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Firm Fundamentals and Cost of Capital of Non-financial Firms in Nepal

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ABSTRACT

This paper examines the impact of firm fundamentals on the cost of capital (COC) of non-financial firms in Nepal for the period 2004/05-2017/18. This study has applied a causal-comparative research design to investigate the effect of firm fundamentals on COC. COC is the weighted average cost of capital of debt and share capital and is used as a dependent variable and bank-related fundamental variables such as growth rate of net sales, growth rate of assets, leverage ratio as debt to capital, dividend payout ratio, earning variability, assets tangibility and liquidity ratio are explanatory variables of this study. Estimated results show that liquidity, earnings variability, dividend payout and leverage ratio are key factors influencing COC in Nepalese nonfinancial firms. The estimated regression results of this paper reveal that COC is positively affected by dividend payout and inversely influenced by leverage, earning variability, and liquidity. This paper concludes that Nepalese non-financial firms with less dividend distribution using high financial leverage with a strong liquidity position and higher-earning variability can minimize the cost of capital. Nepalese firms should pay more dividends to use cheaper sources of debt and increase liquidity position and financial leverage to minimize the average cost of capital. Policymakers can use the results of this study to formulate and implement policies about firm fundamentals, cost of capital and business activities.

1. INTRODUCTION

The modern theory of cost of capital and financial leverage started from a prominent article by Modigliani and Miller (1958). Literature shows mixed evidence about factors affecting the cost of capital of firms. The cost of capital is a firm's required rate of return on investment for market value to attract funds (Gitman, 2010). Cost of capital is the weighted average cost of capital raised for investment in projects from various sources, such as long and short-term debt, preferred stock and common equity (Brigham & Ehrhardt, 2014).

The fundamental decision of firms is to invest funds into various assets and projects and evaluate the performance of existing investments. Cost of capital (COC) is the essential key measure in the business firm for sound investment decisions. Investment decisions of firms are affected by the composition of firms' capital structure, cost of capital and other factors. The business firm should make more attention to the cost of capital (COC) in making investment and financing decisions. Firms can raise capital from different financial resources such as retained earnings (undistributed profits), bonds, preferred stock, common stock etc.

Financial instruments (bonds, preferred stocks, common stocks etc.) have been developed to raise capital which depends on investors' preferences, security, growth in value, earnings etc. Equity stocks are a more adventurous instrument as compared to bonds. The risk and cost of preferred stock are between common stock and bond securities. Retained earnings are cheaper than new common stocks due to the lack of floatation costs but not cheaper than bonds and preferred stocks. Funds from retained earnings belong to equity shareholders. Retention profit (retained earnings) by firms must be justified with an assurance of return at least equal or more with shareholders from the distribution of profits as dividends.

Firms should formulate an optimal capital structure that helps minimize the overall cost of capital and maximize the value of equity shares. Financial literature shows that many studies were made on leverage and firms' cost of capital. However, the question regarding the impact of firm fundamentals on COC is still unanswered. This is the key issue in the areas of economics and finance. Modigliani and Miller (1958) revealed a hypothesis that COC remains invariant with the capital structure change of a firm. In contrast, the traditionalist view argues that COC is a function of capital structure. Literature shows that various studies were made to analyze factors affecting the cost of capital, but there is no common agreement about firm fundamentals and the COC of firms.

Debt-to-equity, debt-to-capital, and debt-to-assets ratios are measures of firms' leverage, though the debt-to-equity ratio is universally used. Leverage indicates a firm's borrowing position at a certain period (Pandey, 1981). In general, the debt ratio is long-term debt though Modigliani and Miller considered preference capital also in debt due to fixed cost. Barges (1963) argued that preferred stock has no risk of bankruptcy in non-payment of dividends as with debt. There is a leveraged benefit of short-term debt to stockholders, and short-term debt involves costs and risks like long-term debt (Pandey, 1981; Razan & Zingales, 1995).

Weston (1963) used size as an explanatory (independent) variable in analyzing the relationship between COC and leverage. Large business firms attract investors to invest in securities because they have more marketability, higher market values, are more familiar with the capital market, and can diversify with less risk. Thus, larger firms should be able to use more modernized technology to increase production efficiency, which helps reduce production costs. In general, larger firms have more debt capacity. They like to use a large volume of cheaper sources of debt capital to maximize the tax benefits and minimize the cost of capital (Rajan & Zingales, 1995).

