Corporate Pay-out Policy and Test of Life Cycle Theory; Evidence from Nepalese Commercial Banks

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Abstract

Dividend policy of firm in theoretical finance is one of the most controversial issue, various theories of dividend policy try to explain the dividend behaviour of the firm. The dividend distributed by a firm to its shareholder is very different when it is viewed from the perspective of the company's life cycle. If no regulation forces, then firms at initial stage have higher investment opportunities, so they retain all their earning and pay no dividend. The firms at maturity stage have less investment opportunities, slow pace of growth rate and lower cost of raising external capital, hence, mature firms retain less and pays higher dividend. Life cycle hypothesis suggests that firm increases their dividend with their maturity. This study investigates the dividend behaviour of Nepalese commercial banks, by using the ten years panel data for the period from 2010 to 2019. Using conventional proxies of life cycle, the result of the study consistently shows that Nepalese listed commercial bank follow dividend life cycle theory. The result also shows that larger firms pay higher dividend and dividend history has positive relation with next period dividend payment. The result is robust and such robustness check has been conducted by altering some of the proxies of the variables. The result of the study suggest that the regulators should not impose same dividend policy to the entire banking industry.

Keyword: Dividend Policy, Firm Life Cycle, Life Cycle Hypothesis, Commercial Bank

JEL classification: G32, G35

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BACKGROUND

The life cycle theory of dividends argues that the optimal dividend policy of a firm depends upon the firm's stage of the life cycle. The life cycle of any firm from starting to maturity is associated with declining investment opportunities, a slow pace of growth rate and the lower cost of raising external capital. According to Jensen (1986) life-cycle influences the incremental value-relevance of earnings and cash flow measures. Also, the changes in life cycle stages lead to a higher pay-out ratio when the firms become more mature (Denis & Osobov, 2008). The theory also argues that relatively higher investment opportunities are set for younger firms but they do not earn sufficiently enough profit to grab all those opportunities. They also try to retain most or all of their earnings to invest in those available opportunities. They usually have very little or no money left to distribute as dividends (Bulan & Subramanian, 2011).

There has been a substantially huge number of research conducted regarding the firms' dividend after Miller and Modigliani (1961) first proposed the dividend irrelevance proposition. This proposition states that the dividend policy doesn't change the shareholders' wealth. After that, the theoretical and empirical research on dividends has argued on different aspects such as the bird in hand hypothesis (Lintner, 1962), agency theory (Jensen & Meckling, 1976), signalling hypothesis (S. Bhattacharya, 1979), free cash flow hypothesis (Jensen, 1986), catering hypothesis (Baker & Wurgler, 2004) and life cycle hypothesis (DeAngelo, DeAngelo, & Stulz, 2006; Fama & French, 2001; Grullon, Michaely, & Swaminathan, 2002). After the fundamental study of Miller and Modigliani (1961) on dividend irrelevance proposition, most of the study on dividend policy has been conducted on the assumption of market imperfection such as asymmetric flow of information, tax, agency problem to examine the relevance of dividend with firm value. Fama and French (2001) conducted a study of the nature of dividends in the US firms between 1926-1999, the result of the study shows that the average dividend of the firm has declined significantly after 1978. They found that the reason to be newly listed firms in US securities market, which were paying a low dividend and affect overall average dividend of the listed companies.

The growing importance of dividend policy in the Nepalese capital market is to be diagnosed as the regulator often ties to impose single dividend policy to the entire industry. For an illustration the monetary policy of FY 2020/21 point 122 states;

"BFIs licensed by NRB will be allowed to declare and distribute cash dividend to the extent of 30 percent of net distributable profit of 2019/20 (which shall not be higher than the weighted average deposit interest rate of mid-July 2020 of the particular institution). However, BFIs having net distributable profit of less than 5 percent of total paid-up capital will not be allowed to distribute cash dividend." (NRB, 2020)

This study will identify whether the dividend pay-out policy of the firm is affected by the firm life cycle or not. Even though it has been a decent time in the capital market, after the stock exchange and Securities Board came into existence in Nepal, they lack several infrastructural arrangements and legal barriers (SEBON, 2018). The only stock exchange that has been operating for more than two decades-long also lacks advanced trading management system which can support high-frequency trading and so on. Also, there are only around 200 companies listed in the stock exchange, which is highly dominated by the financial and insurance sectors. The market capitalisation of commercial bank only occupies more than 50 percent of total market capitalisation of the exchange. Addition of other class of BFI increases the market capitalisation to around two third of the total market capitalisation of the exchange. With the higher level of occupancy of BFI in market capitalisation, the general investors have higher degree of concern to the dividend policy adopted by the BFI. It is often expressed by the scholars that the Nepalese market is sensitive towards dividends and most of the finance managers do not like to reduce the dividend amount (Adhikari, 2014). However, Nepalese companies lack proper corporate governance (Pradhan et al., 2019) and doesn't follow proper dividend policy. According to Black (2001), developing countries generally have weaker law enforcement and poor corporate governance practices, so the firms in these countries behave differently, this also affects the dividend policy adopted by the

firms. On the basis of a study conducted in developed economies generalization cannot be made for the all developing and emerging countries. Further, explicit study is required in emerging and developing countries so that life cycle theory stands in emerging and developing countries as well. This study aims to address the void.

