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STOCK PRICE VARIABILITY AND THE EFFECT OF FUNDA- MENTAL, ASYMMETRIC AND CORPORATE GOVERNANCE VARIABLES

Key Words

***Stock Valuation; Stock
Variability; Kuwait
Stock Exchange;
Asymmetric Effect;
Corporate Governance.***

Abstract

This paper uses cross-sectional data of the period 2003-2005 for most of the companies listed on Kuwait stock exchange. The paper has two objectives. The first is to test for the incremental effect of corporate governance on stock price variability by controlling some established variables. The second is to add to the body of knowledge by examining the asymmetric effects of the established controlling variables, namely, the change in earnings per share, the change in book value per share and the change in cash dividend on stock price variability. The results indicate an insignificant incremental effect of the corporate governance variable on stock price variability. By rejecting the hypothetical symmetric notion, the study provides strong evidence of the existence for asymmetric effects of the controlling explanatory variables on stock price variability. Potential theoretical and practical implications are presented.

Introduction

What the determinants of a firm's value are is a question for which researchers are still unable to provide a complete answer. Empirical studies are still providing evidence of new financial and non-financial determinants. From reviewing the va-

luation literature, the number of determinants seems endless. However, there is a credible agreement among researchers (see White, *et al.* 2003 for a detailed review) on a couple of variables, which have a strong significant

effect on value. These variables are the earnings and book value.

There is no empirical research attempts to account for all possible financial and non-financial variables. Although most of the valuation research is based on causality modeling, there are few attempts to account for all possible financial variables as applied to developed markets (see, for example, Durham, 2001). Al-Deehani (2005) is the only researcher to do this for an emerging market. Using Extreme Bound Analysis (EBA) methodology, three main variables were found to pass the strict robustness test. These variables are Earnings Per Share (EPS), Book Value per share (BV) and the Cash Dividend per share (CD).

This study is a logical extension to Al-Deehani's work for two reasons. First, it would be interesting to test whether or not a Corporate Governance (CG) variable would have an incremental effect on stock returns when added to the initial model resulting from AL-Deehani's study. Second, similar to much empirical research, Al-Deehani has assumed a symmetric effect of the explanatory variables. Therefore, it would also be interesting to test for the asymmetric effects of these variables. These are the specific concerns that triggered the need to conduct this empirical study.

In the next section, the relevant literature will be reviewed with the aim of identifying the dependent and independent variables that will be used to specify our models. This will lead to the development of the research hypotheses in the section that follows, which will also include the nature of the data and the research methodology. The models' estimations, the results and their analysis will be dealt with next. Finally, we present the concluding remarks and the possible theoretical and practical implications.

Literature Review

Most business organizations exist for the main purpose of maximizing shareholders' wealth. Brigham and Houston (2004) argue that "*the primary goal for management decisions; considers the risk and timing associated with expected earnings per share in order to maximize the price of the firm's common stock*". It is, therefore, logical to assume that an investor would purchase a stock that is expected to appreciate in price in order to make positive returns.

Indeed, in stock markets, investors would buy stocks that are thought to provide better returns. Buying and selling decisions are made based on the information they get concerning the future of the stocks. Sound information is expected to initiate buying

decisions that lead to positive stock returns or selling decisions that lead to negative stock returns.

Academicians have been striving to identify the factors that influence the variation in companies' stock returns. As discussed by White, *et al.* (2003), asset pricing theory recognizes two classes of valuation models: asset-based valuation models and discounted cash flow models. Asset-based valuation models assign a value to the company based on the current market value of its assets where $value = Assets - Liabilities$. The resulting value of this model is the book value of the company. Ohlson (1995), Burgstahler and Dichev (1997) and Bao and Bao (1998) have all provided empirical evidence for the significant effect of the book value on stock price returns.

According to the discounted cash flow valuation models, the $value = \sum_{t=1}^n CF_t / (1 + r)^t$ where CF may represent free cash flows, earnings or dividends and the r is the discount rate representing the company's cost of capital. It is important to note that future dividends depend on future earnings and free cash flow forecasts require estimating earnings.

Although Modigliani and Miller's (1958) arguments with regard to the irrelevance of capital structure deci-

sions and dividend policy to the firm's value are still controversial, there are other theories that assert relevance. The capital structure trade-off theory argues that, as interest paid on debt is a tax saving expense, then the higher the debt ratio the higher the value of the company until a maximum level is reached. This means that taxes, capital structure, dividends and their growth rate are all explanatory variables candidates. [see for example Brealey and Myers (2000) and Brigham and Daves (2004)].

