Dividend policy and stock price volatility of industrial products firms in Malaysia

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Abstract
Purpose – The purpose of this paper is to analyse the relationship between stock price volatility (SPV) and dividend policy of industrial products firms listed on Bursa Malaysia.
Design/methodology/approach – The sample comprises 166 industrial products public-listed firms covering a time span from year 2003 to 2012. Using Baskin’s framework, firm’s SPV is related to dividend payout, controlling for earnings volatility, firm size, leverage and growth of assets. Further, the impact of the global financial crisis on the relationship between SPV and the tested variables is examined.
Findings – Earning volatility significantly explains SPV of industrial product firms during the crisis period, while dividend payout ratio (PR) predominantly influences volatility during pre- and post-crisis sub-periods. The empirical results indicate that dividend policy is a strong predictor of SPV of industrial products firms in Malaysia, particularly during the post-crisis period.
Originality/value – The paper explores the firm’s SPV and dividend policy for a new set of data focusing on industrial products firms listed on the Malaysian Stock Exchange.
Keywords Malaysia, Global financial crisis, Dividend policy, Stock price volatility, Industrial products sector

1. Introduction
Dividend policy is perhaps one of the most debated issues amongst economics and finance researchers. According to the literature, corporate dividend policy directly impacts the firm’s value and shareholders’ wealth (Lintner, 1962; Asquith and David, 1983; Baker and Powell, 1999; Gul et al., 2012). Miller and Rock (1985) highlight that dividend payout has an informational content that provides positive signals of the firm’s future earnings to investors. In a practical context, dividend payout decisions are unique and are interlinked to other management decisions such as capital planning, capital structure, mergers and acquisitions, and asset pricing.

In view of the importance of this corporate policy, the relevance of dividend decisions on stock prices remains to be of interest to researchers since the past five decades, particularly in the context of developing markets. In a prominent study of the US public-listed firms, Baskin (1989) proposed a fundamental theory relating dividend policy to stock volatility. Using the arbitrage realization effect, he suggests that dividends tend to retract a firm’s stock from its fair price. Baskin further emphasises that dividends are not just a set of information flow into the market, but are also a signal of market confidence towards the firm’s performance. Based on these two arguments, dividend policy may significantly affect the volatility of a firm’s stock price.

In the context of emerging economies, stock markets display distinct behaviour compared to their developed counterparts. Capital markets in emerging markets are smaller in size, less efficient and have been regarded as more risky and volatile compared to...
developed markets (Kumar and Tsetsekos, 1999; Bekaert and Harvey, 2017; Laopodis and Papastamou, 2016). While rapid globalization over the past 20 years has brought economies closer together, emerging markets have been described as not being fully integrated within global capital markets (Bekaert and Harvey, 2017). Nonetheless, the importance of stock markets towards the growth of the real economy should not be undermined due to its significant contribution in generating wealth and the potential of its liquidity in steering economic growth (Rousseau and Wachtel, 2000). Hence, studies on the stock markets of emerging countries have remained to be of significant interest to researchers in the field.

Baskin’s theory has been applied in a vast number of empirical research in the context of matured markets[1] as well as emerging markets[2]. The results, however, are inconclusive where some studies note significant positive relationships (e.g. Zakaria et al., 2012), significant negative relationships (e.g. Baskin, 1989; Allen and Rachim, 1996; Hussainey et al., 2011) and insignificant relationships (e.g. Rashid and Rahman, 2009). A plausible reason for the inconsistent findings is due to contextual differences of each study. It has been suggested in the literature that industry-specific analyses are vital to overcome industry variations of dividend payout in order to better understand the impact of dividend policies on stock market variations, particularly in the context of emerging economies.

In view of the aforesaid, this paper heeds the suggestions from the literature (e.g. Baskin, 1989; Rashid and Rahman, 2009; Sew et al., 2015) by investigating the relationship between dividend policy and stock price volatility (SPV) in an emerging economy, Malaysia. Our study is conducted in an industry-specific context by focusing on the industrial products market. The industrial products sector plays a significant role in the country’s transformation from a commodity-based to an industry-based economy, and about 40 per cent of Malaysia’s GDP is contributed by this sector (Malaysian Department of Statistics, 2017a). In February 2017, the industrial production index recorded a higher growth rate of 4.7 per cent compared to the same period the previous year. The growth is attributed to positive expansion in manufacturing, mining and electricity indices (Malaysian Department of Statistics, 2017b). In addition, the dividend payout ratios (PR) of industrial products firms were reported to be on a declining trend with one of the highest standard deviations among industries (Pandey, 2003). Hence, the declining trend of PR implies an adverse effect on stock prices that could potentially dampen investors’ sentiments in regards to this sector.