Extant literature (Adhikari, 2015; Bhandari & Pokharel, 2012; Bista et al., 2019; Pradhan, 2003) on the dividend policy of Nepalese firm suggests that the listed Nepalese companies decide dividend pay-out policy on the basis of past year dividend, liquidity position, net profit and so on. It is not clear that whether these firms do follow the life cycle theory or not. Even though the banking activities are highly regulated by the monetary authority, the policy regarding the dividend is less regulated. However, in some events, the monetary authority makes provision on the dividend to regulate the industry. In this context, the objective of this study is to analyse the dividend policy from the highly regulated banking sector of Nepal. This study attempts to answer the research question that 'Does Nepalese commercial bank follow the life cycle theory regarding the dividend pay-out policy?' This study will contribute to the dividend literature in the Nepalese context and also further validate the life cycle theory of dividends proposed by DeAngelo et al. (2006) the fraction of publicly traded industrial firms that pay dividends is high when retained earnings are a large portion of total equity (and of total assets in developing economies. Moreover, the result of the study will assist the regulators such as Central Bank, Insurance Board, Securities Board of Nepal, Telecommunication Authority, Electricity Regulatory Commission for the formation of regulation that can affect the cash outflow, capital plan or stock buyback. This study will also serve as a basis for further research and discussion on dividend theory among Nepalese firms.

The paper is composed of five different sections. It starts with the general background of the dividend policy and the life cycle theory. The next section deals with literature review, where the theoretical construct and empirical studies has been reviewed. The third section is about the research methodology where the research methods have been described. The results of the study have been

presented in the fourth section. This section also covers the robustness test. The fifth section deals with the discussion and the avenues for future research.

LITERATURE REVIEW

According to Grullon et al. (2002), when firms become more mature and there occurs a situation of the declining rate of reinvestment, this allows the firms to have excess cash, which should be ultimately paid to investors as dividends. So, the researcher indicated that at the maturity stage firms are able to pay a higher dividend. This is the initial argument made that the firm life cycle affects the dividend policy. At this point, however, there is no formal model in finance that explains the firms' life cycle stage change the firms' pay-out policy. The hypothesis is explicitly tested by DeAngelo et al. (2006) by assessing whether the firms' probability to pay dividends is positively related to the life cycle stage of the firm. The result indicates that there is an increment in the probability to pay dividends when the firm turns to the mature stage. This is the first strong evidence in the support of life cycle theory of dividend. Afterwards, there have been several empirical studies conducted, that supports the life cycle theory; most of this research has been conducted in developed economies such as DeAngelo et al. (2006) took samples from US firms; Coulton and Ruddock (2011) conducted a study in the Australian context; Denis and Osobov (2008), used the evidence from six developed economies US, Canada, France, Germany, UK and Japan. Flavin and O'Connor, (2017) conducted an empirical study using pieces of evidence from South Korea whereas Bhattacharya et al. (2019) conducted a study among listed firms in the US. There have been very few studies in emerging and developing economies. Wang et al. (2011) tested the theory among the listed firm in Taiwan stock exchange; Hassani and Dizaji (2013) provided the evidence from Teheran stock exchange, Thanatawee (2011) conducted a study among the listed firms in Thailand and Dixit et al. (2020) tested the theory among listed Indian firms. The firms in emerging and developing economies possess different characteristics than the firms in developed economies.

STUDIES IN INTERNATIONAL CONTEXT

In the study of Fama and French (2001) the propensity to pay dividends by US firms between 1926 to 1999, the average dividend declined after 1978. The result shows that the new listing of small firms in exchange with lower profitability and higher investment opportunities retain the cash and most of them never pay dividends. The result indicates that the firms having higher maturity provides higher dividend and younger firms pay low or no dividend. The firms' maturity is captured using the natural age of the firm. This study is the initial departure to the life cycle hypothesis of dividend.

Grullon et al. (2002) conducted a study to examine whether the changes in dividend is the change in firms' maturity or not. The result of the study also supports the assumptions of the life cycle hypothesis. Also, Brav et al. (2005) survey provides an important insight that around eighty percent of 384 financial executives believe that dividend pay-out policy conveys information to the market. The other results that is driven from the survey are; maintaining the dividend level higher has importance, so more than two-third of financial executive strongly agree that they try to avoid reducing dividend payment.

DeAngelo et al. (2006) added important evidence in dividend literature by empirically testing the life cycle hypothesis for the first time. Unlike Fama and French (2001), DeAngelo et al. (2006) used the ratio of retained earnings to total assets as a proxy to define the maturity of the firm. In the initial study to test life cycle theory, DeAngelo et al. (2006) argued that the fraction of publicly traded industrial firms has the potential to pay a high dividend when the ratio of retained earnings (RE) to total asset/total equity earning (TA/TE) is high and such dividend falls lower or even zero when most equity of the firm is contributed rather than earned. To test such life cycle theory, scholars argued that a firm is treated to be mature if they have a higher ratio of earned capital to total capital, if such a ratio is low, then the firm is treated as younger. The result of the study shows that there exists a high and significant relation between dividend pay-out decisions and earned/contributed capital mix. Such a result is obtained when

the researchers have controlled for the variables such as; profitability, growth, total equity, firm size, cash holding and dividend history. The result of the study shows that firms' propensity to pay dividends is positively related to the firms' life cycle.

Expansion on the study of DeAngelo et al. (2006) was conducted by Denis and Osobov (2008) by including the firms from six developed economies. The monotonic and positive relationship between firms' maturity and dividend policy is further validated in the international context. Further evidence on life cycle theory is presented by Brockman and Unlu (2011). The researcher presented the study with the support of international evidence of pay-out policy. The result of the study shows that there is a positive influence of the ratio of RE to TE for the firm to pay dividends. In other words, the result supports that the younger firm pays lower dividends than that of the older firm, being consistent with DeAngelo et al. (2006).

