Factors Determining the Share Price Volatility: Evidence from Listed Companies in Sri Lanka

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Abstract

The objective of this study is to investigate the factors determining the share price volatility of listed companies in the Colombo Stock Exchange (CSE), Sri Lanka. A sample of 72 listed non-financial firms from CSE in Sri Lanka is examined using panel data analysis for five years from 2013 to 2017. Dividend pay-out ratio, dividend yield, dividend per share, sales growth, leverage, exchange rate, firm size, earnings volatility, and GDP are considered as explanatory variables. According to the fixed effect regression analysis, only 22% of the movements in share prices are explained by the explanatory variables considered in this study. Therefore, it is concluded that dividend yield, dividend per share, exchange rates, and firm size have a significant impact on price volatility in the Sri Lankan context. Dividend policy can be considered as a protective mechanism to maintain share price volatility in order to enhance the shareholders' wealth.

Keywords: dividend yield, dividend per share, exchange rate, firm size, share price volatility

JEL Classification: D31, M41, F31, L25, D4
INTRODUCTION

Colombo Stock Exchange (CSE) operates the only one stock market in Sri Lanka, which is considered as the main investment avenue for investors to invest in financial instruments like bonds, derivatives, mutual funds as well as shares in Sri Lanka. The share market plays a significant role in Sri Lankan economic development by raising economic growth and capital formation. The share price is a significant determinant for the investment decision of investors in the share market because investors mainly focus on the price of shares when they decide to invest in shares. However, share prices are fluctuating every day, which depends on various internal factors like dividend payout, dividend yield, dividend per share, sales growth, leverage, earnings volatility, and firm size as well as external factors like exchange rate, inflation, and GDP. Therefore, investors need to have knowledge and awareness about the factors which determine share price in order to make an optimum investment decision (Sharif, Purohit & Pillai, 2015). Thus, it is really important to investigate the factors determining the share prices in the stock market. Numerous studies have been conducted to find out the factors determining share prices. Hence, in the Sri Lankan context, there are very few studies that have been conducted to identify the factors determining the share prices.

In the South Asian economy, the share market is one of the most dominant sectors which performs a vital part in a country's economic growth. Notably, the Sri Lankan economy is directly affected by the share market price. Thus, the share price is one of the significant factors which affect the Sri Lankan economy. Previous literature suggests that there are so many factors influencing when setting the share prices. Such as Dividend Yield, Dividend Pay-out Ratio, Price Earnings Ratio, and Earnings per Share, Size, Net Asset Value per Share, Lending Interest Rate, Inflation Rate, Gross Domestic Product, Retained Earnings, Financial Leverage (i.e., Ganavi, 2018; Mohamed & Nassir, 1993). Ideas generated from the empirical studies in the past, the present study uses dividend payout, dividend yield, DPS, sales growth, leverage, exchange rate, firm size, earnings volatility, and GDP as the independent variable and share price as the dependent variable.

Further findings of this study will help policymakers, investment decision-makers, portfolio managers, share brokers to make better profitable investment decisions and provides empirical evidence for
researchers who are interested in the performance of capital markets. Therefore, the objective of this study is to investigate the factors influencing on share price volatility of listed companies in Sri Lanka. Thus, this study tries to answer the following research question:

*What are the factors affecting share price volatility in the listed nonfinancial firm in Sri Lanka?*

**LITERATURE REVIEW**

There are plenty of different empirical studies have been conducted over different periods across the different market to identify the factors that affect stock prices. According to the previous literature, internal and external factors are the significant determinants of the share price. Some recent studies related to the factors influencing share prices have been reviewed here.

Mehmooda, Ullahb & Sabeeh (2019) conducted a study to examine the determinants of stock price volatility in Pakistan stock exchange by collecting a sample of 15 firms from PSX over the period 2011-2015. Their results revealed that there was a positive relationship between stock price volatility and dividend payout ratio. Besides, earnings volatility and leverage had a negative relationship with stock price volatility. Other independent variables, including assets growth and size, had a positive relationship with stock price volatility.

Singh (2018) investigated the determinants of the share price of the twenty-six non-financial companies listed in Muscat Securities Market, Oman. In this study, closing annual stock price from 2011 to 2016 was the dependent variable and the firm-specific variables like firm size, dividends pay-out, earning per share, debt ratio, price-earnings ratio, first lag of dependent variable (stock price) were the independent variables in the panel data regression using a random-effect model. Further, three economic variables—growth rate in GDP, crude oil prices, and consumer price index—were also considered as independent variables. As per the results, EPS, debt ratio, and first lag of stock prices were significant determinants of stock prices. Dividend payout, firm size, and PE ratio were insignificant determinants of stock prices. The inflation rate and crude oil price were significant at the 10% level. The growth rate in GDP was not seen as important and significant variables for share prices in Oman.

