, price-earnings ratio, firm size, and share price were taken from Sharma and Singh (2006),
- (ii) The CEO duality were taken from Kajola (2008), and
- (iii) The internationality of the firm were taken from Gill (2011).

The measurements of the independent and dependent variable (equity share price) are as follows:

Book value per share ($BV_{i,t}$) was measured as equity share capital plus shareholders reserves divided by total number of common shares outstanding.

Earnings per share ($EPS_{i,t}$) was measured as net income after tax, interest, and preferred dividends divided by number of shares outstanding.

Dividend coverage ratio ($C_{i,t}$) was calculated as earning per share divided by dividend per share.

Dividend per share ($DPS_{i,t}$) was measured as total dividends paid out to common shareholders divided by number share outstanding.

Dividend payout ratio ($P_{i,t}$) was measured as dividend per share divided by earning per share.

Price-earnings ratio ($P/E_{i,t}$) was measured as market price per share divided earning per share.

Firm size ($FS_{i,t}$) was measured by logarithm of total assets.

To measure the CEO duality ($CD_{i,t}$), value one (1) was assigned if the same person occupied the post of the chairperson and the chief executive officer and zero (0) for otherwise.

To measure internationality ($MULTI_{i,t}$) firm was assigned value one (1) if it was a multinational corporation and zero (0) otherwise.

To measure industry ($Ind_{i,t}$) firm was assigned value one (1) if it was a manufacturing corporation and zero (0) otherwise.

Share price ($SP_{i,t}$) was measured as highest market price plus lowest market price during the year divided by two (2).

The regression model is as follows:

$$SP_{i,t} = b_0 + b_1 * BV_{i,t} + b_2 * EPS_{i,t} + b_3 * C_{i,t} + b_4 * DPS_{i,t} + b_5 * P_{i,t} + b_6 * P/E_{i,t} + b_7 * FS_{i,t} + b_8 * CD_{i,t} + b_9 * MULTI_{i,t} + b_{10} * Ind_{i,t} + \mu_{i,t}$$

where b_0 = Constant of the regression equation

$b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8, b_9$, and b_{10} are the coefficients of BV, EPS, C, DPS, P, P/E, FS, CD, MULTI, and Ind

$SP_{i,t}$ - Share price of the firm i during the year (e.g., 2009)

$\mu_{i,t}$ = the error term

3.2. Data Collection

A database was built from a selection of approximately 800 financial-reports that were made public by publicly traded companies between January 1, 2009 and December 31, 2011. The selection was drawn from Mergent Online [<http://www.mergentonline.com/compsearch.asp>] to draw a random sample of American firm. Out of approximately 800 financial-reports announced by public companies between January 1, 2009 and December 31, 2011, only 333 financial reports were usable. The cross sectional yearly data were used in this study. Thus, 333 financial reports resulted to 999 total observations. Since random sampling method was used to select companies, the sample is considered as a representative sample.

For the purpose of this study, certain industries were omitted due to the type of activity. For example, all financial services companies were omitted. In addition some of the firms were not included in the data due to lack of information for the certain time periods.

3.3. Descriptive Statistics

Table 1 shows descriptive statistics of the collected variables. The explanation of descriptive statistics is as follows:

- (i) Total observations: $333 \times 3 = 999$; Manufacturing firms: 183; Service firms: 150
- (ii) SP11 (Share price): 46.15; SP10: 41.85; SP09: 30.98
- (iii) BV11 (Book value per share): 18.10; BV10: 16.73; BV09: 15.32
- (iv) EPS11 (Earnings per share): 3.18; EPS10: 2.60; EPS09: 2.04
- (v) C11 (Dividend coverage ratio): 3.31; C10: 3.63; C09: 2.92
- (vi) DPS11 (Dividend per share): 0.64; DPS10: 0.56; DPS09: 0.61
- (vii) P11 (Dividend payout ratio): 0.26; P10: 0.32; P09: 0.33
- (viii) P/E11 (Price-earnings ratio): 19.67; P/E10: 25.72; P/E09: 21.60
- (ix) FS11 (Firm size): 3.53 million; FS10: 3.49 million; FS09: 3.45 million

Table 1: Descriptive Statistics of Independent, Dependent, and Control Variables (2009-2011)

	Minimum	Maximum	Mean	Std. Deviation
SP11	0.80	689.80	46.15	50.67
SP10	0.68	678.58	41.85	47.22
SP09	0.90	520.28	30.98	37.39
BV11	0.20	344.88	18.10	25.60
BV10	0.20	318.46	16.73	25.14
BV09	0.06	306.38	15.32	24.02
EPS11	-4.51	64.14	3.18	4.62
EPS10	-0.14	36.37	2.60	3.03
EPS09	-15.74	32.30	2.04	2.68
C11	-64.49	58.82	3.31	7.65
C10	-0.16	71.78	3.63	7.64
C09	-2.07	62.22	2.92	6.50
DPS11	0.00	9.00	0.64	0.86
DPS10	0.00	7.65	0.56	0.73
DPS09	0.00	30.81	0.61	1.84
P11	-1.14	2.20	0.26	0.36
P10	-6.20	15.08	0.32	1.00
P09	-5.33	9.95	0.33	0.86
P/E11	-102.86	289.45	19.67	28.31

Table 1: Descriptive Statistics of Independent, Dependent, and Control Variables (2009-2011) - continued

P/E10	-207.44	723.03	25.72	51.83
P/E09	-34.77	200.01	21.60	28.30
FS11	2.03	5.86	3.53	0.62
FS10	2.02	5.88	3.49	0.62
FS09	1.64	5.89	3.45	0.63

Appendix A provides the Pearson correlation for the variables that were used in the regression model.