Coulton and Ruddock (2011) test the life cycle theory with corporate pay-out policy in the Australian context. The researchers were also interested to examine whether the dividend tax imputation system of Australia provides additional information on firm life cycle or not. The study included more than nine thousand three hundred firm-year observation and the result of the study shows that the probability to increase dividend increases with the portion of retained earnings, which is the proxy used to measure the firms' maturity as suggested by DeAngelo et al. (2006) and the empirical evidence of the study that the life cycle theory is strongly suggested. In other words, the dividend payment increases with maturity, the firms paying higher dividends are larger, more profitable with limited investment opportunities and higher amounts in retained earnings.

Flavin and O'Connor (2017) used the samples from South Korean firms to examine the life cycle theory. This study used a various range of life cycle indicators to define the different stages of firms' maturity. The result of the study shows that the life cycle stages are economically significant with dividend policy which indicate that the different classification method supports the life cycle theory of dividend.

Bhattacharya et al. (2019) examined the firms' life cycle to explain the propensity to pay dividends. The result of the study shows that the dividend policy adopted by the firm is significant with various stages of the firm life cycle but the relation is non-linear in nature. The researchers used an alternative way to measure the life cycle stages as suggested by Dickinson (2011), which develop the proxy for life cycle using a cash flow pattern that captures non-linear relation of the firm life cycle with firm profitability, size and age.

Dixit et al. (2020) examine the dividend pay-out behaviour to test signalling, life cycle and catering theories of dividend policy among Indian firms. The result of the study shows that only the life cycle theory can be used to explain the dividend pay-out behaviour of Indian firms. The researcher did not find any evidence in support of signalling and catering theory.

STUDIES IN NEPALESE CONTEXT

In Nepal, there have been several studies that examine the firms' dividend policy. Pradhan (2003)examined the major motive for cash dividend by Nepalese firms, the result shows that the firm intent to express the situation of the favourable prospect of the firm through cash dividend. Adhikari (2014) analysed the perception of managers on dividend policy by surveying the views of managers of various listed companies in the Nepal Stock Exchange. Even though the result of the study indicates that the most important determinant of dividend policy is the growth rate of earning, the researcher did not link up the result with the life cycle stage. Adhikari (2015) analysed the determinant of corporate dividend pay-out policy in selected Nepalese listed firms. The researchers used variables such as net profit, size of past dividend, liquidity, risk, investment opportunities and the number of the shareholder base. The result of the study shows a net profit, total assets and liquidity are the major determinants of the corporate dividend pay-out policy among Nepalese firms. The researcher did not even include the life cycle stage as a control variable in the study. Bhandari and Pokharel (2012) conducted a study on dividend policy among selected eight

commercial banks of Nepal and could not conclude any appropriate dividend policy that fits Nepalese commercial banks. Bista et al. (2019) analysed the relationship between firm performance and its dividend policy among selected commercial banks and insurance companies of Nepal. The result of the study shows that foreign ownership, firm size is positively related to dividend pay-out ratio. The above discussion shows that none of the studies in dividend literature conducted in the Nepalese context has included life cycle theory, there is no strong empirical evidence that the life cycle hypothesis stands in the Nepalese context as well. Furthermore, the result of most of the studies in the Nepalese context remains inconsistent either because of the small sample base.

The evidence from the extant literature shows that with the different stage of firms' life cycle, the free cash of the firm is served in different function. The proposed hypothesis has been well established in the developed economies where the firm's have high level of corporate governance. In the regular fashion, it is interesting to examine the hypothesis in the developing countries, where the practice of corporate governance is sub-optimal. Moreover, in Nepal the existing literature on dividend policy have ignored the life cycle hypothesis. This study aims to address this void in literature through the explicit examination of the life cycle hypothesis in the Nepalese context with the panel data of all listed 26 commercial banks for 10 years period making the sample 260 firm-year along with the robustness test.

MEASURING THE FIRMS' MATURITY

In the words of Gort and Klepper (1982), there are five stages of the life cycle of the firm; the first one is the introduction where the firm innovation is produced for the first time, second is the growth stage where dramatically the high number of producer exceeds, the third one is maturity, where most of the producers reach to their optimum capacities, the fourth stage is the shake-out from where most of the producers capacity starts to decline. The final stage is decline form where there is essentially a zero-net entry.

There are many life cycle proxies proposed by the extant literature. DeAngelo et al. (2006) suggested retained earnings to total assets as a proxy for life cycle, while Dickinson (2011) used five life-cycle stages as suggested by Gort and Klepper (1982). Black et al. (2014) used firm age as a proxy to maturity, whereas Faff et al. (2016) employed the firm age-adjusted by industry and size. The age of the firm increases monotonically with maturity. Many papers disagree that firm natural age can be a true proxy for a firm's maturity.

Owen and Yawson (2010) conducted a study regarding the impact of corporate life-cycle on takeover activity. The researcher followed DeAngelo et al. (2006) and used the RE proposition as a proxy to measure the firm's life-cycle. The result of the study shows that there is a significant positive relation between firm life-cycle and acquisition attributes. DeAngelo et al. (2006) approach for measuring firm maturity through earned/contributed has been well accepted in dividends.

Denis and Osobov (2008), Brockman and Unlu (2011), Shao et al. (2013) are the other scholars to use RE to TE (or TA) ratio as a proxy to measure firm maturity. Furthermore, von Eije and Megginson (2008) also suggest that a firm's natural age is only able to measure its calendar age whereas the ratio of RE to TA capture the financial age of the firm. The financial age is able to describe the firm's maturity, so, the ratio of RE/TE and RE/TA has been employed in this study as well.