Aveh and Awunyo-Vitor (2017) undertaken a study to examine the influence of firm-specific determinants of stock prices in an emerging
market with particular reference to firms listed on the Ghana Stock Exchange from 2008 to 2014. In this study, panel regression analysis was used to analyze the data. This study found that a positive and significant relationship of ROE, EPS, book value of the share, and market capitalization with the market price of shares. These results suggested that these variables are significant determinants of the market price of shares on the Ghana Stock Exchange. Further, a significant negative relationship was found between the market price of shares and dividend yield. This result suggested that dividend decisions are not critically important in influencing the market price of shares.

Balan and Srinivasan (2017) conducted a study on the determinants of share price with reference to the Bombay Stock Exchange "group a" shares using a sample of 69 companies from 7 industries from 2006 to 2013. The results confirmed the significance of DPS and sales as determinants of market share price by the statistical tool of multiple regression. Further, the result of the study indicated that dividends per share being the strong determinants of the market price. Further, the study supported the liberal dividend policy and suggested a company to pay regular dividends. This policy will affect the market price of the share in a positive direction.

Enow and Brijlal (2016) undertaken a study to investigate the determinants of share prices using fourteen companies listed on the Johannesburg stock exchange from 2009-2013. Through the multiple regression analysis, the authors found that dividends per share, earnings per share, and price-earnings ratio accounts for 57.8% of share price movements. Furthermore, earnings per share and price-earnings were significantly positively correlated to share prices, although dividend per share was not. This finding implied that managers could create value for their shareholders by increasing dividend per share, earnings per share, and price-earnings.

Pradhan and Dahal (2016) conducted a study to analyze the factors affecting the share price of Nepalese commercial banks. Fourteen banks listed commercial banks in NEPSE were considered as a sample, and the study period was 2002/03-2013/14. The results indicated that firm-specific variables like earnings per share, dividend per share, price-earnings ratio, book value per share, return on assets, and size were the significant determinants of the stock price in the context of commercial banks in Nepal. Among the variables considered in their study, the size was
found to be the most important determinant that affects the share price. It means, if larger the firm size, the stock price would be higher. Among the macroeconomic variables such as gross domestic product, inflation, money supply, and gross domestic product were important determinants that affect the share price.

Ghose and Chowdhury (2016) surveyed to examine the microeconomic factors as the determinants of share prices in Bangladesh. The study employed annual panel data for 2010-2014 pharmaceuticals sectors in Bangladesh. The results revealed that the dividend per share, size, and price-earnings ratio had a positive and significant impact on the share prices of pharmaceuticals sectors. The evidence also showed that earning per share and returns on equity were the crucial determinants and positively associated with share prices. Moreover, the net asset value per share positively influences the share prices of the pharmaceuticals sector.

In the context of Sri Lanka, there are few studies carried out to investigate the factors influencing the share price. For example, Dissanayake and Biyiri (2017) were attempted to investigate the impact of internal factors on share price using a sample of 20 hotels in CSE over 2011 – 2015. Researchers performed descriptive analysis, correlation analysis, and regression analysis to analyze the data. This study found that there was a significant impact of earning per share, dividend per share, and return on equity on the share price. Further, there was a strong positive relationship between earning per share and share price. Dividends per share had a strong positive relationship with the share price.

According to Atchyuthan (2017), earnings per share, return on equity, return on asset, and dividend per share had a significant positive association with share price while debt to asset ratio had an insignificant association with the share price. The results of this study revealed that earnings per share and dividend per share were the significant determinants of the share price.

**Hypotheses development**

According to the empirical studies carried out in the past to investigate the determinants of share price volatility, the following hypotheses have been formulated to examine the factors determining the share price volatility in the current study context.
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H1: Dividend payouts significantly influenced on share price volatility
H2: Dividend yield significantly influenced on share price volatility
H3: Dividend per share significantly influenced on share price volatility
H4: Sales growth significantly influenced on share price volatility
H5: Leverage significantly influenced on share price volatility
H6: Exchange rate significantly influenced on share price volatility
H7: Firm size significantly influenced on share price volatility
H8: Earnings volatility significantly influenced on share price volatility
H9: GDP significantly influenced on share price volatility

RESEARCH METHODOLOGY

Sampling and Data Collection

The primary objective of the study is to examine the factors determining the share price volatility of non-financial firms listed in CSE, Sri Lanka. The sample of the study is 72 non-financial firms selected under a random sampling method from a population of 225 non-financial firms. Some firms in the population were eliminated as they do not have enough relevant data and unavailability of annual reports since they have listed in the CSE only before three years. The panel data for this study were retrieved from the annual report of sample firms for a period of five years from 2013 to 2017.

Research Model

The study aims to investigate the factors determining the share price volatility, focusing on listed non-financial firms in Sri Lanka. Panel data takes into account the observations regarding comparable transversal units over a large number of periods, there may be cross-sectional effects on each company or a group of companies.

To select the method of analysis that is most suitable to conduct the empirical analysis, pooled, fixed, and random effect models are performed.

