Stock Price Volatility and Dividend Policy in Jordanian Firms

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Abstract
This paper examines the relationship between stock prices and dividend policy. To test the relationship, it uses multiple least square regressions for its analysis. The model developed for this research evaluates the relationship between dividend policy and stock price volatility over a span of ten years. The analysis utilizes multiple regressions to describe these relationships and also includes a correlation analysis amongst the variables chosen. The results conveyed a negative impact of the two components of the dividend policy that is D-P and D-Y on the share price volatility. This demonstrated that Jordanian industrial firms had their dividend yield rise, the stock prices tended to stabilize while the price volatility declined and thus lowers the share price risks. The results also demonstrated that higher payout ratios would mean low volatility of the stock price.
Keywords; Divined Policy, Stock Price, Volatility, Jordanian Financial Market.

1. Introduction

Since the existence of stock markets, there has been extensive discussion on the issue of whether stock prices reflect the fundamental values of companies within the market. The average investor, who is risk averse, will invest in the stock market for one reason and that is to make a profit. Therefore, profitable earnings are one of the most significant factors that entice investors to capitalize on their investments. The Dividend payout ratio of any particular company reflects the dividend policy adopted by that particular firm. Dividend policy has been subject to considerable debate for many decades, but no universally accepted explanation for companies' observed dividend behavior has been established (Al-Kuwari, 2009). The Brealey and Myers (2005) description of dividend policy as being one of the top ten most difficult unsolved problems in financial economics is consistent with Black (1976) who stated that;

"*The harder we look at the dividend picture, the more it seems like a puzzle, with pieces that don't fit together.*"

Defining the volatility of share prices, Guo, (2002), states that the term reflects the systematic risk faced by investors who possess ordinary share investments. Because of the inherent nature of risk averseness, the volatility of their investments is important to them as a measure of the level of risk they are exposed to. Positive changes in stock prices tend to occur as a result of an increase in the dividend payout ratio and vice versa. This can be explained by the fact that when firm's increase dividends to shareholders, they do so after funding all projects that have positive net present values. This is important when taking into consideration the form of efficiency of the market under consideration. In this case, the semi-strong form of market efficiency postulates that stock prices incorporate all expected future dividend (cash and stock) and that, hence, their public announcement should not result in abnormal earnings for any investor because such dividend are fully accounted for in current stock prices (Akbar and Baig, 2010).

Being risk averse in nature and with the goal of making a profit in mind, investors unquestionably take in mind the level of risk they are exposed to in their investments. This is a matter that is also realized by companies who discern the fact that the awareness and nature of investors may affect the valuation of a company's shares in the long run. This naturally makes the volatility of stock prices just as important to companies as they are to the individual investor.

In light of this discussion, this paper aims determining whether a relationship exists between divided policy and stock price volatility, with a particular focus on the Amman Stock Exchange of Jordan. This research adopts the theoretical framework created by Baskin (1989) and Allen and Rachim (1996), employing correlation and multiple least square regressions in order to establish to which extent dividend policy affects stock price changes in Jordan. To establish this relationship, we apply regression of stock prices to two dividend variables, namely payout ratios and dividend yield. Similar to the research of Hussainey *et al* (2011), this paper excludes firms from the financial sector due to the regulatory nature of these institutions. Unlike the previous studies mentioned, this research will analyze firms in Jordan, which is an unprecedented research. It will also examine the determinants of dividend policy and examine the theories behind dividend policy.

2.Literature Review

At its first beginnings, Miller and Modigliani (1961) illustrated the irrelevance of dividends and that it had no influence on share prices. Since then, those researchers and practitioners that have disagreed with this theory introduced competing theories and hypotheses to illustrate the fact that dividends do matter in an imperfect capital market. These theories and hypotheses include the bird-in-hand theory, signaling theory, agency cost, stakeholder's theory and clientele effect.

Predating the irrelevance theory of Miller and Modigliani, the bird-in- hand theory suggests that firms should set a high dividend payout ratio in order to maximize share price. This is because investors prefer dividends, which are certain, over retained earnings, which are less certain (Graham and Dodd, 1951; Gordon, 1959; Lintner, 1956; Fisher, 1961; Walter, 1963; Brigham and Gordon, 1968). Lintner (1956) further indicates that a firm's management will resort to increasing dividends if it believes that the increase will be permanent.

Since the 1970s, several researchers have introduced the tax preference theory which suggests that dividends are subject to a higher tax cut than capital gains and that dividends are taxed directly whereas capitals gains are not until a stock is sold[1]. Thus, for tax related reasons, investors would prefer profit retention over the distribution of cash dividends. However, capital gains treatment has its advantages, which may lead investors to prefer a low dividend payout as opposed to a high payout ratio.

The signaling theory proposed in the early 1980s, formed the base for another explanation of why dividend policy has been so popular. Aharony and Swary, 1980; Brickley, 1983; Asquith and Mullins, 1983; Kalay and Loewenstein, 1985; Healy and Palepu, 1988; Aharony and Dotan, 1994 suggest that the separation of ownership along with the information asymmetry that exists between managers and outside shareholders, allows the managers to use dividends as a tool to signal private information about a firm's performance to outsiders. In the light of the existence of asymmetric information, Bhattacharaya (1979), states that an increase or decrease in dividends conveys price-sensitive information to shareholders and prospective investors. Miller and Rock (1985) and John and Williams (1985) also support the signaling or information content of dividend hypothesis, however, Penman (1983) and Benartzi *et al* (1997) do not.