Building upon the above issues, the objectives of this study are threefold. First, we examine the impact of dividend policy on the SPV of industrial products firms listed on Bursa Malaysia. Second, we further examine the impact of four firm-specific variables, namely, earnings volatility, size, leverage and growth in assets on the volatility of industrial products firms’ stock price. Third, we investigate the impact of the global financial crisis on the relationship between dividend policy and SPV, following evidence in the literature that firms in ASEAN-5 countries had been less generous in their dividend payout during the Asian financial crisis period (see Sawicki, 2009).

This study uses ten-year data (2003-2012) with the aim of unravelling some of the puzzles in regards to dividend policy, by establishing an empirical regularity between dividend policy and SPV in the Malaysian stock market, particularly in the industrial product sector. The Malaysian stock market is classified as an emerging market with unique characteristics as opposed to developed markets. Emerging markets are often smaller in size, more volatile and have less information efficiency (Kumar and Tsetsekos, 1999). A deeper understanding on the true correlation between a firm’s dividend policy and SPV in this market will benefit both management of firms and investors.

The rest of this paper is organized as follows. A brief review of the literature on dividend policy and SPV is presented in Section 2. Section 3 explains the data collection procedures, measurement of variables and the estimation models. Section 4 discusses the results of the estimation models, and Section 5 concludes.
2. Literature review

2.1 Dividend policy theories

Dividend policy relates to the management decision on how much of the company’s earnings are to be paid out to shareholders as dividends vs retaining for reinvestment in new opportunities. In general, there are three schools of thought in regards to the relationship between dividend policy and stock value (Damodaran, 2010). The dividend irrelevance school of thought suggests that dividend policy has no effect on stock price; hence the value of the firm in a perfect capital market will not be affected (Miller and Modigliani, 1961; Black and Scholes, 1974). The second school of thought claims that dividends are bad for the average stockholder because of tax disadvantage which will result in lower value (Brennan, 1970; Litzenberger and Ramaswamy 1979). Finally, the bird-in-the-hand school of thought argue that dividends are favourable and will lead to an increase in the wealth of the shareholders through its influence on stock price (Harkavy, 1953; Gordon, 1963; Pettit, 1972; Ball et al., 1979; Woolridge, 1983). Besides these three theories, the signalling theory describes how the increments of dividend payout convey good signals to the markets related to company’s future earnings (Miller and Rock, 1985) which further translates into upward movements of the share price (vice versa). In the context of the agency cost theory, dividend payments minimise agency costs between the shareholders and managers (Moh’d et al., 1995). Dividend payment displays the manager’s commitment in maximising the shareholder’s investment fund without having to invest the funds into risky and/or unprofitable projects.

2.2 SPV

SPV is used to define the risk of a common stock, whereby, the greater the volatility of a common stock, the greater its risk. Volatility is defined as the variation or deviation of an asset’s returns from their mean (Kotze, 2005). From an investor’s viewpoint, understanding SPV is crucial. Stocks that move by larger margins can be more profitable on the upside, but they also carry greater risk of loss. According to the modern portfolio theory (Markowitz, 1952), investors are rational and risk averse – they want to avoid risk unless they are compensated for taking such risk. Investors usually choose less risky investments as they offer more certainty in returns as opposed to investments with higher risk (Kinder, 2002).

2.3 Dividend policy and SPV

As the impact of a firm’s dividend policy on its stock prices is still an unresolved issue, a number of studies have examined the issue in great depth. A holistic study by Baskin (1989) using data from 1967 to 1986 of 2,344 US firms reveal a dominating negative relationship between SPV and dividend yields (DY). Such results infer that firms with higher DY are associated with lower risk. Similar results are noted by Hussainey et al. (2011) in a study of the UK firms from 1998 to 2007, and by Profilet and Bacon (2013) in a study of 599 US-based companies listed on the S&P 500. Comparable results have been obtained by Allen and Rachim (1996) in the context of the Australian stock market. From a sample of 173 companies from 1972 to 1985, they find that SPV of the Australian stock market tends to decrease when PR increases. In addition, their results show that a firm’s financial leverage and earnings volatility are positively associated with SPV.