Pooled model:

\[
SPV_{it} = \beta_0 + \beta_1 DP_{it} + \beta_2 DY_{it} + \beta_3 DPS_{it} + \beta_4 SG_{it} + \beta_5 LEV_{it} + \beta_6 EXR_{it} + \beta_7 FS_{it} + \beta_8 EV_{it} + \beta_9 GDP_{it} + \epsilon_{it} \]

(1)
Fixed model:
\[ SPV_{it} = \beta_0 + \beta_1D_{Pit} + \beta_2D_{Yit} + \beta_3D_{PSit} + \beta_4S_{Git} + \beta_5L_{EVit} + \beta_6E_{XRit} + \beta_7F_{Sit} + \beta_8E_{Vit} + \beta_9G_{DPit} + u_{it} \] .............................. (2)

Random model
\[ SPV_{it} = \beta_0 + \beta_1D_{Pit} + \beta_2D_{Yit} + \beta_3D_{PSit} + \beta_4S_{Git} + \beta_5L_{EVit} + \beta_6E_{XRit} + \beta_7F_{Sit} + \beta_8E_{Vit} + \beta_9G_{DPit} + u_{it} + \epsilon_{it} \] .............................. (3)

In the equation,
- \( SPV_{it} \) is the share price volatility of firm \( i \) at time \( t \).
- \( DP_{it} \) is dividend payout of firm \( i \) at time \( t \).
- \( DY_{it} \) is the dividend yield of firm \( i \) at time \( t \).
- \( DPS_{it} \) is the dividend per share of firm \( i \) in time \( t \).
- \( SG_{it} \) is the sales growth of firm \( i \) in time \( t \).
- \( LEV_{it} \) is the financial leverage of a firm \( i \) at time \( t \).
- \( EXR_{it} \) is the exchange rate of firm \( i \) in time \( t \).
- \( FS_{it} \) is the size of firm \( i \) at time \( t \).
- \( EV_{it} \) is the earnings volatility of firm \( i \) in time \( t \).
- \( GDP_{it} \) is the gross domestic product time \( t \).
- \( \beta_0 \) – intercept coefficient of firm \( i \) at time \( t \);
- \( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8 \) & \( \beta_9 \) – row vectors of slope coefficient of regressors
- \( \epsilon_{it} \): Stochastic error term of firm \( i \) at time \( t \)
- \( u_{it} \): error term of firm \( i \) at time \( t \)
Table 1: Variables and their measurements

| Variable                  | Connotation       | Measurements                      | Source                                      |
|---------------------------|-------------------|-----------------------------------|---------------------------------------------|
| Dividend Payout Ratio     | DPR               | Dividend per share                | Harshapriya (2016)                          |
|                           |                   | Earnings per share                | Mehmood, Ullah & Sabeeh (2019)              |
| Dividend yield            | DY                | Dividend per share                | Zakaria et al. (2012) and Harshapriya (2016) |
|                           |                   | Average market price per share    |                                             |
| Dividend per share        | DPS               | Total dividend paid               | Dissanayake (2016)                          |
|                           |                   | No. of ordinary shares outstanding|                                             |
| Sales growth              | SG                | Current year sales - Last year sales x 100 | Amidu & Absor (2006)                       |
|                           |                   | Last year sales                   |                                             |
| Leverage                  | LEV               | Total Debt                        | Harshapriya (2016)                          |
|                           |                   | Total Assets                       |                                             |
| Exchange rate             | EXR               | The rate determined dollar value  | Alam & Rashid (2014)                        |
|                           |                   | against Sri Lankan rupees (log value) |                                             |
| Firm Size                 | FS                | The market value of share * Total number of shares (Natural logarithm of Market capitalization) | Baskin (1989), Sharif, Purohit & Pillai (2015) |
| Earnings volatility       | EV                | The standard deviation of earnings per share over the previous five years | Baskin (1989)                               |
| Gross Domestic Product    | GDP               | Real domestic product of the country | Oskooe (2010), Singh, Mehat & Varsha (2011) |
| Share price volatility    | SPV               | Share Price Volatility = \[
\frac{\left(\frac{\text{MPS}_h - \text{MPS}_l}{\text{MPS}_h + \text{MPS}_l}\right)^2}{2}
\]
|                           |                   | = Highest market price per share  | Baskin (1989)                               |
|                           |                   | = Lowest market price per share   |                                             |

Results and discussion

The following section represents the results and discussion of the present study. Initially, a brief description of the summary statistics on the variables considered in this study has been discussed. Following that, correlation analysis, test to measure variable inflation among the independent variables, and finally, panel data analysis have been discussed to identify the factors determining the share price volatility in Sri Lankan listed non-financial firms.
Descriptive statistics

Table 2 illustrates the descriptive statistics of the independent variables and the dependent variable of this study. This illustration is based on the information collected from the audited annual reports of 72 listed non-financial firms for the period from 2013 to 2017.

