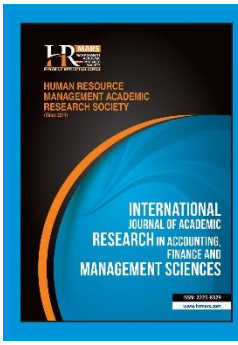

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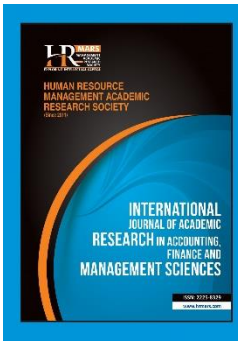
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# Dividend Policy and Price Volatility. Empirical Evidence from Jordan

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**Abstract**
The aim of this paper is to investigate the influence of the dividend policy on the share price volatility for the Jordanian industrial firms. All the 77 Jordanian industrial firms listed at Amman Stock Exchange for twelve years from 2000 to 2011 have been selected. Descriptive analysis, correlation analysis and a cross-sectional time series multiple least square regression method have been used to present data analysis, test hypotheses, and achieve the objective of the study. The experiential results showed significant negative effect of the two components of the dividend policy D_Y and D_P, on the share price volatility, indicating that as the Jordanian industrial firms increase their dividend yield and/or dividend payout, the stock prices tend to stability, as the price volatility fall, and thus, the share price risks fall. Moreover, the results conclude that the dividend policy has an impact on the price volatility, and that the managers of the Jordanian industrial firms have the ability to affect their firm's share price by adapting dividend policy that suits their target investors. Moreover, the study suggests that duration effect theory and signaling theory are relevant in determining the share price volatility in the Jordanian equity market.
**Keywords:** Dividend Policy, Share Price, Jordan

## Introduction

Dividend policy of the company determines the portion to be distributed to shareholders through dividends, and the portion to be held in order to reinvest. As the main goal of financial management is to maximize the wealth of the firm's owners, the main aspect of the paper is to inspect the association between dividend policy and the market value of the firm's shares. Dividends are more than just an instrument to distribute net surplus revenue of costs, that any significant difference in the rate of distributions may have an impact on share prices, and here comes the important role of management, which is, reaching a dividend policy that achieve maximizes the wealth of the owners of the company. The dividend policy became an important topic in the financial literature, since public shareholding companies came into existence. One of the most complicated topic in business is the dividend policy, in his study regarding dividend, Black (1976), suggested that the more we come across the dividend portrait, the further it seems like a puzzle, with parts are not jointly well. Why owners prefer dividends on retained earnings, and why they recompense managers who pay a constant growth rate of annual dividends is still mystery. Even with long

days of hypothetical and experimental investigation, the dividend policy stills a foundation for argument and disagreement, especially the aspect that connects the dividend policy with share price volatility. Dividend policy can take one of two methods: the managed dividends and the residual dividends. In the residual method, the portion to be distributed is simply the amount of net profit that exceeds all attractive investments using net present value method. The managed method is generally used when managers believe that dividends are very important to the investors and play a major role in determining the share price. On the other hand, firms usually take on the dividend policy that fits the stage of their life cycle.

The practical researches which have mostly concentrated on developed economies have concluded that dividends and share prices are significantly associated (Zhou and Ruland, 2006; Pandey, 2004), as increasing dividend improve investor's confidence, this leads them to discount firm's cash flow at a inferior required rate, causing a rise in the share price, while lessening dividend magnifies the investor's uncertainty, causing the share price to fall-down. The possibility that dividend policy of the Jordanian industrial firms (JIF) listed at Amman Stock Exchange (ASE) affects the share price volatility triggers the investigation to be undertaken, as there is no firm theory or existing model to clarify how dividend policy affect the market value of the company's shares. This paper aims to clarify the association between dividend policy and stock prices for the JIF listed at ASE in the hope to help management to redraw dividend policies and to verify or refute academic interpretation of the practice of paying dividends.