Bivariate Correlation Analysis (Entire Sample – Year 2011)

The Bivariate correlation analysis shows that share prices are positively correlated with book value per share, earnings per share, dividend coverage, dividend per share, firm size, the CEO duality, and the internationality of the firm (see Table A in Appendix A).

Bivariate Correlation Analysis (Entire Sample – Year 2010)

The Bivariate correlation analysis shows that share prices are positively correlated with book value per share, earnings per share, firm size, the CEO duality, and the internationality of the firm (see Table A in Appendix A).

Bivariate Correlation Analysis (Entire Sample – Year 2009)

The Bivariate correlation analysis shows that share prices are positively correlated with book value per share, earnings per share, dividend per share, firm size, the CEO duality, and the internationality of the firm (see Table A in Appendix A).

Bivariate Correlation Analysis (Manufacturing Industry Sample – Years: 2011, 2010, and 2009)

The Bivariate correlation analysis shows that share prices of manufacturing industry firms are positively correlated with book value per share, earnings per share, dividend coverage, dividend per share, firm size, the CEO duality, and the internationality of the firm (see Table B in Appendix A).

Bivariate Correlation Analysis (Service Industry Sample – Year 2011)

The Bivariate correlation analysis shows that share prices of service industry firms are positively correlated with book value per share, earnings per share, dividend per share, and the CEO duality (see Table C in Appendix A).

Bivariate Correlation Analysis (Service Industry Sample – Years: 2010 and 2009)

The Bivariate correlation analysis shows that share prices of service industry firms are positively correlated with book value per share, earnings per share, and the CEO duality (see Table C in Appendix A).

4. Regression Analysis, Findings, Discussion, Conclusion, Limitations, and Future Research

Findings – Entire Sample (Year 2011)

Positive relationships between i) BV and SP, ii) EPS and SP, iii) P/E and SP, iv) CD and SP, and v) MULTI and SP were found (see Table 2).

A negative relationship between DPS and SP was found (see Table 2).

Non-significant relationships were found between i) C and SP, ii) P and SP, iii) FS and SP, iv) Ind and SP were found.

Findings – Entire Sample (Year 2010)

Positive relationships between i) BV and SP, ii) EPS and SP, iii) DPS and SP, iv) P/E and SP, v) CD and SP, and vi) MULTI and SP were found (see Table 2).

Negative relationships between i) C and SP, ii) P and SP, and iii) FS and SP were found (see Table 2).

A non-significant relationship between Ind and SP was found.

Findings – Entire Sample (Year 2009)

Positive relationships between i) BV and SP, ii) EPS and SP, and iii) P/E and SP were found (see Table 2).

Non-significant relationships between C and SP, ii) DPS and SP, iii) P and SP, iv) FS and SP, v) CD and SP, vi) MULTI and SP, and vii) Ind and SP were found (see Table 2).

Table 2: OLS Regression Estimates on Determinants of Equity Share Prices (Entire Sample)^{a, b, c}

Entire Sample – Year 2011 (N = 333)

[$R^2 = 0.662$; Adjusted $R^2 = 0.652$; SEE = 29.89; F = 63.18; ANOVA's Test Sig. = 0.000; Durbin Watson: 2.17]

Regression Equation: $SP = -8.828 + 1.92 BV + 2.907 EPS + 0.021 C - 7.267 DPS + 2.678 P + 0.186 P/E + 4.267 FS + 6.571 CD + 8.035 MULTI - 1.027 Ind$

	Unstandardized Coefficients		Standardized Coefficients ^c	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-8.828	10.277		-0.859	0.391		
BV11	1.192	0.108	0.602	11.001	0.000	0.350	2.856
EPS11	2.907	0.662	0.265	4.394	0.000	0.288	3.469
C11	0.021	0.221	0.003	0.096	0.924	0.944	1.060
DPS11	-7.267	2.834	-0.124	-2.564	0.011	0.450	2.222
P11	2.678	6.086	0.019	0.440	0.660	0.563	1.778
P/E11	0.186	0.063	0.104	2.965	0.003	0.858	1.166
FS11	4.267	2.822	0.052	1.512	0.131	0.889	1.125
CD	6.571	3.436	0.065	1.913	0.057	0.913	1.095
MULTI	8.035	4.244	0.064	1.893	0.059	0.917	1.091
Ind	-1.027	3.406	-0.010	-0.302	0.763	0.935	1.070

Entire Sample – Year 2010 (N = 333)