Table 2: Descriptive Statistics

| Variables            | Obs | Mean    | St.Dev. | Minimum | Maximum |
|----------------------|-----|---------|---------|---------|---------|
| Dividend Payout      | 360 | .5271   | 1.0967  | -7.6272 | 11.3557 |
| Dividend Yield       | 360 | .0403   | .0410   | 0       | .4735   |
| Dividend Per Share   | 360 | 5.1522  | 11.4525 | 0       | 79.6859 |
| Sales Growth         | 360 | 6.8574  | 19.2777 | 99.4560 | 79.9091 |
| Leverage             | 360 | .3695   | .2199   | .0099   | .9702   |
| Exchange Rate        | 360 | 2.1412  | .0278   | 2.1109  | 2.1831  |
| Firm Size            | 360 | 9.7693  | .5923   | 8.2430  | 11.3517 |
| Earnings Volatility  | 360 | 10.8846 | 3.6695  | .127    | 15.8135 |
| GDP                  | 360 | 4.26    | .7265   | 3.4     | 5       |
| Share Price Volatility| 360   | .1116   | .0860   | 0       | .4665   |

As per the descriptive statistics presented in Table 2, the dividend payout ratio indicates a mean value of .5271 with a range from -7.6272 to 11.3557. Therefore the dividend payout ratio expresses high payouts in Sri Lankan nonlisted firms during the study period and this finding is consistent with the prior study of Harshapriya (2015) in Sri Lanka. The mean value of the dividend yield reports that 0.04 with a minimum yield of 0 and the maximum yield of .4735. Further, the dividend per share of the Sri Lankan listed non-financial firms for the period from 2013 to 2017 indicates the mean value of 5.1522 rupees which is ranging from 0 to 79.6859. Therefore, we could realize the high deviations in the dividend per share to the shareholders during the study period. The average value of the sales growth during the study period is 6.8574, with the ranges from -99.4560 to 79.9091, which expresses the high standard deviation (SD = 19.2777). Anyhow, when we compare the dividend payouts with sales growth, it is relatively low. Averagely, Sri Lankan non-financial firms are using debt capital is 36.95 %. The exchange rate is ranging from 2.1109 to 2.1831 and no significant fluctuations in the exchange rate during the study period. Firm size has a mean value of 9.7693, with a range of 8.2430 to 11.3517. The standard deviation of the earnings per share is considered as earnings volatility. The mean value of the earnings volatility is quite high,
at 10.88. The average GDP of the country from 2013 to 2017 is 4.26. Share price volatility in listed non-financial firms in Sri Lanka has a mean value of .1116. This value indicates share price volatility in Sri Lanka is around 10%, which is ranging from 0 to .4665.

Correlation Analysis

Table 3: Correlations between dividend policy and share price volatility

|     | DPR  | DY    | DPS   | SG     | LEV    | EXR    | FS     | EV     | '   | SPV   |
|-----|------|-------|-------|--------|--------|--------|--------|--------|-----|-------|
| DPR | 1.0000 |       |       |        |        |        |        |        |     |       |
| DY  | 0.4465* | 1.0000 |       |        |        |        |        |        |     |       |
|     | 0.0000 |       |       |        |        |        |        |        |     |       |
| DPS | 0.2039* | 0.2620* | 1.0000 |        |        |        |        |        |     |       |
|     | 0.0001 | 0.0000 |       |        |        |        |        |        |     |       |
| SG  | -0.0091 | 0.1058* | 0.0429 | 1.0000 |        |        |        |        |     |       |
| LEV | -0.0236 | 0.0231 | 0.1803* | 0.1697* | 1.0000 |        |        |        |     |       |
|     | 0.6552 | 0.6626 | 0.0006 | 0.0012 |        |        |        |        |     |       |
| EXR | 0.0021 | 0.0786 | 0.0990 | 0.0777 | 0.0428 | 1.0000 |        |        |     |       |
|     | 0.9680 | 0.1365 | 0.0605 | 0.1413 | 0.4187 |        |        |        |     |       |
| FS  | 0.0789 | -0.0746 | 0.3481* | -0.0329 | 0.0184 | -0.0134 | 0.1000 |        |     |       |
| EV  | 0.1352 | 0.1580 | 0.0000 | 0.5335 | 0.7278 | 0.7997 |        |        |     |       |
| GDP | 0.0726 | -0.0670 | 0.2092* | -0.0226 | -0.1650* | -0.0152 | 0.2653* | 1.0000 |     |       |
|     | 0.1694 | 0.2049 | 0.0001 | 0.6689 | 0.0017 | 0.7737 | 0.0000 |        |     |       |
| SPV | 0.0183 | -0.0292 | -0.0190 | -0.0437 | -0.0212 | -0.2916* | 0.0327 | 0.0054 | 1.000 |
|     | 0.7294 | 0.5809 | 0.7188 | 0.4081 | 0.6885 | 0.0000 | 0.5358 | 0.9183 |     |       |
| SPV | -0.1000 | 0.1200* | -0.3586* | 0.0672 | 0.0929 | -0.0782 | -0.3537* | -0.3021* | 0.0389 | 1.000 |
|     | 0.0579 | 0.0227 | 0.0000 | 0.2036 | 0.0783 | 0.1387 | 0.0000 | 0.0000 | 0.4619 |     |