With regard to dividend policy, Lintner (1962), Gordon (1963) and Fama and French (2001) have all provided evidence for association with earnings. This implies that any factor that determines dividend policy, including all financing and investing decisions, is relevant to value.

In an attempt to account for as many explanatory variables as possible, Al-Deehani (2005) applied an Extreme Bound Analysis (EBA) technique to test the robustness of many possible explanatory variables. Earnings, book value and payouts were confirmed to have highly significant effects on stock price variation. Al-Deehani's research is important to our study for two reasons: The first is that it is one of few studies which tried to account for most of the fundamental financial explanatory variables that

may have effects on firms' values using EBA. The second is that it is concerned with the Kuwaiti market, on which our study is based.

Like most empirical studies, Al-Deehani's research did not consider possible asymmetric effects. Certainly, it is not unreasonable to hypothesize that positive and negative changes in an explanatory variable may affect the variation in a dependent variable differently. This is what this study strives to uncover. In addition to the analysis of the asymmetric effects of the three variables, a new variable that captures the corporate governance (CG) effect will also be analyzed.

The importance of adding the CG variable as a potential determinant of stock returns stems from the fact that evidence for association between CG and the company's capital structure has already been provided for the same market. In their comprehensive study of CG and its relation to capital structure of the companies listed on the Kuwait Stock Exchange, Al-Deehani and Al-Saad (2007) found that the amount of debt leverage is significantly determined by four different CG variables. These variables are, (1) whether or not the manager is a member of the controlling family, (2) the amount of controlling rights when the manager is a family member, (3) the amount of cash flow rights when

the manager is a family member, and (4) whether or not the company is controlled by one family.

Al-Deehani and Al-Saad's study was an attempt to test the results found earlier by Du and Dai (2005), who investigated the relationship between corporate leverage and the ultimate corporate ownership structure, particularly the separation of cash flow rights and control rights. Du and Dai supported the notion that controlling shareholders with relatively small ownership share tend to increase leverage out of the motive of raising external finance without diluting their shareholding dominance.

The way that the literature defines ownership and control was shaped by La Porta, *et al.* (1999), who were the first to provide evidence for the sharp divergence of cash flow rights from control rights in the hands of the largest shareholder. This finding was later confirmed by Claessens, *et al.* (2000) and Du and Dai (2005). They all warned that the conflict of interests between large shareholders and minority shareholders is a major theme of corporate governance (see also Claessens *et al.* 2002).

Indeed, Lee and Yeh (2004) state "*Prior empirical evidence supports the wealth expropriation hypothesis that weak corporate governance induced by certain types of ownership structures*

and board composition tends to result in minority interest expropriation. This in turn reduces corporate value.” They found that firms with weak corporate governance are vulnerable to economic downturns and the probability of falling into financial distress increases.

Although there are studies that provide enough evidence for a positive relationship between value and the ownership structure (see Morch, *et al.* (1988) and Kole (1995)), there are others that found no significant effect (see Himmelberg, *et al.* (1999), Mehran (1995) and Demsetz and Lehn (1985)). We intend to test the null hypothesis that the CG factor has no incremental effect on the change in stock return.

Data and Methodology

The cross-sectional fundamental financial data for 111 companies were obtained from Kuwait Stock Exchange (KSE) database. Before testing for possible asymmetric effects, the incremental CG effect will be assessed. This is done by adding the CG variable to a regression model while controlling for the established explanatory variables, namely: change in earnings per share, change in book value and change in cash dividends. Calculation of the changes in the dependent and independent variables entailed collecting end of year data for the years 2003-2005.

To deal with the normality problem, some outliers were removed.

Our initial symmetric model will take the form:

$$\begin{aligned}\Delta P_{it} = & a + b_1 \Delta EPS_{it} + b_2 \Delta BV_{it} \\ & + b_3 \Delta CD_{it} + b_4 CG_{it} \\ & + \varepsilon_{it}\end{aligned}\quad (1)$$

Where,

ΔP_{it} is the stock return for company i at year t defined as $\ln(P_{it}) - \ln(P_{it-1})$

ΔEPS_{it} is the change in earnings per share for company i at year t defined as $\ln(EPS_{it}) - \ln(EPS_{it-1})$

ΔBV_{it} is the change in book value for company i at year t defined as $\ln(BV_{it}) - \ln(BV_{it-1})$

ΔCD_{it} is the change in cash dividend for company i at year t defined as $\ln(CD_{it}) - \ln(CD_{it-1})$

CG_{it} is the percentage ownership share of the largest shareholder for company i at time t .

ε_{it} is the error term for company i at year t with the assumptions of zero mean, constant variance and normal distribution.