RESEARCH METHODOLOGY

The deductive approach has been used in this study. Deductive approach is popular in the economic literature where a testable hypothesis is designed on the basis of the theory. Hypothesis or group of hypotheses are developed at the beginning of the study, which are supported by the existing literature or some scenarios, so that the research objective can be further explored. In this study also, hypothesis has been tested to answer the research question. The structural Pooled OLS / Fixed Effect / Random Effect based on the result of Hausman test has been adopted for the

test and the discovery. The following conceptual framework has been developed for the study based on the research objective. Based on the above discussion and literature, the following hypothesis has been developed:

H1: Banks having higher maturity is expected to pay a higher dividend than banks having lower maturity.

The above hypothesis examines the life cycle theory of dividends among Nepalese commercial banks. There is an expectation of a positive relationship between the life cycle stage and dividend policy, which can also be viewed as the firms having lower maturity (young stage) is expected to pay a low dividend as compared to the firms having higher maturity.

EXPLANATION OF VARIABLES

Dependent Variable

The dependent variable of the study is the Dividend Pay-out policy (DIV). The dividend pay-out ratio (DPR) is used as a proxy to measure the dependent variable. The dividend per share (DPS) doesn't truly reflect the financial capabilities of the firm in the particular year, this study uses the ratio of earnings to pay-out as the proxy to capture the dividend policy. The total dividend of the firm is divided by the total earnings per share of the firm to calculate the dividend pay-out ratio. If the firm distributes all its earnings as dividends, then the DPR of the firm will be one, if it doesn't distribute anything the DPR will be zero in such an event. In some extra-ordinary events if the firm also uses the previous year retained earnings to distribute then DPS can be more than one. In the event that firm has negative EPS but the firm still pays dividends, the ratio has been capped to zero for this study. Dividend yield (YIELD) has been taken as the dependent variable for the robustness test.

Explanatory variables

Firm's maturity: The firm's maturity is the explanatory variable to explain the dependent variable of the study. As mentioned earlier in the literature review

segment, there have been various proxies used to measure the firm's maturity. In this study, the ratio of earned to contributed capital has been used to measure the firm's maturity. According to DeAngelo et al. (2006) the fraction of publicly traded industrial firms that pay dividends is high when retained earnings are a large portion of total equity (and of total assets, the proxy of RE/TE (or RE/TA) is appropriate to measure a firm's maturity. The independent variable has been lagged to one year to minimize the endogeneity issue. The life cycle hypothesis says that firms at younger pay less dividend and firms at higher maturity stage pays a higher dividend, in this study both of the proxies (RE/TE and RE/TA) has been used and both of them are expected to have a positive relationship with the dependent variable.

Control variables

Several variables have been controlled for this study; they are included as control variable of the study; these includes

Growth Opportunities: Asset's growth rate (AGR) has been used to measure the growth opportunities of the firm. It is calculated as the percentage of the growth in assets from the previous year. Following Fama and French (2001), AGR is used as a proxy for current investment opportunities. The life cycle hypotheses predict a negative relation between investment opportunities and dividend pay-outs.

Profitability: Profitability is measured by the earnings per share (EPS) of the firm. The EPS of the firm is received by dividing the net profit of the firm by the number of outstanding shares. In other words, EPS represent the per-unit profit allocation of the firm, which is yet to distribute to the investor. Profitability is also measured by the Return on Assets (ROA), which is calculated by dividing the net profit by the total assets. It is expected that have a positive relationship between profitability and dividend pay-out.

Firm Size: It is often argued in life cycle theory that larger firms are more mature than smaller firms. There are different proxies used to measure the size of the firm since it is related to maturity; the market capitalization of the firm has been used to measure the firm size (SIZE). The log value of market capitalization has

been employed in this study. It is expected to have positive relation between firm size and dividend pay-out.

Dividend History: Dividend history or past dividends also affects the dividend policy of the firm, so the previous year dividend pay-out ratio has been used as a proxy to capture dividend history. Dividend history is assumed to have a positive relation with pay-out policy.

Table 1: Variable of Study

Type	Variables	Proxy
Dependent	Dividend Pay-out Policy	Dividend Pay-out Ratio (DIV)
Independent	Firm Maturity	Retained Earnings/Total Equity (RETE)
		Retained Earnings/Total Assets (RETA)
	Growth Opportunities	Assets Growth Rate (AGR)
	Profitability	Return on Assets (ROA)
Control		Earnings Per Share (EPS)
	Firm Size	Log of Market Capitalization of Firm (SIZE)
	Dividend History	Last year Dividend (DIV(t-1))

Expected relation

The expected relation between independent variable, control variable and dividend pay-out has been presented in following table;

Table 2: Expected relation between variables

Variable	Proxy	Expected Relation
Firm Maturity	RETE	+
Firm Maturity	RETA	+
Profitability	ROA	+
Profitability	EPS	+
Growth Opportunities	AGR	−
Firm Size	SIZE	+
Dividend History	DIV (t-1)	+

Empirical Model of the study

Consistent with Fama and French (2001), DeAngelo et al. (2006) and Coulton and Ruddock (2011), following the statistical methodology of Fama and MacBeth (1973) to test whether the likelihood of the firm paying dividend depends systematically with a firm's stage in its financial life cycle, the study uses the proxy of level of contributed capital (retained earnings) as the portion of total capital (RETE) and level of contributed capital to total earnings (RETA). The following regression models are estimated that takes the payment of dividends by firm i in year t as the dependent variable;