[$R^2 = 0.842$; Adjusted $R^2 = 0.837$; SEE = 19.05; F = 171.88; ANOVA's Test Sig. = 0.000; Durbin Watson: 2.03]

Regression Equation: $SP = 2.433 + 1.037 BV + 6.801 EPS - 0.602 C + 4.167 DPS - 5.278 P + 0.156 P/E - 1.947 FS + 4.701 CD + 8.133 MULTI - 0.513 Ind$

	Unstandardized Coefficients		Standardized Coefficients ^c	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	2.433	6.337		0.384	0.701		
BV10	1.037	0.061	0.552	16.960	0.000	0.462	2.163
EPS10	6.801	0.545	0.436	12.490	0.000	0.401	2.491
C10	-0.602	0.148	-0.097	-4.070	0.000	0.857	1.167
DPS10	4.167	1.743	0.065	2.391	0.017	0.672	1.488
P10	-5.278	1.810	-0.112	-2.916	0.004	0.333	3.001
P/E10	0.156	0.034	0.172	4.588	0.000	0.350	2.853
FS10	-1.947	1.828	-0.026	-1.065	0.288	0.850	1.176
CD	4.701	2.189	0.050	2.148	0.032	0.913	1.095
MULTI	8.133	2.718	0.070	2.992	0.003	0.907	1.102
Ind	-0.513	2.193	-0.005	-0.234	0.815	0.915	1.093

Table 2: OLS Regression Estimates on Determinants of Equity Share Prices (Entire Sample)^{a, b, c} - continued**Entire Sample – Year 2009 (N = 333)**

[$R^2 = 0.872$; Adjusted $R^2 = 0.868$; SEE = 13.61; F = 218.52; ANOVA's Test Sig. = 0.000; Durbin Watson: 2.08]

Regression Equation: $SP = -2.863 + 0.907 BV + 5.868 EPS - 0.019 C + 0.225 DPS - 1.934 + 0.143 P/E + 0.798 FS + 1.127 CD + 2.351 MULTI + 0.461 Ind$

	Unstandardized Coefficients		Standardized Coefficients ^c	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-2.863	4.381		-0.653	0.514		
BV09	0.907	0.045	0.583	19.955	0.000	0.468	2.137
EPS09	5.868	0.418	0.421	14.046	0.000	0.444	2.251
C09	-0.019	0.118	-0.003	-0.162	0.872	0.944	1.059
DPS09	0.225	0.638	0.011	0.353	0.724	0.404	2.474
P09	-1.934	1.388	-0.045	-1.394	0.164	0.387	2.585
P/E09	0.143	0.032	0.108	4.407	0.000	0.664	1.505
FS09	0.798	1.245	0.014	0.641	0.522	0.900	1.111
CD	1.127	1.550	0.015	0.727	0.468	0.929	1.076
MULTI	2.351	1.949	0.025	1.207	0.229	0.901	1.110
Ind	0.461	1.558	0.006	0.296	0.768	0.926	1.080

^a Dependent Variable: SP

^b Independent Variables: BV, EPS, C, DPS, P, P/E, FS, CD, MULTI, and Ind

^c Linear Regression through the Origin

SEE = Standard Error of the Estimate

OLS = Ordinary Least Square

SP = Share price

BV = Book value per share

EPS = Earnings per share

C = Dividend coverage ratio

DPS = Dividend per share

P = Dividend payout ratio

P/E = Price-earnings ratio

FS = Firm size

CD = The CEO duality

MULTI = Internationality of the firm

Ind = Industry

Note that:

- A test for multicollinearity was performed. All the variance inflation factor (VIF) coefficients are less than 4 and tolerance coefficients are greater than 0.30.
- 66.20% ($R^2 = 0.662$) of the variance in the degree of SP can be explained by the degree of Ind, P11, FS11, C11, BV11, CD, P/E11, MULTI, DPS11, and EPS11 in the entire American sample for year 2011,
- 84.20% ($R^2 = 0.842$) of the variance in the degree of SP can be explained by the degree of Ind, FS10, P/E10, BV10, C10, CD, MULTI, DPS10, EPS10, and P10 in the entire American sample for year 2010, and
- 87.20% ($R^2 = 0.872$) of the variance in the degree of SP can be explained by the degree of Ind, FS09, P09, C09, BV09, CD, MULTI, P/E09, EPS09, and DPS09 in the entire American sample for year 2009.
- Analysis of variance (ANOVA) tests are also significant at 0.000.

Findings – Manufacturing Industry Sample (Year 2011)

Positive relationships between i) BV and SP, ii) EPS and SP, iii) DPS and SP, iv) P/E and SP, v) FS and SP, and vi) MULTI and SP were found (see Table 3).

A negative relationship between P and SP was found (see Table 3).

Non-significant relationships between i) C and SP and ii) CD and SP were found.

Findings – Manufacturing Industry Sample (Year 2010)

Positive relationships between i) BV and SP, ii) EPS and SP, iii) C and SP, iv) DPS and SP, v) P/E and SP, vi) FS and SP, vii) CD and SP, and viii) MULTI and SP were found (see Table 3).

A non-significant relationship between P and SP was found (see Table 3).

