

## The Capital Structure and It's Impact on the Profitability of the FMCG Companies in India – A Study



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**ABSTRACT:** The purpose of this study is to examine the impact of the capital structure on the profitability of the companies under the FMCG sector listed in the National Stock Exchange (NSE) of India. The sample of 10 companies over 14 years from 2007 to 2020 is considered in this study. To examine the impact of capital structure on the profitability, Total Debt to Total Assets (TDTA) Debt- Equity (DE), Interest Coverage Ratio (ICR) consider as the independent variables, Price to Book Value Ratio (PBVR) and Growth (GROW) considered as the control variables and Return on Capital Employed (ROCE) considered as dependent variable (profitability). To fulfil the objective of the study Pearsons' Correlation has been conducted for testing the Collinearity, Shapiro-Wilk test has been run for normality test of the variables, to test the Stationary Hadri LM test, Kao and Pedroni test for cointegration test and to choose the appropriate model Hausman test and finally, for the result, I run Fixed Effect Model. The result of the Regression analysis showed that Total Debt to Total Assets (TDTA), Debt- Equity (DE), Interest Coverage Ratio (ICR), and Price to Book Value are the factors that have an impact on the Profitability (ROCE) of the company. The empirical result also suggests that total debt to Total Assets (TDTA), Interest Coverage Ratio (ICR), and Price to Book Value of the company have a positive impact but Debt -Equity has a negative impact on the ROCE.

**KEYWORDS:** - Profitability, Capital structure, Interest Coverage Ratio, Debt to Equity, Growth, Return on Capital Employed.

### I. INTRODUCTION

**1. Background:** Capital structure is one of the most crucial tasks for the management of a company. Optimum capital structure influences the profitability of a company. The capital mixes in such a way that the company can earn profit at a minimum cost. Capital structure is a vital task of financial management is defined as the combination of the loan capital and own capital with the long-term time frame. There are many sources of loan capital such as bank loans, issues of debentures by the company, loan taking from non-banking financial institutions, etc. It has to be repaid at a later date with interest. The own capital means the company sourcing the capital by the issue of shares to the public. The company pays a dividend to the shareholder if the company earns a profit. But the question is, which combination of debt capital and Equity capital makes the company more profitable, i. e. optimal capital structure. So the Capital structure decision is an important task of the management. The profitability of the company is directly affected by these financial decisions. The key financial strategy will be the successful selection of debt and Equity capital in such a proportion the company can earn maximum profit with a minimum cost of capital. The FMCG sector is a core sector of the Indian economy, study of capital structure would provide meaningful insight into understanding its behavior and measure the degree of influence on the profitability of the companies. Capital structure has the potential to exert a positive impact on profitability (Laban N. Njoroge, Dr. Tabitha Nasieku -2016,<sup>1</sup> Yu Shang-2018)<sup>2</sup>. The objective of this study is to the impact of capital structure on the profitability of the FMCG sector listed in the National Stock Exchange (NSE) of India.

### 2. Review of the Literature

<sup>1</sup> T. N. Laban N. Njoroge (2016) "Determinants of Capital Structure of Internet Service Providers In Kenya," International Journal of Social Sciences and Technology, vol. 2, no. 4, pp. 532-542, 2016.

<sup>2</sup>Y. Shang (2018) "An Empirical Study of EVA on Capital Structure-based on N)ew Energy Shipping Companies Data," Journal of Coastal Research, no. 83, pp. 828-832, 2018.

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**Sheikh and Wang (2011)** have studied to examine the factors determining the capital structure of 160 firms listed in the Karachi Stock Exchange during 2003–2007. The multi-regression model employed to analyze the data concluded from the study that profitability, tangibility, earning volatility, and liquidity are negatively related to leverage while the firm size is positively significant to leverage. The study also observed that the non-debt tax shield and growth opportunity have an insignificant impact on the capital structure of the company listed in (KSE).