Larger firms have advantages in information and monitoring costs and easy access to the debt market. Therefore, large firms can borrow more debt at a low cost (Fama, 1985). This is empirically tested and supported by the findings of Kim and Sorensen (1986). Nevertheless, Wald (1999) argued that larger firms use less debt capital, and numbers of professional managers try to control most of the firm's stocks and force the management to act in favour of shareholders' interest. Wald concluded centralized control system is responsible for adverse effects on size. There is a positive nexus between capital structure and firm size, which affects firm's weighted average cost of capital (Danso & Adomako, 2014; Arsov & Naumoski, 2016). In the test of the cost of the capital proposition, Weston (1963) found that an absence of growth may bias the coefficient of leverage. Literature shows that the growth variable is associated with leverage which affects the COC of firms. Theory suggests an inverse relationship between growth opportunities and leverage of firms which affects COC. Agency cost theory believes firms with high growth generally use less debt to minimize agency problems, which may adversely increase firms' COC. Jensen and Meckling (1976) argued leverage of a firm increases with the absence of growth opportunities, resulting in the cost of capital being less. Management is ready to accept growth only when shareholders' and management's interests coincide and firms have strong investment opportunities (Stulze & Johnson, 1985). This result supports the findings of Rajan and Zingales (1995), Wald (1999), and Booth et al. (2001). Pecking order theory (Myers, 1977; Myers & Majluf, 1984) shows a direct relationship between growth with leverage. This theory proposes that rapidly growing firms can use more debt than external equity for sound investment opportunities. This proposition is supported by the findings of Arsove and Naumoski (2016).

Part of the net income distributed to shareholders is the dividend. Dividend payout indicates the proportion of net income share-out to firms' real owners/shareholders. Generally, shareholders like to receive dividends rather than retain profits in the organization (Graham, 2000). Dividend payout depends on companies attempting to reduce transaction costs through dividend and financing policies. Higher-level dividend payout tends to increase with debt financing (Martin & Scott, 1974). Thus, it can be believed that COC and shareholders' stock value are affected by firms' dividend payout ratio. Debt is a discipline tool to ensure that managers make a profit for firms. Firms with higher free cash flow and profits can use more debt and restrain management's discretion, affecting the cost of capital. The pecking order theory of Myers (1984) and Myers and Majluf (1984) confirm that most firms should prefer internal equity (retained earnings) and use debt only if retained earnings are not enough. Literature shows an inverse association between leverage and profitability, affecting COC. This result is in line with Arsov and Naumoski (2016), Chen and Chen (2011), Booth et al. (2001), Wald (1999), Razan and Zingales (1995), and Titman and Wessels (1988).

Earning variability is used to measure the degree of risk. There is serious bias in the analysis and measurement of capital effect if selected sample firms have a different risk level and are not homogeneous. In an investigation of financial structure and its effect on the firm's value, Wippern (1966) found that industry groups have no sufficient bias to ensure homogeneity of uncertainty. More volatile firms have a higher risk of earnings and should acquire funds (financing) at high costs and face a higher bankruptcy risk. Bankruptcy cost theory believes firms with more volatile earnings have more chances of failure and tend to increase bankruptcy costs. It may create agency problems with debt holders, become annoying, and have a high chance of bankruptcy. There is a direct (positive) association between earnings volatility and the COC of firms (De Angelo & Masulis, 1980, Masuli, 1983; Titman & Wessels1988; Booth et al., 2001). This implies that firms having a higher level of earnings volatility could have a risk of earning below debt charges, which results in raising funds at a higher cost rate and should face problems of bankruptcy risk. Hence, highly volatile earning firms should use more equity financing to run their project, increasing firms' capital costs.

