



Capital Structure on Dividend Policy: Is There Any Relationship?

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ABSTRACT

Dividend pay-out policies often emanate from complex financial decisions and corporate managers do not consider dividend policies in isolation. However, some studies have indicated that capital structure significantly affects dividend pay-out and should be managed properly as it accounts for variations in dividends. The aim of this study was to investigate the relationship between capital structure and dividend pay-out. This study made use of a Kolmogorov-Smirnov and a Chi-square test. These tests are more reliable in investigating the variations and dependency between variables and are a leap from the models used in the prior literature. Using the R^2 values of six published articles, the results revealed that capital structure cannot be used to explain variations in dividend pay-out as suggested by some authors. The implications of this study are that academic journals should scrutinise journal manuscripts where there are suggestions that there is a relationship between capital structure and dividend policy.

Keywords: Capital Structure, Dividend Policy, Kolmogorov-Smirnov Test, Chi-square Test.

JEL Classifications: G1, G2, G4

1. INTRODUCTION

Financing and investing decisions are two important financial management decisions that corporate managers need to make on a regular basis (Grozdanovska et al., 2017). Financing decisions are generally related to raising capital to support firm operations, while investing decisions involve selecting a suitable asset that will generate higher returns. Capital structure and dividend policy are examples of financing and investment decisions that affect the level of funds available in the firm. Specifically, the capital structure is important due to its perceived ability to mitigate risk and is generally applicable at the senior management level. The capital structure relates to the financing and financing of a firm's noncurrent asset, which, in essence, is the proportion of debt and equity that prevails. This concept signals a high financial risk when there is a high proportion of debt compared to equity (Abata et al., 2017). The choice and amount of securities issued play a significant role in raising capital in a firm which indicates more or less debt financing. In relation to other important decisions in a firm, capital structure does not mean much. As proposed by Modigliani and Miller (1963), capital structure

decisions do not affect the value of a firm. The value of a firm is usually determined from factors such as expected cash flows and other financial matrix such as earnings multiples.

On the contrary, dividend policy is related to how firms distribute their free cash flows to equity holders, which is the compensation for holding equity securities (Yeo, 2018). Traditional finance theories propose that dividends and dividend policies should be paid and crafted respectively in line with the level of cash flows and retained earnings. Considering the above-mentioned, it can be suggested that the following factors may play an important role in dividend decision;

- Size of the business
- Level of growth
- Ownership and control
- Earnings
- Cash flow position.

This implies that there may be no significant and meaningful relationship between capital structure and dividend policy, or

Table 1: Summary of prior studies on the effect of capital structure on profitability

Study (Author and Year of study)	Country	Period	Dependent variables used for profitability	Independent variables used for capital structure	Summary of Findings
Murage, (2016)	Kenya	2011–2015	Dividend pay-out ratio	Ratio of total debt to equity	Capital structure affects dividend pay-out and capital structure should be considered when estimating future dividends.
Rahman et al., (2017)	Pakistan	2008–2016	Dividend pay-out ratio	Financial leverage	The capital structure positively affects the dividend pay-out; hence, the capital structure should be considered when deciding the optimal dividend pay-out.
Ismawati, (2018)	Indonesia	2010–2015	Dividend pay-out ratio	Debt-to-equity ratio	Capital structure and dividend policy are positively correlated, and financial managers need to consider capital structure inputs in the day-to-day management of the firm.
Irawati and Komariyah, (2019)	Indonesia	2012–2018	Dividend pay-out ratio	Debt-to-equity ratio	The capital structure plays an important role in determining the number of dividends.
Sakr and Bedeir, (2020)	Egypt	2003–2016	Dividend pay-out ratio	Total debt to total asset ratio	The capital structure significantly affects the pay-out of the dividends and should be considered when making dividend decisions.
Ali et al., (2022)	Pakistan	2009–2014	Dividend pay-out ratio	Debt-to-equity ratio	The capital structure is inversely and negatively significant to dividend policy, and government should formulate policies that will favour investors.

