

The Impact of Dividend Policy on Share Price Volatility: Evidence from Banking Stocks in Colombo Stock Exchange

*W.G.R.Harshapriya*¹

Abstract

This paper examines the dividend policy related literature in order to find evidence by looking at the impact of dividend policy on share price volatility through an analysis of licensed commercial banks listed in Colombo Stock Exchange in Sri Lanka. The panel data least squares method was adopted with the fixed effect model. The impact of dividend yield on share price volatility of licensed commercial banks were found to be insignificant at a 5% significant level with positive correlation, whereas dividend pay-out had a significant negative correlation as expected with share price volatility, which was substantiated by the empirical evidence from different capital markets as well as dividend related theories. These results suggest that dividend policy has an impact on share price volatility in the Colombo Stock Exchange with regard to banking sector stocks.

Key words: *Dividend Policy, Share Price Volatility, Dividend Yield, Dividend Pay-Out Ratio, Panel Data*

¹I am grateful to Mr. Nishantha Hewawithana, of the Colombo Stock Exchange for his valuable comments on improving the research paper and to Dr. R.A.A Perera, Senior Economist, and Mr. H.P.G. Rathnasiri, Additional Director, of the Central bank of Sri Lanka for extending their support and valuable comments and suggestions to the research paper. Further, I would like to thank to Ms. W.C.T. Kumari and Ms. N. Rupawatta for the support extended towards verifying the accuracy of data collected from secondary sources.

1. Introduction

The share market is a place where both companies and investors come together to fulfil two different objectives, borrowings and lending, respectively. The companies approach the share market in view of searching for finance and the investors in search for good investments that will yield sufficient return to their investment, to cover the risk that they are accepting by investing in companies that someone else is managing.

The managers of a company initially have to decide whether they should go for internal financing, if available, or external financing. The decision to finance from internally generated funds may affect the dividend payments of the company and investors see that as a signalling effect of the firm on the expected future performance of the company (Nizar Al-Malkawi, 44).

If internal financing is not possible or not sufficient to cover the entire financing need, it has to be financed from external sources, either from new equity or debt.

The companies' capital structure consists of either equity or borrowings, where firms have to balance the finance from equity and debt, as the investors and lenders are sceptic of the risk of the company. Therefore, firms have to keep their capital structure at the optimum level in order to avoid the risk of bankruptcy.

Miller and Modigliani, the cost of capital, corporation finance and the theory of investment, (261) stated that the value of the firm is independent of its capital structure, subject to some assumptions, and if the said assumptions are lifted it is doubtful on validity of theory.

On the other hand the investors put their money with the expectation of sufficient return by way of dividend and capital gain (price return) from the share market investments. The dividend return that is expected by shareholders (investors) is affected by the dividend policy of the firms, which is linked with financing decision of firms.

The preference for return, by way of dividend or capital gain, by shareholders was also studied by Hotchkiss and Lawrence (02) who have stated that investors who are in high tax brackets prefer low dividend yielding stocks that have more price appreciation potential. Therefore, dividend policy is important to shareholders in different significance levels depending on the tax circumstance that they face. Further, senior shareholders prefer high dividend yielding companies as they need continuous income from their investments, due to the fact that price appreciation is less important than current consumption income (Krieger et al.155).

Dividend Policy is a subject that has been examined during the last few decades by numerous researchers starting from Miller and Modigliani, the cost of capital, corporation finance and the theory of investment, (261), Miller and Modigliani, Dividend policy, growth, and the valuation of shares, (411). Miller and Modigliani, Dividend policy, growth, and the

valuation of shares (411) proposed the dividend irrelevance theory, whereas De Angelo, et al. Reversal of fortune, presented the evidence for its relevance to the shareholders (342).

Dividend policy is a policy of a company on how much of profit earned by them are going to distribute to their shareholders as the return for the investment that was made. Effect on decision of a company's dividend policy was explained by dividend related theories, which include birds on the hands theory, signalling effects theory, clientele effect, tax preference theory, agency cost theory, behavioural theory, and firm life cycles theory.

Share price volatility on the other hand is the systemic risk faced by investors who hold equity investments. Investors are naturally risk averse and being aware of the volatility of their investments is important as it measures the level of risk that they are exposed to by holding shares of the listed companies.

Although there are number studies have been done on developed capital markets (Hussainey et al. 57), emerging markets (Zakaria et al. 02) and also in frontier markets (Nazir et al. 132; Habib et al. 78; Masum 09-10) to find out the relationship between dividend policy and share price volatility, since the results of the studies done revealed different and contradictory results in different markets may be due to differences in efficiency in capital markets in terms of information availability.

When managers take decisions on the optimal capital structure of the firms, they need to decide whether to finance from internally generated funds (retained earnings) or from external financing (debt or equity). If internally generated funds are to be used to invest in new project, they will have an impact on dividend policy as the returns of the new investments are uncertain until they realize. This may lead to change the firms' dividend policy.

Investors and shareholders in the share markets also have different needs and level of return (Krieger et al. 151). Therefore if there is any change in dividend policy, as against the expectation their response in share market by way of buying and selling of shares also get affected thereby leading to volatility in share prices (Nazir et al. 132).

Hence, the continuous study on the impact of dividend policy on share price volatility is important to add to the academic literature with the present condition of the relationship between dividend policy and share price volatility as it helped to fill the time gap of empirical evidences.

Even though there are empirical studies that have been conducted on developed markets, emerging markets and in some frontier markets (Morgan Stanley Capital International) in Sri Lankan context empirical evidences is hardly available on the topic of "impact of dividend policy on share price volatility". Further, studies that have been conducted in the UK which is categorized as a developed market (Morgan Stanley Capital International) found that dividend pay-out had a negative relationship with price volatility (Hussainey et al. 57) while

emerging market like Malaysia evidenced that dividend pay-out had a positive the relationship with price volatility (Zakaria et al. 02). Further, Habib et al. found that in a frontier market like Pakistan relationship between dividend pay-out and price volatility is negative (78). In this context, the question is what is the impact to price volatility in Sri Lankan stock market from dividend policy?

Therefore, the author studied the “impact of dividend policy on share price volatility” in Colombo Stock Exchange (CSE), concentrating on banking sector stocks as the selected sector has been continuously paying the dividends.

The author aims to examine the relationship between dividend policy and price volatility due to the lack of literature in the chosen area in the Sri Lankan context by filling the empirical gap prevailing in the Sri Lankan stock market (CSE) and further to fill the time gap with the objective of using latest data. In this research to measure the changes in dividend policy Dividend Yield (D_YLD) and Dividend Pay-out (D_PO) ratios (Hussainey et al. 57; Habib et al. 78; Zakaria and Ahmadi 02; Masum 9-10) were be used. The dependent variable will be Price Volatility (P_VOL) (Hussainey et al. 57; Habib et al. 78; Zakaria et al. 02; Masum A, 09). In order to identify the relationship between independent variables and the dependent variable, the author decided to use the following research questions.

- i. Is there any relationship between Dividend Yield and Price Volatility?
- ii. Is there any relationship between Dividend Pay-out ratio and Price Volatility?
- iii. What is the direction of relationship (positive or negative) between Dividend Yield and Price Volatility and Dividend Pay-out ratio and Price Volatility?

The guiding research questions of the study are “Is there any relationship between Dividend Yield, Dividend Pay-out and Price Volatility” as well as the directional impact of dividend policy on stock price volatility. In this study the effect of dividend policy on share price volatility in the banking sector stock listed in the Colombo Stock Exchange were investigated. The following hypotheses were tested in this study.

Hypothesis 1: Dividend Yield has an impact on Share Price Volatility

The above hypothesis was tested by Nazir et al. (132); Habib et al. (78); Masum (09) in their study to find out the relationship between dividend policy and share price volatility.

Hypothesis 2: Dividend Pay-out ratio has an impact on Share Price Volatility

Hussainey et al. (57); Zakaria et al. (02); Habib et al. (78); Lashgari (273) in their studies on the same question used the above hypothesis also to find out the impact of dividend policy on share price volatility.

Both hypotheses are related to testing the dividend related theories. Miller and Modigliani, the cost of capital, corporation finance and the theory of investment, (261); Dividend policy,

growth, and the valuation of shares, (411) in their theory on dividend irrelevance theory tested both hypotheses. Further birds in the hands theory elaborates that shareholders put more value on certain dividend income rather than uncertain capital gain suggesting a correlation between dividend policies with price volatility which will be tested in the two hypotheses of the study. Further, according to the agency cost theory La Porta et al. (04-07), differences of objectives could be minimized by the continuous or increasing dividend payment, which supports hypothesis 02 of the study.

The signalling effect theory Nizar Al-Malkawi, stated that dividend payment can be used to signal the expected performance of the company (62-63). Therefore, dividend pay-out signals the expected strong or bad performance, which leads to assume low or high risks to the firms by the investors, thereby affecting the volatility of the share prices. Hence, Hypothesis 2 was used to find out the theoretical implications of dividend policy.

This study attempts to fill the gap of a lack of empirical studies in the Colombo Stock Exchange concentrating on banking sector stocks, while investigating the direction of causality (positive or negative) between Dividend Yield and Price Volatility and Dividend Pay-out ratio and Price Volatility.

Share price volatility is the risk faced by the investors while the dividend policy affects the return of the investors by holding the shares of a company. As the investors prefer lower risk due to nature of risk averse, prefer lower volatility. Dividend policy is important to investors with different degree of significance, (Krieger et al. 156-157) depending on their tax bracket upon which the dividend income is liable to pay taxes and the need of current income from their investments in share market. The volatility of share prices affects the price return of the shares (capital gain), therefore the “impact of dividend policy on stock price volatility” is an important factor for investors when they make decisions on investing in the share market in Sri Lanka. Investments in the CSE by foreigners are an important factor for Sri Lanka as the country is running with savings investments gap (Central Bank of Sri Lanka) while the gap has to be filled by foreign investments.

In the case of Sri Lankan capital market, this is an area which needs more research since the literature is hardly available. Therefore by studying the dividend policy with reference to the Sri Lankan stock market, this research was able to add new updated knowledge to the literature while filling the time gap also since the author used up to date data for the study.