A. The Stock Price Return Variable

Researchers base their definitions of stock returns on different definitions. One definition is the simple difference of the stock price between

time t and $t-1$, which can be in logarithm form. This is called the price change *per se* (as in Moosa and Al-Deehani, forthcoming). There are others who used the absolute price change $|\Delta p_t|$, and the squared price change $(\Delta p_t)^2$. Others have used the concept of stochastic volatility, which can be found in Shephard (1996) and in Ghyles, *et al.* (1996). The last important price measure used by researchers is the extreme value variance, which is calculated from the high and low prices as $\sigma^2 = [\log(p^H) - \log(p^L)]/4 \log 2$, where p^H is the high price, p^L is the low price for the trading period. This measure of volatility is several times more efficient than conventional estimator as pointed out by Garman and Klass (1980).

Research findings concerning the appropriate price variable are inconclusive and indicate that it varies from one market to another.

In this study, we adopt the price change *per se* as the stock return variable which is defined as the natural log of the stock price of company i at time t (end of the year) minus the stock

price of company i at time $t-1$ (end of the year); $\Delta p_t = \ln(p_t) - \ln(p_{t-1})$. This is widely accepted definition in empirical research and allows for better understanding and interpretations of the symmetric/asymmetric estimations' results.

B. The Change in Earnings per Share Variable

This variable is defined as the natural log of earnings per share of company i at time t (end of the year) minus the earnings per share of company i at time $t-1$ (end of the year). According to the accounting standard, when treasury stocks are involved⁽¹⁾ companies do not have the right to receive dividends on those treasury stocks and earnings are recorded as part of the company's equity without affecting the income statement. There are mainly two measures of earnings per share. The first measure takes the purchased treasury stock into consideration and deducts the amount of shares purchased from the total number of shares outstanding. The direct implication of this treatment is an enhancement of the

(1) That is when a company purchases its own stock from the market. To do so, companies have to get a prior permission of their general assembly. Regulations limit the maximum that can be purchased to 10% of the total number of the shares outstanding. It is common in Kuwait for the companies to get these permissions to obtain treasury stock for many reasons. They do so when the stock price is undervalued to increase the return on equity or they may do so to manipulate the prices by sending signals to the investors in order to affect the direction of the price trend.

reported EPS as the treasury stocks do not have rights on earnings. The second measure, which is adopted by this study, takes all shares, common and treasury, into consideration and calculates earnings per share for both types. Our motive for this selection is that treasury stocks do have direct effects on value. As their effects are recorded in the company's equity, treasury stocks do add to value when the prices increase and deduct from value when prices decrease.

C. The Change in Book Value Variable

This variable is defined as the natural log of book value per share of company i at time t (end of the year) minus the book value per share of company i at time $t-1$ (end of the year). The book value per share is defined as the total equity divided by the number of shares outstanding.

The importance of the book value variable as a determinant of value is discussed in detail by White, *et al.* (2003). In an overview of the valuation models, White, *et al.* (2003) argue that, theoretically, for a constant cash flow stream, the valuation model can be written as

$$Value = \frac{CF}{r}$$

where CF is the cash flow defined

variously as streams of future dividends, earnings, or free cash flows. But the amount of a firm's earnings, is equal to

$$CF = r * B$$

Where B is the book value of the firm and r^* is the actual rate of return. Assuming that the firm will earn its required rate of return, r , then

$$CF = rB.$$

Therefore,

$$Value = \frac{CF}{r} = \frac{rB}{r} = B.$$

The relationship between market value and book value was also the basis for the Q-Ratio developed by the Nobel prize-winning economist James Tobin. Defined as the market value of the firm divided by its book value, when its value is below 1, Tobin's Q-Ratio implies that the firm earns less than the required rate of return.

D. The Change in Cash Dividend Variable

Cash dividend is the amount of cash (in Kuwaiti Dinar) per share distributed to shareholders. The variable is defined as the natural log of the cash dividend per share of company i at time t (end of the year) minus the cash dividend per share of company i at time $t-1$ (end of the year).

As discussed before, cash flow can be defined as the stream of future dividends. Indeed, the *Constant Dividend Model* defines the firm's value as

$$P_0 = \frac{D_1}{r}$$

where P_0 is the current market price, D_1 is the expected dividend per share and r is the required rate of return. This model requires forecasting dividend to infinity, which is impossible. Nevertheless, there are contradicting theories on dividend as a determinant of value. For example, the *Irrelevance* theory of MM finds no relevance between the company's dividend policy and its value because every individual shareholder can construct his/her own dividend policy based on his/her own preference. The *Bird-In-The-Hand* and *Tax-Preference* theories, although in conflict with each other, propose logical explanations of the dividend policy's relevance to the value of the company.