Findings – Manufacturing Industry Sample (Year 2009)

Positive relationships between i) EPS and SP, ii) DPS and SP, iii) P/E and SP, iv) FS and SP, and v) MULTI and SP were found (see Table 3).

A negative relationship between P and SP was found (see Table 3).

Non-significant relationships between i) C and SP and ii) CD and SP were found.

Table 3: OLS Regression Estimates on Determinants of Equity Share Prices (Manufacturing Industry Sample)^{a, b, c}

Manufacturing Industry Sample – Year 2011 (N = 183)

[$R^2 = 0.624$; Adjusted $R^2 = 0.605$; SEE = 15.39; F = 31.91; ANOVA's Test Sig. = 0.000; Durbin Watson: 2.31]

Regression Equation: $SP = -3.971 + 0.559 BV + 3.093 EPS + 0.101 C + 9.255 DPS - 11.738 P + 0.153 P/E + 4.621 FS + 1.812 CD + 6.911 MULTI$

	Unstandardized Coefficients		Standardized Coefficients ^c	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-3.971	7.289		-0.545	0.587		
BV11	0.559	0.120	0.259	4.652	0.000	0.699	1.431
EPS11	3.093	0.433	0.423	7.142	0.000	0.620	1.613
C11	0.101	0.133	0.037	0.758	0.449	0.895	1.118
DPS11	9.255	2.052	0.278	4.511	0.000	0.573	1.747
P11	-11.738	3.857	-0.187	-3.043	0.003	0.577	1.734
P/E11	0.153	0.040	0.203	3.790	0.000	0.759	1.317
FS11	4.621	2.054	0.119	2.250	0.026	0.782	1.279
CD	1.812	2.446	0.037	0.741	0.460	0.891	1.122
MULTI	6.911	3.586	0.096	1.927	0.056	0.884	1.131

Manufacturing Industry Sample – Year 2010 (N = 183)

[$R^2 = 0.626$; Adjusted $R^2 = 0.606$; SEE = 13.14; F = 32.166; ANOVA's Test Sig. = 0.000; Durbin Watson: 2.00]

Regression Equation: $SP = -7.725 + 0.310 BV + 6.137 EPS + 0.276 C + 3.347 DPS - 0.060 P + 0.096 P/E + 3.663 FS + 4.914 CD + 8.295 MULTI$

	Unstandardized Coefficients		Standardized Coefficients ^c	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-7.725	6.044		-1.278	0.203		
BV10	0.310	0.124	0.147	2.492	0.014	0.621	1.611
EPS10	6.137	0.808	0.538	7.593	0.000	0.431	2.319
C10	0.276	0.152	0.088	1.816	0.071	0.918	1.090
DPS10	3.347	1.709	0.137	1.958	0.052	0.442	2.261
P10	-0.060	2.763	-0.001	-0.022	0.983	0.515	1.943
P/E10	0.096	0.029	0.172	3.351	0.001	0.819	1.222
FS10	3.663	1.754	0.111	2.088	0.038	0.761	1.314
CD	4.914	2.072	0.116	2.372	0.019	0.904	1.106
MULTI	8.295	3.037	0.134	2.731	0.007	0.897	1.115

Table 3: OLS Regression Estimates on Determinants of Equity Share Prices (Manufacturing Industry Sample)^{a, b, c} - continued**Manufacturing Industry Sample – Year 2009 (N = 183)**

[$R^2 = 0.637$; Adjusted $R^2 = 0.619$; SEE = 10.59; F = 33.797; ANOVA's Test Sig. = 0.000; Durbin Watson: 2.19]

Regression Equation: $SP = -10.878 + 0.124 BV + 5.925 EPS + 0.190 C + 5.123 DPS - 3.101P + 0.210 P/E + 3.598 FS + 2.044 CD + 7.737 MULTI$

	Unstandardized Coefficients		Standardized Coefficients ^c	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-10.878	4.727		-2.301	0.023		
BV09	0.124	0.105	0.064	1.187	0.237	0.713	1.403
EPS09	5.925	0.621	0.588	9.533	0.000	0.551	1.815
C09	0.190	0.118	0.077	1.603	0.111	0.908	1.101
DPS09	5.123	1.600	0.188	3.202	0.002	0.610	1.639
P09	-3.101	1.228	-0.153	-2.526	0.012	0.571	1.752
P/E09	0.210	0.034	0.384	6.246	0.000	0.553	1.807
FS09	3.598	1.408	0.134	2.555	0.011	0.765	1.307
CD	2.044	1.619	0.059	1.262	0.209	0.963	1.038
MULTI	7.737	2.482	0.153	3.118	0.002	0.874	1.144

^a Dependent Variable: SP

^b Independent Variables: BV, EPS, C, DPS, P, P/E, FS, CD, and MULTI

^c Linear Regression through the Origin

SEE = Standard Error of the Estimate

OLS = Ordinary Least Square

Note that:

- A test for multicollinearity was performed. All the variance inflation factor (VIF) coefficients are less than 3 and tolerance coefficients are greater than 0.40.
- 62.40% ($R^2 = 0.624$) of the variance in the degree of SP can be explained by the degree of MULTI, CD, P/E11, C11, DPS11, BV11, FS11, EPS11, and P11 in the American manufacturing industry sample for year 2011,
- 62.60% ($R^2 = 0.626$) of the variance in the degree of SP can be explained by the degree of MULTI, P10, CD, C10, FS10, P/E10, BV10, DPS10, and EPS10 in the American manufacturing industry sample for year 2010, and
- 63.70% ($R^2 = 0.637$) of the variance in the degree of SP can be explained by the degree of MULTI, P/E09, CD, C09, DPS09, BV09, FS09, P09, and EPS09 in the American manufacturing industry sample for year 2009.
- Analysis of variance (ANOVA) tests are also significant at 0.000.