Furthermore, over the past decade, various researchers have turned their attention to explaining the transaction cost and residual theory to firms' dividend policies. For instance a few of those indicate that firms incurring large transaction costs will be required to reduce dividend payouts to avoid the costs of external financing[2]. La Porta *et al*, (2000) states that agency cost which also relates to dividend policy has received more attention post the 1980s than prior to this period. Agency costs usually arise while monitoring company management in order to prevent inappropriate behavior. In this case, large dividend payouts reduce agency costs. Rozeff, 1982; Easterbrook, 1984; Loyd *et al.*, 1985; Crutchley and Hansen, 1989; Dempsy and Laber, 1992; Moh'd *et al.*, 1995; Glen *et al.*, 1995; Holder *et al.*, 1998; Saxena, 1999; Al-Malkawi, 2007; and Al-Najjar and Hussainey, 2009 all suggest that this is because large dividend payouts reduce internal cash flows, forcing managers to seek external financing, and thereby, making them liable to capital suppliers.

The clientele effect suggests that investors may have different reasons for favoring dividends as a result of institutional features such as regulatory requirements or tax differentials, or from behavioral preference. Studies that support the theory of dividend clientele among institutional investors include that of Brav and Heaton (1997), who identify a preference to dividend payouts using the prudent man rules that require certain types of institutional investors to hold mature, and thus dividend-paying firms. In his study, Allen *et al.* (2000) presents a model in which dividends attract institutional investors because they are taxed less than retail investors, which in turn imposes a better governance structure. In addition, Dhaliwal, Erickson, and Trezevant (1999) and Seida (2001) find empirical evidence that supports the existence of tax-based clientele for dividends. P´erez-Gonz´alez (2003) presents evidence that investors' tax status affects firm dividend policy. Complementary evidence is found by Hotchkiss and Lawrence (2002) who claim that firm returns are higher following dividends announcements for firms with institutional investors who favor dividends. Finally, Brav *et al.* (2005), report that managers consider their investor preferences toward dividends when making dividend-related decisions.

In contradiction to the supportive evidences found, Grinstein and Michaely (2005) do not find supporting evidence for the clientele theory. They investigate whether institutional investors do indeed favor dividend-paying firms and find that institutions avoid investing in non-paying firms, but nevertheless favor firms that pay low dividends over high ones. Barclay, Holderness, and Sheehan (2009) paper investigated whether corporations that have the lowest dividend tax bracket favor dividends. In contradiction of previous findings, they find that corporate shareholders do not induce firms to pay dividends, but rather are concerned with improving the firms' operating business. Finally, according to a managerial based survey of 384 managers and interviews of another 23 firms, Brav *et al.* (2005) state that managers are sceptical about the relation between dividends and investor clientele and believe that institutional investors are indifferent to dividend decisions[3].

Whether rational theories can explain dividend policy is still under discussion. Presenting a traditional argument, Miller (1986) contends that behavioral theories may be able to explain the micro-behavior of agents, but that rational theories should suffice to explain the aggregate behavior of firms. Frankfurter and Lane (1992) and Frankfurter and Wood (2006) emphasize the normative aspects of dividend payments and call for an alternative theory, based on behavioral and social aspects, to explain dividend policy. Frankfurter and McGoun (2000)

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[1] Brennan, 1970; Elton and Gruber, 1970; Litzenberger and Ramaswamy, 1979; Litzenberger and Ramaswamy, 1982; Kalay, 1982; John and Williams, 1985; Poterba and Summers, 1984; Miller and Rock, 1985; Ambarish et al., 1987

[2] Mueller, 1967; Higgins, 1972; Crutchley and Hansen, 1989; Alli et al., 1993

[3] Their goal was to reconcile managerial views with common academic theories of dividends.

argue that the search for a rational explanation for dividends is an example of thought contagion in the field of economics. They claim that there is little doubt that dividends appeared in financial markets to help investors value common stocks. To this effect, Denis, Denis, and Sarin (1994) and Guay and Harford (2000) find support for the idea that dividends convey information about future investments. Furthermore, DeAngelo *et al.* (2009) claim that dividend distribution could be an efficient device in mitigating information asymmetry problems.

In contrast, Allen and Michaely (2003) argue that rational theories have low explanatory power. In support of this argument, Benartzi, Michaely, and Thaler (1997), Grullon, Michaely, and Swaminathan (2002), and Grullon, Michaely, Benartzi, and Thaler (2005) all find that dividend changes do not predict future earnings growth or improvement in operating performance, contradicting signaling theory.

Different researchers have different views about the relationship among dividend policy and stock prices. Harkavy (1953); Friend and Puckett, (1964); Litzenberger and Ramaswamy (1982); Fama and French (1988); Baskin (1989) and Ohlson (1995) conducted the earlier work on dividend-yield and stock price-volatility in the context of the United States. Rozeff (1982) found a high correlation between value line CAPM and betas and dividend payout for 1000 US firms. In explaining stock returns, Fama (1991) and Fama and French (1992) focus on dividends and other cash flow variables such as accounting earnings, investment, industrial production among others variables. Allen and Rachim (1996) in their study of Australia found no significant relationship between dividend policy and stock prices. Also, Gordon (1963) argues that stock prices are influenced by dividend payouts and reported that firm with large dividends faces less risk in terms of stock price volatility. Some of the hypothetical mechanisms suggest that there is a universal relationship of dividend yield and dividend payout ratio with stock price volatility. Jensen's and Meckling (1976) developed an agency cost argument which suggests that dividend payouts reduce the cost of funds and increase the cash flows of the firm. After paying cash dividends to stock holders, the firm would have less idle funds in the hands of managers to invest in less or negative NPV projects.