E. The Corporate Governance (CG) Variable

This variable is defined as the percentage of ownership of the largest shareholder of company i at time t (end of the year). That is the number of shares owned by the largest shareholders divided by the total number of shares outstanding.

As discussed earlier, research on the effect of CG is not conclusive. Depending on what aspect of CG is considered and how it is measured and defined, results vary from one study to another.

In a recent study, Ting (2006) endorsed the positive effect of corporate governance on a firm's performance. Different from some previous studies, this study concluded that the corporate governance effect performed better under poor economic conditions, higher agency costs, and complicated firm structure. Furthermore, corporate governance mechanism could work effectively when the executives realize its importance.

Having discussed the specific variables of the main model, the expected results of estimating the models are also important to highlight.

While the actual signs of the controlling variables can be positive or negative as they measure the change, their effects on stock return are expected to be positive. The hypotheses in the null form state that the additional explanatory variables: CG will not show incremental information content when added to our initial model. The actual sign of the CG variable is positive as ownership is always greater than zero. However,

as indicated by the reviewed literature, the expected sign of the coefficient of this variable can be positive, negative or insignificant. Our hypotheses with regard to this model are outlined in Table (1).

Table 1
Summary of Hypotheses for the Initial Symmetric Model:

$$\Delta P_{it} = a + b_1 \Delta EPS_{it} + b_2 \Delta BV_{it} + b_3 \Delta CD_{it} + b_4 CG_{it} + \varepsilon_{it}$$

Hypothesis	Actual variable sign	Expected coefficient sign
$H_0: b_1 = 0$	+/-	+
$H_0: b_2 = 0$	+/-	+
$H_0: b_3 = 0$	+/-	+
$H_0: b_4 = 0$	+	+/-

The first step in analyzing the asymmetric effects of the explanatory variables is to drop the CG variable as it is a measure of the ownership structure at one point in time. The second step is to divide each of the three established variables into two variables; one to capture the effect of positive changes and the other to capture the effect of the negative changes.

Our GLS asymmetric model can be written as

$$\begin{aligned} \Delta P_{it} = & a + b_1 \Delta EPS_{it}^+ + b_2 \Delta EPS_{it}^- \\ & + b_3 \Delta BV_{it}^+ + b_4 \Delta BV_{it}^- \\ & + b_5 \Delta CD_{it}^+ + b_6 \Delta CD_{it}^- \\ & + \varepsilon_{it} \end{aligned} \quad (2)$$

where,

ΔEPS_{it}^+ equals ΔEPS_{it} if $\Delta EPS_{it} > 0$ and zero otherwise

ΔEPS_{it}^- equals ΔEPS_{it} if $\Delta EPS_{it} < 0$ and zero otherwise

ΔBV_{it}^+ equals ΔBV_{it} if $\Delta BV_{it} > 0$ and zero otherwise

ΔBV_{it}^- equals ΔBV_{it} if $\Delta BV_{it} < 0$ and zero otherwise

ΔCD_{it}^+ equals ΔCD_{it} if $\Delta CD_{it} > 0$ and zero otherwise

ΔCD_{it}^- equals ΔCD_{it} if $\Delta CD_{it} < 0$ and zero otherwise

By definition, the actual signs of the variables: ΔEPS_{it}^+ , ΔBV_{it}^+ and ΔCD_{it}^+ are positive and their coefficients are expected to be positive if they are to have positive effects on stock returns. The actual signs of the variables: ΔEPS_{it}^- , ΔBV_{it}^- and ΔCD_{it}^- are negative and their coefficients are expected to be positive if they are to have negative effects on stock returns. Our hypotheses with regard to this asymmetric model are outlined in Table (2).

Table 2
Summary of Hypotheses for the Asymmetric Model:

$$\Delta P_{it} = a + b_1 \Delta EPS_{it}^+ + b_2 \Delta EPE_{it}^- + b_3 \Delta BV_{it}^+ + b_4 \Delta BV_{it}^- + b_5 \Delta CD_{it}^+ + b_6 \Delta CD_{it}^- + \varepsilon_{it}$$

Hypothesis	Actual variable sign	Expected coefficient sign	Expected effect on stock return when rejecting hyp.
$H_0: b_1 = 0$	+	+	+
$H_0: b_2 = 0$	-	+	-
$H_0: b_3 = 0$	+	+	+
$H_0: b_4 = 0$	-	+	-
$H_0: b_5 = 0$	+	+	+
$H_0: b_6 = 0$	-	+	-

To check for the severity of multi-collinearity between the explanatory variables, the variance inflation factor (VIF) will be employed. The VIF equation is written as

$$VIF_j = \frac{1}{1 - R_j^2} \quad (3)$$

In general terms, multi-collinearity among explanatory variables is considered severe if the largest VIF is greater than 10^2 .