The scope of the study was to add value to the corporate finance literature by studying the “Impact of dividend policy on share price volatility” by studying the relationship of banking sector stocks of Colombo Stock Exchange. Section Two is devoted to remaining the existing literature on dividend policy and historical background. Section three is allocated to discuss the research, Section Four discusses the analysis and discussion of findings. Section Five concludes the paper.

2. Literature Review

2.1. Dividend Policy and Historical Background

Miller and Modigliani, the cost of capital, corporation finance and the theory of investment, (261); Dividend policy, growth, and the valuation of shares, (411) studied the issue of selecting suitable capital structure for a company. It is the proportionate amount of debt and equity financing by a firm. The shareholders, who own the firm, are the residual claimant for the profit that the firms earn. The objective of the managers of the firms is to maximize the shareholders' wealth by increasing the value of the firm's assets. Hence, Miller and Modigliani, the cost of capital, corporation finance and the theory of investment, proposed that with certain assumptions dividend policy does not have an impact on the value of the firm(261). This irrelevance theory was supported by Brennan (1116). Since the dividend irrelevance theory works in a perfect market with assumptions, question remains as to what extent this stands in the real world.

2.2. Theoretical Background of Dividend Policy

2.2.1. M & M Theory

Miller and Modigliani, the cost of capital, studied the dividend policy in a perfect capital market and rational behaviour of investors with certainty (261). Miller and Modigliani, the cost of capital, (261) were able to prove that in a perfect capital market, a firm's financing decisions do not have an impact on its value of the firm, thereby stating that dividend policy too does not affect the same. This is because the changes in the capital structure affects the dividend policy, since the changes in the borrowings plan has a direct impact on the increasing or decreasing of the money available to be distributed to shareholders. Brennan also supported the dividend irrelevance theory (1116).

In a world without tax, transaction costs, without market imperfections (no asymmetric information), Miller and Modigliani, the cost of capital (290) were able to demonstrate that the capital structure decision is not relevant to the shareholders' wealth of a firm. Whereas those simplified assumptions were interrogated by the empirical studies subsequently.

DeAngelo and DeAngelo, the irrelevance of the MM dividend irrelevance theorem (293) in their paper discussed the relevance of the dividend irrelevance theory of Miller and Modigliani, the cost of capital (290). There it was argued that not only pay-out policy is important, once the assumptions are relaxed, but also investment policy has a significant effect on the value of the firm (02-04). In order to optimize the pay-out policy of a firm, the present value of the dividend payment has to be equal to the present value of expected projects cash flow. DeAngelo and DeAngelo, the irrelevance of the MM, or the

shareholders' wealth will deteriorate as the present value of the dividend is higher than project cash flows (293-300).

The issue with the theory proposed by Miller and Modigliani, the cost of capital (261), is how to explain the real world complexities in a model with assumptions by the empirical researchers. Therefore these models with assumptions and simplicities might work only in a real world subject to conditions (Myers, 81).

Some of the empirical researchers suggested that more work to be done on synthesising to reconcile the debate on dividend irrelevance or relevance on the value of the firms (Elasas and Florysiak, 36-37).

2.2.2. Birds in the Hands Theory

The birds in the hand theory first presented by Linter (97) and Gordon (264) elucidated that dividends are relevant to determine the value of the firms, against the theory of Miller and Modigliani, the cost of capital (261). The model states that dividend and future growth of earning consist of the total value of equity. In a more simplistic way, the value of equity is equal to dividend and future capital gain. Future capital gain is dependent on future earnings and it is therefore uncertain as well. Sometimes firms may lose the value to the extent that it will go bankrupt. Hence, it is difficult to estimate, and accuracy also cannot be guaranteed. Therefore it is stated that dividends are more valuable than uncertain capital gain (Nizar Al-Malkawi, 62-63).

The birds in the hand theory has few assumptions, some of which are, zero debt capital structure, further financing from retained earnings, return from the investments are constant and cost of capital is also a constant Gordon (264).

The theory of birds in the hand is critiqued due to the assumptions that are unrealistic in the real world. Specifically, the total financing is to be fulfilled with internally generated funds for future investments cannot be achieved in the real world, due to the fact that when a firm is in its growth stage, it may require more funds than it is generating. When a firm's funding requirement is higher than the internally generated fund, it has to borrow from outside, which is a limitation of the theory.

Bhattacharya argued against the acceptance of dividends are more valuable than expected capital gain is misleading not only in the world of perfect capital markets, but also in real world markets (259). Brennan (1115-1121) evaluated the Miller and Modigliani, the cost of capital (261) model and the theory of birds in the hand and concluded that the issue is more intricate, and therefore suggested to consider more factors to find out a resolution to the birds in the hands theory.

2.2.3. Agency Cost Theory

In a perfect capital market, under dividend irrelevance theory, it is assumed that there is no conflict of interest between shareholders and the management of a firm, which is the board of directors. Nevertheless, in real world markets, the validity of the said assumption is doubtful as the management of the firm is separated from the shareholders of the firm (Hussainey et al. 66-67). In such a scenario managers of firms have their own interest to satisfy while the owners' interests will be distracted. Therefore, shareholders has to get a burden on additional cost to monitor the behaviours of the management of the firm, and this cost is the implicit charge of agency cost, which is a result of conflicting self-interest between management and owners. The outcome of conflicting objective is, the managers' tendency to undertake investment options that are unprofitable, which leads to the erosion of the shareholders' wealth. The payment that is received via dividend can serve to reduce the impact of agency cost while dropping the unrestricted funds that are available to the managers (Rozeff, 249).

The Agency problem in firms was studied by La Porta et al. (27-28) found out that, with a sample of 33 countries data, countries that have better protection for minority shareholders pay higher dividends, enabling the reduction of the agency cost. Further, countries with high growth potential pay lower dividends than slower growing companies, which is in line with shareholders' interest, as they wait for higher dividends until returns are received from investments that firms made (La Porta et al. 27-28).

2.2.4. Signalling Effect

Nizar Al-Malkawi proposed that dividends are used to give a signal to shareholders about the performance of the firms, whether prospects of the companies are improving or deteriorating (55-62). Thus, continuous increasing or constant dividends were considered as a signal that a firm will do well in the future too. This signalling effect was studied by Lipson, et al. (36-38); Tse (12-13) and Nizar Al-Malkawi since the managers hold more information, than the owners of those firms performance (55-62).

Since there is a gap of information between management and the investors or the shareholders of firms, share prices of the firms may not represent the true value of the firms. Therefore, dividends carry some information to the market that can be used by shareholders to get some implicit information about firms' prospects. Companies have a tendency to pay increased dividends when the management believes that they can continue to stay in those levels (Lintner, 97), which in turn suggests that the Company has a sustainable long term growth potential. Lipson, et al. (36-38).

Tse found evidence to conclude that large cap companies used dividends to signal supporting empirical evidences that large cap firms are more likely to give signal to market

by dividends which are also trusted by shareholders too (24-29). Further, it was found that firms that have more diversified shareholdings have higher tendency to use dividends to signal in real world markets.

Nissim and Ziv found evidence to suggest that dividends had a positive correlation to expected future earnings (2111). Increased dividend payment is also linked to low systematic risk of the firms (Grullon et al. (31), while Dong, et al. stated that firms are paying stable dividends due to the fact that it helped to have positive corporate images of firms (121).

2.2.5. Clientele Effect

The clientele effect is important as the investors value their income after paying relevant taxes due to the income that they have earned. Investors of a firm may receive the return in the forms of dividend and capital gains. Since dividends and capital gains are taxed differently, different clients with different tax brackets would prefer either dividend or a capital gain, depending on their tax scenarios. Due to this effect, investors in the low tax category, who need regular streams of income, prefer to invest in high dividend paying firms, while those who are in the higher taxable income category will be attracted by firms, that do not pay much dividend or no dividend which concentrate on the growth of the earnings which result in future capital gain.

Krieger et al. studied the clientele effect with a senior clientele sample and found that there is no significant impact from senior investors on the firms to change their dividend pay-out policies (150) which was affirmation of the findings of Becker et al. (655). Therefore, it was concluded that the senior effect is unrelated to firms' dividend policy, also found that seniors too indifferent between dividend and repurchases Becker et al. (655).

Hotchkiss and Lawrence studied the characteristics of institutional investors' preference for dividend income using the analysis of their portfolios (23-24). It was found that those who hold high dividend yielding stocks in their portfolio tend to change the composition of stocks by removing lower dividend yield stock, if firms change their dividend policies. Further investment managers, who manage portfolios on behalf of their clients, who are taxable, are less likely to go for investments that pay higher dividends.

2.2.6. Tax Preference Theory

Miller and Modigliani, the cost of capital assumed that capital market is efficient and free from tax effects and further in their propositions, and it was assumed that there is no difference in tax policies for dividend and capital gain (261). Conversely, in real world capital markets, taxes have to pay for dividend and capital gain as well as tax treatments including tax rates are differ from each other.

The tax preference theory explains that paying low dividends would lower the cost of capital, hence increasing the value of the company. This was articulated with the fact that dividends are taxed at higher rates than that of capital gain in the real world scenario (Lindop & Holland, 2003). Further, dividend tax has to be paid immediately after payment of dividend, while capital gain taxes could be deferred until the gains are realized. Therefore, capital gain has advantages over dividend in two different ways.

One more situation is in an estate, where beneficiaries are entitled to firms' shares after death of the donor; in such a scenario no capital gain is due until the heir gets the benefits of the estate. Dividend taxation and adjustments of share prices were tested by Bell and Jenkinson (1971), using data from the United Kingdom equity prices. The results showed that if dividends are taxed at higher rates than capital gain, the price impact of ex dividend price from cum dividend prices is different from dividend paid per share, as after tax basis, dividend income is at a disadvantaged position.