Findings – Service Industry Sample (Year 2011)

Positive relationships between i) BV and SP, ii) EPS and SP, iii) P and SP, iv) P/E and SP, and v) CEO and SP were found (see Table 4).

A negative relationship between DPS and SP was found (see Table 4).

Non-significant relationships between i) C and SP, ii) FS and SP, and iii) MULTI and SP were found (see Table 4).

Findings – Service Industry Sample (Year 2010)

Positive relationships between i) BV and SP, ii) EPS and SP, iii) DPS and SP, iv) P/E and SP, v) CD and SP, and MULTI and SP were found (see Table 4).

Negative relationship between i) C and SP and ii) P and SP were found (see Table 4).

A non-significant relationship between FS and SP was found (see Table 4).

Findings – Service Industry Sample (Year 2009)

Positive relationships between i) BV and SP, ii) EPS and SP, and iii) P/E and SP were found (see Table 4). Non-significant relationships between i) C and SP, ii) DPS and SP, iii) P and SP, iv) FS and SP, v) CD and SP, and vi) MULTI and SP were found (see Table 4).

Table 4: OLS Regression Estimates on Determinants of Equity Share Prices (Service Industry Sample)^{a, b, c}

Service Industry Sample – Year 2011 (N = 150)

[$R^2 = 0.762$; Adjusted $R^2 = 0.747$; SEE = 35.53; F = 49.804; ANOVA's Test Sig. = 0.000; Durbin Watson: 2.23]

Regression Equation: $SP = -10.429 + 1.169 BV + 6.467 EPS + 0.228 C - 35.937 DPS + 55.262 P + 0.462 P/E + 0.122 FS + 14.970 CD + 7.545 MULTI$

	Unstandardized Coefficients		Standardized Coefficients ^c	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-10.429	18.747		-0.556	0.579		
BV11	1.169	0.187	0.597	6.242	0.000	0.186	5.372
EPS11	6.467	1.454	0.533	4.446	0.000	0.118	8.449
C11	0.228	0.550	0.018	0.415	0.679	0.940	1.063
DPS11	-35.937	5.793	-0.509	-6.204	0.000	0.253	3.955
P11	55.262	14.080	0.250	3.925	0.000	0.417	2.396
P/E11	0.462	0.134	0.147	3.437	0.001	0.933	1.072
FS11	0.122	5.095	0.001	0.024	0.981	0.895	1.118
CD	14.970	6.140	0.106	2.438	0.016	0.897	1.115
MULTI	7.545	6.515	0.049	1.158	0.249	0.957	1.045

Service Industry Sample – Year 2010 (N = 150)

[$R^2 = 0.907$; Adjusted $R^2 = 0.901$; SEE = 20.93; F = 151.934; ANOVA's Test Sig. = 0.000; Durbin Watson: 2.01]

Regression Equation: $SP = 6.199 + 0.985 BV + 8.104 EPS - 1.200 C + 8.417 DPS - 19.346 P + 0.452 P/E - 4.740 FS + 7.583 CD + 7.467 MULTI$

	Unstandardized Coefficients		Standardized Coefficients ^c	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	6.199	10.604		0.585	0.560		
BV10	0.985	0.077	0.530	12.785	0.000	0.386	2.591
EPS10	8.104	0.728	0.492	11.129	0.000	0.340	2.944
C10	-1.200	0.232	-0.156	-5.172	0.000	0.725	1.380
DPS10	8.417	3.972	0.066	2.119	0.036	0.680	1.470
P10	-19.346	4.285	-0.404	-4.515	0.000	0.083	12.089
P/E10	0.452	0.090	0.443	5.023	0.000	0.085	11.723
FS10	-4.740	3.052	-0.043	-1.553	0.123	0.871	1.148
CD	7.583	3.628	0.057	2.091	0.038	0.892	1.122
MULTI	7.467	3.877	0.051	1.926	0.056	0.937	1.067

Service Industry Sample – Year 2009 (N = 150)

[$R^2 = 0.928$; Adjusted $R^2 = 0.923$; SEE = 14.57; F = 199.507; ANOVA's Test Sig. = 0.000; Durbin Watson: 1.99]

Regression Equation: $SP = 9.287 + 1.009 BV + 5.482 EPS - 0.111 C - 0.873 DPS + 0.435 P + 0.112 P/E - 2.363 FS + 0.538 CD + 0.920 MULTI$