Previous theoretical and empirical studies show contradictory views in investigating the impact of liquidity position on a firm's capital structure and COC. Most managers of business firms prefer internal sources of financing (retained earnings) to external sources (pecking order theory). Thus, firms like to generate more liquid reserves by retaining profit as retained earnings for future investment than external financing sources. Firms with higher liquid assets would not have to collect capital through debt financing. Therefore, the expectation is to have an inverse relationship of leverage with liquidity which affects firms' cost of capital. In the study of capital structure and COC, Ozkan (2001) revealed similar findings. Another view argues that firms with more liquidity like to raise more capital from debt because they would have more debt capacity, affecting capital structure and cost of capital. Firms with higher liquidity ratios can raise capital from debt due to more debt capacity, which indicates a positive relationship between leverage and the liquidity position of firms that tends to reduce the cost of capital. Awan and Amin (2014) found a similar result.

The assets tangibility of a business firm affects capital structure and cost of capital. Firms should match the maturity of tangible assets and liabilities. Sufficient tangible assets in a business firm are more important to use as collateral in external financing (borrowing), which helps minimize firms' cost of capital. Titman and Wessels (1988), Harris and Raviv (1990), Rajan and Zingales (1995), and Fama and French (2002) revealed that tangible assets have a positive relation with leverage. Tangible assets increase firms' collateral value, which helps to make more borrowing capacity and helps reduce firms' COC. Jenson and Meckling (1976) observed that firms could use more tangible assets as sufficient collateral, reducing lenders' risk and agency costs of debt and the cost of capital. An analysis of signalling theory (Myers & Majluf, 1984; Danso & Adomako, 2014) revealed a direct relationship between tangibility and leverage, reducing firms' overall capital cost.

Theoretical and empirical studies show that various firm-specific fundamentals and macroeconomic factors affect COC. Firm fundamental related factors are leverage, size (size of sales), assets tangibility, liquidity, profitability, growth opportunity, earning volatility etc. Macroeconomic factors are gross domestic product growth rate, inflation rate, tax policy, market interest rates, exchange rate etc. This paper attempts to investigate the effect of firm fundamentals on the COC of firms in Nepalese contexts. Does this study focus on addressing what firm fundamental factors influence the cost of capital in Nepalese non-financial firms? Furthermore, how do firm fundamentals (growth of net sales, total assets, leverage, dividend payout, earning variability, assets tangibility, liquidity etc.) affect the cost of capital in Nepalese firms?

The basic purpose of this study is to examine the impact of firm fundamental factors on the cost of capital in Nepalese firms. This paper is outlined in four sections. First section deals with the introduction of the cost of capital, firm fundamentals, and issues and objective of this study. The second section covers the research methodology, including research design, nature and data sources, population and sample, analytical tools, variables, and model specification. Further, section three is for analysis of results and discussion of the study. Finally, section four concludes the paper's major findings and policy implications and suggests further research.

2. RESEARCH METHODS

This paper has applied a causal-comparative research design to examine the impact of firm fundamentals on the cost of capital of non-financial firms in Nepal. Causality research design is employed to investigate the relationship between firm fundamentals (size, the growth rate of assets, leverage, liquidity, dividend payout, tangibility, earning variability) and cost of capital. This paper has applied correlation analysis to ascertain, understand and analyze directions and relationships between dependent and various explanatory variables. Finally, Regression models have been applied to examine the impact of firm-related fundamental variables on the COC of firms and evaluate the explaining power of its various explanatory (independent) variables along with a statistical test of significance such as t-test, F-test, and R².

In this study, secondary data sources are used to examine the impact of the firmrelated fundamental variables on the cost of capital of non-financial firms in Nepal. Data were collected from the annual report of individual sample firms and the Security Board of Nepal (SEBON) of sample firms for fourteen years covering the fiscal year 2004/05 through 2017/18.

The population of this study represents all non-financial firms of Nepal listed on the Nepal Stock Exchange Ltd. (NEPSE). Forty-nine non-financial firms (including manufacturing, processing, trading, hotels, hydropower etc.) were listed in NEPSE till mid-July 2018. Fifteen out of the listed forty-nine non-financial firms have been considered sample firms. Thirteen observations (one observation is less than sample periods in the determination of growth) from each firm and a total of 195 observations are used to examine the impact of firm fundamentals on the cost of capital. In this paper, banks, finance companies, microfinance, co-operatives, insurance companies etc., are not included in the sample. The exclusion of financial institutions is the reason for significant differences in their nature and characteristics from non-financial firms, and the use of debt by financial institutions is incomparable with debt used by non-financial organizations (Rajan & Zingales, 1995).