According to Miller and Rock (1985); Asquith and Mullin (1983); Born et al. (1984), when a company declares dividends, it provides information to its shareholders to forecast the financial position and the earning ability of the company. But these forecasts also depend upon the source of information whether it is reliable or not. Still there is disagreement among different researchers on the relationship of dividend yield and stock price volatility and it is still unexplained and is considered as debatable in corporate finance. Friend and Puckett (1964) initiated the work on relationship between dividend and stock price volatility. They found a positive relationship among dividend and stock prices. Ball et. al. (1979) found a positive impact of dividend yield on post announcement rate of returns. Michaely (1991) states that long-term individual investors do not affect the ex-day stock prices infect ex-day stock prices strongly affected by the short-term individual investors and corporate traders. Baskin (1989) argues that there is significant, dominating negative relationship between dividend and stock price volatility.

Contrarily Allen and Rachim (1996) found a significant positive correlation among stock price volatility and earning volatility and leverage, and a significant negative relationship between price volatility and payout ratio. Conroy et al. (2000) found that current dividend announcements are unable to explain the market reaction towards announcements. Nishat and Irfan (2001) argued that both dividend payout ratio and dividend yield have significant effect on stock price volatility. Rashid and Rehman (2008) found a positive but non-significant relationship among stock price volatility and dividend yield in the stock market of Dhaka. Some other studies on stock price volatility in Pakistan include Nishat and Bilgrami (1994) and Nishat (1999). Finally, Nazir M. *et al* (2010) found that dividend policy has a strong significant relationship with the stock price volatility in a sample selected from Karachi Stock Exchange (KSE). The findings are consistent with the earlier researchers of developing economies that price volatility may be reduced by employing an effect corporate dividend policy (Rashid and Rahman, 2008).

3.Methodology:

This paper examines the relationship between stock prices and dividend policy. To test the relationship, we use multiple least square regressions for our analysis. The model developed for this research evaluates the relationship between dividend policy and stock price volatility over a span of the last ten years. The analysis utilizes multiple regressions to describe these relationships and also includes a correlation analysis amongst the variables chosen. All of the data chosen for this research was obtained from the Amman Stock Exchange (ASE) over the periods 2001 -2011.

The dependent variable for this study, stock price volatility, is based on the annual range obtained from the Amman Stock Exchange. This average is then divided by the average of the highest and lowest prices obtained in the year and then squared. In order to obtain a variable comparable to a standard deviation, this measure was averaged for every year chosen with a square root transformation subsequently applied[1].

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[1] This is because standard deviation could be influenced by extreme values (Hussainey *et al*, 2011).

The dependent variable was regressed against two main independent variables, namely payout ratio and dividend policy. The Dividend Yield measure is expressed as the dividend per share (as gross dividends) as a percentage of the share price. On the other hand, Dividend Payout was calculated as the ratio of dividend per share divided by earnings per share and is averaged over all of the years studied.

A rudimentary test of this relationship was formulated in the regression equation:

$$P\text{-}V = a_1 + a_2 DY_j + a_3 PAY_j + e_j \qquad\qquad (1)$$

However, it is necessary to take into consideration certain factors that affect both stock price volatility and dividend policy. According to Baskin (1989), using factors such as asset growth, earnings volatility and firm size as control variables may limit problems in analysis due to the close relationship between dividend yield and dividend payout ratios.

In their analysis, Allen and Rachim (1996) reported a positive relationship between stock price volatility and dividend yield and a negative relationship between stock price volatility and dividend payout. Also, Baskin (1989) revealed a significant negative relationship between dividend yield and dividend payout and share price volatility. The variables chosen to represent the control variables are Earnings Volatility, Size, Long-term Debt, and Growth. Table 01 highlights both the dependent, Independent and control variables of the study.

Table 01. Measures of Variables

Variable	Measure
Dependent Variable	
Price Volatility	Annual range of stock prices divided by the average of the high and low prices in the year, raised to the second power.
Independent Variables	
Dividend Yield	Dividend per share divided by price per share
Dividend Payout	Dividend per share divided by earnings per share
Size	Number of ordinary shares multiplied by price per share
Earnings Volatility	Standard Deviation of earnings for the most recent preceding five years for each year
Long-term Debt	Ratio of Long-term debt to total assets
Growth	The ratio of the change in total assets at the end of the year to the level of total assets at the beginning of the year

Size was measured as the share price multiplied by the number of ordinary shares in issue. A transformation using base 10 logarithm was then applied to obtain a variable that reflects orders of magnitude. Earnings figures for the variable 'Earnings Volatility' represent the earnings before interest and tax (EBIT). Following Dichev and Tang (2009), Earnings volatility is calculated by taking the standard deviation of earnings for the most recent preceding five years for each year.

Figures for long-term debt and total assets represent all interest bearing financial obligations, excluding amounts due in one year[1]. It is calculated as the ratio of long-term debt to total assets and averaged over all the years available. Finally, the Growth in assets was obtained by taking the ratio of the change in total assets at the end of the year to the level of total assets at the beginning of the year and were averages over all the years studied.