Ordinary Least Square (OLS) will be used if there is no evidence of heteroskedasticity that inflates the standard errors of the OLS estimates. The homoskedasticity assumption for multiple regression modeling states that the variance of the unobservable error (ε), conditional on the explanatory variable, should be constant.

Homoskedasticity fails whenever the variance of the unobservables changes across different segments of the population, where the segments are determined by the different values of the explanatory variables. In this case the error is described as heteroskedastic.

Therefore, as suggested by Koenker (1981), a Lagrange Multiplier (LM) test will be used to detect heteroskedasticity. The LM statistic is asymptotically distributed as a chi-squared (χ^2) variate.

To correct for possible heteroskedasticity problems and account for heteroskedasticity in the errors of the symmetric and asymmetric models, Generalized Least Square (GLS) estimators will be employed. The GLS estimators for correcting heteroskedasticity are called Weighted Least

(2) A detailed explanation of VIF can be found in Bowerman, *et al.* (2001).

Square (WLS) estimators. There are many ways to model heteroskedasticity, but we will adopt the following fairly flexible approach (see Wooldridge, 2003):

1. Run the regression of y on $x_1, x_2, \dots, x_k$ and obtain the residual, $\hat{u}$
 2. Create $\log(\hat{u}^2)$ by first squaring the OLS residuals and then by taking the natural log.
 3. Run the regression in $\log(\hat{u}^2)$ on $x_1, x_2, \dots, x_k$ and obtain the fitted values, $\hat{g}$.
 4. Exponentiate the fitted values: $\hat{h} = \exp(\hat{g})$.
 5. Estimate the equation
- $$y = \beta_0 + \beta_1 x_1 + \dots + \beta_k x_k + \varepsilon$$

In this case the GLS estimates are used in place of the Ordinary Least Square (OLS) estimates because they are more efficient.

Results and analysis

Before starting the analysis of the estimated models, it is always useful to look at the correlation matrix of the dependent and independent variables in their original form. We should look for high absolute correlation coefficients between the dependent and each of the independent variables. That is because the higher this coefficient the higher the likelihood of a significant effect of the independent variable on the dependent variable. It is also important to check the absolute correlation coefficients among independent

variables. That is because higher coefficients may indicate a multi-collinearity problem, which may cause misleading results.

The correlation matrix for all the variables in their symmetric form are shown in Table (3).

Table 3
Correlation Matrix

	ΔP	ΔEPS	ΔBV	CG	ΔCD
ΔP	1				
ΔEPS	0.39	1			
ΔBV	0.52	0.36	1		
CG	0.01	0.06	0.01	1	
ΔCD	0.01	-0.29	-0.29	-0.10	1

Table (3) indicates a relatively higher positive correlation coefficient between the stock returns and the change in EPS. This result implies an association between the two variables, hence a possible significant positive effect of the change in EPS on stock returns. The correlation coefficient between stock returns and the change in BV is also relatively high and positive, indicating that BV is a possible determinant of stock returns. The correlation coefficient between stock returns and the change in CD is relatively low, indicating a weak or no association between the two variables. A similar result can be observed between stock returns and the corporate governance variable.

With regard to the absolute correlation coefficients among the independent variables, we can observe a lower

but significant coefficient between the change in EPS and the change in BV, indicating a possible multi-collinearity problem. The severity of this possible problem will be checked using the VIF test when estimating the regression model. The other correlation coefficients are statistically insignificant.

Descriptive statistics including the mean, standard error of the estimate, variance and skewness for all the variables are shown in Table (4).

Table 4
Descriptive statistics

	ΔP	ΔEPS	ΔBV	CG	ΔCD
Mean	0.28	0.65	0.23	0.30	0.03
St. error	0.04	0.08	0.03	0.02	0.01
Variance	0.16	0.75	0.08	0.03	0.02
Skewness	0.34	0.87	0.23	0.70	-0.46

The skewness statistic indicates that the change in EPS, the change in BV and the corporate governance variables are all positively skewed while the change in cash dividend is negatively skewed. These results imply possible asymmetric effects. This possible asymmetry means that if the independent variable is positively or negatively skewed, then the positive and negative changes of this independent variable affect the dependent variable differently. In other words, because the changes in EPS are positively skewed, then positive changes in EPS are expected to have a more significant effect on stock returns compared to negative changes. Similarly, because the changes

in CD are negatively skewed, then negative changes in CD are expected to have a more significant effect on stock returns compared to positive changes. These expectations will be tested by estimating both the symmetric and asymmetric models.