**Vijayakumar. R. and Sunitha. (2011)** examined the determinants of long-term leverage. The study used the sample of fifty companies of Sri Lanka for a period of five years from 2004 to 2008. The variables profitability, tangibility, size, growth, and leverage as the exploratory variable. They concluded that the leverage of Sri Lankan firms was comparatively low and the profitability was negatively and significantly associated with leverage. The size of the firms was positively and significantly related to leverage. The result also indicated that more profitable firms tend to use less leverage.

**Alkhatib (2012)** investigated the determinants of leverage of 121 Jordanian companies from the period 2007 to 2010 and the samples were taken for the industrial and services sectors only. The variables used in this study firm's liquidity, size, growth rate, profit, and tangibility as the independent variables, and the dependent variable was the leverage. The regression model runs for the study. The results for the industrial sector showed that liquidity and tangibility have a significant relationship with leverage whereas the results for the services sector revealed that the growth rate, liquidity, and tangibility had a statistically significant relationship with the leverage.

**T. Velnampy& J. Aloy Niresh (2012)** have investigated the relationship between capital structure and profitability of ten listed Sri Lankan banks from 2002 to 2009. The variables considered in this study were Return on Capital Employed, Return on Equity, Net interest Margin, Debt to Equity, Debt to Total funds, and Net profit. The correlation analysis was used for the data analysis. The result of the analysis revealed that there was a negative association between capital structure and profitability. However, the association between debt to equity and return on equity was found negative.

**Yegon et al. (2014)** conducted a study on the relationship between the capital structure and the profitability of the firms. The researcher used data of banking industries listed in the Stock Exchange of Nairobi, Kenya, and the study covered 9 years from 2004 to 2012. The statistical techniques used are regression analysis, fixed effect model, random effect model, and Hausman test. The result of the study indicated that long-term Debt has a statistically significant negative impact on Profitability while short-term debt has a positive relationship with the profitability of the banking sector of the Stock Exchange of Nairobi.

**Agha (2015)** conducted a study on the determinants of capital structure and their relationship with the profitability of the companies under the cement sector listed on the Stock Exchange of Pakistan. The variables were Taxability, liquidity cost of debt, growth, tangibility, dividend, and profitability. The study selected 18 firms in the cement sector out of 22, mentioned and listed in the Karachi Stock exchange, and the data has been analyzed for the period 2008 to 2013 using the panel least square method of regression. The result of the study suggested that the profitability is a statistically significant and statistically negative relationship with the debt ratio. She recommended that financial managers should have a deep look at the financials of the cement companies and the debt capital should be decreased to maximize the ultimate profit.

**3. Research gap:** A lot of research work has been done on the capital structure and the profitability of the company in India. Yet, there is no indisputable explanation on what factors of capital structure influence the profitability of the companies. Few studies have been done in the Indian context but no one considered the factors Total Debt to Total Assets (TDTA) Debt- Equity (DE), Interest Coverage Ratio (ICR) consider as the independent variables, Price to Book Value Ratio (PBVR) and Growth (GROW) considered as the control variables and Return on Capital Employed (ROCE) considered as dependent variable (profitability).

**4. Objective of the Study:** The objective of the study is to find out the impact of capital structure on the profitability of the FMCG sector in India listed in the stock exchange of India (NSE).

- a) Observe the impact of Total Debt to Total Assets (TDTA) on the ROCE of the companies.
- b) Observe the impact of Debt-Equity (DE) on the ROCE of the companies
- c) Observe the impact of Interest Coverage Ratio (ICR) on the ROCE of the companies
- d) Observe the impact of Price to Book Value Ratio (PBVR) on the ROCE of the companies
- e) Observe the impact of Growth (GROW) on the ROCE of the companies

## II. METHODOLOGY

### 5.1. Data collection and Study design

This study is analytical and using secondary data to find the impact of capital structure on Profitability of the companies under the FMCG sector listed in the National Stock Exchange (NSE) of India.

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- i. **Study design:** The study is based on the secondary data available in the Annual Reports of the company. And the data sources: www. monecontrol.com
- ii. **Study Location:** The Companies under the FMCG sector listed in the Stock Exchange of India (NSE).
- iii. **Study Duration:** -Period of 14 years from 2007 to 2020.
- iv. **Sample size:** 140 observations of 10 listed companies under the FMCG sector.
- v. **Sample Calculation** Variables are calculated through *EXCEL*.
- vi. **Nature of the research:** is *Static Panel Data analysis*. The data analysis was done through *STATA 17.00*.