2.3. Dividend Policy and Colombo Stock Exchange

The Colombo Stock Exchange (CSE) was established in 1985 and is regulated by the Securities Exchange Commission (SEC) of Sri Lanka. Both equity and debt instruments issued by companies and unit trusts are traded in the CSE. There are two boards where a company can list its shares to trade in the CSE, Main board and Dirisavi board (secondary). Large cap companies with more frequent disclosure requirements need to adhere to list in the main board, while disclosure requirements and frequency are somewhat relaxed in the Dirisavi Board, until such companies grow to some extent.

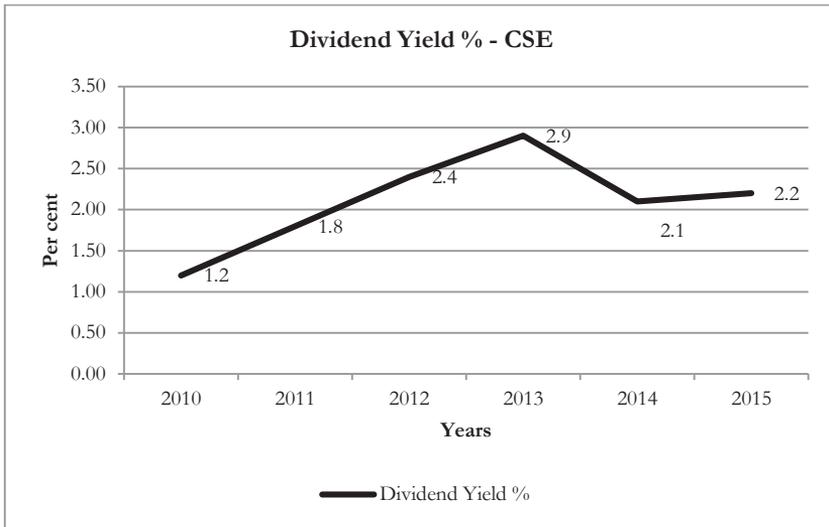
The transactions in the CSE are carried out in an electronic trading platform, while the securities are deposited in script less form in the Central Depository System. The All Share Price Index (ASPI) is the main index that tracks the performance of the market that includes all the listed companies in the CSE. Currently there are 294 companies listed in the CSE in 20 different sectors, with a total market capitalization of Rs. 2,591 billion (Colombo Stock Exchange).

Colombo Stock Exchange is classified as a frontier market (Morgan Stanley Capital International), and it has adopted the widely accepted industry classification of Global Industry Classification Standards (GICS®) in 2015, in order to be in line with global standards (Colombo Stock Exchange).

Since the end of the war in Sri Lanka in 2009, the ASPI had grown at a cumulative annual growth rate of 12.58% while from the 2009 to 2015 period, the average market dividend yield was in the range of 1.2% to 2.9% (Figure 01). The dividend yield of 1.2% is the lowest amount reported in the CSE during the last ten year period, which may be due to the fact

that the market had grown 96% during the year of 2010, while such a growth was not possible to achieve via earnings of the companies in a year.

Figure 01: Dividend Yield of CSE from 2010 to 2015



Source: CSE Annual Report 2015

2.4. Dividend Policy and Share Price Volatility

The decision regarding dividend policy has a direct impact on a firm's capital structure as dividend payment reduces the funds available for new investments, which are required for the firm to grow. The relevance of capital structure on the value of a firm is a topic which has been studied for more than five decades (Miller & Modigliani, dividend policy 411; Hussainey et al. 66-67).

Dividend policy and share price volatility has been studied by different researchers in different time periods in different capital markets around the world (Hussainey et al. 66-67; Habib et al. 78; Nizar Al-Masum, 44), yet there is no consensus among them on the impact of dividend policy. Therefore, different theories have developed from dividend irrelevance theory (Miller and Modigliani, dividend policy 411), such as Birds in the hands theory (Gorden, 264), Agency cost theory, Signalling effect, Clientele effect, Tax preference, Firms life cycle theory and Behavioural theory.

Hussainey et al. studied the impact of dividend policy on stock price volatility using the price data from London Stock Exchange in United Kingdom (66-67). In their analysis dividend yield and dividend pay-out ratio were the main independent variables, while price volatility

was the dependent variable. In order to mitigate the impact from other unknown factors, firms' growth rates, leverage, size, earnings also were the other controlling variables of the study. Ten years' data was used in the analysis, Hussainey et al concluded that dividend pay-out has a negative relationship with price volatility (66-67) and the findings were in line with Baskin's (19) analysis on the same, whereas dividend yield has shown a positive but insignificant relationship with share price volatility. Allen and Rahim (175) too proposed a positive relationship between dividend yield and price volatility.

Further Hussainey et al. in their analysis found that company size had a negative significant impact on share price volatility, while the leverage of the firms had a positive correlation to share price volatility (66).

One of the emerging market (Morgan Stanley Capital International), the Kuala Lumpur stock exchange of Malaysia, was studied by Zakaria et al. (04-06), using data from construction and material sector companies during the period from 2005 to 2010. The study was similar to Hussainey et al. (66) which was done on the London Stock Exchange. Zakaria et al. found evidence to conclude that dividend pay-out ratio had a positive significant impact on share price volatility while there was no significant impact to price volatility from dividend yield in the Kuala Lumpur stock exchange (04-06). Further when a firm size increases there was more impact to price volatility with positive correlation, whereas the leverage of the companies witnessed a negative impact to price volatility as increasing leverage can cause disturbance to stable dividend policy. Investment growth had an insignificant influence on the share price of the firms, while the influence of leverage on the share prices of the firms were negative with significant effect, which is contrary to the findings of Hussainey et al. (66).

Empirical evidence from frontier markets published by Habib, et al. on their study done on the Pakistani's stock market, using cross sectional regression analysis, was carried out to analyse the relationship of share price with dividend yield and dividend pay-out ratio (78). By adding more evidence to the experience of the United Kingdom, (Hussainey et al. 66) it was found that dividend yield also positively correlated with share prices of the Karachchi Stock Exchange, with significant impact.

Nazir et al. selected a sample from financial sector firms in the Karachchi Stock Exchange in Pakistan to determine the impact of dividend policies in volatilities of share prices for a period of five years from 2006 to 2010 (136). Four controlling variables used to which are similar to Hussainey et al. (61-62) and Zakaria et al. (04). Using panel data fixed effect regression analysis results revealed dividend pay-out had a similar impact, which was evidenced by Habib et al. (80) in Pakistani stock market. A positive correlation between dividend yield and share price volatility was found for the first time in the Pakistan stock market, which was later confirmed by Sadiq (428), yet there was only an insignificant impact on share price volatility.

Sadiq found an insignificant impact from company size to its price volatility (429-431) similar to the fact found in the Malaysian stock market in 2012 by Zakaria et al. (04-05). Further Nazir et al. announced one significant contradictory evidence to prove that earnings volatility of the firms also have a positive significant impact on share prices (136-138).

The impact of dividend policy on price volatility in the Tehran stock exchange was studied by Lashgari and Ahmad (273) with a sample of stock selected covering a period of six years, using the fixed effect model. The same methodology used by Hussainey et al. (61-62); Zakaria et al. (04-05); Habib et al. (80); Sadiq (429-431) was used to study the correlation of the variables. No significant impact was witnessed from dividend yield to share price volatility during the period from 2007 to 2012, while a negative significant effect from pay-out ratio was established, confirming the empirical evidence from Habib et al. (80).

According to Nizar Al-Masum banks listed in the stock exchange of Dhaka in Bangladesh, which is a frontier market (Morgan Stanley Capital International), confirmed a negative correlation of dividend yield with share prices (09). In contrast to other researchers, Nizar Al-Masum used Retention ratio as against pay-out ratio (09), which is the opposite of pay-out ratio and the analysis revealed a negative, but insignificant correlation with share prices. In addition to the main variable of the study, out of the controlling variables, return of equity and earnings per share also proved to be significant to share price volatility with significant effect.

Pay-out policy was analysed by Al-Twajjry using a sample of stock from the Kuala Lumpur stock exchange of Malaysia and results suggested that pay-out ratio did not have a significant impact on companies' earnings growth (349). This finding was important as Nazir et al. found a positive correlation between earning volatility and share price volatility (132) and if it is valid for Malaysia, pay-out ratio could have an impact on price volatility, a fact that needs to be proved by studying relevant markets.

3. Methodology

3.1. Research Design

In order to find out the relationship of dividend policy with share price volatility, the author used a positivist paradigm to detect any impact of dividend yield and dividend pay-out ratio on share price volatility using a deductive approach. In this paper a longitudinal research design was assumed, due to continuous recurring data on the same set of variables for the same sample of firms over a period of time from 2008 to 2015 (Bryman & Bell, 39-70). The research design which was used in this research intends to find out the correlation of independent and dependent variables. Compared to the cross section research design, the adopted longitudinal research design enables the examination of deviations or changes over a period of time, whereas cross sectional design is used to examine one point of time

(Bryman & Bell 39-70), as with this study covers eight years period. The adopted design helps to study causal relationship between variables over time (Bryman & Bell 39-70).

The process of collecting data was designed based on the guidance of relevant existing literature and the findings of the research was compared with empirical evidences and checked the level of consistency of the study results with previous theories related to dividend policy and prior literature in order to comprehend the results of the study via inductive reasoning, existing theories can be advanced or refuted (Bryman & Bell 39-70).

Quantitative data was used since the research questions are answered via quantitative data analysis and testing. Since the secondary data was used, it helped to have good quality data with minimum cost while enabling longitudinal analysis (Bryman & Bell 149-155) being advantages to the study as well.

3.2. Population and Sample Selection

Financial and share market data from a sample of Licensed Commercial Banking (LCB) stocks listed in the Colombo Stock Exchange (CSE) were used for the quantitative analysis. There were ten licensed commercial banks (Central Bank of Sri Lanka) that were licensed by the Central Bank of Sri Lanka, that have been listed as at end 2015, which is the population of the study.