Similar studies in the context of emerging markets have also been explored. In Pakistan alone, for example, several studies pertaining to this issue have been conducted. Nazir et al. (2010) used data of 73 firms listed on the Karachi Stock Exchange (KSE) from 2003 to 2008, and results reveal that DY has a positive relationship SPV, while dividend PR has an opposite negative relationship with the volatility of stock price. Meanwhile, Shah and Noreen (2016) discover significant negative relationships between the two measures of dividend policy (dividend payout and DY) with SPV. The data employed by Shah and Noreen (2016) differ from that of Nazir et al. (2010), whereby the authors use data of non-financial firms listed on the KSE from year 2005 to 2012. Interestingly, Hamid et al. (2017) reveal a significant positive
relationship between dividend PR and SPV, using data from 2006 to 2014. However, the varying results may plausibly be due to the sector examined by Hamid et al. (2017), which are financial firms, while Nazir et al. (2010) and Shah and Noreen (2016) studied non-financial firms.

In the context of Jordanian industrial firms, Ramadan (2013) examined the impact of dividend policy on share price volatility for Jordanian industrial firms using data of public-listed industrial firms from 2000 to 2011. Consistent with past studies, Ramadan (2013) found that increases in DY and dividend payout tend to reduce share price volatility. Likewise, in the context of Iran, Lashgari and Ahmadi (2014) reported a significant negative relationship between SPV and dividend policy behaviour of firms listed on the Tehran Stock Exchange.

A number of studies investigating the relationship between dividend policy and SPV have been also conducted in the context of Malaysia. Hashemijoo et al. (2012) use data from 2005 to 2010 to examine the relationship between SPV and dividend policy of 84 consumer products firms listed on Bursa Malaysia. Consistent with past studies, the study reveals that DY and dividend payout are negatively related to SPV. In addition to DY, size of the firm is also strongly related to the share price volatility of Malaysian consumer product companies. However, contradicting results are noted by Zakaria et al. (2012) in a study of 77 construction and material companies listed on Bursa Malaysia from 2005 to 2010. Their results suggest that SPV for construction and material companies are positively related to dividend PR. Meanwhile, a recent study by Sew et al. (2015) employs a large data set of 319 companies from various sectors listed on the Kuala Lumpur Stock Exchange. The study indicates that DY and dividend payout are strongly related to the volatility of stock prices, with a negative sign of relationship.

From the review of literature, it is clear that the evidence in regards to the effect of dividend policy on SPV is inconclusive, particularly in industry-specific contexts. The significance of this relationship is still open for debate and further research regarding this issue is thus warranted, as per the suggestions of Sew et al. (2015).

3. Data, estimation model and variables

3.1 Data
The sample of this study comprises firms that are listed on Bursa Malaysia in industrial products sector from 2003 to 2012. In order for a firm to be included in the sample, it must fulfil two screening criteria:

1. the firm should be continuously listed on Bursa Malaysia from 2003 to 2012; and
2. the firm should have complete financial data that are available in Datastream for the entire period of study.

Based on the above selection criteria, a total of 166 out of 238 firms within the industrial products sector were selected. Firms in the sample had considerable variation in terms of size, earning, leverage, growth and payout. Data were obtained primarily from Datastream and the firms’ annual reports.

3.2 Estimation model
This study adopts Baskin’s (1989) theoretical framework, which are also in line with more recent empirical studies conducted in emerging markets (e.g. Sew et al., 2015; Shah and Noreen, 2016; Sharif et al., 2015; Hamid et al., 2017). Baskin (1989) demonstrates that dividend policy is an effective predictor of SPV even when many financial and industrial factors are controlled for. The basic regression model relates SPV with two measures of dividend policy –PR and DY. The regression equation is as follows:

\[ SPV = \alpha_0 + \alpha_1 DY + \alpha_2 PR + \varepsilon \]  

(1)

Similar to Baskin (1989), earnings volatility (EV), firm’s size (FS), leverage (LEV) and growth in assets (GRO) are included as control variables (see Equation 2). The ultimate
regression equation after incorporating the control variables is expressed as follows:

\[ SPV = \beta_0 + \beta_1 \text{DY} + \beta_2 \text{PR} + \beta_3 \text{FS} + \beta_4 \text{EV} + \beta_5 \text{LEV} + \beta_6 \text{GRO} + e \]  

(2)

To achieve the objectives of this study, the average of all variables from 2003 to 2012 are first computed. Following Equation (1), the SPV is regressed with DY and PR to identify the link between the two independent variables and the dependent variable. In the following procedure, Equation (1) is expanded to include the control variables. A regression analysis is repeated to examine the effects of the control variables on the correlation strengths between SPV and dividend policy. To test the impact of the global financial crisis on the variables, the data are first divided into three sub-periods starting from pre-crisis (2003-2006), during crisis (2007-2008) and post-crisis (2009-2012). Then, regression analyses are performed for each of the three sub-periods to determine the changes, if any, on the estimated relationships.