### 5.2. Steps for the Analysis

- a) For testing the Collinearity -: **Pearsons' Correlation**
- b) For normality test: **Shapiro-Wilk test**.
- c) For the stationary test: **Hadri LM test**
- d) For cointegration test: **Kao and Pedroni test**
- e) To select the Appropriate method: **Hausman test**
- f) For the result- **Regression Analysis (Fixed Effect Model 6.2. Hypothesis**

### 5.3. Hypothesis

The null hypothesis assumed that –

- H01: Total Debt to Total Assets (TDTA) does not have an impact on the ROCE of the companies.  
 H02: Interest Coverage Ratio (ICR) does not have an impact on the ROCE of the companies.  
 H03: Debt-Equity (DE) does not have an impact on the ROCE of the companies.  
 H04: Price to Book Value Ratio (PBVR) does not have an impact on the ROCE of the companies.  
 H05: Growth (GROW) does not have an impact on the ROCE of the companies.

The alternative hypothesis assumed that –

- H11: Total Debt to Total Assets (TDTA) has an impact on the ROCE of the companies.  
 H12: Interest Coverage Ratio (ICR) has an impact on the ROCE of the companies.  
 H13: Debt-Equity (DE) has an impact on the ROCE of the companies.  
 H14: Price to Book Value Ratio (PBVR) has an impact on the ROCE of the companies.  
 H15: Growth (GROW) has an impact on the ROCE of the companies.

### 5.4. Multiple Regression model

The multiple regression model used in this study can be written as:

$$ROCE_{it} = \beta_0 + \beta_1 TDTA_{it} + \beta_2 ICR_{it} + \beta_3 DE_{it} + \beta_4 PBVR_{it} + \beta_5 GROW_{it} + \epsilon_i$$

Where ROCE= Return on Capital Employed of the firm i in period t

TDTA= Total Debt to Total Assets

ICR= Interest Coverage Ratio

DE=Debt- Equity ratio

PBVR= Price to Book Value Ratio

GROW=Growth

$\epsilon_i$  = Standard Error

$\beta_x$  (x=0,1,2,.....n)

### 5.5. The definitions of the variables are summarized in the following table

Name of Variables	Definition	Hypothesis	Impact
<b>Dependent Variable</b>			
Return On Capital Employed	ROCE=Net Margin/ Capital Employed	Profitability	
<b>Independent Variables</b>			
Total Debt to Total Assets	Total Debt / Total Assets	Capital Structure	Positive (+)/Negative (-)
Interest Coverage Ratio	ICR= EBIT/Interest expenses		
Debt to Equity ratio	DE= Debt/ Equity		
<b>Control variables</b>			
Price to Book Value Ratio	PBVR= Share price/ Book Value Per	Firm value	Positive (+)

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	sahre		
Growth	GROW= Total Sales for current year/ Total Sales for previous Year	Growth	Positive(+)

### III. RESULT AND DISCUSSION

#### 6.1. Collinearity test

It has been examined the correlation between the independent variables by using the covariance matrix. If an absolute correlation value exceeding 0.8 which indicates that there is a strong correlation exist and this circumstance indicates removing one of the variables.

**Table-1: Pearsons' Correlation**

```
. correlat ROCE TDTA ICR DE PBVR GROW
(obs=140)
```

	ROCE	TDTA	ICR	DE	PBVR	GROW
ROCE	1.0000					
TDTA	0.4620	1.0000				
ICR	0.2936	-0.2075	1.0000			
DE	0.0190	0.5624	-0.4836	1.0000		
PBVR	0.7132	0.1939	0.3661	-0.0527	1.0000	
GROW	0.0380	0.1780	-0.1145	0.1856	-0.1129	1.0000

*Sources: Author's Calculation through STATA-17.00*

Table no 2: The above table shows that the correlation between the independent variables used in the model is less than 80%. The largest correlation coefficients exist between the DE and TDTA variables (56.24%), followed by that between PBVR and ICR (36.61%). We can conclude from the result table that there is no collinearity exists between the explanatory variables.