The banking sector stocks were selected as a research context for several reasons, such as, licensed commercial banks generally make continuous positive net income, which enable them to pay continuous dividend as the main analysis is on dividend policy, shareholdings of licensed commercial banks are diversified as the maximum limit for an individual is 10% of total issued capital or group holding is capped at 15% (Central Bank of Sri Lanka), which helps to increase the liquidity of the company in the CSE. It is important to mention that due to the ceiling on shareholding of licensed commercial banks in Sri Lanka, firms have high liquidity, which helps to adjust the prices with much less restriction on the information available to the market.

Out of the LCBs which have been listed as at the end of 2015 in CSE were the population for the study (10 LCBs). When selecting a sample for analysis, out of ten banks, there were seven licensed commercial banks, which have been continuously listed in CSE for the period from 2008 to 2015, that were selected as a sample of banks for the study. Therefore, the sample size covered seventy percent (70%) of the total licensed commercial banks listed in the CSE.

Since the sample size covers 70% of the licensed commercial banks, the author believes, with the sample selected, and was able to generalize the results to the population.

3.3. Data Collection

The data collection for this study was based on Secondary data, therefore the study had significant advantages. The use of Secondary data with minimum cost while enabling longitudinal analysis (Bryman and Bell, 311) is an advantage to the study. Conversely, the author has no control over the accuracy and quality of the data in the case of Secondary (Bryman and Bell, 311). In the case of current study, the author believes that the quality of the secondary data was high as the licensed commercial banks are subject to the supervision of the Central Bank of Sri Lanka.

In order to calculate share price volatility, historical market prices were retrieved from Bloomberg terminal, a reliable source to collect market information. The historical data needed to calculate dividend yield, pay-out ratio, company size, earnings volatility, leverage and growth of the companies were collected from respective banks quarterly financial statements, which were available on the CSE databases (Colombo Stock Exchange). Data collection was not problematic as the all the listed companies, which are in main board of the CSE, have to publish their quarterly financial statements within a period of three months from the quarter end which is a mandatory requirement in order to be listed in CSE. All the banks are listed in main board of Colombo Stock Exchange as well.

3.4. Variables Used in the Study

In the quantitative analysis one dependent variable and two main independent variables were used, along with another four controlling variables which, are defined and explained in the section below.

In the analysis, Price Volatility (P_VOL) was the dependent variable, while Dividend Yield (D_YLD) and Dividend Pay-out Ratio (D_PO) were the main independent variables (Habib et al. 80). Since the PV may be affected by further variables in addition to dividend related variables, assets size of the company (LSIZE), earnings volatility (E_VOL), Leverage of the firm (LEV), Growth of the company (GROWTH) will be used as controlling variables (Lashgari & Ahmadi 273).

Price Volatility (P_VOL)

Price volatility was used as the dependent variable of the study (Nazir et al. (136); Hussainey et al. (61-62); Zakaria et al. (03-04)). First, stock market prices as at the end of quarter for each bank were collected from the stock exchange market data (Colombo Stock Exchange) and from Bloomberg. Before the calculation of PV as the share price may have an effect from corporate action such as stocks splits and bonus issues were adjusted to reflect the effect of such corporate actions. Then the range of the prices traded during the quarter was calculated using the highest and the lowest price traded during the same period divided by

the average of the market prices of same quarter. Then PV was obtained from squaring the above answer. This method is supported by the research of Nazir et al. (136); Hussainey et al. (61-62) and Zakaria et al. (03-04) as this is identified as more accurate than using the difference between beginning and end of the period prices.

$$PV = \{(MPS_{qh} - MPS_{ql}) / (MPS_{qh} - MPS_{ql}) / 2\}^2$$

Where,

MPS_{qh} = Adjusted highest market price of the stock during the quarter.

MPS_{ql} = Adjusted lowest market price of the stock during the quarter.

Dividend Yield (D_YLD)

Dividend Yield was calculated using the adjusted market prices of each stock and the dividend per share for the same quarter. D_YLD was arrived at by dividing dividend per share by average adjusted market prices of each stock during the particular quarter. The same calculation method was adopted by Zakaria et al. (03-04).

$$D_YLD = \text{Dividend per share (DPS)} / \text{Adjusted average market price (AMP)}$$

Where,

DPS = Dividend per share declared for the quarter

AMP = Adjusted average market prices of the stock for corporate actions

Dividend Pay-out Ratio (D_PO)

Dividend pay-out ratio is dependent on the company's financial performance in terms of accounting. In Sri Lanka, according to the Companies Act (Companies Act No 7 of 2007), a company has to pass the solvency test before declaring dividend to shareholders. The ratio was calculated using Dividend per share as numerator of the ratio and Earnings per share as the denominator.

$$D_PO = \text{Dividend per share (DPS)} / \text{Earnings per share (EPS)}$$

Where,

DPS = Dividend per share declared for the quarter

EPS = Quarterly earnings per share

Company Size (SIZE)

Company size is a controlling variable that was introduced to the analysis in order to measure the possible effect of such variables on price volatility (Zakaria et al. (03-04); Lashgari & Ahmadi (277-278)). This variable was calculated using the natural logarithm (Zakaria et al. (03-04); Lashgari & Ahmadi, (277-278)) of total assets of the banks.

$$LSIZE = \ln (\text{Total Assets})$$

Where,

Total Assets = Total assets of the bank at the end of the quarter

Ln (Total Assets) = Natural logarithm of total assets

Earnings Volatility (E_VOL)

Earnings Volatility was arrived at initially by dividing earnings before taxes by total assets (Lashgari & Ahmadi 277-278). Then the ratio obtained was squared for all the quarters, which was tested and used by Nazir et al. (136); Hussainey et al. (61-62); Zakaria et al. (03-04).

$$E_VOL = (\text{Earnings before Taxes (EBT)} / \text{Total Assets})^2$$

Leverage (LEV)

Leverage of the company is one of the factors that can have an impact on share price volatility (Hussainey et al. 61-62; Habib et al. 80-81). Leverage was calculated by Nazir et al. (136) in their study by dividing total debt from total assets of the company. The same formula to measure the leverage was also used for this study.

$$LEV = \text{Total Debt} / \text{Total Assets}$$

Where,

Total Debt = Total long term and short term portion of debt

Total Assets = Total balance sheet size of the bank at the end of the quarter

Growth of the Company (GROWTH)

The growth of the company was calculated using the growth rate of the total assets of the banks (Nazir, et al. 136; Lashgari & Ahmadi 277-278). This ratio was obtained from taking the changes in total assets during the quarter as the numerator and beginning total assets of the quarter as the denominator.

GROWTH = Change in Assets / Total Assets

Where,

Change in Assets = Change in total assets of the bank during the quarter

Total Assets = Total balance sheet size of the bank at the beginning of the quarter

To test the relationship between dividend policy and share price volatility, the following equation was derived (Zakaria et al. 03-04).

$$P_VOL = a + \beta_1 D_YLD + \beta_2 D_PO + \epsilon$$

In order to avoid the problem that can be caused from multi-collinearity, as the dividend yield and dividend pay-out are closely correlated, for the panel data regression analysis, the following equation was used (Habib et al. 80-81) including four controlling variables.

$$P_VOL = a + \beta_1 D_YLD + \beta_2 D_PO + \beta_3 LSIZE + \beta_4 E_VOL + \beta_5 LEV + \beta_6 GROWTH + \epsilon$$

Where,

a= intercept,

β_1 to β_6 are the coefficients of each variable and ϵ is used as the error term of the equation.

3.5. Data Analysis

The data collection was consistent with existing literature (Nazir et al. 137; Habib et al. 81-82; Lashgari & Ahmadi 277-278). Since the frequency of the data was quarterly, they were more representative of the changes in company performance than annual data.

Since the data consists of seven different banks, covering on eight year period, with seven different variables, the collected data set has to be analysed using “panel data structure”, which was created to analyse cross section multiple regression analysis (Nazir et al. 137; Lashgari & Ahmadi, 277-278).

The data collected from market sources was used to calculate the dependent variable, price volatility and then two main variables, dividend yield and dividend pay-out ratio were calculated from 2008 first quarter to 2015 fourth quarter. The other four controlling variables have also calculated for 32 quarters. In order to start the analysis, panel data set was created as mentioned below (Table 01).

Table 01: Panel Data Analysis Structure

| Prd | Comp | P_Vol | D_Yld | D_PO | Lsize | E_Vol | Lev | Gro |
|--------|------|-----------|-------|-------|---------|----------|-------|-------|
| 2008Q1 | COMB | 0.0033015 | 0.02 | 62.50 | 5.44550 | 0.000041 | 86.29 | 3.85 |
| 2008Q2 | COMB | 0.0198392 | 0.02 | 30.01 | 5.44120 | 0.000045 | 86.49 | -0.99 |
| 2008Q3 | COMB | 0.0589426 | 0.01 | 39.89 | 5.45063 | 0.000045 | 86.14 | 2.17 |

Source: Author compiled from using literature

Where,

Prd = period from 2008Q1 to 2015Q4

Comp = Name of the company

Other variable as explained in the above section.

Initially one company data was structured in the above format followed by the variables in six other banks, in order to create a panel database. The panel data is the most suitable structure for the analysis as the study involves analysing three dimensional database. The alternative to the panel data analysis is multiple regression analysis for each bank in the selected sample, where seven different regression analyses has to be carried out, in order to evaluate the results. In that case, individual bank's impact could be analysed, whereas impact from LCBs cannot be ascertained.

The panel data base that was created has 1,568 data points from seven banks, for seven variables, for 32 periods. Further, all variables were collected for the entire analysis period, which enabling "balanced panel data base".

The analysis required sophisticated statistical analytical software in order to analyse a panel data set which has 1,568 data points. Therefore, E-views software version 7 (E-views7) was used for data analysis of the study.

Unit Root Test

In order to analyse a variable, the stationarity of the same has to be checked and if the variable is not stationary, it has to be corrected and converted as stationary variables. Therefore for his purpose under two main methods, unit root test was carried out. First, the Levin, Lin & Chu t test, assuming a common unit root process for all variables, while in the second method it was assumed individual unit root process under Im, Pesaran and Shin W-stat test , ADF - Fisher Chi-square test , and PP - Fisher Chi-square test were carried out (Lashgari and Ahmadi, 278). All the tests were carried out at the significance level of 5 percent.