Therefore, the dependent variable was regressed against the two independent variables and takes into consideration the control variables chosen to formulate the following regression equation;

$$P\text{-}V = a_1 + a_2 DY_j + a_3 PAY_j + a_4 SIZE_j + a_5 EAR_j + a_6 DEBT_j + e_j \qquad (2)$$

Furthermore, the relationship between dividend policy and stock price volatility may also be attributed to industry patterns and not the individual company policies alone. Therefore, dummy variables are also included and so the regression equation becomes;

$$P\text{-}V = a_1 + a_2 DY_j + a_3 PAY_j + a_4 SIZE_j + a_5 EAR_j + a_6 DEBT_j + a_7 DUMMY_j + e_j \qquad (3)$$

4. Data analysis and discussion

This section represents the data that was collected from the ASE library and publication between the periods of 2001 to 2011. The findings were interpreted and discussed. The section is subdivided into three main parts; descriptive statistics, correlation analysis and regression analysis.

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[1] It is shown as net of premiums and discount.

4.1 Descriptive statistics

This part seeks to show description of the variables by applying the obtained averages in describing the relationship between different variables. Table 1.0 shows a wide description of the statistics summary for the variables that were used during the study. It illustrates statistical median, mean, maximum and minimum and standard deviation.

Table 1. Descriptive Statistics

	P-V	*D-Y*	*D-P*	*SIZE*	*EV*
Mean	0.7365341	0.0407682	0.1260824	10.05999	0.046
Median	0.4608	0.0595	0.5719	9.86	0.035
Maximum	1.752876	0.444726	2.743497	11.97153	0.495
Minimum	-0.33871	0.00	0.00	7.824957	0.011
Std. Dev.	0.3879312	0.0654376	0.1312131	0.8016795	0.055
Sample Size	400	400	400	400	400
(Groups)	(85)	(85)	(85)	(85)	(85)

Price volatility (P-V) was determined by dividing the annual range of stock prices by the average of the low and high prices that were got in that particular year then raised to power 2 (two). Dividend yield (D-Y) was determined by dividing dividend per share by prices per share. Dividend payout (D-P) was determined by dividing dividend per share by the earnings per share. Size was determined by multiplying the number of shares by the share price.

From the results shown on **table 1,** price volatility (P-V) is ranging from -0.33871 to 1.752876 plus a mean value of 0.7365341 and a standard deviation of 0.3879312. The result also shows that **size** had the highest value of mean and the standard deviation, while **earning volatility** had the lowest values of mean and the standard deviation among the variables. It was also realized from the statistics that the minimum value for all the independent variables was 0.00. According to Allen and Rachim (1996), whenever it is presumed that prices for the stock follow a normal distribution model because of the large sample used during the study and no influence of the going ex-dividend for the firms, then, the volatility for the study can be calculated. This was calculated using the formula that was formulated by Parkinson (1980) together with Baskia (1989). In this formula, the mean price volatility 0.7365341 is multiplied by a constant value of 0.6008. The result is 44.25%. This result is in line with the results of Baskin (1989) on the U.S firms that had a 36.9%.

4.2 Correlation analysis

Pearson correlation was applied to find out if there existed any correlation or any level of association between price volatility (P-V) and dividend payout ratio (D-P), price volatility and dividend yield (D-Y), price volatility and Size. The correlation analysis of variables of Jordanian firms during the period of 2001 to 2011 is shown on **table 2:**

Table 2, Correlation Analysis between Variables

	P-V	*D-Y*	*D-P*	*Size*	*E-V*
P-V	1.00				
D-Y	0.0985	1.00			
D-P	-0.3658	0.0256	1.00		
Size	-0.1861	0.0571	0.0621	1.00	
E-V	-0.1327	-0.0060	0.0642	-0.3411	1.00

From **table 2,** there was a significant negative correlation of (-0.3658) between dividend payout ratio (D-P) and price volatility (P-V); this is because poor payout ratio affects share price negatively. The significant level of this correlation is 0.001. This result is consistent with the correlation of -0.0542 determined by Baskin (1989). The result is also in line with the one for Allen and Rachim (1996) which was found to be -0.230. On the other hand, the price volatility had a positive correlation of (0.0985) with the dividend yield (D-Y). This contradicts the findings of Baskin (1989) who obtained a value of (-0.643), but it is consistent with the findings of Allen and Rachim (1996) who obtained a positive result of (0.006). There was also a negative association of (-0.1861) between the Size and the price volatility. At the same time, the Size was positively associated with other independent variables. This could be an indication that larger companies tend to display higher dividend yields

as well as dividend payout ratio as compared to smaller firms. Earning volatility had a positive correlation with the payout ratio as shown from the table. This could be an indication that the Jordanian firms do more payments to their shareholders. From table 2, it was also noted that dividend yield and payout ratio had got a low correlation of 0.0256. This possibly indicated that there were no multi-co linearity problems that could have existed. According to Drury (2008), multi-co linearity problems come into action when there is a 70% or more correlation between the independent variables. Therefore, it can be summed up that, there was a weak correlation between the two variables, and the positive correlation clearly showed that any rise in the dividend yield will cause a weak impact on the dividend payout ratio.

4.3. Regression analysis

A multiple least square regression was applied to find out the relationship between the stock prices and dividend policy of Jordanian firms listed at ASE. **Table 3** shows the results the results for multiple least square regressions.