The LM statistic, when using OLS modeling, reveals a value of $\chi^2_1 = 11.86$ rejecting the null hypothesis of constant variance in the errors and indicating the presence of heteroskedasticity. Therefore, a feasible GLS procedure to correct for heteroskedasticity is employed.

The results of estimating the GLS symmetric model are revealed in Table (5). The Table contains diagnostic and goodness of fit measures. The model passes the normality test, which is based on a test of skewness and kurtosis of residuals. The F test is also significant, which rejects the null hypothesis that the variation in the dependent variable is a result of chance and, as indicated by the $\bar{R}^2$, the explanatory variables included in the model can significantly explain 46% of that variation. The unexplained variation in stock returns is 54% implying the existence of other variables that should be accounted for. However, this is not an issue of this research. Our main concern is to validate already established determinants, to test the incremental effect of corporate governance, and then to test asymmetry.

Table (5) indicates that changes in EPS, changes in BV and changes in CD

all have significant positive effects on stock returns. This means, an increase in any of these variables would result in an increase in stock returns and if they decrease, stock returns will decrease by the same degree.

Table 5
GLS Regression Results
and Symmetric Effect Assumed.
Original Model Estimated:

$$\Delta P_{it} = a + b_1 \Delta EPS_{it} + b_2 \Delta BV_{it} \\ + b_3 \Delta CD_{it} + b_4 CG_{it} + \varepsilon_{it}$$

Coefficient Name	Coefficient & t score	VIF
<i>a</i>	-0.07 (-1.24)	
<i>b</i> ₁	0.09*** (3.47)	1.40
<i>b</i> ₂	0.96*** (6.04)	1.28
<i>b</i> ₃	0.51*** (2.84)	1.07
<i>b</i> ₄	0.17 (1.18)	1.05
<i>Norm</i> (χ^2_2)	3.18	
$\bar{R}^2$	0.46	
<i>F</i> (4, 103)	9.31***	
<i>N</i>	108	

*** Significant at 0.01, *Norm* (χ^2_2) is the normality test based on a test of skewness and kurtosis of residuals⁽³⁾, $\bar{R}^2$ is the adjusted coefficient of determination, *F* is the *F* test and *N* is the number of observations.

For example, a one-unit increase in EPS would result in an increase in stock

returns by the amount of its coefficient and a one-unit decrease in EPS would result in a decrease in stock returns by the amount of the same coefficient. The same logic can be applied for all significant effects. But this proposition might not be true given the positive and negative skewness of the independent variables demonstrated by the descriptive statistics. Interestingly, the corporate governance explanatory variable does not seem to affect stock returns as its coefficient proved insignificant.

Comparing the results of the estimated symmetric model with the summary of the hypotheses outlined in Table (1), we can observe:

1. As expected, the coefficient sign of the change in EPS is significantly positive, implying a positive relationship with the stock returns. That is, an increase in the change in EPS leads to an increase in stock returns, and vice versa. The effect is assumed to be symmetric. This assumption is questioned by this paper and will be checked later by an asymmetric model. The result is in line with most of the relevant empirical research. This is logical as earnings are the main driver of the company's value.

(3) The Jarque-Bera's test (see Jarque and Bera, 1980 and Bera and Jarque, 1981) of the normality of regression residuals with χ^2_2 critical value of 5.99.

2. The coefficient sign for the change in BV is also positive and significant as expected, implying the rejection of the hypothesis of no effect. It also means that the change in book value does affect stock return, presumably, symmetrically. Except for the asymmetry, this result is also logical because the book value measures how much equity the shareholders own. When there is no change in capital, equity will increase/decrease mainly from the accumulation of retained earnings, which explains the significant correlation between the EPS and BV variables observed earlier.
3. The coefficient for the change in CD is also significant with the right expected sign. The hypothesis of no effect is rejected, implying the existence of a positive effect of the change in cash dividend on stock returns. The result also means that stock returns will increase as cash dividends are increased, and vice versa.
4. The coefficient for the CG proved insignificant, which means that stock returns are not affected by how much the main shareholder owns of the company's stock. The result confirms findings of some corporate governance empirical research [See for example Dem-

setz and Lehn (1985), Mehran (1995), and Himmelberg, et al. (1999)]. Further testing of another corporate governance variable representing whether or not the company's manager is a member of the main shareholder's family also emerged as insignificant.

The overall conclusion of the above observations confirms the established variables as significant determinants of stock returns and that there is no proof of an incremental explanatory power for the corporate governance variables when added to the initial model. This means it does not really matter who runs the company or how much he/she controls of the company's stock.