The hypothesis that was tested in unit root test was,

H₀: Variables have a unit root

H₁: Variables are stationary

Regression Analysis

The second step of the analysis is to run the multiple regression analysis using E-views7 for the equation designed for the analysis of the study.

$$P_VOL = a + \beta_1 D_YLD + \beta_2 D_PO + \beta_3 LSIZE + \beta_4 E_VOL + \beta_5 LEV + \beta_6 GROWTH + \epsilon$$

Random Effect, Fixed Effect and Hausman Tests

The objective of the next test of analysis was selecting a method of analysis that is suitable to find out the correlation of price volatility and dividend policy. Therefore, Random effect test was carried out as an initial step of the Hausman test (Lashgari and Ahmadi, 278). The hypothesis of the Hausman test are random effect is appropriate under null hypothesis and if the null hypothesis is rejected fixed effect model is appropriate. Under either of these two methods the heteroskedasticity error would be able to address with panel data analysis (Zakaria et al. 03-04).

H₀: Random effect model is appropriate

H₁: Fixed effect model is appropriate

Depending on the outcome of the Hausman test (Lashgari & Ahmadi, 278) an appropriate model will be used to find out the relationship between price volatility and dividend yield, dividend pay-out, and other four controlling variables, company size, leverage, earnings volatility, and growth of the company.

The significant level for the Hausman test, random effect model and fixed effect model of the study are to be 5% according to Nazir et al. (136); Habib et al. (81-82); Zakaria et al. (03-04).

The expected results of the analysis would be a negative effect from dividend pay-out ratio to price volatility as per the empirical evidence provided by Nazir et al. (136); Habib et al. (81-82); Lashgari and Ahmadi (279-282) as per the frontier market empirical evidences. Correlation between dividend yield and price volatility was not in agreement on direction or the level of significant among the researchers (Nazir et al. 136; Habib et al. 81-82; Lashgari and Ahmadi, 279-282), as there were conflicting evidences from negative correlation to positive correlation, while other researchers suggested that relationship is not significant as

well (Hussainey et al. 63-66; Sadiq 429-431; Zakaria et al. 05-06; Lashgari and Ahmadi 279-282).

4. Analysis and Discussion of Findings

This section initially analyses descriptive statistics since before starting any statistical analysis all the variables have to be tested for stationarity as all the variables need to be stationary, if not has convert it to be stationary, for the statistical analysis. Then regression results are summarized and random effect model is evaluated before starting the Hausman test, which is used to select a model for panel data analysis. As the results suggested, using the fixed effect model, results are presented, analysed and evaluated referring to empirical evidences and related dividend theories.

4.1. Summary of Descriptive Statistics

Table 02: Summary of Descriptive Statistics

| Description | P_VOL | D_YLD% | D_PO % | L SIZE | LEV % | E_VOL | GROWTH |
|-------------|-------|--------|--------|--------|--------|----------|--------|
| Mean | 0.19 | 2.84 | 53.12 | 5.32 | 85.11 | 5.51E-05 | 3.4 |
| Median | 0.15 | 2.67 | 35.67 | 5.29 | 86.09 | 3.37E-05 | 2.69 |
| Maximum | 0.71 | 9.43 | 485.4 | 5.95 | 150.09 | 0.00173 | 60.4 |
| Minimum | 0.04 | 0.00 | 0.00 | 4.79 | 60.71 | 1.13E-07 | -52.26 |
| Std. Dev. | 0.12 | 1.56 | 57 | 0.28 | 6.82 | 0.00015 | 6.66 |

Table 02 depicts the descriptive statistics of all the variables used in the study covering a period from 2008 to 2015. Based on the adjusted share price, price volatility in licensed commercial banks in Sri Lanka has a mean of 19 percent while emerging markets like Malaysia reported a 94.4 percent (Zakaria et al. 05-06). Even in frontier markets Nazir et al. (137-138); Habib et al. (81-82); Lashgari and Ahmadi (279-282) have reported a mean price volatility of more than 50 percent.

The mean dividend yield reported by licensed commercial banks during the period from 2008 to 2015 was 2.84% while the overall market is in the range of 1.2% to 2.9% (Figure 01), confirming constantly stable dividend yield from banking stocks. Dividend pay-out ratios

stood at half of the earnings (53.12%), which represents a very high pay-out ratio, while emerging markets like Malaysia reported a very low dividend pay-out ratio of 18.24% (Zakaria et al. 05-06), which was substantiated by higher growth rate of 45.2%, whereas in frontier markets, in the same financial sector firms reported 38.10% dividend pay-out during the period from 2006 to 2010 (Nazir et al. 137-138). Even though LCBs listed in CSE had recorded 13% growth, Pakistan’s financial sector firms had reported a growth rate of 19% due to the relatively low pay-out ratio, keeping a higher percentage to reinvest for growth. According to Nazir et al. (137-138) leverage of frontier market financial sector firms 58.45% was much less compared to that of stocks in CSE of 85.11%.

4.2. Results of Panel Data Unit Root Test

Table 03: Panel Unit Root Test Summary

| Panel unit root test: Summary | | | | |
|--|-----------|---------|----------------|-----|
| Series: P_VOL | | | | |
| Method | Statistic | Prob.** | Cross-sections | Obs |
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -5.51102 | 0.0000 | 6 | 180 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -4.91489 | 0.0000 | 6 | 180 |
| ADF - Fisher Chi-square | 46.3936 | 0.0000 | 6 | 180 |
| PP - Fisher Chi-square | 69.6234 | 0.0000 | 6 | 186 |

Before starting any regression analysis, variables had to be tested for stationarity as non-stationary data would give spurious results of the regression analysis, unless variables are treated for non-stationarity. If the data are non-stationary, variables may move together indicating they have a strong correlation, even if the variables are unrelated. In other words the “t-ratio” of the analysis will not follow the assumed “t distribution”, hence the validity of the hypothesis test is in question (Breitung & Das, 414).

Four tests were carried out using the statistical software E-views7 under two different methods, which are common and individual unit root process Levin et al. (02). Unit root test

was carried out under Levin, Lin and Chu assuming a common unit root process in order to test stationarity.

As shown in Table 03, test results of Levin, Lin and Chu revealed that at the significance level of 5%, the null hypothesis is rejected, as the p – value is zero. Therefore the alternative hypothesis is accepted and, all the variables stationary during the period in consideration for this study.

The same hypothesis was tested with the Im, Pesaran and Shin W -stat test , ADF - Fisher Chi-square test , and PP - Fisher Chi-square test, and it was found that the evidence to reject the null hypothesis with individual variable unit root processes also for supports the conclusion that all the variables are stationary.

Since all the variables are stationary, the same data set was used for analysis without any manipulations.

4.3. Results of Regression Analysis

After testing for stationarity of the data, basic regression analysis was carried out, in order to explore the relationship of price volatility with dividend yield and dividend pay-out. According to the panel data, regression analysis price volatility had a negatively significant relationship with dividend pay-out, which was in line with the findings of Nazir et al. (137-138); Hussainey et al. (63-64); Habib et al. (81). Even though there is a positive correlation witnessed between price volatility and dividend yield, is not significant, similar to the evidence found by Hussainey et al. (63-64). Out of controlled variables, company size also had a significant negative correlation with price volatility (Zakaria et al. 04-05). The model fit of the analysis R^2 and adjusted R^2 , was 10% and 7.6%, respectively.

The analysis done in Table 04, panel data regression analysis, may contain the error caused by data clustering or grouping (Clark & Linzer 399). In order to account for the effect from clustering data, either fixed effect or random effect regression analysis has to be used. The objective of using either fixed effect or random effect model is to increase the model fit and to account for group level variation (Clark & Linzer, 399). If these effects are not corrected it would lead to the data poorly fitting the model and misleading estimates (Greene, 01-02). Therefore, the Hausman test was used to select the most suitable model to explain the relationship of price volatility to dividend policy variables.

Table 04: Summary of Regression Analysis

Dependent Variable: P_VOL

Total panel (balanced) observations: 224

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|------------|-------------|--------|
| C | 0.547551 | 0.106662 | 5.133536 | 0.0000 |
| D_YLD | 0.006581 | 0.012627 | 0.521190 | 0.6028 |
| D_PO | -0.000225 | 0.000106 | -2.130603 | 0.0342 |
| LSIZE | -0.064762 | 0.019821 | -3.267368 | 0.0013 |
| E_VOL | -25.01715 | 34.51488 | -0.724822 | 0.4693 |
| LEV | -0.001588 | 0.000880 | -1.803323 | 0.0727 |
| GROWTH | -0.000779 | 0.000845 | -0.921832 | 0.3576 |
| R-squared | 0.101501 | | | |
| Adjusted R-squared | 0.076658 | | | |

4.4. Random Effect Model

In order to run the Hausman test, the initially random effect model was run, assuming cross section random effects and the summary of outcome is illustrated in Table 05.

Table 05: Summary of Random Effect Model

Dependent Variable: P_VOL

Method: Panel EGLS (Cross-section random effects)

Total panel (balanced) observations: 224

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| C | 0.547551 | 0.103787 | 5.275723 | 0.0000 |
| D_YLD | 0.006581 | 0.012287 | 0.535626 | 0.5928 |
| D_PO | -0.000225 | 0.000103 | -2.189615 | 0.0296 |
| LSIZE | -0.064762 | 0.019287 | -3.357866 | 0.0009 |
| E_VOL | -25.01715 | 33.58467 | -0.744898 | 0.4571 |
| LEV | -0.001588 | 0.000857 | -1.853271 | 0.0652 |
| GROWTH | -0.000779 | 0.000822 | -0.947365 | 0.3445 |

Weighted Statistics

| | |
|--------------------|----------|
| R-squared | 0.101501 |
| Adjusted R-squared | 0.076658 |

4.5. Results of the Hausman Test

Table 06: Results of Hausman Test

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|----------------------|-------------------|--------------|--------|
| Cross-section random | 18.187251 | 6 | 0.0058 |

As per Table 06 above, the level of significance (p- value) is less than 5 percent for the Hausman test, which is the significant level used for all statistical testing of the study. Therefore, the null hypothesis is rejected and accordingly the (H_1) alternative was accepted.