The correlation analysis presented in Table 3 explains the association between independent variables and the dependent variable. As per the result given in table 3, even there is a negative association between dividend payout ratio and share price volatility that is not significant at a 5% level in this study (r = -0.1000, p > 0.05). Dividend per share (r = -0.3586, p = 0.0000), firm size (r = -0.3537, p = 0.000) and earnings volatility (r = -0.3021, p = 0.000) significantly negatively associated with share price volatility. This negative means that if the dividend per share, firm size and earnings volatility are high, share price volatility will be lower. Therefore, it can be concluded that there is a significant negative relationship between dividend per share, firm size, and earnings volatility with share price volatility. However, the dividend yield shows a significant positive
relationship with share price volatility \( (r = 0.1200, \ p = 0.0227) \) in this study. This positive explains that if the dividend yield is high, share price volatility will also be high. Even though, sales growth \( (r = 0.0672, \ p > 0.05) \), leverage \( (r = 0.0929, \ p > 0.05) \), exchange rate \( (r = -0.0782, \ p > 0.05) \) and GDP \( (r = 0.0389, \ p > 0.05) \) have not shown any significant relationship with share price volatility. As per this correlation output, share price volatility is not influenced by dividend payout, sales growth, leverage, exchange rate, and GDP.

**Regression Analysis**

Other researchers (such as Pratheepan & Banda, 2016) suggest to estimate the panel regression model can go with Pooled Ordinary Least Square model, Fixed Effect model and Random Effect model to verify the firm effects, country effects, time effects, and other factors to determine the factors influencing share price volatility in Sri Lanka.

**Pooled Ordinary Least Square Model**

As per the model (1) developed in this study, it is hypothesized that there are no groups or individual effects between the non-financial firms considered as the sample in this study. Therefore, the pooled OLS model is performed to estimate the model (1), and results are presented in Table 4 below.

**Table 4: Pooled regression analysis to identify the factors determining the share price volatility**

| Variable              | Coefficient | Std.Error | t-Statistic | Prob. | (95% Conf. Interval) |
|-----------------------|-------------|-----------|-------------|-------|----------------------|
| C                     | .7749       | .3313     | 2.34        | 0.020 | .1232 - 1.4265       |
| Dividend payout       | -.0086      | .0040     | -.214       | 0.033 | -.0165 -.0006        |
| Dividend yield         | .4814       | .1125     | 4.28        | 0.000 | .2600 .7027          |
| Dividend per share     | -.0024      | .0003     | -.603       | 0.000 | -.0032 -.0016        |
| Sales growth           | .0001       | .0002     | 0.70        | 0.487 | -.0002 .0005         |
| Leverage               | .0469       | .0187     | 2.50        | 0.013 | .0100 .0838          |
| Exchange Rate (Rate)   | -.1911      | .1479     | -1.29       | 0.197 | -.4820 .0997         |
| Firm Size              | -.0261      | .0073     | -3.57       | 0.000 | -.0404 -.0117        |
Table 4 illustrates that the adjusted R-squared is 26.15%. This value explains that the total variability in the share price volatility has been explained by the nine variables considered in this study, and the rest of the 73.85% is not explained in model 1. Furthermore, F statistics (F(9,350) = 15.12, Prob > F = 0.000) shows the 1% level of significance, and then it is decided as a pooled OLS model is significant at 1% to explain the factors determine the share price volatility. From the table 4, we can come to know that the nine variables considered in this study, dividend payout ratio (β = -.0086, p < 0.05), dividend per share (β = -.0024, p < 0.05), firm size (β = -.0261, p < 0.05), earnings volatility (β = -.0033, p < 0.05) have significant negative influence on share price volatility. Thus, it can be concluded that there is a significant negative relationship between dividend payout, dividend per share, firm size, and earnings volatility with share price volatility. But, dividend yield has significant positive influence on share price volatility (β = .4814, p < 0.05)

**Detecting multicollinearity problem**

It is conducted the test for variable inflation factor to estimate the variable inflation among the independent variables considered in this study and the results are presented in Table 5. The VIF measures the extent the variance of the estimated regression coefficients are inflated as a result of being related to the other independent variables, and Tolerance is the amount of variability of the selected independent variables not explained by other independent variables' (Al-Shawawreh, 2014, p.140)
Hair, Black, Babin, and Tatham (2006) explained that multicollinearity problem could be detected that any of the variables with a VIF value above ten or with a value below 0.10 of Tolerance would have a correlation of more than 0.90 with other variables, indicative of the Multicollinearity problem. As per the results presented in table 5, VIF for all the independent variables considered in this study is ranging from 1.05 to 1.40, which are less than ten, and Tolerance for all independent variables are ranging from 0.7148 to 0.9523 which are higher than 0.10. Therefore, the results of the VIF test have not shown any issues in the present study.