3.3 Measurement of variables

SPV is the dependent variable in this study. To determine SPV, the annual range of adjusted stock price for all available years is first computed. For each year, the range is divided by the average of the high and the low, and then raised to the second power. The average measures of variances for all available years are then transformed into standard deviations by using a square root transformation. This method of calculation is based on Baskin (1989), Hashemijoo et al. (2012), Sew et al. (2015) and Shah and Noreen (2016). SPV is determined based on the following equation:

\[ SPV = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n} \left( \frac{H_i - L_i}{ \left( \frac{H_i + L_i}{2} \right) } \right)^2} \]  

(3)

where \( H_i \) and \( L_i \) are the highest and the lowest stock price for fiscal year \( i \) for each industrial product firm.

DY is the main independent variable of interest in this study. DY is determined from total dividends per share declared during the fiscal year divided by the market price of the company’s stock as illustrated in Equation (4) (Hussainey et al., 2011; Hashemijoo et al., 2012; Sew et al., 2015; Shah and Noreen, 2016). The yearly average DY of the ten-year period is utilized for analysis:

\[ DY = \frac{\sum_{i=1}^{n} \text{DPS}_i / \text{PRICE}_i}{n} \]  

(4)

where \( \text{DPS}_i \) is dividend per share for fiscal year \( i \), and \( \text{PRICE}_i \) represents the price per share of the common stock for fiscal year \( i \).

PR measures the proportion of total residual profits distributed as dividends to shareholders (Fama and French, 1988; Bali, 2003). Investors are particularly interested in the dividend PR because this indicates how generous a company is in paying out net income to investors. PR represents the proportion of earnings distributed and expressed as a ratio of net earnings. The calculation of PR is based on the ratio of dividends per share to earnings per share (Wild et al., 2007; Marshall et al., 2011; Sew et al., 2015; Shah and Noreen, 2016), as illustrated in Equation (5). The average of the variables for the ten-year period is utilized for analysis. PR is set at one if the total dividends paid exceeded the net income for that year:

\[ PR = \frac{\sum_{i=1}^{n} \text{DPS}_i / \text{EPS}_i}{n} \]  

(5)

where \( \text{DPS}_i \) denotes dividends per share for fiscal year \( i \), and \( \text{EPS}_i \) is the earnings per share for fiscal year \( i \).
3.4 Control variables

3.4.1 Firm size (FS). Many empirical researches have documented the effect of firm size on stock volatility. Black (1976a, b) and Christie (1982) argue that smaller firms tend to react more strongly to idiosyncratic shocks and are likely to experience a larger volatility. Cheung and Ng (1992) observe that the impact of shocks on prices of small firms is more uncertain and will cause wider price movements and hence larger volatility. In general, small firms are less diversified as compared to larger firms in terms of operations and geographic location. As such, their stock price will tend to experience higher volatility. In this study, the natural logarithm of market value of the firm is chosen as an indicator for firm size (Baskin, 1989; Al-Malkawi, 2008; Sew et al. 2015). This variable is obtained by computing the year-end market value average of the firm for the ten-year period. In order to obtain a variable that reflect the size magnitude, the market value average is then converted to a natural logarithm transformation, as reflected in Equation (6):

\[
FS = \ln \frac{\sum_{i=1}^{n} MV_i}{n}
\]  

(6)

where \(MV_i\) represents market value of the firm at the end of year \(i\).

3.4.2 Earnings volatility (EV). Generally, the more stable the earnings of a firm, the more stable its stock price, hence eventually translating into higher dividend payout. Ball and Brown (1968) and Beaver et al., (1979) demonstrate that the information contained in income is useful in that it is related to stock price. Leroy and Porter (1981) and Shiller (1981) report similar findings in their studies—that stock prices are excessively sensitive to the earnings and dividends. The method of measuring EV employed in this study is similar to Allen and Rachim (1996) and Zakaria et al. (2012). First, the ratio of earnings before interest and tax (EBIT) to total assets for each year is calculated. The average over ten years is then computed, then raised to second power. The standard deviation is obtained by using a square root transformation on the average amount. The EV is expressed as per Equation (7):

\[
EV = \sqrt{\frac{\sum_{i=1}^{n} (R_i - \bar{R})^2}{n-1}}
\]

(7)

where \(R_i\) is the ratio of EBIT to total assets for fiscal year \(i\) and:

\[
\bar{R} = \frac{\sum_{i=1}^{n} R_i}{n}
\]