Since H_1 was accepted, the fixed effect model was the most suitable for the analysis of dividend policy impact to share price volatility in licensed commercial banks listed in the CSE.

4.6. Fixed Effect Model

Table 07 depicts the summary of the results of the fixed effect model where the hypothesis tested were,

H_{01} : Dividend Yield does not have an impact on Share Price Volatility

H_{02} : Dividend Pay-out ratio does not have an impact on Share Price Volatility

H_{11} : Dividend Yield has an impact on Share Price Volatility

H_{12} : Dividend Pay-out ratio has an impact on Share Price Volatility.

Table 07: Summary of Fixed Effect Model

| Dependent Variable: P_VOL | | | | |
|--|-------------|------------|-------------|--------|
| Total panel (balanced) observations: 224 | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | 1.064456 | 0.169169 | 6.292272 | 0.0000 |
| D_YLD | 0.015416 | 0.012958 | 1.189666 | 0.2355 |
| D_PO | -0.000271 | 0.000107 | -2.540044 | 0.0118 |
| LSIZE | -0.183095 | 0.035126 | -5.212537 | 0.0000 |
| E_VOL | -23.25006 | 34.06778 | -0.682465 | 0.4957 |
| LEV | -0.000279 | 0.001175 | -0.237369 | 0.8126 |
| GROWTH | -4.08E-05 | 0.000889 | -0.045900 | 0.9634 |
| R-squared | 0.172802 | | | |
| Adjusted R-squared | 0.125757 | | | |

According to the fixed effect regression model, which is presented in Table 07, first null hypothesis (H_{01}) is accepted as the p-value related to dividend yield is 0.2355, which is more than 5%. Hence dividend yield does not have a significant impact on share price volatility with positive correlation. The same relationship was evidenced in developed capital markets during the period from 1998 to 2007 (Hussainey et al. 63-64) and merging capital markets like Malaysia also provides evidence to support positive significant effect on price volatility by Zakaria et al. (04-05). While in other studies done in frontier markets by Sadiq (428-430) proposed a negative insignificant correlation, whereas Nazir et al. (136-137) concluded that financial sector firms in Pakistan had a negative significant correlation during the five year period from 2006 to 2010. Moreover, findings of Nazir et al. (137) on correlation between dividend yield and price volatility were in line with Nizar Al-Masum's (14-15) findings on the Bangladesh capital market, where it was found that there is a significant negative relationship between dividend yield and price volatility.

Dividend pay-out ratio, as depicted in Table 07, negatively associated with share price volatility during the period from 2008 to 2015. Since the p-value of Dividend pay-out is 0.0118, which is less than 5%, the second null hypothesis (H_{02}) is rejected. As the null hypothesis is rejected, the alternative hypothesis "Dividend Pay-out ratio has an impact on Share Price Volatility" is accepted. Hence, it was concluded that dividend pay-out has an impact on price volatility in licensed commercial banks in the CSE, which is in line with the findings in developed capital markets like in UK (Hussainey et al. 63-64), and frontier markets like Pakistan (Nazir et al. 137); Habib et al. (81); Lashgari and Ahmadi, (04)). Specially Nazir et al. (137) carried out their analysis in the financial sector firms in Pakistan, which more similar to the author's analysis on Sri Lankan capital market in current study. In addition in their analysis by Lashgari and Ahmadi (04) covering a period from 2007 to 2012 evidenced the same strong negative correlation as found in author's analysis.

Zakaria et al. analysed emerging markets during the period from 2005 to 2010, found a weak positive correlation between Dividend pay-out and Price Volatility (01-03) which against the evidences found in developed market and frontier markets (Hussainey et al. 63-64; Nazir et al. 137; Habib et al. 81; Lashgari and Ahmadi, 04), though the relationship is weak.

Since the study revealed that dividend pay-out had a significant impact dividend irrelevance theory (Miller and Modigliani, the cost of capital, 261), was rejected and which was affirmed by DeAngelo and DeAngelo (293) in their study in real world capital markets while rejecting dividend irrelevance theory.

The author's finding on dividend pay-out and price volatility relationship was in line with the birds in the hands theory, where it says that shareholders put more value to dividend than uncertain future capital gain (Linter, 97; Gorden, 264). According to this theory, if a company pays continuous dividend or maintain healthy Dividend pay-out shareholders give

more value to the company reducing the risk of the firm. When a firm risk reduces, it leads to stable price movements with low price volatility was found. In this study a negative significant relationship between dividend pay-out, and price volatility, where higher the dividend payment of companies, lower the volatility due to lower risk.

Due to agency cost, shareholders value firms adding a premium to its risk due to the differences in the interest of shareholders and the managers of firms. According to the findings of Rozeff (249), the impact of agency cost could be reduced with increased dividend payments, thereby reducing the risk and increasing the value of the firm. As the increase in dividend pay-out leads to the convergence of interest of shareholders and managers, price volatility is reduced, which affirmed the agency cost theory.

Nizar Al-Malkavi (44) studied the signalling effect and found evidences to show that dividend payment is used to signal the expected performance of firms, as the managers hold more information than shareholders (Lipson et al. 36; Tse 12). It was stated that companies have a tendency to pay increased dividend, signalling their belief of continuous increases in the financial performance of such companies. If a company is expected to perform well in the future, its systematic risk will be lower, resulting in stable prices with lower volatility.

As per the empirical evidences from different financial markets as well as the some dividend related theories, like birds in the hands, agency cost, signalling effect were in line with the findings of this study on the relationship of dividend pay-out and price volatility.

Further, out of the four controlling variables, company size was found to be negatively correlated with price volatility with significant effect, Hussainey et al. (62); Habib et al. (80-81) also affirmed the same correlation between company size and Price Volatility. Company size is negatively correlated with price volatility as larger firms are subject to lower risk since they are well established in their capital markets (Habib et al. 80-81). All other three controlling variables are inversely correlated with price volatility, whereas earnings volatility, leverage, growth of the company is not statistically significant as the p-values are higher according to the results of fixed effect regression analysis.

The model fitness of the study is only 17%, which means the share price volatility explained by the dividend yield, dividend pay-out ratio and four controlling variables, size of the company, earnings volatility, leverage of the firm and growth are relatively lower compared to other countries studies like United Kingdom is 27%, Malaysia it is 43% and experience in Iran is 37%. Even though the model fitness is lower compared to other countries, the explanatory power of the variables was at a lower level in empirical studies as well. The model fitness was only 10% initial regression and based on the results of the Hausman test, the fixed effect model was selected for the analysis, which resulted an increase in model fitness to 17%.

5. Conclusion

The study was intended to explore the impact of dividend policy on share price volatility in Sri Lanka, while concentrating on LCBs listed in the CSE. The dividend policy is a subject that has been studied by numerous researchers and more than six decades (Miller and Modigliani, the cost of capital, 261; Lashgari and Ahmadi, 281), in different capital markets. The general empirical evidence in this subject matter in frontier market like Sri Lanka is inconclusive as even within the frontier markets results are contradictory. Further, in the Sri Lankan context, published literature on dividend policy and price volatility is hardly available and in order to fill the time and empirical gap, studying the subject matter was important.

The analysis included multiple variables for LCBs listed in the CSE for a period covering eight years; therefore the multivariate regression analysis (Bryman and Bell, 333) was adopted. Data analysis was started with testing the variable for stationarity, while after passing the test, panel data set was put in the regression analysis using E-views7 statistical software. Finally, Random effect test, Hausman test and fixed effect tests were carried out find out the relationship of price volatility and dividend policy.

According to the results of the study, there was no significance evidence to conclude that there was a relationship between dividend yield and price volatility of LCBs. Similar results were evidenced by Hussainey et al. (66) in a developed market (Morgan Stanley Capital International) in United Kingdom as dividend yield is calculated based on the current market prices, while different shareholders have a different cost per share depending on their time of purchase. Since different shareholders might have differences dividend yields, as they may have purchased the shares in different time periods (different cost basis). Therefore, shareholder may have reacted differently to changes in dividend yields which results in no significant impact to share price volatility. As evidenced by Zakaria et al. (06) and Lashgari and Ahmadi (281) in their studies done covering the period from 2005 to 2012 in emerging market and frontier market, like Iran and Pakistan (Morgan Stanley Capital International), also found similar evidence that dividend yield did not have a significant impact on share price volatility.

The theoretical cases for dividend yield related to the dividend starts with the dividend irrelevance theory by Miller and Modigliani, the cost of capital, (261), where it says that dividend policy does not have an impact on the capital structure of a firm and the value of the firm. Dividend yield is considered as a part of dividend policy, even though the results found in this study supports the dividend irrelevance theory which cannot be concluded in favour of dividend irrelevance theory as the assumptions of dividend irrelevance theory was not hold in real world capital market like in the CSE.

It was found a strong case to confirm significant relationship between dividend pay-out ratio and share price volatility of LCBs in CSE. Shareholders have responded to changes in dividend pay-out ratio as it affects the realized income received from the investments that

they made in LCBs. All three different capital markets, developed, emerging and frontier (Morgan Stanley Capital International) indicated the same impact of dividend pay-out on price volatility of respective capital markets (Hussainey et al. 66; Nazir et al. 138; Habib et al. 82; Lashgari and Ahmadi, 281).

The evidence from the study was also consistent with the theory confirming shareholders put more value to current income than capital gain as explained in birds in the hands theory. Further, Agency cost theory in terms of dividend policy also affirmed by the study, as higher dividend pay-out could lower the price volatility which leads to reduction of risk of the firm. The results support the agency cost theory in practice in LCBs listed in the CSE.

Even though the results of the study found a positive relationship between dividend yield and price volatility it was a not a significant relationship which was supported by the previous studies done in United Kingdom, Malaysia, Iran and Pakistan (Hussainey et al. 66; Habib et al. 82; Zakaria et al. 06; Lashgari and Ahmadi, 281), because different shareholders may react to the changes in dividend yield differently as each shareholder may have different dividend yield depending on their purchase prices.