Source: Authors

capital structure may have no effect on dividend policy. However, there are several studies that have been published citing that capital structure affects dividend policy (Murage, 2016; Rahman et al., 2017; Ismawati, 2018; Irawati and Komariyah, 2019; Sakr and Bedeir, 2020; Ali et al., 2022). Using a correlation analysis, these authors have made several recommendations on how firms can achieve optimal dividend policies by restructuring their capital structures. The purpose of this study is therefore to investigate the effect of capital structure on dividend policy using a more reliable approach. The significance of this study is that it investigates the effect of capital structure on dividend policy using a Kolmogorov-Smirnov test and a chi-square test, which are two important and widely used methods of dependence testing and more reliable than correlation analysis; hence, a leap from prior literature. Also, this study made use of R-square values as a measure of goodness of fit between capital structure and dividend policy, which provides a more robust and reliable analysis than the correlation method. It should be worth noting that correlation analysis can be spurious because of the multidimensional relation between the dependent and independent variables (Rjoub et al., 2017). The findings of this study provide significant insight into the literature and the body of knowledge on capital structure. The next section highlights the literature review section.

2. LITERATURE REVIEW

The literature comprises studies published in international journals on the effect of capital structure on dividend policy. The Table 1 highlights the findings.

The above studies summarise the findings of prior research with the corresponding findings (Table 1). However, this study uses a different approach which is essentially the R-square values (variations of the dependent variable accounted for by the independent component) of the above studies to estimate the

Table 2: Studies and the R² values used

Author and year of study	R ² value	Sample size
Murage (2016)	0.562	62
Rahman et al. (2017)	0.59	31
Ismawati (2018)	0.61	36
Irawati and Komariyah (2019)	0.14	41
Sakr and Bedeir (2020)	0.55	62
Ali et al., (2022)	0.1806	40

Source: Authors

goodness of fit between capital structure and dividend policy. The following section highlights the blueprints for data analysis.

3. METHODOLOGY

As already alluded, this study used a Kolmogorov-Smirnov test and a Chi-square to explore the extent to which capital structure explains variations in dividend policy. The Kolmogorov-Smirnov dependency test is used to determine whether a distribution of a sample data conforms to some theoretical distribution (Mishra et al., 2019). The Kolmogorov-Smirnov test estimates variations by measuring the distance between the cumulative distribution of the sample and that of a theoretical cumulative function, as shown below (Hanusz and Tarasińska, 2015);

$$D = \text{Max} / f_s(x) - f_T(X)$$

Here f_s is the sample frequency distribution, f_T is the theoretical frequency distribution, and D is the distance between the two variables. In addition, a Chi-square test was also used as a supplementary data analysis tool to provide a robust analysis. The observed frequencies, which are the R-square values from the studies in the prior literature, were benchmarked with the expected frequencies. The formula below highlights the chi-square distribution procedure

Figure 1: Lilliefors distribution tail

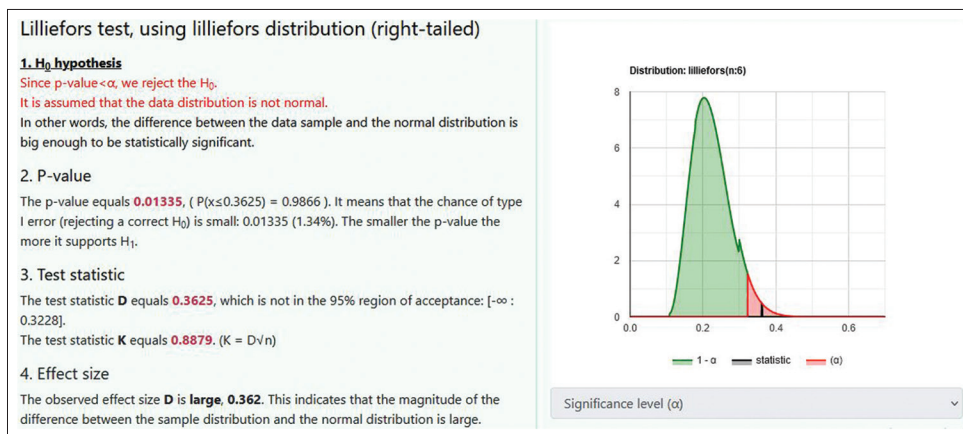


Table 3: Kolmogorov-Smirnov test output

R ² values	Cumulative	Expected	Rank	NORM.S.INV	Actual	Difference
56.2%	1	0.167	-0.167	-0.967	0.715	0.882
59.0%	2	0.33	0	-0.431	0.757	0.757
61%	3	0.5	0.167	0.000	0.785	0.618
14.0%	4	0.667	0.33	0.431	0.084	0.249
55.0%	5	0.83	0.5	0.967	0.696	0.196
18.1%	6	1	0.667		0.117	0.549
Count	6					
Mean	44%					
Standard deviation	22%					
Maximum	0.882					
Test statistics (5%, n = 6)	0.52					