3.4.3 Leverage (LEV). Over the years, many researchers have found evidence that higher financial leverage is associated to greater stock market volatility (Black, 1976a, b; Christie, 1982; Schwert, 1989). When firms issue new debt securities in a larger proportion to new equity as compared to their prior financial structure, stock volatility increases. When operating risk is assumed to be constant, an increase in financial leverage is expected to instigate greater SPV. Similar to Bowman (1980), Gaver and Gaver, (1993), Peterson (1999) and Al-Malkawi (2008), this study uses debt to equity ratio as the proxy for financial leverage. Thus, LEV can be estimated using Equation (8):

\[
LEV = \frac{\sum_{i=1}^{n} \text{DEBT}_i / \text{EQUITY}_i}{n}
\]

(8)

where \(\text{DEBT}_i\) denotes total debt for year \(i\), and \(\text{EQUITY}_i\) is shareholders’ equity for year \(i\).
3.4.4 Growth in assets (GRO). The literature suggests that there is an association between growth, investment opportunities and risk (Beaver et al., 1970; Eskew, 1979; Chung, and Charoenwong, 1991). Studies have demonstrated that the greater the growth rate and growth opportunities, the higher the firm’s risk – hence inducing greater stock volatility. Firms in the growth stage will continue to invest in property, plant and equipment to facilitate the growth required. Firms in this stage are usually retaining more income for new projects, and it is intuitively appealing to think that the earning stream for new projects is more uncertain as compared to existing projects. Therefore, growth or investment opportunities and SPV are expected to have a direct relationship. This study uses the same basis as Baskin (1989), Allen and Rachim (1996), Hashemijoo et al. (2012) and Sew et al. (2015) to estimate GRO. The change in total assets at the end of the year is first taken and then divided with the total assets at the beginning of the year. Then, the average of the ratio over the ten-year period is computed, as per Equation (9):

$$GRO = \left( \frac{\sum_{i=1}^{n} \Delta \text{ASSET}_i}{\text{ASSET}_i} \right) / n$$ (9)

where $\Delta \text{ASSET}_i$ is change in total assets in year $i$, and $\text{ASSET}_i$ defines the total assets at the beginning of year $i$.

4. Empirical results
4.1 Descriptive statistics
Table I summarizes descriptive statistics of all the variables included in our regression model for the full sample and three sub-periods.

Baskin (1989) suggests the standard deviation of stock returns that is equivalent to the measured volatility can be estimated by using the formulas derived by Parkinson (1980). Adopting Baskin’s method, we found that the volatility for Malaysia Industrial product firms is 41.62 per cent[3]. This result is in line with Hashemijoo et al. (2012) who reported a 39.60 per cent standard deviation of stock returns for 84 consumer products companies in Malaysia from 2005 to 2010. The volatility of stock price of industrial products firms is therefore much lower compared to the volatility of the construction and material markets in Malaysia, computed as 56.72 per cent (Zakaria et al., 2012). The standard deviation of 41.62 per cent in stock returns is considerably high relative to those of developed markets (Baskin, 1989; Hussainey et al., 2011; Allen and Rachim,1996).

On average, firms in the industrial products sector have a DY of 2.36 per cent. This result is consistent with the findings of Hashemijoo et al. (2012) and Zakaria et al. (2012) as they reported mean values of 3.80 per cent in consumer products firms and 2.20 per cent for Malaysian construction and material firms. The findings are also consistent with the DY of 3 per cent

<table>
<thead>
<tr>
<th>Panel A</th>
<th>Panel B</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>SPV</td>
<td>0.6928</td>
</tr>
<tr>
<td>DY</td>
<td>0.0236</td>
</tr>
<tr>
<td>PR</td>
<td>0.2489</td>
</tr>
<tr>
<td>FS</td>
<td>11.6776</td>
</tr>
<tr>
<td>EV</td>
<td>0.0686</td>
</tr>
<tr>
<td>LEV</td>
<td>0.5550</td>
</tr>
<tr>
<td>GRO</td>
<td>0.1649</td>
</tr>
</tbody>
</table>

Table I. Descriptive Statistic for the tested variables
across sectors, as reported by Sew et al. (2015). During 2003-2012, industrial products firms recorded a mean score of 24.89 per cent for PR. This result indicates that industrial products firms pay a higher portion of net income to investors compared to construction and material firms with a mean score of 18.24 per cent as reported by Zakaria et al. (2012). However, Hashemijoo et al. (2012) found that the consumer products firms in Malaysia were more generous towards their shareholders with a mean PR score of 37.25 per cent. The dividend payout reported by Sew et al. (2015) also indicates a PR of 30 per cent by firms across all sectors. In general, the PR for Malaysian stocks is lower than those of developed markets such as the UK, the USA and Australia (see Hussainey et al., 2011; Allen and Rachim, 1996).