	Unstandardized Coefficients		Standardized Coefficients ^c	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	9.287	6.952		1.336	0.184		
BV09	1.009	0.061	0.662	16.661	0.000	0.328	3.053

Table 4: OLS Regression Estimates on Determinants of Equity Share Prices (Service Industry Sample)^{a, b, c} - continued

EPS09	5.482	0.560	0.369	9.795	0.000	0.364	2.749
C09	-0.111	0.210	-0.012	-0.528	0.598	0.924	1.083
DPS09	-0.873	1.486	-0.044	-0.587	0.558	0.091	10.956
P09	0.435	4.356	0.007	0.100	0.921	0.095	10.516
P/E09	0.112	0.057	0.050	1.947	0.054	0.781	1.280
FS09	-2.363	2.008	-0.028	-1.177	0.241	0.894	1.119
CD	0.538	2.540	0.005	0.212	0.833	0.881	1.135
MULTI	0.920	2.754	0.008	0.334	0.739	0.900	1.111

^a Dependent Variable: SP^b Independent Variables: BV, EPS, C, DPS, P, P/E, FS, CD, and MULTI^c Linear Regression through the Origin

SEE = Standard Error of the Estimate

Note that:

- A test for multicollinearity was performed. All the variance inflation factor (VIF) coefficients are less than 11 and tolerance coefficients are greater than 0.08.
- 76.20% ($R^2 = 0.762$) of the variance in the degree of SP can be explained by the degree of MULTI, DPS11, C11, P/E11, CD, FS11, BV11, P11, and EPS11 in the American service industry sample for year 2011,
- 90.70% ($R^2 = 0.907$) of the variance in the degree of SP can be explained by the degree of MULTI, DPS10, C10, BV10, P/E10, CD, FS10, EPS10, and P10 in the American service industry sample for year 2010, and
- 92.80% ($R^2 = 0.928$) of the variance in the degree of SP can be explained by the degree of MULTI, FS09, BV09, P/E09, C09, P09, CD, EPS09, and DPS09 in the American service industry sample for year 2009.
- Analysis of variance (ANOVA) tests are also significant at 0.000.

The summary of the findings is as follows:

Table 5: Determinants of Equity Share Prices in America (Summary of Findings)

Entire Sample										
Variables/Year	BV	EPS	C	DPS	P	P/E	FS	CD	MULTI	Ind
2011	Y	Y	I	N	I	Y	I	Y	Y	I
2010	Y	Y	N	Y	N	Y	N	Y	Y	I
2009	Y	Y	I	I	I	Y	I	I	I	I
American Manufacturing Industry Sample										
Variables/Year	BV	EPS	C	DPS	P	P/E	FS	CD	MULTI	
2011	Y	Y	I	Y	N	Y	Y	I	Y	
2010	Y	Y	Y	Y	I	Y	Y	Y	Y	
2009	I	Y	I	Y	N	Y	Y	I	Y	
American Service Industry Sample										
Variables/Year	BV	EPS	C	DPS	P	P/E	FS	CD	MULTI	
2011	Y	Y	I	N	Y	Y	I	Y	I	
2010	Y	Y	N	Y	N	Y	I	Y	Y	
2009	Y	Y	I	I	I	Y	I	I	I	

Y = Yes; N = No; I = Non-Significant

SP = Share price

BV = Book value per share

EPS = Earnings per Share

C = Dividend coverage ratio

DPS = Dividend per share

P = Dividend payout ratio

P/E = Price-earnings ratio

FS = Firm size

CD = The CEO duality

MULTI = Internationality of the firm

Ind = Industry

4.1. Discussion and Conclusion

The purpose of this study was to find the variables that explain the variance of equity share prices for American firms. We found that book value per share, earnings per share, dividend per share, price-earnings ratio, the CEO duality, and the internationality of the firm are associated with the equity share prices of American firms. With reference to manufacturing firms we found that book value per share, earnings per share, dividend coverage ratio, dividend per share, price-earnings ratio, firm size, the CEO duality, and the internationality of the firm explain the variance of share prices. As to service firms we found that book value per share, earnings per share, dividend per share, dividend payout ratio, price-earnings ratio, the CEO duality, and the internationality of the firm explain the variance of equity share prices.

The findings of this study lend some support to the findings of Collins (1957), Karathanassis and Philippas (1988), Midani (1991), Irfan and Nishat (2002), Pradhan (2003), Sharma and Singh (2006), AL-Omar and AL-Mutairi (2008), Khan (2009), Somoye *et al.* (2009), Uddin (2009), Nirmala, Sanju, and Ramachandran (2011), Sharma (2011), Gill and Mathur (2011), and Nisa and Nishat (2012). Table 6 provides the summary of previous authors' findings.