**Fixed Effect Model**

In the fixed-effect model, it is assumed that the coefficients are changed among the units and time during the study period. Therefore, the model considers the individual effects of the firms as in fixed effect. Thus, if there is any unobserved heterogeneity, it will be deducted in the fixed effect estimation (Bayrakdaroglu, Ege & Yazci, 2013). Results of the fixed effect regression analysis are presented in the table 6.

**Table 5: Values of variable inflation factors**

| Variable          | VIF | 1/VIF(Tolerance) |
|-------------------|-----|------------------|
| Dividend yield    | 1.40| 0.7148           |
| Dividend per share| 1.36| 0.7328           |
| Dividend Payout   | 1.29| 0.7756           |
| Firm size         | 1.23| 0.8116           |
| Earnings volatility| 1.16| 0.8608           |
| Leverage          | 1.12| 0.8949           |
| Exchange rate     | 1.11| 0.8991           |
| GDP               | 1.10| 0.9126           |
| Sales growth      | 1.05| 0.9523           |
| Mean VIF          | 1.20|                  |

**Table 6: Fixed effect regression analysis to identify the factors determining the share price volatility**

| Variable          | Coefficient | Std.Error | t-Statistic | Prob. | (95% Conf. Interval) |
|-------------------|-------------|-----------|-------------|-------|----------------------|
| C                 | 1.2798      | .2278     | 5.62        | 0.000 | .8313 - 1.7284       |
| Dividend payout   | -.0029      | .0023     | -1.26       | 0.209 | -.0075 - .0016       |
| Dividend yield    | .4160       | .0880     | 4.73        | 0.000 | .2427 - .5893        |
| Dividend per share| -.0010      | .0005     | -1.71       | 0.089 | -.0021 - .0001       |
| Sales growth      | -.0001      | .0001     | -1.05       | 0.294 | -.0003 - .0001       |
| Leverage          | .0043       | .0310     | 0.14        | 0.889 | -.0567 - .0653       |
As per the results presented in table 6, overall R-squared value = .2176 illustrates that around 22% of the total variability of share price volatility is explained by all nine variables included in the fixed-effect model. The value of F (9,279) = 6.62 is at a 1% level of significance, which explains the model is goodness fit. The rho value of .7935 reveals that 79.35% of the variances have been explained because of the differences across panels. Out of the nine variables considered in the study, only three variables have shown a significant relationship with share price volatility. The dividend yield is significantly, positively (β = .4160, \(p < 0.01\)), influenced on share price volatility; therefore, it can be concluded that there is a significant positive relationship between dividend yield and share price volatility. Even though, exchange rate (β = -.1964, \(p < 0.05\)) and firm size (β = -.0735, \(p < 0.01\)) are negatively and significantly influenced share price volatility. The rest of the variables have not shown any significant relationship with share price volatility.

The objective of this study is to identify the factors determining the share price volatility in Sri Lankan listed non-financial firms. Therefore, it is estimated with the pooled OLS and fixed-effect model, and both models are significant to explain the impact. Both models are compared to evaluate which model is most suitable to identify the factors determining the share price volatility. Results of the F test indicated that the significant value of 0.0000 and then it is decided that fixed effect model is more suitable to identify the factors.

**Random effect regression analysis**

It is assumed that constant coefficients are between the units considered in this study and which do not differ. Therefore, the constant is to be estimated randomly in order to get unconsidered variables in this study.
thorough a random effect model (Bayrakdaroglu, Ege & Yazci, 2013). Results of the random effect regression analysis are presented in table 7.

Random Effect Regression is to identify the factors influencing share price volatility.

| Table 7: Random effect GLS regression analysis to identify the factors determining the share price volatility |
| Variable | Coefficient | Std.Error | t-Statistic | Prob. | (95% Conf. Interval) |
|---|---|---|---|---|---|
| C | 1.0142 | .1945 | 5.21 | 0.000 | .6329 | 1.3955 |
| Dividend payout | -.0032 | .0023 | -1.39 | 0.164 | -0.0078 | .0013 |
| Dividend yield | .4367 | .0819 | 5.33 | 0.000 | .2760 | .5974 |
| Dividend per share | -.0014 | .0004 | -3.01 | 0.003 | -0.0023 | -0.0004 |
| Sales growth | -.0001 | .0001 | -0.77 | 0.443 | -0.0003 | .0001 |
| Leverage | .0220 | .0244 | 0.91 | 0.365 | -.0257 | .0699 |
| Exchange Rate | -.1998 | .0760 | -2.63 | 0.009 | -.3488 | -.0508 |
| Firm Size | -.0476 | .0111 | -4.26 | 0.000 | -.0695 | -.0256 |
| Earnings volatility | -.0040 | .0020 | -1.93 | 0.053 | -.0080 | .0001 |
| GDP | .0041 | .0028 | 1.47 | 0.142 | -.0013 | .0097 |