#### 6.2. Normality Test

Regression models assume that the variables took in the model follow a normal distribution. To test the normality of the variable, we use the Shapiro & Wilk (1965)<sup>3</sup> test. If the value of W lies between zero and one, the small values of W lead to rejection of normality.

**Table-2 Shapiro-wilk Test**

```
. swilk ROCE TDTA ICR DE PBVR GROW
```

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
ROCE	140	0.94676	5.839	3.986	0.00003
TDTA	140	0.96825	3.482	2.818	0.00241
ICR	140	0.82536	19.156	6.670	0.00000
DE	140	0.72587	30.069	7.688	0.00000
PBVR	140	0.94740	5.769	3.959	0.00004
GROW	140	0.77219	24.988	7.270	0.00000

*Sources: Author's Calculation through STATA-17.00*

On the basis of the results above, W ranges from 0.72587 and 0.96825. This **showed an indication of normality of the variables.**

#### 6.3. Stationary test

**Table-3: Hadri LM test-At level**

<sup>3</sup> Shapiro S.S. & Walk, M.B., (1965) An analysis of variance Test for Normality (Complete samples), Biometrika, 52(3/4), 591-611.

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H<sub>0</sub>: All panels are stationary  
 H<sub>a</sub>: Some panels contain unit roots  
 Number of panels = 10  
 Number of periods = 14  
 Time trend: Not included  
 Heteroskedasticity: Not robust  
 LR variance: (not used)  
 Asymptotics: T, N -> Infinity sequentially

Variables	Statistics	P-value
ROCE	9.4692	0.0000
TDTA	14.8038	0.0000
DE	6.7171	0.0000
ICR	7.6522	0.0000
PBVR	10.3860	0.0000
GROW	2.6313	0.0043

*Sources: Author's Calculation through STATA-17.00*

The Null Hypothesis assumed that (H<sub>0</sub>): all panels are stationary, whereas alternative hypothesis(H<sub>1</sub>): some panels contain unit-roots. The result of the Hadri LM test reveals that the P-value of all the variables is 0.05, at a 5% significant level. It indicates that the Null hypothesis is rejected, the Alternative hypothesis is accepted.

**The result depicts that the series contains non-stationary at a level.**

**Table-4: Hadri LM test- At First difference**

H<sub>0</sub>: All panels are stationary  
 H<sub>a</sub>: Some panels contain unit roots  
 Number of panels = 10  
 Number of periods = 13  
 Time trend: Not included  
 Heteroskedasticity: Not robust  
 LR variance: (not used)  
 Asymptotics: T, N -> Infinity sequentially

Variables	Statistics	P-value
D.ROCE	-0.7221	0.7649
D.TDTA	-0.3712	0.6448
D.DE	-1.7962	0.9638
D.ICR	-1.2937	0.9021
D.PBVR	0.4833	0.3144
D.GROW	-2.3974	0.9917

*Sources: Author's Calculation through STATA-17.00*

The Null Hypothesis assumed that, H<sub>0</sub>: all panels are stationary, whereas the alternative hypothesis assumed that (H<sub>1</sub>): some panels contain unit root at first difference. The result of the first difference shows that the P-value of all the variables is greater than 0.05 at a 5% significant level. It implies that the Null hypothesis is accepted and the Alternative hypothesis is rejected. **The result depicts that the series contains stationary at first difference.**

**6.4. Cointegration Test:** The pre-condition of the co-integration test is that model should be non-stationary at level but stationary at first difference.