Next, we segregated the sampling period into three sub-periods to cater for pre-, during and post-crisis periods. The statistical description shows that SPV is very much higher during the period of 2007-2008 (59.37 per cent) as compared to pre-crisis and post-crisis sub-periods (43.7 per cent). These results corroborate with the findings of Angabini and Wasiuzzaman (2011) which suggest that the volatility of the Malaysian stock market increases by 24.5 per cent during the global financial crisis. It is also evident that the Malaysian stock market experienced high volatility for just a short period of time, from 2007 to 2008. The SPV eventually returned to pre-crisis level in 2009. This observation is consistent with the finding of Schwert (2011). Schwert (2011) highlights that the sharp increases in the volatility of the USA, the UK and Japan stock markets during the crisis are relatively short lived, and volatility recovers to more normal levels relatively quickly. The high levels of stock market volatility during the crisis may be due to the concerns about the stability of the financial system, absence of liquidity, concerns about systemic risk and speculation about the future economic conditions of the whole economy.

The effect of the global financial crisis can also be seen from the mean score of EV (during crisis: 0.0847, pre-crisis and post-crisis: 0.07). The unprecedented financial crisis had triggered a downturn or recession in many countries throughout the world. The disappearance of immense financial wealth in the immediate aftermath of the crisis spilled over into the real economy. As people have less wealth (in this case, the producers and consumers of durable products), they are apt to spend less. Less spending results in markedly lower output affecting the earnings of firms.

The average PR and DY values remain stable during the three sub-periods (0.02 for DY, and 0.23 to 0.25 for PR). This finding confirms previous evidence (Ling et al., 2008) that the dividend policy of firms in Malaysia is rigid and sticky. One possible explanation for this could be that the firm’s management always seek to limit the probability of a dividend cuts and aim to maintain dividend levels even when the performance of the firm is deteriorating. The reluctance to cut dividends is driven, in part, by the significant negative market reaction to dividend cuts (DeAngelo et al., 2008). The dividend smoothing behaviour found in the Malaysian market is consistent with the US market. Brav et al. (2005) highlight that public-firm managers consider maintaining stable dividends as top priority. These managers would rather be selling assets, laying off a large number of employees, borrowing heavily or bypassing positive NPV projects in order to avoid having to cut dividends.

Another observation from the statistical description is that the firm’s GRO is seriously affected by the financial crisis (pre-crisis: 0.1572, during-crisis: 0.047 and post-crisis: 0.0372). A plausible explanation for this is that during the global financial crisis, firms experience credit rationing in capital markets. They find difficulties in initiating or renewing their credit lines and have to pay higher cost of borrowing. During this difficult period, the credit-constrained firms start to cut spending, employment, and some firms even sell their assets to fund operations. The inability to borrow externally causes many firms to forgo attractive investment opportunities. Campello et al. (2010) show that many investments in attractive projects are restricted during the crisis, and more than half of the respondents cancel or postpone their planned investments.
4.2 Determinants of SPV of industrial products firms

4.2.1 Full sample. The first stage of analysis aims to identify the impact of dividend policy on the SPV. In doing so, we estimate SPV on DV and DY (Equation 1). From Table II, it is evident that there is a significant negative relationship between SPV and DY ($\alpha_1 = -1.995$, $\rho < 0.01$) and between SPV and PR ($\alpha_2 = -0.430$, $\rho < 0.01$). For this model, the independent variables explain 41.3 per cent of the variability of the dependent variables. The overall results suggest that dividend per se may influence the SPV.

Using the full sample period, we proceed to conduct re-estimations by including the control variables as per Equation (2) in the second stage. The regression results are presented in Table III. Contrary to Hashemijoo et al. (2012), who fail to find any significant relationship between SPV and dividend policy in Malaysian consumer products firms, the present study reveals a significant negative relationship between SPV and DY and between SPV and PR. Based on the literature, dividend policies implemented across different industries tend to vary, hence it is not surprising that different results are attained for Malaysian industrial product firms. These results are expected and are in agreement with Baskin’s (1989) findings. Firms that pay out high dividends are usually more matured, profitable, stable and less risky. Lower risk translates to less volatile price movements of stocks.

Another variable that has statistically significant impact on SPV is EV ($\beta_4 = 0.637$, $\rho < 0.01$). The results show that SPV and EV are positively correlated. Firms with stable earnings are less risky than firms with volatile earnings. Thus, these firms have more stable stock price movements and a higher ability to distribute dividends.