Cost of capital (COC) is the dependent variable. There are various approaches to expressing COC. Average COC is estimated as the weighted average cost of capital based on earnings of each component capital divided by the book value of each source of debt and share capital in the proportion of their use. Equity capital is considered as net book value and adjustment of undistributed profit. Debts are also considered book value. In this paper, no preference share capital is considered. Therefore, the average COC based on equity and debt is considered the dependent variable of this study. There are several factors affecting the cost of capital, but in this paper, firm fundamental determinants such as sales growth, total assets, leverage, dividend payout, earning variability and liquidity are considered explanatory variables.

Size is the growth rate of sales and is considered an explanatory variable because large firms are expected to have a negative effect on COC. Theoretical literature shows that growth opportunities are inversely correlated with firms' financial leverage, which affects the use of debt and the cost of capital. The growth rate of assets has been used to measure growth opportunities. Thus, in this paper, the growth rate of assets is considered an explanatory variable. In general, leverages are defined in two ways. The first way is leverage as the ratio of debt to equity, and the second is leverage as the ratio of total debt to total capital. Although leverage is widely used as the debt-to-equity ratio, it is not used in this study due to the negative equity of some sample firms, which gives a negative ratio of debtequity, which has meaningless. Hence, estimated leverage as total debt to the sum of longterm debt, current liabilities and equity is used as leverage and is considered an explanatory variable.

The dividend is a percentage of net income distributed to the firm's shareholders. In general, shareholders prefer current earnings or dividends to retained earnings. Higher dividend payout leads to increases in the use size of debt financing. The dividend payout policy of firms influences the value of equity. Literature shows the negative association between dividend payout and COC of firms. Here, the dividend payout ratio is estimated as DPS divided by EPS and considered an explanatory variable.

Earning variability is used to measure firms' business risk. Firms with more earning variability have a higher risk of increasing earnings and debt charges, resulting in high chances of bankruptcy in acquiring funds. More unstable earnings of firms have higher chances of business failure, leading to higher bankruptcy costs. A probability of an increase in bankruptcy cost creates agency problems between shareholders and debt holders. There is a direct relationship between earning volatility and COC. In this paper, earning variability (coefficient of variation, i.e., ratio of standard deviation to mean or average operating profit) is an explanatory variable.

The structure of fixed assets influences the capital structure and COC of firms. Shortterm financing (debt) is associated with current assets, whereas long-term debt financing is associated with tangible fixed assets. Tangible assets are more important to use as collateral for external borrowing at lower costs. Thus, tangibility (tangible assets) is directly associated with financial leverage and increases firms' borrowing capacity, which helps reduce firms' COC. Here, asset tangibility is estimated as a ratio of fixed assets to total assets and used as an explanatory variable.

The liquidity ratio has been applied in the model to measure the short-term risk of firms. On the one hand, firms with higher liquidity can raise more capital through low-cost debt, which indicates an inverse relationship between liquidity and COC. On the other hand, managers prefer to use more internal equity (retained earnings) than external financing (pecking order theory) to generate more liquid reserve from the firm's retained earnings. A strong liquidity position indicates firm does not require using more debt capital. It is expected to have a positive relationship between liquidity and the COC of firms. Here, the current ratio (current assets divided by current liabilities) measures firms' liquidity.

The regression model of this paper to investigate the impact of firm fundamentals on the cost of capital is presented in equation 1.

where Y is the average cost of capital, X_1 represents the growth rate of net sales or size, X_2 indicates the growth rate of total assets, X_3 stands for the leverage ratio, X_4 is the dividend payout ratio, X_5 measures earning variability, X_6 is tangible assets ratio, X_7 stands for liquidity ratio, β_1 , β_2 ..., β_7 are beta coefficients, and μ is disturbance term or error term.