When Retained Earnings by Total Equity (RETE) is used to measures the firm maturity;

$$DIV_{i,t} = \beta_{10} + \beta_{11}RETE_{i,t} + \beta_{12}ROA_{i,t} + \beta_{13}AGR_{i,t} + \beta_{14}SIZE_{i,t} + \beta_{15}DIV_{i,t-1} + \varepsilon_{i,t} \ldots \text{(i)}$$

$$DIV_{i,t} = \beta_{20} + \beta_{21}RETE_{i,t} + \beta_{22}EPS_{i,t} + \beta_{23}AGR_{i,t} + \beta_{24}SIZE_{i,t} + \beta_{25}DIV_{i,t-1} + \varepsilon_{i,t} \ldots \text{(ii)}$$

When Retained Earnings by Total Assets (RETA) is used to measure the firms' maturity

$$DIV_{i,t} = \alpha_{30} + \alpha_{31}RETA_{i,t} + \alpha_{32}ROA_{i,t} + \alpha_{33}AGR_{i,t} + \alpha_{34}SIZE_{i,t} + \alpha_{35}DIV_{i,t-1} + \varepsilon_{i,t} \ldots \text{(iii)}$$

$$DIV_{i,t} = \alpha_{40} + \alpha_{41}RETA_{i,t} + \alpha_{42}EPS_{i,t} + \alpha_{43}AGR_{i,t} + \alpha_{44}SIZE_{i,t} + \alpha_{45}DIV_{i,t-1} + \varepsilon_{i,t} \ldots \text{(iv)}$$

Considering both profitability variables in same equation, the empirical model of the study is as follows;

$$DIV_{i,t} = \delta_{50} + \delta_{51}RETE_{i,t} + \delta_{52}EPS_{i,t} + \delta_{53}ROA_{i,t} + \delta_{54}AGR_{i,t} + \delta_{55}SIZE_{i,t} + \delta_{56}DIV_{i,t-1} + \varepsilon_{i,t} \ldots \text{(v)}$$

$$DIV_{i,t} = \delta_{60} + \delta_{61}RETA_{i,t} + \delta_{62}EPS_{i,t} + \delta_{63}ROA_{i,t} + \delta_{64}AGR_{i,t} + \delta_{65}SIZE_{i,t} + \delta_{66}DIV_{i,t-1} + \varepsilon_{i,t} \ldots \text{(vi)}$$

For all of the equations, the notation of the variable indicates;

$DIV_{i,t}$ is the ratio of Dividend per share to Earnings per share (DPS/EPS) of *i* company at *t* period. Dividend per share includes the summation of stock dividend and cash dividend. Furthermore, there is no practices of stock repurchases, so it

has not been considered in the study.

$RETE_{i,t}$ is the ratio of retained earnings to total assets of i company at t period.

$SIZE_{i,t}$ is the log of market capitalization of i company at t period.

$ROA_{i,t}$ is the return on assets of i company at t period.

$EPS_{i,t}$ is the return on earnings per share of i company at t period.

$AGR_{i,t}$ measures the growth opportunity through change in assets size of i company at t period.

$DIV_{i,t-1}$ is the past year dividend, measured by DPS/EPS of i company at t-1 period.

NATURE AND SOURCE OF DATA

For this study, the commercial bank segment has been chosen. Commercial banks are one of the large institutions that are listed in NEPSE. The total market capitalization of the commercial bank only occupies more than 50 percent of total market capitalization. There are 27 commercial banks in Nepal among them 26 are listed in the exchange, for this study all 26 commercial banks have been considered. The data is collected for ten years period, starting from 2010 to 2019, all from the secondary sources. Few new commercial banks came into existence after 2010, so the data has been started in 2010. The data are assumed to be free from the impact of the prevailing effect of the Global Financial Crisis of 2007-2009 as well.

The data for 10 years period for firms should have been 260 firm-year. However, some firms started after 2010 and some firms emerged from mergers and acquisitions from two or more small financial institutions, so no data have been considered for such firms. After removing the missing data there exist only 227 firm-year data. Most of the data are collected from the annual report of the corresponding firm. Some of the data have been collected from the website of Nepal Stock Exchange and Nepal Rastra Bank.

RESULTS AND FINDINGS

Descriptive Statistics and Correlation Analysis

At first, the summary statistics have been presented at the level data except for the size of the firm. The size is taken as the log of market capitalization, which is calculated by using the last trading day stock value of the corresponding firm. The summary statistics is presented in Table 3.

Table 3: Summary Statistics
(Missing values are skipped)

Variable	Mean	Median	Minimum	Maximum
DIV	0.828	0.800	0.000	5.932
RETE	0.403	0.308	-1.056	1.856
RETA	0.026	0.024	-0.055	0.112
ROA	1.646	1.561	-3.434	22.091
EPS	24.996	20.122	-40.231	525.490
SIZE	23.489	23.574	20.595	25.937
AGR	0.252	0.199	-0.096	3.163
DIVt1	0.827	0.807	0.000	5.932
Variable	Std. Dev.	C.V.	Skewness	Ex. kurtosis
DIV	0.611	0.738	2.849	19.815
RETE	0.400	0.994	0.873	1.715
RETA	0.021	0.792	0.196	2.368
ROA	1.580	0.960	8.791	111.340
EPS	35.469	1.419	11.233	155.180
SIZE	1.061	0.045	-0.387	-0.145
AGR	0.292	1.158	5.374	44.987
DIVt1	0.643	0.778	2.706	17.695

The descriptive statistics shows that average dividend pay-out ratio is 82.78 percent. The dividend pay-out ratio has been observed significantly high in the study period. One reason for such a high payout ratio can be due to hike in paid up capital requirement. Commercial banks were forced to hike the capital by four times and the firms used their retained earnings at the upmost level. This can be further validated by the maximum figure of the dividend pay-out ratio, which is 593.19 percent. The average RE to TE is of 40.26 percent. Similarly, average EPS of the firms is found to be Rs. 24.99 and the AGR of 25.19 percent. The details of descriptive statistics have been presented in the annex.