No.of observation 360
R² within 0.1673
Sigma_u = .0649

Wald chi2 (9) 80.95
R² between 0.2661
Sigma_e = .0369

Prob > chi2 0.0000
R² overall 0.2481
rho = .7556

According to the random effect model presented in the table 7, dividend yield (β = .4367 p < 0.05), dividend per share (β = -.0014 p < 0.05), Exchange rate (β = -.1998 p < 0.05) and firm size (β = .0476 p < 0.05) have significant influence on share price volatility. Even though, dividend payout (β = -.0032 p > 0.05), sales growth (β = -.0001 p > 0.05), leverage (β = .0220 p > 0.05), earnings volatility (β = -.0040 p > 0.05) and GDP (β = .0041 p > 0.05) have not shown any significant influence on share price volatility in this model.

| Table 8: Breusch and Pegan Lagrangian Multiplier test for random effects |
| Estimated results | Var | Sd = sqrt(var) |
| Share price volatility | .0074 | .0860 |
| e | .0014 | .0369 |
| u | .0042 | .0649 |

Test: Var(u) = 0
Breusch and Pegan Lagrangian Multiplier test is performed to evaluate whether the pooled OLS or random effect model to explain the factors determining the share price volatility in Sri Lanka. It was hypothesized that $H_0 = $ Pooled effect exists an alternative was $H_1 = $ random effect is exists. Results of the Breusch and Pegan Lagrangian Multiplier indicated that $\text{Prob} > \text{chibar2} = 0.0000$ and the null hypothesis is rejected, and the alternative hypothesis accepted that random effect exists in the empirical analysis.

**Hausman Specification Test**

In order to establish a suitable model that which of the alternative panel, the model is most appropriate to explain the factors determining the share price volatility in Sri Lankan companies, Hausman specification test was performed, and output is presented in table 8. It was hypothesized that $H_0 = $ random effects exist, and alternative declared that $H_1= $ random effect does not exist.

| Variable                  | Fixed (b) | Random (B) | Difference (b-B) | $\text{Sqrt (diag(v_b-v_B))}$ |
|---------------------------|-----------|------------|------------------|-------------------------------|
| Dividend payout           | -.0029    | -.0032     | .0003            | .0002                         |
| Dividend yield            | .4160     | .4367      | -.0207           | .0321                         |
| Dividend per share        | -.0010    | -.0014     | .0004            | .0003                         |
| Sales growth              | -.0001    | -.0001     | -.0000           | 8.8400                        |
| Leverage                  | .0043     | .0220      | -.0177           | .0191                         |
| Exchange Rate             | -.1964    | -.1998     | -.0034           | .0102                         |
| Firm Size                 | -.0735    | -.0476     | -.0259           | .0124                         |
| Earnings volatility       | -.0055    | -.0040     | -.0015           | .0051                         |
| GDP                       | .0048     | .0041      | .0007            | .0002                         |

$\chi^2 (9) = (b-B)'[(v_b-v_B)(-1)](b-B) = 18.19$

$\text{Prob} > \text{chi2} = 0.0331$

As per the Hausman test ($\text{Prob} > \text{chi2} = 0.0331$), the null hypothesis is rejected that the fixed effect model exists to explain the factors determining the share price volatility. Therefore, the fixed-effect model is explained further.
Robust Standard Error

Table 10: Robust standard error

| Variable       | Coefficient | Robust Std.Error | t-Statistic | Prob. | (95% Conf. Interval) |
|----------------|-------------|------------------|------------|-------|----------------------|
| C              | 1.2798      | .2331            | 5.49       | .000  | .8149 - 1.7447       |
| Dividend payout| -.0029      | .0027            | -1.07      | .287  | -.0084 - .0025       |
| Dividend yield | .4160       | .1569            | 2.65       | .010  | .1030 - .7289        |
| Dividend per share| -.0010   | .0005            | -1.72      | .090  | -.0021 - .0001       |
| Sales growth   | -.0001      | .0005            | -0.87      | .390  | -.0004 - .0001       |
| Leverage       | .0043       | .0248            | 0.17       | .862  | -.0452 - .0539       |
| Exchange Rate  | -.1964      | .0729            | -2.69      | .009  | -.3418 - -.0511      |
| Firm Size      | -.0735      | .0167            | -4.40      | .000  | -.1068 - -.0402      |
| Earnings volatility | -.0055 | .0032            | -1.69      | .095  | -.0121 - .0009       |
| GDP            | .0048       | .0023            | 2.07       | .042  | .0001 - .0095        |
| No.of observation | 360        | R² within         | .1760      |       | Sigma_u = .07242    |
| F (9, 71)      | 4.00        | R² between        | .2310      |       | Sigma_e = .0369    |
| Prob > F       | 0.0004      | R² overall        | .2176      |       | rho = .7935         |

When we are looking at the heteroskedasticity problem in the fixed-effect model, results provide the same set of coefficients and also a very similar set of p values. Therefore, results clearly state that even though the model is affected by heteroskedasticity, it does not impact on the empirical results observed. In addition to the robust standard error test presented in table 10, cluster robust standard error was observed to control for unknown heteroskedasticity within the panel autocorrelations. Results of the cluster robust standard error are presented in table 11 below. As per the results presented in table 11, the level of significance of the explanatory variables exhibited to influence the share price volatility is similar in the fixed effect model and the cluster robust standard error.