The outcome of this study would be useful for the investors in the CSE and to economists/analysts who seek to understand the behaviour of capital markets. Hence, the results of this study enable the board of directors of companies to ascertain ways, to change the volatility of their share prices by altering the dividend policy.

The scale of this debate on the impact of dividend policy on share price volatility is therefore extensive and multifaceted, even in the Sri Lankan capital market context. Therefore, with regards to dividend policy studies in Sri Lanka, there are a need for more research in order to allow further assessment of different market sectors in the CSE, as this study was limited to Licensed Commercial Banks listed in the CSE.

References

- Abor, Joshua, and Godfred A. Bokpin. "Investment opportunities, corporate finance, and dividend payout policy: Evidence from emerging markets." *Studies in economics and finance* 27.3 (2010): 180-194.
- Allen, Dave E., and Veronica S. Rachim. "Dividend policy and stock price volatility: Australian evidence." *Applied financial economics* 6.2 (1996): 175-188.
- Al-Twaijry, Abdulrahman Ali. "Dividend policy and payout ratio: evidence from the Kuala Lumpur stock exchange." *The Journal of Risk Finance* 8.4 (2007): 349-363.
- Baker, H. Kent, and David M. Smith. "In search of a residual dividend policy." *Review of Financial Economics* 15.1 (2006): 1-18.
- Baker, H.K. and Powell, G.E. "Dividend policy in indonesia: survey evidence from executives". *Journal of Asia Business Studies*, 6 (1), (2012) pp 79-92
- Baskin, Jonathan. "Dividend policy and the volatility of common stocks." *The Journal of Portfolio Management* 15.3 (1989): 19-25.
- Becker, Bo, Zoran Ivković, and Scott Weisbenner. "Local dividend clienteles." *The Journal of Finance* 66.2 (2011): 655-683.
- Bell, Leonie, and Tim Jenkinson. "New evidence of the impact of dividend taxation and on the identity of the marginal investor." *The Journal of Finance* 57.3 (2002): 1321-1346.
- Bhattacharya, Sudipto. "Imperfect information, dividend policy, and" the bird in the hand" fallacy." *The Bell Journal of Economics* (1979): 259-270.
- Breitung, Jörg, and Samarjit Das. "Panel unit root tests under cross-sectional dependence." *Statistica Neerlandica* 59.4 (2005): 414-433.
- Brennan, Michael. "A note on dividend irrelevance and the Gordon valuation model." *The Journal of Finance* 26.5 (1971): 1115-1121.
- Breuer, W., O. M. Rieger, and C. Soypak. "The behavioural foundations for corporate dividend policy: A cross country empirical analysis." (2012).
- Bryman, Alan, and Emma Bell. "Business research methods. 3 uppl." Malmö: Liber AB (2011) print.
- Clark, Tom S., and Drew A. Linzer. "Should I use fixed or random effects?." *Political Science Research and Methods* 3.2 (2015): 399-408.
- Central Bank of Sri Lanka,(2016). Web 02.August .2016
- Colombo Stock Exchange,(2016). Web 03.August 2016
- DeAngelo, Harry, Linda DeAngelo, and Douglas J. Skinner. "Reversal of fortune dividend signaling and the disappearance of sustained earnings growth." *Journal of financial Economics*40.3 (1996): 341-371.
- DeAngelo, Harry, and Linda DeAngelo. "The irrelevance of the MM dividend irrelevance theorem." *Journal of financial economics* 79.2 (2006): 293-315.
- Denis, David J., and Igor Osobov. "Why do firms pay dividends? International evidence on the determinants of dividend policy." *Journal of Financial economics* 89.1 (2008): 62-82.
- Dong, Ming, Chris Robinson, and Chris Veld. "Why individual investors want dividends." *Journal of Corporate Finance* 12.1 (2005): 121-158.
- Elsas and Florysiak. Literature review on theoretical models of capital structure theory (2008)

- Gaver, Jennifer J., and Kenneth M. Gaver. "Additional evidence on the association between the investment opportunity set and corporate financing, dividend, and compensation policies." *Journal of Accounting and economics* 16.1-3 (1993): 125-160.
- Gordon, Myron J. "Optimal investment and financing policy." *The Journal of finance* 18.2 (1963): 264-272.
- Gul, Ferdinand A., and Burch T. Kealey. "Chaebol, investment opportunity set and corporate debt and dividend policies of Korean companies." *Review of Quantitative Finance and Accounting* 13.4 (1999): 401-416.
- Greene, William H. "Econometric Analysis", Seventh Edition. Upper Saddle River, NJ: Prentice Hall. (2012)
- Grullon, Gustavo, and David L. Ikenberry. "What do we know about stock repurchases?." *Journal of Applied Corporate Finance* 13.1 (2000): 31-51.
- Grullon, Gustavo, Roni Michaely, and Bhaskaran Swaminathan. "Are dividend changes a sign of firm maturity?." *The Journal of Business* 75.3 (2002): 387-424.
- Habib, Yasir, Zernigah Irshad Kiani, and Muhammad Arif Khan. "Dividend policy and share price volatility: Evidence from Pakistan." *Global Journal of Management and Business Research* 12.5 (2012).
- Hotchkiss, Edith S., and Stephen Lawrence. "Empirical evidence on the existence of dividend clienteles." (2007).
- Jecheche, Petros. "Dividend policy and stock price volatility: a case of the Zimbabwe stock exchange." *University of Zimbabwe Institutional Repository* (2012).
- Kent Baker, H., and Gary E. Powell. "Dividend policy in Indonesia: survey evidence from executives." *Journal of Asia Business Studies* 6.1 (2012): 79-92.
- Krieger, Kevin, Bong-Soo Lee, and Nathan Mauck. "Do senior citizens prefer dividends? Local clienteles vs. firm characteristics." *Journal of Corporate Finance* 23 (2013): 150-165.
- La Porta, Rafael, et al. "Agency problems and dividend policies around the world." *The journal of finance* 55.1 (2000): 1-33.
- Lashgari, Zahra, and Mousa Ahmadi. "The Impact of Dividend Policy on Stock Price Volatility in the Tehran Stock Exchange." *Kuwait Chapter of Arabian Journal of Business and Management Review* 3.10 (2014): 273-283.
- Lindop, Sarah, and Kevin Holland. "Dividend taxation and the pricing of UK equities." *Journal of Applied Accounting Research* 14.3 (2013): 203-223.
- Lintner, John. "Distribution of incomes of corporations among dividends, retained earnings, and taxes." *The American Economic Review* 46.2 (1956): 97-113.
- Lintner, John. "Dividends, earnings, leverage, stock prices and the supply of capital to corporations." *The review of Economics and Statistics* (1962): 243-269.
- Lipson, Marc L., Carlos P. Maqueira, and William Megginson. "Dividend initiations and earnings surprises." *Financial Management* (1998): 36-45.
- Masum, Abdullah Al. "Dividend policy and its impact on stock price—A study on commercial banks listed in Dhaka stock exchange." (2014).
- Miller, Merton H., and Franco Modigliani. "Dividend policy, growth, and the valuation of shares." *The Journal of Business* 34.4 (1961): 411-433.
- Miller, Merton H., and Franco Modigliani. "Dividend policy and market valuation: a reply." *The Journal of Business* 36.1 (1963): 116-119.

- Modigliani, Franco, and Merton H. Miller. "The cost of capital, corporation finance and the theory of investment." *The American economic review* 48.3 (1958): 261-297.
- Morgan Stanley Capital International (2016) Web 21 July 2016
- Myers, Stewart C. "Capital structure." *The journal of economic perspectives* 15.2 (2001): 81-102.
- Nizar Al-Malkawi, Husam-Aldin. "Determinants of corporate dividend policy in Jordan: an application of the Tobit model." *Journal of Economic and Administrative Sciences* 23.2 (2007): 44-70.
- Nazir, Mian Sajid, and Muhammad Musarrat Nawaz Abdullah. "How Dividend Policy Affects Volatility of Stock Prices of Financial Sector Firms of Pakistan." (2012): 132-139.
- Nissim, Doron, and Amir Ziv. "Dividend changes and future profitability." *The Journal of Finance* 56.6 (2001): 2111-2133.
- Porta, R.L., Silanes, F.L., Shleifer, A. and Vishny, R.W. *Agency problems and dividend policies around the world*. Harvard University and University of Chicago, (1999)
- Rozeff, Michael S. "Growth, beta and agency costs as determinants of dividend payout ratios." *Journal of financial Research* 5.3 (1982): 249-259.
- Sadiq, M., Ahmad, S., Anjum, M.J., Sulaiman, S., Abrar, S., Khan S.U. (2013) Stock price volatility; a case study of karachchi stock market, *Middle East journal of scientific research*, 13 (3), pp. 426-431
- Tse, Chin-Bun. "Use dividends to signal or not: an examination of the UK dividend pay out patterns." *Managerial Finance* 31.4 (2005): 12-33.
- Weigand, Robert A., and H. Kent Baker. "Changing perspectives on distribution policy: The evolution from dividends to share repurchase." *Managerial Finance* 35.6 (2009): 479-492.
- Zakaria, Zuriawati, Jorah Muhammad, and Abdul Hadi Zulkifli. "The impact of dividend policy on the share price volatility: Malaysian construction and material companies." *International Journal of Economics and Management Sciences* 2.5 (2012): 1-8.