To achieve the goals of the study, Necessary financial data have been obtained from ASE. Firms in the financial sector or services sector have been excluded. The population of the study includes all the 77 listed JIF. The sample data are twelve years of unbalanced cross-sectional panel data ranging from 2000 to 2011, result in 892 firm-year observations. Price volatility as the statistical measure of the dispersion in stock returns is set as the dependent variable, two proxies of the dividend policy have been used as the explanatory variables: the dividend yield and dividend payout ratio, the estimation model also includes two control variables: firm size and growth in assets. Descriptive analysis, correlation analysis and a cross-sectional time series multiple least square regression method have been used to present data analysis, test hypotheses, and achieve the objective of the study.

**Literature Review**

The impact of the dividend policy on the stock price volatility has been tested early by many researchers (Gordon, 1959; Miller and Modigliani, 1961; Baskin, 1989; Allen and Rachim, 1996). Some theories i.e., irrelevant theory, bird-in-hand theory, signaling theory, clientele effect theory, and tax preference theory were developed to explain the effect of the dividend policy on stock price volatility.

Under assumptions that there are no taxes or transactional cost, investors are rational, and management acts in the best interests of the shareholders, Miller and Modiglani (1961) claim that dividend policy is irrelevant because it has no effect on stock price. MM claimed that the risk and income from assets are the key source of the stock price.

Al-Malkawi (2007) has concluded that, as a result of ambiguity of future income, investors frequently are likely to favor dividends instead of capital gains. Thus, dividends are appreciated by investors in a different way from retained earnings. This point of view is consistent with the view that "A bird in hand is worth more than two in the bush", and supports the results of (Gordon and Shapiro, 1956; Ross, 1977; and Bhattacharya, 1979).

The announcement of dividend can be considered a way to settle and reduce the agency problems, which arise due to the conflict of interest between the management and the owners of the firm. While managers are expected to act in the best interests of the owners, they are motivated to compose decisions, directly or indirectly, that best serve their interest. Owners will prefer present dividends over capital gain to reduce the chance that the managers will use the free cash for their own interest. Increasing the dividend will limit the free cash available for managers and reduces the acuity of agency problem, which can be reflected in the stock price.

In his study, Pettit (1972) has concluded that the dividend paid to shareholders bears huge information about the prediction of the firm. Hiking up the dividend can be seen as a good sign, as managers raise the dividend only when they are sure that earnings have eternally increased. This action signals to the owners that managers are working in their best interest, and thus, can affect the share price positively.

In his study, Al-Malkawi (2007), divided the clientele effect to: tax effects and transaction cost, Al-Malkawi suggested that investors on the upper tax bracket would prefer retained earnings or capital gain in the form of stock price improvements on dividend, while investors in the lower tax bracket might prefer dividend on retained earnings in the form of stock price improvements. As for the transaction cost, Al-Malkawi suggested that investors that cannot afford the high selling fees, would prefer dividend on price improvements, especially if they depend on the dividend to satisfy their funding needs.

Yasir et al (2012) aimed to investigate the association between dividend policy and stock price volatility in Pakistan. They concluded that the stock volatility is affected by the dividend policy, as the dividend yield (dividend payout ratio) are positively (negatively) associated with price volatility. One more result is that the signaling theory effect is applicable in defining the stock price volatility in Pakistan.

In his study Jecheche (2012) investigated the impact of the dividend policy on share volatility in Zimbabwe. Utilizing the cross-sectional regression analysis for the estimation model, and two proxies of the dividend policy, and controlling for firm size, earning volatility, leverage and asset growth, the study has concluded that the two proxies of the dividend policy have significant effect on the price volatility, also the study offers empirical evidence supporting the signaling and arbitrage realization effects in Zimbabwe.

Hashemijoo et al (2012) examined the effect of the dividend policy on the stock price volatility in Malaysia. The main results of the study show that the price volatility is associated negatively with both proxies of the dividend policy, and that the dividend yield and firm size have the highest significant effect on the stock volatility of all other variables.

Okafor et al., (2011) tested the impact of the dividend policy on stock price volatility in Nigeria. The study confirmed the impact of the dividend policy on the price volatility. While the results showed a statistically significant negative effect of the D_Y on the P_V, the result of the impact of the D_P ratio on the P_V showed negative and positive effect during the years of the study.