3. RESULTS AND DISCUSSION

3.1 Analysis of Relationship

Table 1

Correlation	Coefficient	t of Cost of	Capital wi	th Explana	tory Variał	oles		
Variables	Y	X1	X ₂	X_3	X_4	X_5	X_6	X_7
Y	1.000	-	-	-	-	-	-	-
X_1	-0.232	1.000	-	-	-	-	-	-
X ₂	0.271	0.135	1.000	-	-	-	-	-
X_3	-0.432*	0.352*	0.394*	1.000	-	-	-	-
X_4	0.486**	0.341	0.192	0.204*	1.000	-	-	-
X_5	-0.529**	0.479*	-0.203	0.185	-0.254*	1.000	-	-
X_6	0.213	0.157*	0.196	-0.176	-0.258	-0.327	1.000	-
X_7	-0.494**	0.278	0.287^{*}	0.326*	0.167*	-0.203	-0.394*	1.000

Note. The author's estimation is based on data from annual reports of sample firms and SEBON (2004/05-2017/18). The table shows correlation coefficients between different firm fundamentals and COC pairs based on 195 observations. Y represents the average cost of capital, X_1 indicates the growth of sales, X_2 refers to the growth of assets, X_3 represents leverage, X4 stands for dividend payout, X5 represents earning variability, X6 represents tangibility assets, and X_7 indicates liquidity.

* indicates significant at 5 percent

** represents significant at 1 percent.

This paper uses correlation analysis to investigate the relationship between COC and its explanatory variables. Pearson's correlation coefficient is used to find an association among variables. Table 1 exhibits the correlation coefficient of different pairs of firm-related fundamentals and COC to analyze the relationship (directions and magnitudes) between different pairs of variables of Nepalese non-financial firms.

The result of correlation coefficients exhibited in Table 1 shows an association among variables. The estimated result indicates that COC is positively related to the growth of assets,

dividend payout, and tangibility of firms but only dividend payout has a significant association with COC. In addition, the result shows that COC is negatively associated with leverage, liquidity, growth of sales, and earnings variability in non-financial firms but significantly correlated with leverage, liquidity and earnings variability. Similarly, correlation results reveal the relationship among explanatory variables.

3.2 Regression Analysis

In this section, univariate and multiple regression models are used to examine the impact of explanatory variables (growth of sales, growth of assets, leverage, dividend payout, earning variability, tangible assets and liquidity) on the cost of capital of Nepalese firms. Regression results of various univariate and multiple models to show, predict and explain the power of independent variables to determine COC in Nepalese firms are presented in Table 2.

Table 2

Models	Model 1	Model II	Model III	Model IV	Model V	Model VI	Model VII	Model VIII		
Constant	0.483	0.483	0.573	0.495	0.583	0.483	0.526	0.483		
	(2.205*)	(2.118*)	(3.205**)	(5.983 ^{**)}	(6.056**)	(4.105^{**})	(5.137**)	(6.205**)		
X_1	-0.135							-0.125		
	(-1.364)							(-1.317)		
X_2		0.182						0.173		
		(1.612)						(1.514)		
X_3			-0.318					-0.295		
			(-2.917*)					(-1.869*)		
X_4				0.2976				0.286		
				(3.363**)				(3.251**)		
X_5					-0.349			0.317		
					(-3.874**)			(-2.987**)		
X_6						0.137		0.106		
						(0.435)		(0.318)		
X_7							-0.215	-0.209		
							(-4.293**)	(-3.917**)		
\mathbb{R}^2	0.251	0.161	0.214	0.313	0.342	0.194	0.413	0.491		
F	32.171**	18.422**	26.137**	43.738**	49.897**	23.107**	67.543**	22.428**		

Regression Relationship of Cost of Capital with Explanatory Variables

Note. The author's estimation is based on data from annual reports of sample firms and SEBON (2004/05-2017/18). The table demonstrates regression coefficients of explanatory variables on COC with 195 observations. Cost of capital Y is a dependent variable, growth of net sales X_1 , growth of assets X_2 , leverage ratio X_3 , dividend payout X_4 , earning variability X_5 , tangibility assets X_6 , and liquidity X_7 are independent variables. The figures presented in parentheses are t-statistics. * indicates t-statistic is significant at a five percent level

** indicates significant at 1 percent level.

Table 2 demonstrates the regression coefficients of various variables in different models. The regression result of univariate model one shows that sales growth has a negative relation with the cost of capital but statically is insignificant, indicating that sales growth has no substantial impact on the cost of capital. Regression model two shows that the growth of assets has a positive association with the cost of capital but is statistically insignificant, implying that the impact of the total asset on the cost of capital is very weak. Further, regression models three, five and seven show that leverage ratio, earning variability and liquidity negatively affect the cost of capital. Leverage is significant at the 5 percent level, and earning variability and liquidity are significant at a 1 percent level, indicating that leverage, earning variability, and liquidity significantly affects COC in Nepalese non-financial firms.