Appendix 01

Descriptive Statistics Detailed

| | P_VOL | D_YLD | D_PO | E_VOL | LEV | LSIZE | GROWTH |
|--------------|----------|----------|----------|----------|----------|----------|-----------|
| Mean | 0.052715 | 0.098549 | 53.11554 | 5.51E-05 | 85.10733 | 5.318117 | 3.395801 |
| Median | 0.023822 | 0.027580 | 35.66814 | 3.37E-05 | 86.08693 | 5.290193 | 2.694370 |
| Maximum | 0.497468 | 4.854369 | 485.4369 | 0.001729 | 150.0904 | 5.945559 | 60.39876 |
| Minimum | 0.001805 | 0.003751 | 0.000000 | 1.13E-07 | 60.71367 | 4.790292 | -52.25533 |
| Std. Dev. | 0.079011 | 0.472805 | 56.99870 | 0.000152 | 6.823647 | 0.279643 | 6.657225 |
| Skewness | 3.063649 | 7.810617 | 3.570223 | 9.871305 | 3.278926 | 0.232961 | 0.631560 |
| Kurtosis | 13.48147 | 68.08780 | 22.45141 | 102.9675 | 38.78359 | 2.198832 | 48.44257 |
| Jarque-Bera | 1375.780 | 41817.49 | 4007.206 | 96910.63 | 12352.39 | 8.016900 | 19288.48 |
| Probability | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.018162 | 0.000000 |
| Sum | 11.80818 | 22.07508 | 11897.88 | 0.012352 | 19064.04 | 1191.258 | 760.6595 |
| Sum Sq. Dev. | 1.392127 | 49.85052 | 724493.9 | 5.18E-06 | 10383.36 | 17.43861 | 9883.056 |
| Observations | 224 | 224 | 224 | 224 | 224 | 224 | 224 |

Panel Unit Root Test

Panel unit root test: Summary

Series: P_VOL

Date: 08/07/16 Time: 10:02

Sample: 2008Q1 2015Q4

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each test

| Method | Statistic | Prob.** | Cross- sections | Obs |
|--|-----------|---------|--------------------|-----|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -5.51102 | 0.0000 | 6 | 180 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -4.91489 | 0.0000 | 6 | 180 |
| ADF - Fisher Chi-square | 46.3936 | 0.0000 | 6 | 180 |
| PP - Fisher Chi-square | 69.6234 | 0.0000 | 6 | 186 |

** Probabilities for Fisher tests are computed using an asymptotic Chi
-square distribution. All other tests assume asymptotic normality.

Results of Regression Analysis

Dependent Variable: P_VOL

Method: Panel Least Squares

Date: 08/05/16 Time: 20:21

Sample: 2008Q1 2015Q4

Periods included: 32

Cross-sections included: 7

Total panel (balanced) observations: 224

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | 0.547551 | 0.106662 | 5.133536 | 0.0000 |
| D_YLD | 0.006581 | 0.012627 | 0.521190 | 0.6028 |
| D_PO | -0.000225 | 0.000106 | -2.130603 | 0.0342 |
| LSIZE | -0.064762 | 0.019821 | -3.267368 | 0.0013 |
| E_VOL | -25.01715 | 34.51488 | -0.724822 | 0.4693 |
| LEV | -0.001588 | 0.000880 | -1.803323 | 0.0727 |
| GROWTH | -0.000779 | 0.000845 | -0.921832 | 0.3576 |
| R-squared | 0.101501 | Mean dependent var | | 0.052715 |
| Adjusted R-squared | 0.076658 | S.D. dependent var | | 0.079011 |
| S.E. of regression | 0.075922 | Akaike info criterion | | -2.287466 |
| Sum squared resid | 1.250825 | Schwarz criterion | | -2.180852 |
| Log likelihood | 263.1962 | Hannan-Quinn criter. | | -2.244431 |
| F-statistic | 4.085647 | Durbin-Watson stat | | 1.588855 |
| Prob(F-statistic) | 0.000663 | | | |

Appendix 04

Results of Random Effect Model

Dependent Variable: P_VOL

Method: Panel EGLS (Cross-section random effects)

Date: 08/05/16 Time: 20:21

Sample: 2008Q1 2015Q4

Periods included: 32

Cross-sections included: 7

Total panel (balanced) observations: 224

Swamy and Arora estimator of component variances

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| C | 0.547551 | 0.103787 | 5.275723 | 0.0000 |
| D_YLD | 0.006581 | 0.012287 | 0.535626 | 0.5928 |
| D_PO | -0.000225 | 0.000103 | -2.189615 | 0.0296 |
| LSIZE | -0.064762 | 0.019287 | -3.357866 | 0.0009 |
| E_VOL | -25.01715 | 33.58467 | -0.744898 | 0.4571 |
| LEV | -0.001588 | 0.000857 | -1.853271 | 0.0652 |
| GROWTH | -0.000779 | 0.000822 | -0.947365 | 0.3445 |

Effects Specification

| | S.D. | Rho |
|----------------------|----------|--------|
| Cross-section random | 2.29E-09 | 0.0000 |
| Idiosyncratic random | 0.073876 | 1.0000 |

Weighted Statistics

| | | | |
|--------------------|----------|--------------------|----------|
| R-squared | 0.101501 | Mean dependent var | 0.052715 |
| Adjusted R-squared | 0.076658 | S.D. dependent var | 0.079011 |
| S.E. of regression | 0.075922 | Sum squared resid | 1.250825 |
| F-statistic | 4.085647 | Durbin-Watson stat | 1.588855 |
| Prob(F-statistic) | 0.000663 | | |

Unweighted Statistics

| | | | |
|-------------------|----------|--------------------|----------|
| R-squared | 0.101501 | Mean dependent var | 0.052715 |
| Sum squared resid | 1.250825 | Durbin-Watson stat | 1.588855 |

Hausman Test Results

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|----------------------|-------------------|--------------|--------|
| Cross-section random | 18.187251 | 6 | 0.0058 |

Cross-section random effects test comparisons:

| Variable | Fixed | Random | Var(Diff.) | Prob. |
|----------|------------|------------|------------|--------|
| D_YLD | 0.015416 | 0.006581 | 0.000017 | 0.0319 |
| D_PO | -0.000271 | -0.000225 | 0.000000 | 0.1107 |
| LSIZE | -0.183095 | -0.064762 | 0.000862 | 0.0001 |
| E_VOL | -23.250064 | -25.017149 | 32.683748 | 0.7572 |
| LEV | -0.000279 | -0.001588 | 0.000001 | 0.1035 |
| GROWTH | -0.000041 | -0.000779 | 0.000000 | 0.0288 |

Cross-section random effects test equation:

Dependent Variable: P_VOL

Method: Panel Least Squares

Date: 08/05/16 Time: 20:22

Sample: 2008Q1 2015Q4

Periods included: 32

Cross-sections included: 7

Total panel (balanced) observations: 224

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| C | 1.064456 | 0.169169 | 6.292272 | 0.0000 |
| D_YLD | 0.015416 | 0.012958 | 1.189666 | 0.2355 |
| D_PO | -0.000271 | 0.000107 | -2.540044 | 0.0118 |
| LSIZE | -0.183095 | 0.035126 | -5.212537 | 0.0000 |
| E_VOL | -23.25006 | 34.06778 | -0.682465 | 0.4957 |
| LEV | -0.000279 | 0.001175 | -0.237369 | 0.8126 |
| GROWTH | -4.08E-05 | 0.000889 | -0.045900 | 0.9634 |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|--------------------|----------|-----------------------|-----------|
| R-squared | 0.172802 | Mean dependent var | 0.052715 |
| Adjusted R-squared | 0.125757 | S.D. dependent var | 0.079011 |
| S.E. of regression | 0.073876 | Akaike info criterion | -2.316576 |
| Sum squared resid | 1.151565 | Schwarz criterion | -2.118578 |
| Log likelihood | 272.4565 | Hannan-Quinn criter. | -2.236654 |
| F-statistic | 3.673158 | Durbin-Watson stat | 1.703550 |
| Prob(F-statistic) | 0.000050 | | |

Results of Fixed Effect Model

Dependent Variable: P_VOL

Method: Panel Least Squares

Date: 08/05/16 Time: 20:22

Sample: 2008Q1 2015Q4

Periods included: 32

Cross-sections included: 7

Total panel (balanced) observations: 224

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| C | 1.064456 | 0.169169 | 6.292272 | 0.0000 |
| D_YLD | 0.015416 | 0.012958 | 1.189666 | 0.2355 |
| D_PO | -0.000271 | 0.000107 | -2.540044 | 0.0118 |
| LSIZE | -0.183095 | 0.035126 | -5.212537 | 0.0000 |
| E_VOL | -23.25006 | 34.06778 | -0.682465 | 0.4957 |
| LEV | -0.000279 | 0.001175 | -0.237369 | 0.8126 |
| GROWTH | -4.08E-05 | 0.000889 | -0.045900 | 0.9634 |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|--------------------|----------|-----------------------|-----------|
| R-squared | 0.172802 | Mean dependent var | 0.052715 |
| Adjusted R-squared | 0.125757 | S.D. dependent var | 0.079011 |
| S.E. of regression | 0.073876 | Akaike info criterion | -2.316576 |
| Sum squared resid | 1.151565 | Schwarz criterion | -2.118578 |
| Log likelihood | 272.4565 | Hannan-Quinn criter. | -2.236654 |
| F-statistic | 3.673158 | Durbin-Watson stat | 1.703550 |
| Prob(F-statistic) | 0.000050 | | |

Appendix 07

Population and Sample Selected From LCBs in CSE

Population

| No | Name of LCB |
|----|----------------------------------|
| 01 | Amana Bank PLC |
| 02 | Commercial Bank of Ceylon PLC |
| 03 | DFCC Bank PLC |
| 04 | Hatton National Bank PLC |
| 05 | National Development Bank PLC |
| 06 | Nations Trust Bank PLC |
| 07 | Pan Asia Banking Corporation PLC |
| 08 | Sampath Bank PLC |
| 09 | Seylan Bank PLC. |
| 10 | Union Bank of Colombo PLC |

Sample selected for the analysis

| No | Name of LCB |
|----|--------------------------------------|
| 01 | Commercial Bank of Ceylon PLC (COMB) |
| 02 | DFCC Bank PLC (DFCC) |
| 03 | Hatton National Bank PLC (HNB) |
| 04 | National Development Bank PLC (NDB) |
| 05 | Nations Trust Bank PLC (NTB) |
| 06 | Sampath Bank PLC (SAMP) |
| 07 | Seylan Bank PLC. (SEYB) |