**Methodology of Research**

The conflict of thoughts whether dividend policy is relevant or not, is the center of a great deal of attention, and continues to be a source of disagreement aspect between financial researchers all over the world, thus, the main question that the study aims to answer is: Is there a statistically significant effect of dividend policy in the Jordanian industrial firms

on their share price volatility, and therefore on the share price risks? Accordingly, the study aims to examine the following null hypothesis:

*$H_0$: There is no significant effect of the dividend policy on the price volatility for the Jordanian industrial firms listed at ASE.*

Following Baskin, (1989) the multiple least square regression method has been adopted to achieve the objectives of the study and test its hypotheses. The explanatory variables i.e., dividend yield and dividend payout ratio, have been used to explain the firm's price volatility while controlling for firm's size and growth in assets.

**Sample and Data**

Following Muhammad et al., (2011), Firms in the financial sector or services sector have been excluded. The population of the study includes all the 77 listed Jordanian industrial firms divided to eleven sectors i.e., Chemical, Electrical, Engineering, Food and beverages, Glass and ceramic, Mining and extraction, Paper and cartoon, Pharmaceutical and medical, Printing and packaging, Textiles leathers and clothing, and Tobacco and cigarettes. The sample data are twelve years of unbalanced cross-sectional panel data ranging from 2000 to 2011, result in 892 firm-year observations. Necessary financial information has been extracted from the historical information, which is provided by Amman Stock Exchange (ASE).

**Estimation Model**

To test the hypothesis of the study, the price volatility can be seen as a function of the dividend policy, which includes dividend yield and dividend payout ratio, and the estimation model, can be estimated as follows:

$$P_{V\,it} = \alpha + \beta_1 D_{Yit} + \beta_2 D_{Pit} + \varepsilon_{it} \quad (1)$$

Where; $P_V$ is the price volatility for $i^{th}$ cross-sectional company for the $t^{th}$ period, as *i = 1,2,3,…,77, t = 1,2,3,…,12*; $\alpha$ is constant; $\beta$ unknown parameters of the firm's dividend policy which includes $D_Y$ and $D_P$ to be estimated; $\varepsilon_{it}$ is the random error.

Because the size of the firm may affect the dividend policy, as Baskin, (1989) concluded that companies that do not have ownership concentration use the dividend as a signaling tool, and because the dividend policy may be affected by the growth of the firm, as firms in the growth phase retain their profit and do not distribute it, two control variables i.e., firm's size and growth in assets are added, and the estimation model is modified as follows:

$$P_{V\,it} = \alpha + \beta_1 D_{Yit} + \beta_2 D_{Pit} + \gamma_1 SIZE_{it} + \gamma_2 G_{Ait} + \varepsilon_{it} \quad (2)$$

Where; $P_{V\,it}$ is the price volatility for $i^{th}$ cross-sectional firm during the $t^{th}$ period, $\alpha$ is constant; $\beta$ unknown parameters of the firm's dividend policy which includes $D_Y$ and $D_P$ to be estimated; $\gamma$ unknown parameters of control variables included in the estimation model to be estimated; SIZE the firm's size measured by the log of the total assets; $G_A$ growth in assets measured by the ratio of change in total assets; $\varepsilon_{it}$ is the random error.

**Variables Measurement**

*3.3.1. Price volatility:* the price volatility *(P_V)* is the statistical measure of the dispersion in stock returns. P_V is the dependent variable in the estimation model of the study. Price volatility indicates the volume of uncertainty of changes in the stock value. High price volatility indicates that a stock value can theoretically span to cover a large range of values, meaning that the stock price can change significantly within short time horizon in either direction.

Following Baskin, (1989) price volatility can be computed annually by using the following formula:

$$P_{V_{it}} = \sqrt{\frac{HP_{it} - LP_{it}}{\left(\frac{HP_{it} + LP_{it}}{2}\right)^2}} \quad (3)$$

Where; $P_{V_{it}}$ is the price volatility for $i^{th}$ cross-sectional firm during the $t^{th}$ period, $HP_{it}$ the highest stock price for $i^{th}$ cross-sectional firm during the $t^{th}$ period, $LP_{it}$ the lowest stock price for $i^{th}$ cross-sectional firm during the $t^{th}$ period.