Table 3 shows the results for regression analysis,

P-V = a1 + a2DYj + a3PAYj + a4SIZEj + a5EARj + a6DEBTj + a7DUMMYj+ ej   (3)

Table 3. Regression Analysis

Dependent Variable: P-V						
Variables	*Coefficient*	*Std.Error*	*t-statistic*	*P-value*	*Summary*	
D-P	-.2117119	.0410692	-3.92	0.000***	**Root**	0.5889
D-Y	-.3500075	.3383224	-0.82	0.361	**R-Squared**	0.3579
E-V	-.0032231	.0002135	-2.95	0.005***	**Adjusted R-squared**	0.1657
Size	-.1138982	.0329953	-3.65	0.001***	**F – Statistic**	7.40
Debt	-.0046144	.0014631	-2.85	0.009***	**(p-value)**	0.0000***
Constant	1.956282	.4433379	5.73	0.000	**No.of observations**	400
*Significant at: ***1% and **5% Level of Significance*						

From the last column of the **table 3** it can be deduced that the value of F of the model is 7.4 and a probability value of 0.00. This indicates that this model is significant in illustrating the changes in prices for the share. The adjusted R-square value indicates that 16.6% changes in stock price volatility are well illustrated by Debt, D-Y, E-V, D-P and Size of the ASE listed firms.

4.4.Empirical results

In order to identify whether there was an effect of independent variables i.e. size, dividend payout ratio, dividend yield, Debt and earning volatility on dependent variable share price volatility, all stable characteristics of the firms included in the research are controlled using fixed effect method. **Table 4** shows the results that were found from equation (1). First, a regression of P-V on the D-P and D-Y minus the control variables was performed for Model 1.

Table 4. Model 1Results

Dependent Variable : P-V						
Variables	*Coefficient*	*Std.Error*	*t-statistic*	*P-value*	*Summary*	
Constant	3.657928	1.812491	2.51	0.015	*R-Sqr within*	0.2046
D-P	-0.1756079	0.032883	-3.49	0.001***	*R-Sqr between*	0.1353
D-Y	0.3123446	0.6128277	0.34	0.934	*R-Sqr overall*	0.0704
E-V	-0.0003686	0.0002445	-1.46	0.147	*F statistic*	3.58
Size	-0.2443869	0.175641	-2.09	0.038**	*(p-value)*	0.0043***
Debt	0.0000139	0.0023023	0.01	0.995	*Number of observations*	400
*Significant at: ***1% , **5% and *10%, Level of Significance*						

The findings show that there is a significant negative relation that exists between the share price volatility (P-V) and the dividend payout (D-P). On the other hand, there is a positive relation between the share price volatility (P-V) and the dividend yield (D-Y) as shown on **table 4.**

The negative relationship between the dividend payout (D-P) and the share price volatility (P-V) remain even after the inclusion of control variables (i.e. size, Debt and E-V) to the regression model. Additionally, the positive relation between D-Y and P-V remains as well and it is seen to be significant. This is also shown on **table 4.** From the results, the association of Debt and E-V with the stock price volatility is determined to be negative and is insignificant. 7.04% variations shown by overall R-square value in P-V are illustrated by D-P, D-Y, Size and Debt of the Jordanian firms listed on ASE.

4.5 Random model effect

This is the second model (Model 2). Under this model, independent variables were added to check whether any change is felt in the coefficient of the dividend yield. This model represents the regression equation (2).

Table 5 shows the findings for random effect Model.

$$P\text{-}V = a1 + a2DYj + a3PAYj + a4SIZEj + a5EARj + a6DEBTj + ej \qquad (2)$$

Table 5. Random Effect Model

Dependent Variable: P-V						
Variables	Coefficient	Std.Error	z-statistics	P-value	rho /	0.076685
constant	1.975625	0.3211598	5.30	0.000	R-Sqr within	0.0801
D-P	-0.211089	0.0279176	-3.77	0.000***	R-Sqr between	0.5006
D-Y	-0.432295	0.6056589	-0.80	0.426	R-Sqr overall	0.1987
E-V	-0.000329	.0001204	-2.62	0.009***	Wald chi2	33.65
Size	-0.336087	0.0246414	-3.17	0.002***	(p-value)	0.0000***
Debt	-0.003269	0.0022494	-2.27	0.023**	Number of observations	400
Significant at: ***1% , **5% and *10%, Level of Significance						

Table 5 gives the findings for the random effect model. It was realized that in this model the dividend yield coefficient was now negative and other variables were just as were expected. This was a clear indication that dividend policy by itself does not influence the stock price volatility. The results obtained from this model are in line with the previous studies, for instance, Allen and Rachim (1996), Travlos et al (2001), and many more.

Finally, dummy variables for the firms were incorporated in the regression analysis. This is represented by regression equation 3. The result is shown on **table 6** below:

Table 6. Equation 3 analysis

Dependent Variable: P-V						
Variables	Coefficient	Std.Error	z-statistics	P-value	rho /	0.076685
constant	1.8976525	0.4311598	5.30	0.000	R-Sqr within	0.0801
D-P	-0.113289	0.0279176	-3.77	0.000***	R-Sqr between	0.5006
D-Y	-0.562295	0.5436589	-0.80	0.426	R-Sqr overall	0.1987
E-V	-0.000329	.0001204	-2.62	0.009***	Wald chi2	33.65
Size	-0.336087	0.0246414	-3.17	0.002***	(p-value)	0.0000***
Debt	-0.003269	0.0022494	-2.27	0.023**	Number of observations	
Dummy	0.0125	0.001124	0.4071	0.6847		400
Significant at: ***1% , **5% and *10%, significance level						

From the results it is noted that there is no significant association between the industrial factors and the stock price variation.