Furthermore, the regression coefficient of models four and six are positive. These regression coefficients show that dividend payout significantly and positively impacts COC at a 1 percent level. In contrast, tangibility has a positive but insignificant effect on the cost of capital. Thus, regression results indicate that leverage, earnings variability, liquidity, and dividend payout are important determinants of COC in Nepalese non-financial firms. Estimated values of R² of each of models one to seven show the explaining power of variables to predict and explain the variance of respective models. F-statistics of regression models one through seven all are significant at 1 percent level, which indicates the fitness of the test of overall models to examine the impact of firm fundamentals on the cost of capital in Nepalese non-financial firms.

Finally, multiples regression model eight shows regression results with the inclusion of all explanatory variables. Regression coefficients show that the growth of assets, dividends payout, and tangibility positively correlate with COC. The estimated regression coefficient indicates that dividend payout significantly impacts COC at a 1 percent level. In contrast, growth rate and tangibility both have no significant effect on the COC of firms. Thus, dividend payout has more explanatory power than COC, which implies that dividend payout is a key determinant of COC in Nepalese non-financial firms. In addition, the regression result shows the growth of net sales; earnings variability and liquidity have an inverse relationship with COC but only earning variability and liquidity have an important effect on COC at the 1 percent level. Thus, the regression result indicates that earning variability and liquidity position have strong explanatory power to predict COC in Nepalese non-financial firms.

The estimated value of R² of multiple regression model eight (considering all independent variables) is 0.491, which confirms the predicting power of explanatory variables in regression model eight. This indicates that independent variables have 49.1 percent explanatory power to explain the cost of capital. The f-statistics of multiple regression model eight are statistically significant (at 1 percent). This result shows the fitness of the test of overall models to examine the effect of firm fundaments on the cost of capital of non-financial firms in Nepal.

4. CONCLUSION AND IMPLICATIONS

COC has become a popular issue in the modern competitive and globalized business age. The cost of capital is a key determinant for financing and investment decisions of business firms, yet sufficient attention is not made to the factors that drive it in Nepal. Thus, this paper attempts to examine the impact of firm fundamentals on the COC of non-financial firms based on a causality research design. This study confirms that leverage, dividend payout, earning variability, and liquidity are key determinants of firms' COC. The cost of capital is positively affected by dividend payout and negatively influenced by leverage, earning variability, and firms' liquidity. Thus, this paper concludes that Nepalese nonfinancial firms with less distribution of profits as dividends with maintaining more retained earnings can minimize the overall cost of capital. This implies that Nepalese firms should pay fewer dividends and retain more earnings. Firms with higher financial leverage can reduce the cost of capital. Therefore, Nepalese firms should use enough cheaper sources of debt financing to minimize the overall cost of capital. Firms can reduce the average cost of capital with a higher level of earnings variability. Finally, this paper concludes that firms should maintain a strong (higher) liquidity position to minimize the average cost of capital of non-financial firms in Nepal.

Policymakers may have an implication of this paper and should emphasize firm fundamental variables to minimize COC by formulating firms' optimal capital structure. The study's finding shows its implication for academics in teaching-learning and research activities in the field of COC. The results of this paper would be useful to financial managers to make decisions about firm fundamentals and cost of capital for effective utilization of resources for the smooth operation of business activities.

This paper uses the total debt ratio as leverage to examine its effect on the COC of firms. A similar study needs to be incorporated into both long-term and short-term leverage to explore the relationship of leverage with the COC of firms. Potential future researchers are suggested to analyze the effect of firm fundamentals on COC, increasing sample size and using more data for longer periods. This study is based on limited firm fundamentals to examine their impact on COC. Therefore, future researchers are suggested to incorporate other variables like profitability, tax rate, inflation, market interest rates, foreign exchange rates, gross domestic product growth rate etc., as explanatory variables to examine their impact on COC in Nepalese non-financial firms.

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