*3.3.2. Dividend yield:* the dividend yield *(D_Y)* as one of the proxies of the dividend policy is an indicator of the percentage return on a stock from its dividend. Muhammad et. al., (2011) suggested a positive significant association between the firm's stock price volatility and its dividend yield, so that as the dividend yield rises, the price volatility or the uncertainty about the stock value rises. The *D_Y* can be computed annually by dividing cash dividend per share for common stocks by the per share market value as follows:

$$D_{Yit} = \frac{CDS_{it}}{MV_{it}} \quad (4)$$

Where; $D_{Yit}$ is the dividend yield for $i^{th}$ cross-sectional firm during the $t^{th}$ period, $CDS_{it}$ the cash dividend per common stock for $i^{th}$ cross-sectional firm during the $t^{th}$ period; $MV_{it}$ the market value per common share for $i^{th}$ cross-sectional firm at the end of the $t^{th}$ period.

*3.3.3. Dividend payout:* the dividend payout ratio *(D_P)* is the second proxy of the dividend policy, and one of the two explanatory variables i.e., dividend yield and dividend payout ratio. Hussainey et al., (2011) concluded a negative and significant association between price volatility and dividend payout ratio. This result indicates that as the firms increase their payout ratio, the *P_V* decreases. This result is consistent with the view that increasing the dividend will decrease the uncertainty regarding stock value. The *D_P* can be computed by the ratio of total cash dividend paid out to common stock holders to net income available for common stock holders as follows:

$$D_{Pit} = \frac{TCD_{it}}{NI_{it}} \quad (5)$$

Where; $D_{Pit}$ is the dividend yield for $i^{th}$ cross-sectional firm during the $t^{th}$ period, $TCD_{it}$ the total cash dividend for common stock holders for $i^{th}$ cross-sectional firm during the $t^{th}$ period; $NI_{it}$ the net income after tax available for common stock holders for $i^{th}$ cross-sectional firm during the $t^{th}$ period. To control other variables which can affect the price volatility, two variables are utilized as control variables, i.e. firm's size and growth in assets.

*3.3.4. Firm's size*, prior studies utilized several proxies for firm size, such as total assets, sales revenue, and volume of shareholders and capital stock, (Omar and Simon, 2011). Following Cynthia A. (2012), the log of total asset has been used as a proxy of the firm's size (SIZE), SIZE can be computed annually as follows:

$$SIZE_{it} = \ln(\text{Total assets})_{it} \quad (6)$$

Where; $SIZE_{it}$ is the size of the $i^{th}$ cross-sectional firm at the end of the $t^{th}$ period; $\ln(\text{Total assets})_{it}$ the natural logarithm of the total assets for $i^{th}$ cross-sectional firm at the end of the $t^{th}$ period.

*3.3.5. Growth in assets (G_A)*; *G_A* can be computed as the ratio of the change in the total assets at the end of $t^{th}$ period to the total assets at the beginning of the same $t^{th}$ period. Growth in assets, as a proxy of the firm's growth, may have an inverse association with the firm's price volatility, due to the inverse relationship between the firm's growth rate and dividend payout ratio. Usually, companies keeps their profit and do not distribute it, as a cheaper source of funding, when they are in the process of growth and expansion. *G_A* can be computed annually as follows:

$$G_{Ait} = \frac{\Delta \text{ Total assets}_{it}}{\text{Total assets}_{it}} \quad (7)$$

Where; $G_{Ait}$ is the growth in assets for $i^{th}$ cross-sectional firm during the $t^{th}$ period; $\Delta$ is the annual change.

**Analysis and Results**

The descriptive analysis in table 1 shows the mean, median, standard deviation, range, minimum, and maximum values of the variables. Table 1 shows that the SIZE (G_A) has the highest (lowest) mean value of all variables, with value of 15.73 (.0985). Table 1 also shows that the P_V has a mean value of 0.7188 with a 0.6547 standard deviation, indicating that the price volatility has the highest volatility and highest range among all variables after the firm's size.