6. Conclusion

The key objective of this research paper was to find out the relationship between the volatility of the stock price and the dividend policy for the Jordanian industrial firms listed at the stock exchange. A data was selected for a period of 10 years between the years 2001 to 2011. A multiple least square regression method was applied to analyze the data.

The results conveyed a negative impact of the two components of the dividend policy that is D-P and D-Y on the share price volatility. This was in line with the findings of some of the previous researchers such as Allen and Rachim (1996). This demonstrated that Jordanian industrial firms had their dividend yield rise, the stock prices tended to stabilize while the price volatility declined and thus lowers the share price risks. The results also demonstrated that higher payout ratios would mean low volatility of the stock price.

According to these results, it would be right to conclude that the dividend policy has an impact on the price volatility. Therefore, the company managers at the Jordanian industrial firms need to effect their firms' share prices by taking into consideration the dividend policy that is attractive to their targets investors.

References

Aharony, J. and Swary, I. (1980), "Quarterly dividend and earnings announcements and stockholders' returns: An empirical analysis," *Journal of Finance*, March, 1-12.

Aharony, J., and Dotan, A. (1994), "Regular Dividend Announcements and Future Unexpected Earnings: An Empirical Analysis," *The Financial Review,* 29, 125-151.

Akbar M., and Humayun Habib Baig (2010), "Reaction of Stock Prices to Dividend Announcements and Market Efficiency in Pakistan," *The Lahore Journal of Economics* 15, 103-125.

Al-Kuwari, (2009), "Determinants of the Dividend Policy in Emerging Stock Exchanges: The Case of GCC Countries," *Global Economy & Finance Journal* ,2, 38-63.

Al-Malkawi, H. N., (2007), "Determinant of Corporate Dividend Policy in Jordan," *Journal of Economic and Administrative Science,* 23, 44-71.

Al-Najjar, B. and Hussainey, K. (2009), "The Association between Dividend Payout and Outside Directorships," *Journal of Applied Accounting Research*, 10, 1, 4-19.

Allen D. E. and Rachim V. S. (1996) "Dividend policy and stock price volatility: Australian Evidence", Journal of Applied Economics, 6, 175-188.

Allen, F. and Michaely, R. (2003), "Payout Policy" In: Constantinides, G., Harris, M., Stulz, R. (Eds.), *Handbook of the Economics of Finance*, North-Holland, Amsterdam

Allen, F., Bernardo, A., Welch, I., (2000), "A Theory of Dividends Based on Tax Clienteles," *Journal of Finance*, 55 (6), 2499 – 2536.

Alli, K., A. Khan and G. Ramirez, (1993), "Determinants of Corporate Dividend Policy: A Factorial Analysis," *The Financial Review*, 28, 523-547.

Ambarish, R, K. John and J. Williams (1987), "Efficient Signalling with Dividends and Investments," *Journal of Finance*, 42, 321-343.

Asquith, Paul and David W. Mullins, Jr. (1983), "The Impact of Initiating Dividend Payments on Shareholders' Wealth," *Journal of Business,* 56, 77-95.

Ball, Ray, Philip Brown, Frank J. Finn, and R. R. Officer, (1979), "Dividend and the Value of the Firm: Evidence from the Australian Equity Market," *Australian Journal of Management* 4, 13-26.

Barclay M, C. Holderness, and Dennis Sheehan (2009), "Dividends and Corporate Shareholders," *Review of Financial Studies*, 22, 2423-2455.

Baskin, J. (1989), "Dividend Policy and the Volatility of Common Stock," *Journal of Portfolio Management, 15* (3), 19-25.

Benartzi, S., R. Michaely, and R. Thaler. (1997), "Do changes in Dividends Signal the Future or the Past?" *Journal of Finance*, 52, 1007–1034.

Bhattacharya, S. (1979), "Imperfect Information, Dividend Policy, and 'The Bird in the Hand' Fallacy," *The Bell Journal of Economics,* 10, 259-270.

Black (1976), "The Dividend Puzzle," *Journal of Portfolio Management*, 2, 5-8.

Born, Jeffery, James Moser, and Dennis Officer (1984), "Changes in Dividend Policy and Subsequent Earnings," *Journal of Portfolio Management*, 3, 56-62.

Brav, A., Graham, J., Harvey, C., Michaely, R., (2005), "Payout Policy in the 21st Century," *Journal of Business*, 59 (4), 451-473.

Brav, Alon, and James B. Heaton. (1997), "The Economic Effects of Prudent Man Laws: Empirical Evidence from Stock Ownership Dynamics," Working Paper, Duke University.

Brealey, R., & Myers, S. (2005), *Principles of Corporate Finance*, London: McGraw Hill,155 – 167.

Brennan, Michael J. (1970), "Taxes, Market Valuation and Corporate Financial Policy," *National Tax Journal*, 23, 417-427.

Brickley, J. A. (1983), "Shareholder Wealth, Information Signaling and the Specially Designated Dividend," *Journal of Financial Economics*, 12, 187-209.