The regression outcome also indicates that FS is negatively associated with SPV ($\beta_5 = -0.020$, $\rho < 0.05$). Large companies are usually more diversified, matured and have a strong market positions. Moreover, large companies are normally financially sound, which make its stocks less risky and less volatile. However, the relationship between LEV and SPV

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>SE</th>
<th>$\beta$</th>
<th>$t$-stat</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>0.847</td>
<td>0.019</td>
<td></td>
<td>45.135</td>
</tr>
<tr>
<td>DY</td>
<td>$-1.995$***</td>
<td>0.788</td>
<td>$-0.226$</td>
<td>$-2.531$</td>
</tr>
<tr>
<td>PR</td>
<td>$-0.430$***</td>
<td>0.083</td>
<td>$-0.462$</td>
<td>$-5.174$</td>
</tr>
<tr>
<td>$R = 0.648$</td>
<td>$R^2 = 0.420$</td>
<td>Adj. $R^2 = 0.413$</td>
<td>$F$-stat. = 59.020</td>
<td>$F$-prob. = 0.000</td>
</tr>
<tr>
<td>Notes:</td>
<td></td>
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</tbody>
</table>

Table II. Regression result based on Equation (1) for period 2003-2012

<table>
<thead>
<tr>
<th></th>
<th>Full sample</th>
<th>Pre-crisis</th>
<th>During crisis</th>
<th>Post-crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.000</td>
<td>1.025</td>
<td>1.141</td>
<td>1.111</td>
</tr>
<tr>
<td>DY</td>
<td>$-1.815$***</td>
<td>$-0.557$ (0.613)</td>
<td>$-0.408$ (0.709)</td>
<td>$-1.062$ (1.162)</td>
</tr>
<tr>
<td>PR</td>
<td>$-0.344$***</td>
<td>$-0.395$*** (0.081)</td>
<td>$-0.359$*** (0.121)</td>
<td>$-0.426$*** (0.121)</td>
</tr>
<tr>
<td>FS</td>
<td>$-0.020$*</td>
<td>$-0.020$ (0.015)</td>
<td>$-0.012$ (0.018)</td>
<td>$-0.025$ (0.014)</td>
</tr>
<tr>
<td>EV</td>
<td>$0.637$***</td>
<td>$0.541$*** (0.151)</td>
<td>$0.663$*** (0.158)</td>
<td>$0.606$*** (0.183)</td>
</tr>
<tr>
<td>LEV</td>
<td>0.003</td>
<td>0.007</td>
<td>0.040</td>
<td>$-0.006$ (0.008)</td>
</tr>
<tr>
<td>GRO</td>
<td>0.028*</td>
<td>0.010</td>
<td>$-0.006$ (0.124)</td>
<td>$-0.166$ (0.222)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.493</td>
<td>0.358</td>
<td>0.204</td>
<td>0.386</td>
</tr>
<tr>
<td>Adj. $R^2$</td>
<td>0.474</td>
<td>0.334</td>
<td>0.174</td>
<td>0.363</td>
</tr>
<tr>
<td>$F$-prob</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table III. Regression result based on Equation (2)

Notes: We estimated regressions model using the method of Baskin (1989). SE are in parentheses. ***Significant at 10, 5 and 1 per cent levels, respectively
is not statistically significant. In addition, the regression results reveal a significant positive relationship between SPV and GRO ($\beta = 0.028$, $\rho < 0.10$). The greater the growth opportunities and growth rate, the higher the stock's risk which will eventually induce greater SPV. This result is in line with the findings of Lashgari and Ahmadi (2014), indicating that asset growth rate has a significant positive effect on SPV. Finally, the results suggest that the additions of control variables have marginally weakened the associations between dividend policy and SPV. However, with additional control variables into the estimation model, the adjusted $R^2$ improves from 41.3 to 47.4 per cent.

4.2.2 Sub-periods. To investigate the impact of the global financial crisis on the relationship between dividend policy and SPV, we re-estimated Equation (2) according to the three sub-periods. The results in Table III show that SPV and PR are negatively associated ($\rho < 0.01$) in all the three sub-periods. During stable economic conditions, investors are more concerned with dividends than earnings, and investors view the firms with higher payout as more profitable, less risky and stable, and display lower price volatility.

As predicted, EV is positively correlated with SPV ($\rho < 0.01$) for all the three sub-periods. Traditionally, earnings have been used as an indicator to gauge the financial performance of corporations (Maditinos et al., 2006). Firms with stable earnings are less likely to roil markets with earnings announcements that would surprise investors. The stability in stock prices should make the returns on these stocks much more predictable.

EV has the strongest influence on SPV during the crisis ($\beta = 0.663$) as compared to PR ($\beta = -0.359$). This can be interpreted as when the whole economy deteriorates during global financial crisis, investors consider the earning ability of a business to be much more representative of the firm's current and future income potential as compared to dividend distribution. Higher volatility in earnings will spread panic among investors who may seek to abandon their exposure to risky assets including shares. The results highlight that DY, GRO and LEV do not influence SPV.