*Table 1.* Descriptive analysis of the variables (N=892)

| *Variable* | *Mean* | *Median* | *St.De* | *Rang* | *Min* | *Max* |
|---|---|---|---|---|---|---|
| *P_V* | *.7188* | *.4607* | *.6547* | *7.597* | *0* | *7.597* |
| *D_Y* | *.1898* | *.0495* | *.3968* | *5.905* | *0* | *5.905* |
| *D_P* | *.3218* | *.5819* | *.3469* | *2.163* | *0* | *2.163* |
| *SIZE* | *15.73* | *14.86* | *1.669* | *8.1* | *11.78* | *19.88* |
| *G_A* | *.0985* | *.0303* | *.1642* | *.5757* | *-.1322* | *.4435* |

*P_V is the price volatility and it is the dependent variable in the estimation model of the study; D_Y is the dividend yield and it is one of the two proxies of the dividend policy; D_P is the dividend payout and it is the second proxy of the dividend policy, D_Y and D_P are the two explanatory variables in the estimation model; SIZE is the firm size; G_A is the growth in assets, SIZE and G_A are the two control variables in the estimation model of the study.*

Assuming that the stock price follows a normal distribution, due to the large sample used in the study (Kleninbaum et al., 1998) and no effect of firm's going ex-dividend, the volatility of the study can be computed using the Parkinson (1980) formula by multiplying the mean price volatility 0.7188 by constant value of 0.6008, and the result is 43.18 percent. This result is inline with the result of Hashemijoo (2012) on Malaysian companies with 39.6 percent.

The correlation analysis results are shown in table 2. As for the explanatory variables, Table 2 shows that P_V and D_Y are significantly negatively correlated with a value of -0.0357 at a significant level 0.01, and also, the Table shows that the P_V is significantly negatively correlated with D_P with value of -0.117 at 0.01 significant level. These results are consistent with the result of Hashemijoo (2012) and Yasir et al., (2012).

*Table 2.* Correlation analysis between variables (N=892)

| *Variable* | *P_V* | *D_Y* | *D_P* | *SIZE* | *G_A* |
|---|---|---|---|---|---|
| *P_V* | *1* | | | | |
| *D_Y* | *-.357*** | *1* | | | |
| *D_P* | *-.117*** | *.366*** | *1* | | |
| *SIZE* | *-.390*** | *.150** | *.048** | *1* | |
| *G_A* | *-.263* | *-.181* | *-.076* | *.059* | *1* |

**, ** indicate significant level at 0.05, 0.01 respectively; P_V is the price volatility and it is the dependent variable in the estimation model of the study; D_Y is the dividend yield and it is one of the two proxies of the dividend policy; D_P is the dividend payout and it is the second proxy of the dividend policy, D_Y and D_P are the two explanatory variables in the estimation model; SIZE is the firm size; G_A is the growth in assets, SIZE and G_A are the two control variables in the estimation model of the study.*

Consistent with the view that large firms are more diversified and have less information asymmetry than small firms, Table 2 shows that the P_V and SIZE are negatively associated at significant level of 0.01. Also, the correlation analysis shows insignificant negative correlation between P_V and G_A. Table 2 also shows that the two explanatory variables are positively correlated to firm size, indicating that larger firms tend to have higher dividend yield and dividend payout ratio than smaller firms.

Table 3 shows the results of the regression analysis based on four models: in model 1 the P_V is regressed on D_Y and D_P in the absence of the control variables. Table 3 also shows that P_V is affected significantly negatively by the two components of the dividend policy D_Y and D_P, indicating that the dividend policy can play an important role in determining the share price risk.