Table-5: Kao test

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```
. xtointtest kao ROCE TDTA ICR DE PBVR GROW
```

Kao test for cointegration

H0: No cointegration	Number of panels	=	10
Ha: All panels are cointegrated	Number of periods	=	12
Cointegrating vector: <b>Same</b>			
Panel means:	<b>Included</b>	Kernel:	<b>Bartlett</b>
Time trend:	<b>Not included</b>	Lags:	<b>1.40 (Newey-West)</b>
AR parameter:	<b>Same</b>	Augmented lags:	<b>1</b>
	Statistic		p-value
Modified Dickey-Fuller t	-2.9188		0.0018
Dickey-Fuller t	-4.2794		0.0000
Augmented Dickey-Fuller t	-3.1012		0.0010
Unadjusted modified Dickey-Fuller t	-5.5291		0.0000
Unadjusted Dickey-Fuller t	-5.2227		0.0000

**Sources:** Author's Calculation through STATA-17.00

Result of Kao test in table no. 5. Shows that p- value of the tests are like-

Modified Dickey-Fuller test	0.0018 i. e.<0.05, Significant
Dickey-Fuller test	0.0000 i. e.<0.05, Significant
Augmented Dickey-Fuller test	0.0010 i. e.<0.05, Significant
Unadjusted Modified Dickey-Fuller test	0.0000 i. e.<0.05, Significant
Unadjusted Dickey-Fuller test	0.0000i. e.<0.05, Significant

Out of five test three tests are significant, implies that Null hypothesis is rejected and alternative hypothesis is accepted. The result indicates that the there is a long run association among the variables.

**Table-6: Pedroni test**

```
. xtointtest pedroni ROCE IDIA ICR DE PBVR GROW
```

Pedroni test for cointegration

H0: No cointegration	Number of panels	=	10
Ha: All panels are cointegrated	Number of periods	=	13
Cointegrating vector: <b>Panel specific</b>			
Panel means:	<b>Included</b>	Kernel:	<b>Bartlett</b>
Time trend:	<b>Not included</b>	Lags:	<b>2.00 (Newey-West)</b>
AR parameter:	<b>Panel specific</b>	Augmented lags:	<b>1</b>
	Statistic		p-value
Modified Phillips-Perron t	3.7746		0.0001
Phillips-Perron t	-6.5654		0.0000
Augmented Dickey-Fuller t	-5.4575		0.0000

**Sources:** Author's Calculation through STATA-17.00

Result of Pedroni test in table no. 6. reveals that p value of all the tests like-

Modified Philips-Parron test	0.0001 i. e.<0.05
Philips- Parron test	0.0000 i. e.<0.05
Augmented Dickey-Fuller test	0.0000 i. e.<0.05

It implies that Null hypothesis is rejected and alternative hypothesis is accepted, indicates that the there is a long run association among the variables.

**6.5. Hausman test:** To select the appropriate model for data analysis between Fixed Effect and Random Effect Model I run Hausman test.

**Table-7: Hausman test**

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```
. hausman fe re
```

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) fe	(B) re		
TDTA	42.04853	37.27914	4.769397	3.187026
ICR	.0723346	.042893	.0294416	.010418
DE	-7.208427	-5.082457	-2.12597	.81823
PBVR	.6891594	1.14104	-.4518805	.1022076
GROW	3.190126	5.240004	-2.049879	.

b = Consistent under H0 and Ha; obtained from xtreg.  
B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

```
chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
        = 24.33
Prob > chi2 = 0.0002
(V_b-V_B is not positive definite)
```

**Sources:** Author's Calculation through STATA-17.00

Hausman test table no. 7, reveals that  $\chi^2=24.33$  (Positive) and  $\text{Prob} > \chi^2=0.0002$ , i.e.,  $< 0.05$  at 5% significant level. It Indicates that Fixed Effect Model is applicable for the analysis.

### 7. Regression Analysis (Fixed Effect Model)

The Regression Analysis examines the impact of capital structure on profitability of the FMCG sector in India Total debt to Total Assets (TDTA) Debt- Equity (DE), Interest Coverage Ratio (ICR) consider as the independent variables, Price to Book Value Ratio (PBVR) and Growth (GROW) considered as the control variables and Return on Capital Employed (ROCE) considered as dependent variable (profitability).