Source: Authors

Table 4: Chi-square test results

Observed R ² values	Expected R ² values	(Observed-Expected) ² /Expected
56.20%	0.339	0.146
59%	0.339	0.185
61%	0.339	0.216
14%	0.339	0.117
55%	0.339	0.131
18.10%	0.339	0.074
Chi-square test value		0.87
Critical value		12.59

Source: Authors

$$x_e^2 = \frac{(o_i - E_i)^2}{E_i}$$

Where x_e^2 is the chi-square value, O_i the observed frequency and E_i the expected frequency. To this end, the following hypotheses were analysed.

- H_0 : Using the Kolmogorov–Smirnov test, R² values are normally distributed, therefore capital structure can be used to explain the variations in dividend policy.
- H_1 : Using the Kolmogorov–Smirnov test, R² values are not normally distributed, therefore, capital structure cannot be used to explain the variations in dividend policy.
- H_2 : Using the R² values, the Chi-square test statistic is greater than or equal to the critical value, hence capital structure is related to dividend policy.

- H_3 : Using the R² values, the Chi-square test statistic is less than the critical value, hence the capital structure is not related to dividend policy.

This study used 6 published articles and these because only papers that reported their R² values were considered. However, the sum total of all the firms used was 272 which is a considerable large figure. The following are a list of studies and the R-square values used (Table 2).

4. RESULTS AND ANALYSIS

From the data analysis of the Kolmogorov-Smirnov test and the Chi-square test, the following results were obtained (Tables 3 and 4).

The above results provide several interesting findings; the Kolmogorov-Smirnov test indicates that the test statistic value of 0.52 is lower than the maximum value of 0.88. Hence, the value of the test statistics falls into the rejection area of the distribution. This finding is in agreement with the findings in Figure 1 where the null hypothesis is also rejected because the data are not normally distributed. D, which is the distance between the sample distribution and the theoretical distribution was large enough, resulting in a right-tail distribution. From Table 2, the Chi-square test value was 0.87 which is much lower than the critical value of 12.59. This implies that the test value also falls into the region of rejection. These findings contradict the findings in the prior literature (Murage, 2016; Rahman et al., 2017; Ismawati, 2018;

Irawati and Komariyah, 2019; Sakr and Bedeir, 2020; Ali et al., 2022) which contends that capital structure significantly affects dividend policy and pay-out. From these results in Tables 3 and 4 as well as Figure 1, it becomes evident that the variation in dividend pay-out cannot be explained by capital structure decisions. Hence the following hypotheses are rejected;

- H_0 : Using the Kolmogorov-Smirnov test, R^2 values are normally distributed, therefore capital structure can be used to explain the variations in dividend policy.
- H_2 : Using the R^2 values, the chi-square test statistic is greater than or equal to the critical value, hence capital structure is related to dividend policy.

5. CONCLUSION AND RECOMMENDATION

The aim of this study was to investigate to what extent capital structure explains variations in dividend policy using the Kolmogorov-Smirnov and Chi-square test. Previous studies (Murage, 2016; Rahman et al., 2017; Ismawati, 2018; Irawati and Komariyah, 2019; Sakr and Bedeir, 2020; Ali et al., 2022) have made several recommendations mostly stating that capital structure should be adjusted to increase dividend payout which may not be valid. These studies used mostly correlation analysis, which lacked all the necessary information to make inferences. From the findings of this study, capital structure cannot be used to explain variations in dividend pay-out and hence dividend policy. Manuscripts presenting a relationship between these two concepts should no longer be accepted in academic journals in line with other bogus topics.

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