*Table 3.* Regression analysis; Dependent variable P_V

| *Variable* | *Model 1* | *Model 2* | *Model 3* | *Model 4* |
|---|---|---|---|---|
| *Constant* | *.0312* | *.0293* | *.0307* | *.0314* |
| *D_Y* | *-2.697*** | *-2.191*** | *-2.308*** | *-* |
| | *.004* | *.002* | *.009* | |
| *D_P* | *-0.609** | *-0.038*** | *-* | *-0.1037** |
| | *.048* | *.008* | | *.014* |
| *SIZE* | *-* | *-.051** | *-.048** | *-.0536** |
| | | *.037* | *.041* | *.043* |
| *G_A* | *-* | *-0.213* | *-.2038* | *-.116* |
| *R-Square* | *0.378* | *0.473* | *.452* | *.447* |
| *Adjusted R-Square* | *0.376* | *.470* | *.450* | *.445* |
| *df Regression* | *2* | *4* | *3* | *3* |
| *Residual* | *889* | *887* | *888* | *888* |
| *Total* | *891* | *891* | *891* | *891* |
| *F* | *270.13* | *199.02* | *244.14* | *239.26* |
| *Sig.* | *0.000* | *0.000* | *0.000* | *0.000* |

*First line regression coefficient, second line Sig. (2-tail). *, ** significant at 0.05 and 0.01respictively. P_V is the price volatility and it is the dependent variable in the estimation model of the study; D_Y is the dividend yield and it is one of the two proxies of the dividend policy; D_P is the dividend payout and it is the second proxy of the dividend policy, D_Y and D_P are the two explanatory variables in the estimation model; SIZE is the firm size; G_A is the growth in assets, SIZE and G_A are the two control variables in the estimation model of the study.*

In model 2, two control variables have been added to ensure the veracity of the results, and increase the explanatory power of the model study. The P_V is regressed on D_Y, D_P, SIZE, and G_A. The negative significant association between P_V and each of D_Y and D_P remained the same. This result confirms the effect of the dividend policy on the price volatility, indicating that firms with higher dividend yield and higher dividend payout ratio have lower price volatility, and thus lower share price risks. Table 3 also shows that the SIZE is negatively associated with P_V at significant level 0.05, and G_A is not significantly affecting P_V. It should also be noted that the control variables did their desired purpose, as the coefficient of determination rose about 25 percent from 37.8 percent to 47.3 percent, as a result of adding the control variables, as shown in Table 3.

In model 3, 4, the D_Y and D_P have been excluded respectively due the possibility of strong association relationship between them. Results of analyzing model 3 and 4 confirm the negative association between P_V and each of D_Y and D_P, and implying that higher dividend yield and/or dividend payout ratio reduces the price volatility. The effect of the firm

size on the price volatility remains the same in model 3 and 4 confirming that lager firms have less price volatility, and thus, less share price risks.

**Summary and Conclusions**

The aim of the study is to investigate the effect of the dividend policy on the share price volatility for the Jordanian industrial firms. All the 77 Jordanian industrial firms listed at Amman Stock Exchange for the period of twelve years from 2000 to 2011 have been selected. Descriptive analysis, correlation analysis and a cross-sectional time series multiple least square regression method have been used to present data analysis, test hypotheses, and achieve the objective of the study.

The experiential results showed significant negative effect of the two components of the dividend policy D_Y and D_P, on the share price volatility, indicating that as the Jordanian industrial firms increase their dividend yield and/or dividend payout, the stock prices tend to stability, as the price volatility fall, and thus, the share price risks fall.

This result provides experiential supporting evidence for the duration effect theory, as the result is consistent with the view that the high dividend yield can be seen as nearby cash, which reduces the uncertainty regarding the firm's cash flows, leading to less fluctuation in the discount rate, and more stability in the price.

In addition, the results of this study provide experiential supporting evidence for the signaling theory, as the results is consistent with the view that high dividends are an indicator of the firm's stability, and thus, inverse association between high dividend yield and high dividend payout is expected, which is consistent with the result of the study.

Based on the foregoing, the results conclude that the dividend policy has an impact on the price volatility, and that the managers of the Jordanian industrial firms have the ability to affect their firm's share price by adapting dividend policy that suits their target investors. Moreover, the study suggests that duration effect theory and signaling theory are relevant in determining the share price volatility in the Jordanian equity market.

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