Second, the correlation among the regressor variables has been tested. If two or more variables are correlated highly with each other, this can create the chances of multicollinearity among the series. The ROA and EPS are found to be highly and positively correlated, they are the proxies for profitability and are alternatives to each other. Surprisingly, both of the proxies of profitability are negatively correlated with dividend pay-out. The negative correlation between the profitability and pay-out indicate that the relation is not monotonic. Possible reason beyond the argument is that the younger firm do not distribute the dividend even though they are able to make significant profit, they rather retain the majority of the portion. On the other hand, the mature firms even if not able to increase the profitability they prefer to distribute majority of the earnings to the shareholders. The result of the correlation analysis has also been presented in the annex of the study.

Test for multicollinearity

Test of multicollinearity has been conducted through the Variance Inflation Factors (VIF), the result of the test is as follows;

Table 4: Variance Influence Factor

Model 5	Model 6
RETE 2.509	RETA 1.470
EPS 3.622	EPS 2.168
SIZE 1.775	SIZE 1.688
AGR 1.119	AGR 1.116
ROA 2.347	ROA 2.249
DIV(t-1) 1.081	DIV(t-1) 1.081

$VIF(j) = 1/(1 - R(j)^2)$, where $R(j)$ is the multiple correlation coefficient between variable j and the other independent variables. The result suggests (all values are less than 10) that there exists no multicollinearity in the data.

Test for autocorrelation and heteroskedasticity

Wooldridge test for autocorrelation in panel data suggests that there is no first-order autocorrelation between the data. Furthermore, the Durbin-Watson values are near to two, which also suggest that the data are not autocorrelated. The White test of heteroskedasticity suggests that the data are not homoscedastic and there exist heteroskedasticity. In a pooled OLS model if heteroskedasticity is present,

Wooldridge (2010) suggest that the robust standard error should be used and the robust standard error can be obtained by Huber, Eicker and White estimators.

Regression Analysis

First, for the regression analysis, the pooled OLS of the panel data is conducted. Afterwards, panel diagnosis of the pooled OLS has been conducted[3], the result of the panel diagnosis suggests that the fixed effect model should be used for model one and model four, the pooled OLS model is appropriate for the rest of the models. The result of the Hausman test[4] shows that the null hypothesis of the Hausman test is rejected for the entire model, indicating that the fixed effect is consistent with that of the random effect. So, for the final result of the regression, the fixed effect regression model for panel data is employed for models one and model four. The final regression result with appropriate pooled OLS and with fixed effect has been presented in Table 5.

Table 5: Regression Summary

Variable	Model 1 Fixed Effect	Model 2 Pooled OLS	Model 3 Pooled OLS	Model 4 Fixed Effect	Model 5 Pooled OLS (Robust SE)	Model 6 Pooled OLS (Robust SE)
Constant	-5.145*** (0.000)	-2.969*** (0.005)	-3.412*** (0.001)	-4.331*** (0.000)	-2.969* (0.060)	-3.852** (0.037)
RETE	0.372** (0.023)	0.712*** (0.000)			0.696*** (0.000)	
RETA			5.704*** (0.000)	3.996 (0.127)		6.369** (0.010)
ROA	-0.282*** (0.000)		-0.269*** (0.000)		-0.033 (0.728)	-0.182** (0.075)
EPS		-0.021*** (0.000)		-0.017*** (0.000)	-0.020*** (0.003)	-0.008** (0.029)
Size	0.269*** (0.000)	0.162*** (0.000)	0.189*** (0.000)	0.237*** (0.000)	0.169** (0.022)	0.209** (0.016)

3   Pooled OLS and Panel diagnosis of the pooled OLS has not been reported in this paper. The results are available on the request.

4   To decide between the FE and RE a Hausman Test (or Hausman Specific Test) is conducted in panel data. In the test the null hypothesis is that the preferred model is FE whereas the alternative hypothesis is that the model is RE. The result of the Hausman Test has been reported at the annex of the paper.

Variable	Model 1 Fixed Effect	Model 2 Pooled OLS	Model 3 Pooled OLS	Model 4 Fixed Effect	Model 5 Pooled OLS (Robust SE)	Model 6 Pooled OLS (Robust SE)
AGR	-0.214 (0.125)	-0.139 (0.281)	-0.170 (0.207)	-0.219 (0.117)	-0.145 (0.155)	-0.183* (0.092)
Div(t-1)	-0.009 (0.892)	0.124** (0.032)	0.131** (0.029)	-0.065 (0.322)	0.123 (0.223)	0.121 (0.263)
Adjusted R Sq.		0.233	0.165		0.231	0.177
D/W	1.87	1.80	1.81	1.75	1.81	1.78

Note: ***Significant at the 1 percent level.
         **Significant at the 5 percent level.
         *Significant at the 10 percent level.
         The values in the parenthesis indicate the p value.

The above table shows the final regression result, where model one and model four are regressed with fixed effect and the rest of the models are regressed with pooled OLS method. When retained earnings by total equity are taken as the firm maturity, the entire model shows that they are significant coefficients with positive values. This indicates that the dividend pay-out increases with the firms' maturity. However, when the retained earnings to total assets are taken as the proxy of firms' maturity, there are statistically significant results in some models and statistically not significant in one model. Whenever RE/TA is significant, they have a positive coefficient indicating that mature firms' pay higher dividends. The result is consistent with previous studies of DeAngelo et al. (2006) and other scholars (Flavin & O'Connor, 2017; Thanatawee, 2011; Wang et al., 2011); that mature firm pays a higher dividend, the result supports the hypothesis of the study.