Table 6: Summary of Previous Findings Related to the Determinants of Equity Share Prices

Author	Findings Related to Determinants of Equity Share Prices	Country
Collins (1957)	Dividend per share and book value per share	USA
Karathanassis and Philippas (1988)	Dividend per share and firm size	Greece
Midani (1991)	Earnings per share	Kuwait
Irfan and Nishat (2002)	Payout ratio and firm size	Pakistan
Pradhan (2003)	Dividend per share	Nepal
Sharma and Singh (2006)	Earnings per share, price earnings ratio, dividend per share, dividend coverage, dividend payout, book value per share, and firm size	India
AL-Omar and AL-Mutairi (2008)	Book value per share and earning per share	Kuwait
Khan (2009)	Dividend per share	Bangladesh
Somoye <i>et al.</i> (2009)	Dividend per share and earning per share	Nigeria
Uddin (2009)	Earnings per share	Bangladesh
Nirmala, Sanju, and Ramachandran (2011)	Dividend per share and price-earnings ratio	India
Sharma (2011)	Dividend per share, earning per share, book value per share, and price-earnings ratio	India
Gill and Mathur (2011)	Found that CEO duality positively impact on the market value of the firm	Canada
Nisa and Nishat (2012)	Firm size and earning per share	Pakistan

In conclusion, book value per share, earnings per share, dividend coverage, dividend per share, dividend payout ratio, firm size, the CEO duality, and the internationality of the firm have a positive impact on the equity share prices of American firms. Although, the CEO duality improves the equity share prices of American firms, it may not be beneficial for the very large multinational firms. Therefore, the CEO duality should be used with caution because it may have a negative impact on the equity share prices of the very large multinational firms. The internationality has a positive impact on the share prices but over expansion may not be in the favor of the American firms.

4.2. Limitations

This study is limited to the sample of American firms. The findings of this study could only be generalized to firms similar to those that were included in this research. In addition, sample size is small.

4.3. Future Research

Future research should investigate generalizations of the findings beyond the American service and manufacturing firms. Important control variables such as industry sectors from different countries, audit committee, board composition, insider holdings, etc., may also be used to conduct new research.

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Appendix A

Table A: Pearson Bivariate Correlation Analysis (Entire Sample)

Entire Sample - Year 2011 (N = 333)											
	SP11	BV11	EPS11	C11	DPS11	P11	P/E11	FS11	CD	MULTI	Ind
SP11	1	0.784**	0.705**	0.114*	0.263**	-0.093	0.065	0.153**	0.196**	0.159**	-0.027
BV11		1	0.800**	0.104	0.390**	-0.078	-0.032	0.123*	0.140*	0.105	-0.058
EPS11			1	0.158**	0.471**	-0.112*	-0.126*	0.180**	0.214**	0.119*	-0.012
C11				1	0.004	-0.068	-0.026	0.103	-0.022	0.115*	0.058
DPS11					1	0.470**	-0.095	0.239**	0.146**	0.096	0.015
P11						1	0.244**	-0.005	-0.016	-0.019	0.005
P/E11							1	-0.106	-0.005	0.048	0.010
FS11								1	0.167**	0.132*	0.019
CD									1	0.032	0.118*
MULTI										1	0.200**
Ind											1
Entire Sample - Year 2010 (N = 333)											
	SP10	BV10	EPS10	C10	DPS10	P10	P/E10	FS10	CD	MULTI	Ind
SP10	1	0.861**	0.799**	0.055	0.085	-0.039	-0.017	0.166**	0.189**	0.164**	-0.021
BV10		1	0.705**	0.068	-0.010	-0.051	-0.044	0.122*	0.130*	0.099	-0.060
EPS10			1	0.282**	0.128*	-0.087	-0.160**	0.253**	0.178**	0.102	-0.035
C10				1	-0.052	-0.062	-0.072	0.146**	-0.018	0.064	-0.012
DPS10					1	0.255**	-0.080	0.246**	0.134*	0.102	0.139*
P10						1	0.745**	0.018	-0.044	-0.129*	-0.007
P/E10							1	-0.014	-0.135*	-0.098	0.012
FS10								1	0.156**	0.126*	0.001
CD									1	0.032	0.118*
MULTI										1	0.200**
Ind											1
Entire Sample - Year 2009 (N = 333)											
	SP09	BV09	EPS09	C09	DPS09	P09	P/E09	FS09	CD	MULTI	Ind
SP09	1	0.882**	0.814**	0.092	0.160**	0.016	0.048	0.172**	0.167**	0.162**	-0.010
BV09		1	0.687**	0.044	0.203**	0.042	0.044	0.125*	0.126*	0.096	-0.059
EPS09			1	0.170**	0.149**	-0.026	-0.175**	0.200**	0.167**	0.165**	0.005
C09				1	-0.033	-0.059	-0.078	0.101	0.008	0.124*	0.028
DPS09					1	0.677**	-0.046	0.193**	0.115*	-0.046	-0.046
P09						1	0.338**	0.073	0.085	0.016	0.042
P/E09							1	-0.023	0.061	0.089	0.110*
FS09								1	0.155**	0.114*	-0.004
CD									1	0.032	0.118*

Table A: Pearson Bivariate Correlation Analysis (Entire Sample) - continued

MULTI Ind									1	0.200** 1
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** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

N = Number of Firms

Table B: Pearson Bivariate Correlation Analysis (Manufacturing Industry Sample)