Based on the regression results for the three sub-periods, it is interesting to note that the adjusted $R^2$ is much lower during the crisis as compared to the pre-crisis and post-crisis sub-periods. This finding suggests that there may be other factors affecting the SPV during crisis. One plausible reason is the confidence level of investors plummet during crisis and hence cause investors to shy away from risky investments such as stocks.

5. Conclusion and policy implications
This paper examined the impact of dividend policy on SPV for industrial products firms listed on Bursa Malaysia. The study covered 166 industrial products firms for a period of ten years (2003-2012). In addition, the relationships between SPV and other variables such as earnings volatility, firm's size, leverage and growth in assets were also examined.

The overall results show that there is a significant negative relationship between dividend PR of firms and SPV, and a significant negative relationship between DY and SPV. These findings suggest that dividend policy is an important predictor of SPV in the industrial product market. The higher the dividend payout and DY, the lower the SPV. Among the control variables, earnings volatility has a significant positive relationship with SPV, suggesting that the more stable the earnings power of a firm, the less volatile its stock price. The relationship between growth in assets and SPV is positively associated and significant at the 10 per cent level. This implies that the greater the growth rate and growth opportunities, the higher the stock's riskiness. Leverage is positively related to SPV but the relationship is not statistically significant. The results also reveal that firm size has a significant negative relationship with SPV. Large firms are generally more profitable, stable and financially sound, and therefore should experience lower volatility in terms of stock price.
To investigate whether there are any changes in the relationship between dividend policy and SPV pre-, during and post-crisis, the findings suggest that dividend PR remains significant in predicting SPV in the industrial product industry in Malaysia. The association between DY and SPV remains negative but statistically insignificant towards SPV. Earnings volatility is found to be significantly and positively related to SPV in all the three sub-periods. Earnings volatility is a dominant determinant of price volatility during the crisis, while dividend PR has greater influence on SPV during the pre- and post-crisis sub-periods. This implies that investors are more concerned with the earning stream of a firm rather than the dividend payment during crisis because the role of earnings is more important in explaining stock prices during the crisis. Investors are hoping that businesses will remain profitable in such difficult times, and it would not be possible for the firm to support the operations of the business without any earnings. The results also reveal that the DY and PR during crisis remain stable and are not materially lower as compared to the pre- and post-crisis periods. This sticky characteristic highlights that industrial products firms in Malaysia are reluctant to cut dividends even during turbulent times. Based on the regression results for the three sub-periods, the adjusted $R^2$ is much lower during the crisis as compared to the pre- and post-crisis sub-periods. This suggests that there may be other important macroeconomic factors affecting the SPV during crisis. Macroeconomic factors such as falling export revenues, currency depreciation and highly volatile capital flows may have greater influence on stock market volatility during crisis as compared to firm-related variables.

The Malaysian industrial product market comprises six sub-sectors namely manufacturing, mining, construction, electricity, gas and water sectors. Our results contribute evidence that is important for two groups of stakeholders in the industrial product market. For investors, the findings provide a clearer picture on the relationship between dividend policy and SPV in these industrial products firms. The research findings can facilitate investors in identifying the best combination of stocks to be selected during their portfolio construction process. The evidence suggests that the dividend PR remains significant in predicting SPV in the industrial product firms, and these firms are generally reluctant to cut dividends even during the crisis period. Hence, the findings imply that investors should include the manufacturing, mining, construction, electricity, gas and water sector stocks into their portfolio, since these firms tend to have stable dividend payout to their shareholders even in turbulent periods. For managers, the results confirm that the dividend announcement conveys important signals to the markets, and the announcement tends to influence the share price movement for industrial product firms. Therefore, the management of these firms need to put forward extra caution in changing the corporate dividend payout policy because the changes will directly influence the firm's SPV.

There are some limitations inherent in the development of this study. The sample of 166 firms makes the study more of an industry-based study rather than inter-industry based one. Thus, it is not representative of the SPV behaviour across various industries in Bursa Malaysia. Studies of different sectors over a longer time horizon may be required to gain complete knowledge on dividend policy behaviour of firms in Malaysia. This study uses six firm-specific variables as the determinants of SPV, hence further extensions to the estimation model encompassing other macroeconomic variables such as inflation rate, volatility in capital flow, interest rate and GDP, may provide a more comprehensive explanation on the behaviour of stock price.

Notes
1. See e.g., Allen and Rachim (1996); Hussainey et al. (2011) and Profilet and Bacon (2013).
3. Taking mean volatility in Table I, $0.6928 \times 0.6008$. 
References


Further reading


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