Regarding the other control, variable size is statistically significant in all models with a positive coefficient, which indicates that a larger firm pays a higher dividend. The assets growth rate has a negative coefficient as expected however they are not significant in any of the models. The dividend history is found to be statistically significant in pooled OLS method but not in the fixed-effect method. The coefficient of the previous year dividend is positive,

which indicate that firms' increases their dividend in comparison to their previous year dividend. Regarding the profitability variables of the study both the proxies (EPS and ROA) has a negative coefficient. The earnings per share are found to be statistically significant in all cases and return on assets is significant in all cases except model five. The negative effect of earnings on dividends is found in this study in contrast to many previous studies. The negative coefficient of profitability indicates that dividend decreases prior to the increases in profitability. One possible reason can be the dividend payers' omission to dividend might have some effect on this, since the pay-out ratio of the respective year are not applicable in panel data set because the omitted year cannot be included in panel data analysis. The negative sign of EPS (earnings) still is consistent with the result of Grullon et al. (2002).

Robustness Test

The robustness of the result is further tested by altering the proxies to capture the variables. Through the extant literature, the proxy to the dividend pay-out has been taken as the ratio of dividend per share to earnings per share. To find out the results are robust small changes in the proxy of the pay-out has been taken as the current yield, which is calculated as the ratio of current dividend to current market price. To conduct the robustness-test, the following model has been estimated.

$$YIELD_{i,t} = \delta_0 + \delta_1 RETE_{i,t} + \delta_2 EPS_{i,t} + \delta_3 ROA(_{i,t}) + \delta_4 PE_{i,t} + \delta_5 SIZE_{i,t} + \delta_6 DIV_{i,t-1} + \varepsilon_{i,t} \ldots \ldots (vii)$$

$$YIELD_{i,t} = \delta_0 + \delta_1 RETA_{i,t} + \delta_2 EPS_{i,t} + \delta_3 ROA_{i,t} + \delta_4 PE_{i,t} + \delta_5 SIZE_{i,t} + \delta_6 DIV_{i,t-1} + \varepsilon_{i,t} \ldots \ldots (viii)$$

Where,

$YIELD_{i,t}$ indicates the dividend per share by market price per share of *i* firm at *t* period.

$PE_{i,t}$ indicates price earning ratio (alternative proxy for growth opportunities) of *i* firm at *t* period.

The result of the regression has been summarized in following table.

Table 6: Regression summary for Robustness Check

Variable	Pooled OLS (with robust standard error)		Fixed Effect	
	Model 7 Fixed Effect	Model 8 Pooled OLS	Model 7 Pooled OLS	Model 8 Fixed Effect
	Dependent Variable: YIELD			
Constant	9.477* (0.070)	7.904 (0.122)	5.538 (0.228)	4.765 (0.285)
RETE	2.723*** (0.000)		3.455*** (0.000)	
RETA		44.072*** (0.000)		56.581*** (0.000)
ROA	1.043*** (0.002)	0.335 (0.306)	0.825** (0.050)	0.304 (0.449)
EPS	-0.074*** (0.000)	-0.029*** (0.007)	-0.038 (0.119)	-0.000 (0.984)
Size	-0.295 (0.188)	-0.227 (0.296)	-0.158 (0.437)	-0.128 (0.515)
PE	-0.005** (0.037)	-0.005** (0.020)	-0.004* (0.050)	-0.004** 0.049
Div(t-1)	0.322 (0.231)	0.319 (0.269)	0.167 (0.491)	0.097 (0.681)
Adjusted R Sq.	0.138	0.158		
D/W	1.50	1.55	1.85	1.92

Note: ***Significant at the 1 percent level.
          **Significant at the 5 percent level.
          *Significant at the 10 percent level.
          The values in the parenthesis indicate the p value.

The result of the robustness test shows that when yield is taken as the proxy for dividend pay-out, then still the RE/TE ratio and RE/TA ratio are statistically significant with a positive coefficient. The result supports the mature firm pays a higher dividend pay-out than that of younger firms. However, most of the control variables did not show statistically significant results. The price-earnings ratio is found to be statistically significant in all cases, which

can be considered as an alternative proxy to the growth opportunities. By observing the above mention regression summary for robustness check, it can be concluded that the dividend pay-out ratio is a better proxy than dividend yield for dividend pay-out.

DISCUSSION AND IMPLICATION

In this study, two proxies have been used to measure the firms' maturity, namely RE/TE and RE/TA, which are suggested by the previous research studies. These proxies define maturities as a higher ratio of earned capital in comparison to contributed capital or assets. The ratio of DPS/EPS is used as a proxy to measure firms' pay-out policy and the regression result shows that the Nepalese commercial banks follow the life cycle theory. The only hypothesis of the study is supported by finding. The younger firm pays fewer dividends and mature firms pay a higher dividend; the result is found to be consistent with both of the proxies of firm maturity. The result are also found to be consistent with the foundation of life cycle hypothesis and the result of the previous empirical studies of Coulton and Ruddock (2011); DeAngelo et al. (2006); Denis and Osobov (2008); Dixit et al. (2020); and Thanatawee (2011). There are various other control variables, which has been employed in the study, such as; firm size, firm's profitability, dividend history and firm's growth opportunities. Except, growth opportunities, the other variables are found to be statistically significant in this study. Proxies for profitability are found to be negative with dividend pay-out, which is averse to the expected sign. The robustness check has been conducted by using dividend yield as an alternative proxy to dividend pay-out, which shows that mature firms still pay more dividends than that younger firms. Regardless, of the result of the control variables on the robustness test, the test further validates the life cycle theory of dividend among Nepalese commercial banks. Furthermore, the regression analysis also suggests that the dividend pay-out ratio is a better proxy to pay-out policy than the dividend yield.