Although useful, the above results of the symmetric model do not help much in differentiating between positive and negative effects of the variables. For example, we do not really know if the stock returns will react to negative changes in cash dividends as they do to positive changes. This is a hypothesis that needs testing. The same reservation applies to the other variables.

By segregating positive changes from negative changes of the variables that proved significant using the symmetric model, an asymmetric model was formulated as in equation (2). Table (6) illustrates the results of estimating this equation.

Table 6
Testing for Asymmetric Effects.
Original Model Estimated:

$$\Delta P_{it} = a + b_1 \Delta EPS_{it}^+ + b_2 \Delta EPS_{it}^- + b_3 \Delta BV_{it}^+ + b_4 \Delta BV_{it}^- + b_5 \Delta CD_{it}^+ + b_6 \Delta CD_{it}^- + \varepsilon_{it}$$

Coefficient Name	Coefficient & t score	VIF
<i>a</i>	.04 (0.81)	
<i>b</i> ₁	0.13*** (2.62)	1.81
<i>b</i> ₂	0.03 (1.38)	2.46
<i>b</i> ₃	0.67*** (3.07)	2.17
<i>b</i> ₄	2.09* (1.96)	1.97
<i>b</i> ₅	0.39 (1.34)	1.31
<i>b</i> ₆	0.72** (2.39)	1.51
<i>Norm</i> (χ^2_2)	3.96	
$\bar{R}^2$	0.46	
<i>F</i> (6, 101)	6.79***	
<i>N</i>	108	

*** Significant at 0.01, ** Significant at 0.05, * Significant at 0.10, *Norm* (χ^2_2) is the normality test based on a test of skewness and kurtosis of residuals, $\bar{R}^2$ is the adjusted coefficient of determination, *F* is the *F* test and *N* is the number of observations.

Table (6) shows

1. While the coefficient for the positive changes of EPS is significant and has the expected positive sign, the coefficient for the nega-

tive changes is insignificant, thus rejecting the symmetry assumption. This result indicates that stock returns react only to positive changes in earnings per share and that negative changes do not have an effect on stock returns. Some of the evidence provided by previous relevant empirical research may interpret this result. There is actually valid support for a positive relation between bull market (positive returns) and high trading volume, indicating the fact that investors are attracted more to positive than negative returns (bear market). Ying (1966), for example, was the first to provide evidence for this asymmetric phenomenon, which was later confirmed by Epps (1975, 1977). Al-Saad and Moosa (2006) also confirmed the association within the Kuwaiti market.

2. With regard to the change in BV, stock returns appear to react to both positive changes in book value and, to a lesser extent, to negative changes. The coefficient of the positive changes is significantly positive at the 0.01 level, while the coefficient of the negative changes is significantly positive at the 0.10 level. Again, the symmetric proposition is rejected as effects are not identical.
3. A very interesting result can be observed with regard to the

change in cash dividend. The coefficient of the positive changes in cash dividend proved insignificant, while the coefficient of the negative changes happened to be significantly positive, implying, again, the existence of an asymmetric effect. The result indicates that stock returns react only to the negative changes of cash dividend and not to the positive ones. This result may be interpreted by the fact that investors look at cash dividends as a signal of management view of the company's future. When cash dividend is cut, then the company will be seen by investors as unable to sustain future dividends. Indeed, Levinsohn (2003), Editor of the *Strategic Finance*, noted "...But once a company begins paying a dividend, it can't turn back without signaling to investors that it can't maintain the dividend." From this statement, one can understand that once a dividend policy is set, then it is taken for granted. Therefore, when a company continues to follow its policy (of a constant and stable growth) then this policy, as it is expected, is already reflected in the stock price. Therefore, stock returns will only react to cuts in dividends. This interpretation is only valid if we can prove that most of the companies follow

stable dividend policies before cutting dividends.

From the above observations, there is strong evidence of the existence of asymmetric effects of the change in earnings per share, the change in book value and the change in cash dividends on stock returns. Within the KSE, investors who intend to put their money in listed stocks, should give more attention to positive changes in earnings, positive changes in book value and negative changes in cash dividends.

Finally, Table (7) presents a comparison between the results of this paper and those of Al-Deehani (2005).