Manufacturing Industry Sample – Year 2011 (N = 183)										
	SP11	BV11	EPS11	C11	DPS11	P11	P/E11	FS11	CD	MULTI
SP11	1	0.562**	0.662**	0.206**	0.343**	-0.053	0.013	0.398**	0.206**	0.293**
BV11		1	0.508**	0.197**	0.091	-0.091	-0.074	0.225**	0.080	0.250**
EPS11			1	0.240**	0.186*	-0.128	-0.162*	0.290**	0.244**	0.136
C11				1	-0.034	-0.076	-0.017	0.063	-0.109	0.122
DPS11					1	0.465**	-0.075	0.370**	0.107	0.191**
P11						1	0.379**	0.021	-0.012	0.062
P/E11							1	-0.125	0.037	0.037
FS11								1	0.110	0.192**
CD									1	-0.032
MULTI										1
Manufacturing Industry Sample – Year 2010 (N = 183)										
	SP10	BV10	EPS10	C10	DPS10	P10	P/E10	FS10	CD	MULTI
SP10	1	0.528**	0.712**	0.167*	0.377**	-0.018	-0.102	0.450**	0.206**	0.317**
BV10		1	0.572**	0.200**	0.109	-0.175*	-0.163*	0.240**	0.052	0.268**
EPS10			1	0.126	0.350**	-0.139	-0.362**	0.410**	0.198**	0.188*
C10				1	-0.074	-0.122	-0.083	0.042	-0.128	0.120
DPS10					1	0.588**	-0.144	0.323**	0.127	0.127
P10						1	0.050	0.055	-0.028	0.017
P/E10							1	-0.013	-0.208**	-0.022
FS10								1	0.090	0.197**
CD									1	-0.032
MULTI										1
Manufacturing Industry Sample – Year 2009 (N = 183)										
	SP09	BV09	EPS09	C09	DPS09	P09	P/E09	FS09	CD	MULTI
SP09	1	0.444**	0.644**	0.212**	0.409**	0.033	0.081	0.448**	0.150*	0.278**
BV09		1	0.373**	0.130	0.147*	0.057	0.146*	0.241**	0.042	0.266**
EPS09			1	0.223**	0.365**	-0.145	-0.366**	0.345**	0.072	0.099
C09				1	-0.048	-0.079	-0.086	0.076	-0.075	0.131
DPS09					1	0.335**	-0.067	0.366**	0.098	0.156*
P09						1	0.511**	-0.021	0.036	0.101
P/E09							1	-0.045	0.086	0.002
FS09								1	0.077	0.200**
CD									1	-0.032
MULTI										1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table C: Pearson Bivariate Correlation Analysis (Service Industry Sample)

Service Industry Sample – Year 2011 (N = 150)										
	SP11	BV11	EPS11	C11	DPS11	P11	P/E11	FS11	CD	MULTI
SP11	1	0.814**	0.733**	0.114	0.257**	-0.140	0.124	0.075	0.232**	0.140
BV11		1	0.892**	0.112	0.509**	-0.096	-0.020	0.111	0.201*	0.092
EPS11			1	0.115	0.624**	-0.113	-0.116	0.114	0.210**	0.120
C11				1	0.059	-0.050	-0.054	0.194*	0.128	0.103
DPS11					1	0.507**	-0.134	0.123	0.183*	0.031
P11						1	-0.043	-0.046	-0.024	-0.112

Table C: Pearson Bivariate Correlation Analysis (Service Industry Sample) - continued

P/E11							1	-0.077	-0.082	0.067
FS11								1	0.235**	0.077
CD									1	0.045
MULTI										1
Service Industry Sample – Year 2010 (N = 150)										
	SP10	BV10	EPS10	C10	DPS10	P10	P/E10	FS10	CD	MULTI
SP10	1	0.898**	0.822**	0.027	-0.043	-0.042	0.001	0.088	0.224**	0.145
BV10		1	0.737**	0.041	-0.063	-0.037	-0.022	0.111	0.197*	0.087
EPS10			1	0.361**	-0.006	-0.077	-0.096	0.196*	0.195*	0.083
C10				1	-0.024	-0.048	-0.067	0.253**	0.087	0.032
DPS10					1	0.157	-0.035	0.106	0.117	0.017
P10						1	0.937**	0.004	-0.058	-0.186*
P/E10							1	-0.016	-0.097	-0.145
FS10								1	0.242**	0.067
CD									1	0.045
MULTI										1
Service Industry Sample – Year 2009 (N = 150)										
	SP09	BV09	EPS09	C09	DPS09	P09	P/E09	FS09	CD	MULTI
SP09	1	0.931**	0.857**	0.062	0.136	0.013	0.051	0.094	0.207*	0.148
BV09		1	0.754**	0.030	0.204*	0.050	0.033	0.119	0.194*	0.085
EPS09			1	0.161*	0.124	0.039	-0.068	0.135	0.239**	0.202*
C09				1	-0.038	-0.034	-0.074	0.139	0.120	0.117
DPS09					1	0.929**	-0.051	0.193*	0.158	-0.083
P09						1	0.076	0.185*	0.132	-0.071
P/E09							1	0.014	-0.011	0.156
FS09								1	0.252**	0.043
CD									1	0.045
MULTI										1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)