Brigham, F. and J. Gordon, (1968), "Leverage, Dividend Policy, and the Cost of Capital," *Journal of Finance*, 23, 85-103.

Conroy, R., Eades, K., Harris, R., (2000), "A Test of the Relative Pricing Effects of Dividends and Earnings: Evidence from Simultaneous Announcements in Japan," *Journal of Finance*, 3, 1199-1227.

Crutchley, C.E and R.S Hansen, (1989), "A Test of the Agency Theory of Managerial Ownership, Corporate Leverage, and Corporate Dividends," *Financial Management*, 18(4), 36-46.

DeAngelo, Harry, Linda DeAngelo, and Douglas Skinner. (2009), "Corporate Payout Policy," *Foundations and Trends in Finance,* 3:2-3, 95–287.

Dempsey, S. and G. Laber, (1992), "Effects of Agency and Transaction Cost on Dividend Payout Ratios: Further Evidence of the Agency-Transaction Cost Hypothesis," *Journal of Financial Research*, 15, 317-321.

Denis, David J. & Denis, Diane K. & Sarin, Atulya, (1994), "The Information Content of Dividend Changes: Cash Flow Signaling, Overinvestment, and Dividend Clienteles," *Journal of Financial and Quantitative Analysis*, Cambridge University Press, 29(04), 567-587.

Dhaliwal, D. S., Erickson, M., Trezevant, R. (1999), "The Effect of Dividend Initiations on Institutional Stock Holdings: A Test of the Tax-clientele Hypothesis," *National Tax Journal*.

Dichev I.D. et Tang V.W., (2009), "Earnings volatility and earnings predictability", Journal of Accounting and Economics, 47, 160-181.

Drury, C. (2008). Management & Cost Accounting. 7th edition. London: Cengage learning.

Easterbrook, F. H. (1984), "Two Agency-cost Explanations of Dividends," *American Economic Review*, 74, September, 220-30.

Elton, E.J. and M.J. Gruber, (1970), "Marginal stockholder tax rates and the clientele effect," *Review of Economics and Statistics*, 52(1), 68-74.

Fama (1991), "Efficient Capital Markets: II," *Journal of Finance*, *46*(5), 1575-617.

Fama, E. F., and K. French, (1992), "The Cross-section of Expected Stock Returns," *The Journal of Finance*, 47(4): 427-465.

Fama, Eugene F. & French, Kenneth R., (1988), "Dividend yields and expected stock returns," *Journal of Financial Economics*, Elsevier, 22 (1), 3-25.

Fisher, G., (1961), "Some Factors Influencing Share Prices," *Economic Journal* LXXI, 121-141.

Frankfurter, George M., and Bob G. Wood. (2006), "Dividend policy: Theory and practice," London: Academic Press.

Frankfurter, George M., and Elton G. McGoun (2000), "Thought contagion and financial economics: The dividend puzzle as a case study," *Journal of Psychology & Financial Markets*, 1(2), 145–53.

Frankfurter, George M., and William R. Lane. (1992), "The Rationality of Dividends," *International Review of Financial Analysis*, 1(2), 115–30.

Friend. I., & Puckett, M. (1964), "Dividend and Stock Prices," *American Economic Review*, 54, 656-682.

Glen, J., Y. Karmokolias, R. Miller, and S. Shah, (1995), "Dividend Policy and Behavior in Emerging Markets," *IFC Discussion Paper*, No. 26, www.ifc.org

Gordon, M. J, (1963), "Optimal Investment and Financing Policy," *Journal of Finance*, 18 (2), 264-72.

Gordon, M., (1959), "Dividends, Earnings, and Stock Prices," *Review of Economics and Statistics*, 41, 99-105.

Graham, B. and D.L. Dodd, (1951), *Security Analysis: Principles and Techniques*, 3rd edition, New York: McGraw-Hill.

Grinstein, Yaniv and Roni Michaely, (2005), "Institutional Holdings and Payout Policy," *Journal of Finance*, 60, 1389-1426.

Grullon, Gustavo, Roni Michaely, and Bhaskaran Swaminathan. (2002), "Are dividend changes a sign of firm maturity?" *Journal of Business,* 75(3), 387–424.

Grullon, Gustavo, Roni Michaely, Shlomo Benartzi, and Richard H. Thaler. (2005), "Dividend Changes Do Not Signal Changes in Future Profitability," *Journal of Business* 78(5), 1659–82.

Guay, W., Harford, J., (2000), "The Cash-flow Permanence and Information Content of Dividend Increase versus Repurchases," *Journal of Financial Economics*, 57, 385-415.

Guo H. (2002) "Stock market returns, volatility and future output", available at: http://www.research.stlouisfed.org/publications/review/02/09/75-86Guo.pdf.

Harkavy O. (1953), "The Relationship Between Retained Earnings and Common Stock Price for Large, Listed Companies," *The Journal of Finance*, 8(3), 283-297.

Healy, P. M. and Palepu, K. G. (1988), "Earnings Information Conveyed by Dividend Initiations and Omissions," *Journal of Financial Economics*, 21(2), 149-176.

Higgins, 1972; Higgins, R.C., (1972), "The Corporate Dividend-saving Decision," *Journal of Financial and Quantitative Analysis*, 7(2), 1527-1541.

Holder, M. E., Langrehr, F. W. & Hexter, L. (1998), "Dividend Policy Determinants: An Investigation of the Influences of Stakeholder Theory," *Financial Management*, 27 (3), 73-85.