**Table-4: Regression Analysis**

```
. xtreg ROCE TDTA ICR DE PBVR GROW, fe
```

Fixed-effects (within) regression  
Group variable: **Company**

Number of obs = 140  
Number of groups = 10

R-squared:  
Within = 0.4272  
Between = 0.8461  
Overall = 0.6215

Obs per group:  
min = 14  
avg = 14.0  
max = 14

corr(u\_i, Xb) = 0.3530

F(5,125) = 18.65  
Prob > F = 0.0000

ROCE	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
TDTA	42.04853	6.18381	6.80	0.000	29.81001	54.28706
ICR	.0723346	.0295112	2.45	0.016	.0139283	.1307409
DE	-7.208427	2.229883	-3.23	0.002	-11.62164	-2.795211
PBVR	.6891594	.1512304	4.56	0.000	.3898556	.9884632
GROW	3.190126	3.992643	0.80	0.426	-4.711811	11.09206
_cons	-1.976602	5.043348	-0.39	0.696	-11.95801	8.004808
sigma_u	3.6097943					
sigma_e	6.223905					
rho	.25171367	(fraction of variance due to u_i)				

F test that all u\_i=0: F(9, 125) = 2.47  
Prob > F = 0.0125

**Sources:** Author's Calculation through STATA-17.00

### 7.1. Discussion

The Result table shows that  $F(5, 125) = 18.65$  (positive), and  $\text{Prob} > F = 0.0000$  i. e.  $< 5\%$ , The result indicates that the overall fitness of the model is good.

- H01 (TDTA): The value of P is (0.00), ( $P < 0.05$ ) at the 1% significant level states that the null hypothesis (H01) is rejected and the alternative hypothesis is accepted (H11). It indicates that TDTA has a positive impact on ROCE. The result table reveals that if the TDTA increased by 1 unit the Roce increased by 42.05%.

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2. H02 (ICR): The value of P is (0.016), ( $P < 0.05$ ) in the 5% significant level states that the null hypothesis (H02) is rejected and the alternative hypothesis is accepted (H12). The result table depicts that ICR has a positive influence on ROCE. The result table also suggests that if the ICR increased by 1 unit the ROCE increased by Rs.0.07%.
3. H03 (DE): The value of P (0.000), ( $P < 0.01$ ) in the 1% significant level states that the null hypothesis (H03) is rejected and the alternative hypothesis is accepted (H13). The result table depicts that DE has a negative influence on ROCE. The coefficient value of DE suggests that if the DE increased by 1 unit, the ROCE decreased by Rs.7.21%.
4. H04: (PBVR): The value of P is (0.000), ( $P < 0.01$ ) at the 1% significant level states that the null hypothesis (H04) is rejected and the alternative hypothesis is accepted (H14). The result depicts that PBV has a positive influence on ROCE. The coefficient value of PBVR indicates that if the PBVR increased by 1 unit, the value per share increased by Rs. 0.69%.
5. H05 (GROW): The value of P is (0.426), ( $P > 0.05$ ) at the 5% significant level states that the null hypothesis (H06) is accepted and the alternative hypothesis is rejected (H15). It indicates that PBVR does not impact on ROCE.

### IV. CONCLUSION

**8.1. Conclusion:** The present study attempted to examine the factors of capital structure and its' impact on the profitability of the FMCG companies listed on the Stock Exchange of India. Panel data about 10 companies under the FMCG sector from 2007 to 2020. The study took Total debt to Total Assets (TDTA), Debt- Equity (DE), Interest Coverage Ratio (ICR), Price to Book Value Ratio (PBVR), and Growth (GROW) that may have an impact on the profitable variable Return on Capital Employed (ROCE) of the companies.

The Empirical result depicts that Total Debt to Total Assets (TDTA), Debt- Equity (DE), Interest Coverage Ratio (ICR), and Price to Book Value are the factors that have an impact on the profitability of the company.

The empirical result table also suggests that total debt to Total Assets (TDTA), Interest Coverage Ratio (ICR), and Price to Book Value of the company have a positive impact on ROCE but Debt -Equity has a negative impact on the ROCE.

*Now the ROCE = -1.98 + 42.05TDTA + 0.07ICR - 7.21DE + 0.69PBV +  $\epsilon_i$*

**8.2. Limitation:** A generalization of the results is limited because of the small sample size.

**8.3. Further study:** For future research, it has been suggested that a longer period of time with a large sample size of firms. It would be more accurate if future studies included more independent variables such as taxation and Business risk, etc.

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