It is interesting to note that although Al-Deehani's results were confirmed by the symmetric model adopted initially by this paper, the asymmetric modeling is more feasible as it differentiates between the effect of the positive and negative changes in the explanatory variables. The main theoretical contribution of this paper is that it complements the evidence provided by Al-Deehani (2005) by answering questions which Al-Deehani could not address then because of some methodological constraints. For example, while Al-Deehani (2005) would rightly argue that EPS has an effect on value, he could not provide evidence that positive and negative changes in EPS would have similar effects on value. In this study, although we support Al-Deehani's

Table 7
Comparing the results of this study to those of Al-Deehani (2005)

Variables modeled	Effect on value	
	Al-Deehani (2005)	This study
EPS	Significant. Symmetry assumed.	Asymmetric. Only positive changes in earnings per share have an effect. Negative changes in earnings per share have an insignificant effect.
BV	Significant. Symmetry assumed.	Asymmetric. Both positive and negative changes in book value have significant effects. However Positive changes are more significant.
CD	Significant. Symmetry assumed.	Asymmetric. Only negative changes in cash dividend have an effect. Positive changes in cash dividend have an insignificant effect.
CG	NA	insignificant

findings using the symmetric model, we extend them and can confidently argue that only positive changes in EPS have an effect on value. The same analytical arguments can be applied to the other two variables.

Conclusion

Researchers have strived to provide evidence for the determinants of the variability in stock returns. Theoretical propositions were presented by prominent economists and challenged by empirical testing. Based on causality modeling, many studies have provided evidence for the significant effect of variables such as profit, book value, capital structure and dividend policy.

As we are interested in studying the Kuwaiti market, we were attracted to

AL-Deehani's study (2005) which tried to account for all possible determinants using the Extreme Bound Analysis (EBA) methodology within this market. Using a strict robustness test, AL-Deehani provided strong evidence for the effect of earnings per share, book value per share and cash dividend per share on stock price variability. However, similar to many empirical studies, Al-Deehani assumed a symmetric effect of the determinants. He also did not account for non-financial variables such as corporate governance. These are the gaps which triggered the need for this research.

To confirm Al-Deehani's findings and to test the incremental effect of the corporate governance variable when added to the initial model, a sym-

metric model was estimated. The results confirmed the significant effect of the change in earnings per share, the change in book value per share and the cash dividend per share on stock returns. Corporate governance, however, was found to have an insignificant effect on stock returns.

To test for the asymmetric effects of the variables in the initial model, positive and negative changes of these variables were segregated in separate variables and an asymmetric model was estimated. The results of estimating this model indicate that stock returns react differently to positive versus negative changes in these variables. In fact, only positive EPS, positive BV per share and negative cash dividend are statistically significant at the 0.05 level.

This study has some theoretical and practical implications. Theoretically, the study implies that researchers should not always assume symmetric effects of the explanatory variables because simply they may not have such effects. Therefore, they should always test this as a researchable hypothesis when applicable. Although the data collection and preparation need more effort, the resulting evidence is more specific.

A specific result of this study that calls for further investigation is the

fact that stock returns will react to cuts rather than to increases in dividends. To better understand this result and validate the interpretation suggested by this study, an empirical investigation of this topic is encouraged. A research methodology that discriminates between companies with stable dividend policy versus those with unstable dividend policy will certainly add significantly to the body of knowledge on this topic.

For practitioners, asymmetric analysis provides more focus. Knowing that positive changes in earnings per share and book value per share are more important than negative changes, the decision maker will, definitely, take more confident buying and selling decisions.

The fact that negative changes in cash dividend have more significant effects on stock returns also has an important implication for dividend policy makers. A clear implication is that decision makers are advised to follow a steady and constant growth cash dividend policy that can be maintained within this market. That is because setting high payout ratios will raise the expectations of the shareholders with no positive effect on stock returns.

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الملخص

التغير في سعر السهم وأثر العوامل الأساسية غير المتماثلة والحوكمة عليه

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تستخدم هذه الدراسة بيانات مستعرضة cross sectional في الفترة ٢٠٠٣ - ٢٠٠٥ لمعظم الشركات الكويتية المدرجة في سوق الكويت للأوراق المالية، ولها هدفان: الأول هو اختبار مدى تأثير أحد عوامل الحوكمة في التغير في سعر السهم بعد تثبيت بعض العوامل الأخرى. أما الهدف الثاني فهو معرفة أثر الطبيعة غير المتماثلة asymmetric لتلك العوامل والتي سبق إثبات أثرها تماثلًا symmetric. هذه العوامل هي التغير في العائد على سعر السهم، والتغير في القيمة الدفترية للسهم، والتغير في التوزيعات النقدية للسهم. وتشير النتائج إلى عدم وجود دليل على أثر عامل الحوكمة على التغير في سعر السهم، إلا أنها تشير إلى وجود دليل قوي على أثر العوامل ذات الطبيعة غير المتماثلة. تستعرض الدراسة، بناءً على هذه النتائج، بعض الانعكاسات النظرية والتطبيقية.

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