Hotchkiss, E. and Stephen, L., 2002, Empirical evidence on the existence of dividend clienteles, Working paper, Boston College.

Hussainey, K., Mgbame, C. O., & Chijoke-Mgbame, A. M. (2011), "Dividend Policy and Share Price Volatility: UK Evidence," *Journal of Risk Finance*, 12 (1), 57 - 68.

Jensen, M. and W. Meckling, (1976), "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics*, 3, 305-360.

John, K., and Williams, J. (1985), "Dividends, Dilution and Taxes: A Signaling Equilibrium," *Journal of Finance,* 40, 1053-1070.

Kalay, (1982), "The Ex-dividend Day Behavior of Stock Prices: A Re-examination of the Clientele Effect'', Journal of Finance, 4, 1059– 1070.

Kalay, A. and U. Loewenstein, (1985), "Predictable Events and Excess Returns: The Case of Dividend Announcements," *Journal of Financial Economics*, 14, 423-449.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer and R. Vishny, (2000), "Agency Problems and Dividend Policy around the World," *Journal of Finance*, 55, 1-33.

Lintner, J., (1956), "Distribution of Incomes of Corporations Among Dividends, Retained Earnings, and Taxes," *American Economic Review*, 46, 97-113.

Litzenberger, R. H. and Ramaswamy, K. (1979), "The Effect of Personal Taxes and Dividends on Capital Asset Prices," *Journal of Financial Economics*, 7 (2), 163-95.

Litzenberger, R., and K. Ramaswamy, (1982), "The Effects of Dividends on Common Stock Prices: Tax Effects or Information Effects?" *Journal of Finance*, 37, 429-443.

Lloyd, William P., John S. Jahera, and Daniel E. Page, (1985), "Agency Costs and Dividend Payout Ratios," *Quarterly Journal of Business and Economics,* 24, 19-29.

Michaely, Roni. (1991), "Ex-dividend Day Stock Price Behavior: The case of the 1986 Tax Reform Act," *Journal of Finance*, 46(3), 845–59.

Miller, M. and D. Modigliani, (1961), "Dividend Policy, Growth, and the Valuation of Shares," *Journal of Business*, 34, 411-433.

Miller, M. and K. Rock, (1985), "Dividend Policy under Systematic Information," *Journal of Finance*, 40, (4), 1031-1051.

Miller, M. H. (1986), "Behavioral Rationality in Finance: The case of dividends.

Miller, M.H. and Modigliani, F. (1961), Dividend policy, growth and the valuation of shares, The Journal of Business, 34, 411-33.

Mohd, M., L. Perry, and J. Rimbey, (1995), "An Investigation of Dynamic Relationship Between Agency Theory and Dividend Policy," *The Financial Review*, 30, 367- 385.

Mueller, D., (1967), "The Firm Decision Process: An Econometric Investigation," *Quarterly Journal of Economics*, 81, 58-87.

Nazir, MS., Nawaz, M.M., Anwar, W. and Ahmed, F. (2010), "Determinants of Stock Price Volatility in Karachi Stock Exchange: The Mediating Role of Corporate Dividend Policy," *International Research Journal of Finance and Economics*, 55, 100- 107.

Nishat, M. (1999), "The Impact of Institutional Development on Stock Prices in Pakistan," Doctoral Dissertation, Auckland Business School, University of Auckland

Nishat, M. and Bilgrami, N. (1994), "Who Pays Dividend - An Exploratory Analysis of Firms Listed with Karachi Stock Market," *Saving and Development*, No.3, XVIII.

Nishat, M. and Irfan. CM (2001), "Dividend Policy and Stock Price Volatility in Pakistan," Paper Presented at 19th Annual General Meeting of PSDE, Pakistan Institute of Development Economics, Pakistan.

Ohlson, J. A. (1995), ''Earnings, Book Values, and Dividends in Security Valuation,'' *Contemporary Accounting Research*, 11, 661–687.

P´erez-Gonz´alez, Francisco. (2003), "Large Shareholders and Dividends: Evidence from U.S. Tax Reforms," *Working Paper*, Stanford Graduate School of Business.

Parkinson, M., 1980. The extreme value method for estimating the variance of the rate of return. Journal of Business 53, 61–65.

Penman, Stephen (1983), "The Predictive Content of Earnings Forecasts and Dividends," *Journal of Finance* 38, (4),1181-1199.

Poterba, J. and L. Summers, (1984), "New Evidence that Taxes Affect the Valuation of Dividends," *Journal of Finance*, 39, 1397-1415.

Rashid, A. and Rehman, AZMA (2008), "Dividend Policy and Stock Price Volatility: Evidence from Bangladesh," *Journal of Applied Business and Economics,* 8 (4), 71-80.

Rozeff, M. S. (1982), "Growth, Beta and Agency Costs as Determinant of Dividend Payout Ratios," *Journal of Financial Research*, Fall, 249-59

Saxena, A. (1999), "Determinants of Dividend Policy: Regulated Versus Unregulated Firms," *Financial Management Association Conference*.

Seida, Jim A. (2001), "Evidence of Tax-clientele Related Trading Following Dividend Increases," *Journal of the American Taxation Association,* 23:1, 1–21.

Walter J. E. (1963), "Dividend policy; its' influence on the value of the enterprise", Journal of Finance,18, 280-291.