Table 11: Cluster Robust standard error

| Variable       | Coefficient | Robust Std.Error | t-Statistic | Prob. | (95% Conf. Interval) |
|----------------|-------------|------------------|------------|-------|----------------------|
| C              | 1.2798      | .2331            | 5.49       | .000  | .8149 - 1.7447       |
| Dividend payout| -.0029      | .0027            | -1.07      | .287  | -.0084 - .0025       |
| Dividend yield | .4160       | .1569            | 2.65       | .010  | .1030 - .7289        |
| Dividend per share| -.0010   | .0005            | -1.72      | .090  | -.0021 - .0001       |
| Sales growth   | -.0001      | .0001            | -0.87      | .390  | -.0004 - .0001       |
Factors Determining the Share Price Volatility
Evidence from Listed Companies in Sri Lanka

Lingesiya Kengatharan
Jeyan Suganya Dimon Ford

| Variable          | Coefficient | Standard Error | t-value | Prob>|F|  | R² within | Sigma_u = .07242 |
|-------------------|-------------|----------------|---------|-----|---|----------|-----------------|
| Leverage          | .0043       | .0248          | 0.17    | .862| -.0452 | .0539    |
| Exchange Rate     | -.1964      | .0779          | -2.69   | .009| -.3418 | -.0511   |
| Firm Size         | -.0735      | .0167          | -4.40   | .000| -.1068 | -.0402   |
| Earnings volatility | -.0055   | .0032          | -1.69   | .095| -.0121 | .0009    |
| GDP               | .0048       | .0023          | 2.07    | .042| .0001  | .0095    |

No. of observation 360
F (9, 71) 4.00 R² between .2310 Sigma_e = .0369
Prob > F 0.0004 R² overall .2176 rho = .7935

**HYPOTHESES TESTING**

By performing different panel data analyses, the fixed-effect model is considered as the most appropriate model to explain the factors determining the share price volatility. According to the fixed-effect model, dividend payout does not influence the share price volatility in this study. Therefore, the H1 is not supported, there is no significant influence of dividend payout on share price volatility. A similar finding was revealed by Mehmood, Ullah, and Sabeeh (2019), even though Nguyen, Bui, and Do (2019) found that there is a significant relationship between dividend payout and share price volatility.

Secondly, the dividend yield is significantly positively related to share price volatility, and then H2 is supported by the data of the study. The outcome of this study is consistent with the results of Al-Shawawreh (2014). However, it is contradicted with the results of Gunarathne et al. (2015) as they have found that there is no significant relationship between dividend yield and share price volatility.

Dividend per share does significantly negatively influence the share price volatility. Therefore, H3 is supported with the results of the study that there is a significant influence of dividend per share on share price volatility. This finding is contradicted with the results of Dissanayake (2016) as he has not found any significant relationship between dividend per share and share price volatility.

H4 and H5 are not supported by the data of the study that sales growth and leverage have not shown any significant influence on share price volatility in this study. These results are contradicted with the results
of Handayani et al. (2019) because they have found that sales growth has a significant positive effect on share price volatility.

H6 and H7 are supported by the data of the study that the exchange rate and firm size have a significant negative effect on share price volatility. Similar findings were observed by Ali and Waheed (2017) that there is a significant negative relationship between firm size and share price volatility. This finding is contradicted with the results of Dewasiri and Weerakoon (2015) as they have found a significant positive relationship between firm size and share price volatility.

H8 and H9 are also not supported by the data of the study that there is no significant relationship of earnings volatility and GDP with share price volatility in Sri Lankan listed non-financial firms. But Ganavi (2018) found a significant effect of GDP on share price volatility.

CONCLUSION

Purpose of the study is to examine the factors determining the share price volatility of 72 non financial firms listed on CSE for the period from 2013 to 2017. Panel data analysis is performed to examine the factors determining the share price volatility, and the fixed effect model is identified as the best model to explain in this empirical study. There is a significant positive relationship between dividend yield and share price volatility. However, dividend per share, earnings volatility, and firm size significantly negatively related to share price volatility. However, dividend payout, sales growth, firm leverage, earnings volatility, and GDP have not shown any significant influence on share price volatility. It is suggested to future research, which can be extended with all the sectors in the Colombo Stock Exchange and to other Asian region markets.

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