Previous studies in the Nepalese context covered the identification of

determinants of dividend policy, investment opportunities, firm size, the growth rate of enterprise earnings, dividend history, net profit, foreign ownership etc. are the determinant of dividend policy in Nepal. However, firms cannot be forced to pay dividends with single policy-fit-regulation, which means the determinant of dividend policy which are influenced by firm characteristics are in fact changes according to the stage of the life cycle. Furthermore, if the regulation is set in accordance which forces the younger firms to pay dividends they are bound for other sources of external financing or restrict with the upper ceiling for mature firms regarding dividend payment, then the problem of suboptimal investment will occur, which eventually lead to the agency cost problem

As mentioned in the introduction section, NRB through the monetary policy, often tries to regulate the dividend payment of the banks and financial institutions through a single regulation. The result of the study shows that a single policy-fit-regulation is not suitable for the entire industry, so it has to make policy considerations regarding this issue in future days. The other regulator of the financial sector, such as the Insurance Board and Securities Board of Nepal also need to consider this issue while formulating policy regarding dividend payment.

CONCLUSIONS

The dividend behaviour of Nepalese commercial banks has been examined in this study, with reference to the life cycle theory of dividends. The Nepalese commercial banks have been taken for the study in order to investigate whether these firms support the life cycle theory or not. All listed 26 commercial banks are considered for the study, data included the period of 10 years from 2010 to 2019. Overall, the dividend policy of listed Nepalese commercial banks is highly consistent with life cycle theory and this result can also help the investor to understand that why some firms pay higher dividends and some firms not.

Nepalese commercial banks are highly regulated firms, during the period of the

study the central bank directed them to hike the paid-up capital fourfold, this eventually leads to various mergers and acquisition activities the commercial banks. Furthermore, they also used their reserves heavily to distribute the stock dividend. These regulatory changes could have affected their capital structure, such influences have not been addressed in this study. Any policy intervention to shape the profit and dividend of commercial banks has been one of the major determinants of pay-out policy of the banking sector, the study has ignored such interventions. As a future research avenue, extension of the study can be conducted to examine whether the theory stands with other sector companies/ firms of Nepal such as; insurance, manufacturing, hydropower, other financial institutions etc.

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Annex

Correlation matrix with dependent variable RETE

Correlation Probability	DIV	RETE	ROA	EPS	SIZE	AGR	DIV(t-1)
DIV	1.000000						
	– – –						
RETE	0.250314	1.000000					
	(0.0002)	– – –					
ROA	-0.020079	0.427088	1.000000				
	(0.7656)	(0.0000)	– – –				
EPS	-0.027475	0.731805	0.703364	1.000000			
	(0.6832)	(0.0000)	(0.0000)	– – –			
SIZE	0.292432	0.535280	0.535999	0.522270	1.000000		
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	– – –		
AGR	-0.139392	-0.212405	-0.253440	-0.226698	-0.261626	1.000000	
	(0.0375)	(0.0014)	(0.0001)	(0.0006)	(0.0001)	– – –	
DIV(t-1)	0.220607	0.065594	0.052699	0.022815	0.216905	-0.167284	1.000000
	(0.0009)	(0.3295)	(0.4336)	(0.7347)	(0.0011)	(0.0124)	– – –

Correlation matrix with independent variable RETA

Correlation Probability	DIV	RETA	SIZE	ROA	EPS	AGR	DIV(t-1)
DIV	1.000000						
	– – –						
RETA	0.213007	1.000000					
	(0.0014)	– – –					
SIZE	0.292432	0.469650	1.000000				
	(0.0000)	(0.0000)	– – –				
ROA	-0.020079	0.496022	0.535999	1.000000			
	(0.7656)	(0.0000)	(0.0000)	– – –			
EPS	-0.027475	0.475746	0.522270	0.703364	1.000000		
	(0.6832)	(0.0000)	(0.0000)	(0.0000)	– – –		
AGR	-0.139392	-0.157802	-0.261626	-0.253440	-0.226698	1.000000	
	(0.0375)	(0.0184)	(0.0001)	(0.0001)	(0.0006)	– – –	
DIV(t-1)	0.220607	0.076496	0.216905	0.052699	0.022815	-0.167284	1.000000
	(0.0009)	(0.2553)	(0.0011)	(0.4336)	(0.7347)	(0.0124)	– – –

The values in the parenthesis indicate the p value.

Panel Diagnostic Summary

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Residual Variance	0.283518	0.270902	0.28854	0.284472	0.27219	0.2841
Joint Significance F statistics	1.74318 (0.02002)	1.34388 (0.13369)	1.5533 (0.05255)	1.73464 (0.02096)	1.3336 (0.1431)	1.5499 (0.0534)
Suggestion (Pooled OLS or Fixed Effect)	Fixed Effect	Pooled OLS	Pooled OLS	Fixed Effect	Pooled OLS	Pooled OLS
Hausman Test Statistics (H)	47.0855 (0.0000)	35.3818 (0.0000)	41.8129 (0.0000)	47.0688 (0.0000)	35.7431 (0.0000)	42.049 (0.0000)
Suggestion (Fixed Effect or Random Effect)	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect