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INVESTIGATING DEBT RATIOS AND THEIR DETERMINANTS IN THE CAPITAL STRUCTURE OF INDIAN FMCG COMPANIES: AN EMPIRICAL STUDY

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ABSTRACT

This research paper investigates the determinants of capital structure within Indian FMCG companies, utilizing a representative sample of firms listed on the Bombay Stock Exchange (BSE) over a decade (2011–12 to 2020–21), sourced from the CMIE Prowess database. Employing a panel data methodology, the study evaluates indices of corporate financial leverage, including short-term debt, long-term debt, total debt, and the debt-equity ratio. The findings indicate that firm-specific variables such as size, asset tangibility, sales growth, profitability, and non-debt tax shields (NDTS) exhibit significant relationships with financial leverage in the Indian FMCG sector. Specifically, determinants of the short-term debt ratio (SDR) include firm size, age, NDTS, profitability, tangibility, and liquidity. The debt-equity ratio (DER) is significantly influenced by profitability and the effective tax rate, while total debt ratio (TDR) is associated with firm age, size, effective tax rate, asset turnover ratio, and liquidity. Additionally, long-term debt ratio (LDR) is significantly linked to firm size, asset turnover ratio, tangibility, and liquidity. The statistical analysis demonstrates that fixed effects panel regression models are the most suitable for representing SDR, LDR, TDR, and DER. Consequently, this study contributes to the existing body of knowledge on capital structure, offering empirical insights that are particularly relevant for Indian FMCG firms as they navigate financial decision-making processes informed by recent data through 2020–21.

Keywords: Capital Structure, Panel Data, Regression, FMCG Companies, Determinants, Financial Leverage

1. INTRODUCTION

A company's capital structure, or CS, is the essential structure of different securities that it issues to finance its business activities (Abor, 2005). In spite of an abundance of research, the CS paradox (Myers, 1984) is still not resolved, and there is insufficient proof of a connection between CS and company performance (Fosu, 2013). Following Modigliani and Miller's seminal work in 1958, an abundance of ideas and empirical investigations have been conducted in this field. By arguing that leverage and company value are "irrelevant" given certain presumptions, including a perfect capital market, no taxes or transaction costs, and uniform investor expectations, Modigliani and Miller (1958) established the discipline of CS. Using the "Net Operating Income" concept, Durand (1959) validated the idea of irrelevance. Later, Modigliani and Miller (1963) incorporated the impact of corporation taxation on CS and modified the assumption of taxes. Because

interest expenses can be written off, debt financing serves as a tax shield and raises the market value of the company (Modigliani & Miller, 1963).

However, Fama and French (1998) presented actual evidence that the tax benefits connected with borrowings are not as substantial as initially promoted, refuting the taxshield hypothesis. Additionally, it is believed that the literature is dominated by three primary theories: pecking order (Myers & Majluf, 1984), agency cost (Jensen & Meckling, 1976), trade-off (Kraus & Litzenberger, 1973; Myers, 1984), and market timing (Baker & Wurgler, 2002). The theory of Pecking Order emphasizes the preferential hierarchy of finance and recommends that companies prioritize internal financing first, then debt, and last equity stocks. Since diverse information causes financing expenses to vary across various sources of funds, the theory focuses its argument on the information asymmetry among managers and investors (Abor, 2005). In accordance with trade-off theory, the most favorable debt ratio can be determined by comparing the present value of the benefits and costs associated with the particular CS option (Myers, 2003). Tax savings (Modigliani & Miller, 1963), the most effective possible investment strategy (Myers, 1977), as well as a reduction in agency problems because of debt performing as a "watch dog" on managers and controlling in excessive and risky spending are all benefits associated with debt financing (Jensen & Meckling, 1976; Margaritis & Psillaki, 2007).

Financial performance and CS are correlated, and this relationship has been thoroughly investigated. However, considering the distinctive features of the FMCG industry, particularly its high growth potential, fierce competition, and requirement for ongoing investment in distribution networks, branding, and advertising, the particular setting of the industry in India calls for targeted research. The factors that characterize capital structure, their statistical significance, and the relationships between variables are all determined by empirical evidence, which sometimes produces contradictory results. Furthermore, there aren't many research that empirically examines this relationship in developing economies like India. The present study adds to this topic by empirically assessing the factors that affect capital structure in the Indian FMCG industry.

The remaining part of the study is organized as follows. The review of major research issues is highlighted in the second section, which also suggests a conceptual model based on the literature study. Furthermore, the third section describes the research methods; the fourth section discusses data analysis and major findings. Last section provides the concluding comments and future scope of research.

2. LITERATURE REVIEW

Based on empirical evidence, a company's capital structure is mostly determined by micro-factors or firm-specific characteristics. In accordance to an overview of numerous studies by Harris and Raviv (1991) and Rajan and Zingales (1995), the majority of research employ the same factors to determine capital structure: tangibility, growth prospects, size, risk, depreciation tax shields, advertisement expenses, R&D expenses, profitability, uniqueness, etc. Companies predict price increases prior to equity issues and debt ratings prior to debt issues, based on Graham and Harvey (2001). As stated by Cook and Tang (2010), under favorable macroeconomic circumstances, businesses quickly modify their capital structure to match their target structure. Chandra (1997) examined how leverage impacted the return to shareholders. According to Pandey (2004), a capital structure decision must be examined to determine how it impacts the firm's value. Bhayani (2006) evaluated the influence of leverage on shareholder's return in the Indian cement sector. De Wet (2006) investigated the connection between the ideal gearing level and company value. Leverage and profitability have been shown to be positively correlated by Fama and French (2002). Furthermore, Gill, Biger, and Mathur (2011) discovered a favorable correlation between profitability and leverage. Capital structure and profitability variables possess a strong one-to-one relationship, as evidenced by Ramachandran and Candasamy's (2011) research, whereby capital structure has a major impact on the firm's profitability.

Goyal (2013) discovered that debt and profitability have a favorable relationship. Pouraghajan and Malekian (2012) discovered a strong inverse link between leverage and company performance. According to Ibrahim (2009), there is little to no effect of capital structure on a company's performance. Olokoyo (2013) discovered a significant adverse impact of leverage on the performance of the organization. Twairesh (2014) demonstrated that leverage significantly affects a company's success. Capital structure has a statistically significant negative effect on a firm's financial performance, according to Quang and Xin's (2014) research.

Based on Wang (2003), ownership structure and firm performance are positively correlated. Leverage and firm performance were found to be negatively correlated by Sheikh and Wang (2013). Leverage and performance were found to be negatively correlated by Mireku, Mensah, and Ogoe (2014). In the words of Bauwhede (2009), the best indicator of

operating performance is the return on asset. The financial success of an organization is inversely correlated with its capital structure, as demonstrated by Krishnan and Moyer (1997) and King and Santor (2008).

In a nutshell the relationship between financial leverage and determinants in developed economies is suggested by empirical evidence in a variety of conflicting ways. Furthermore, there aren't many research conducted in developing nations like India that objectively examine this relationship. By conducting an empirical investigation into the correlation between financial leverage and factors within the Indian FMCG industry, this study adds to the body of knowledge regarding the impact of financial leverage on a firm's performance.

3. RESEARCH DESIGN

3.1 OBJECTIVE OF THE STUDY

To explore the impact of various identified determinants of CS (tangibility, profitability, non-debt tax shield, sales growth, size, age, asset turnover ratio, liquidity and effective tax rate) on financial leverage (Table 1).

3.2 NATURE OF THE STUDY

The current study is analytical, quantitative and historical. The research is based on the secondary data of FMCG index listed on Bombay Stock Exchange (BSE). The yearly financial data (2011-12 to 2020-21) of the companies were collected from the CMIE Prowess database.

Table 1: Research Variables of the Study

Variables	Formulation	Empirical studies of Authors
Dependent Variable		
Short-term Debt Ratio	Short-Term debt/Total Asset	Handoo & Sharma, (2014)
Long-term Debt Ratio	Long-Term debt/Total Asset	Handoo & Sharma, (2014)
Total Debt Ratio	Total debt/Total Asset	Chakrabarti & Chakrabarti, (2019)
Debt-Equity Ratio	Total Debt/Shareholders fund	Handoo & Sharma, (2014)
Independent Variable		
Profitability	EBIT/Capital employed	Chadha & Sharma, 2015
Tangibility	Net Fixed Assets/Total Assets	Chen, 2004; Pandey, 2001, 2004
Sales Growth	(Final Value-Initial value)/Initial value	Chen, 2004; Chen & Chen, 2011
Effective Tax Rate	Corporate Taxes/PBT	Mishra (2011), Handoo & Sharma (2014),
Liquidity	Current assets/ Current liabilities	Chaklader & Chawla, 2016
NDTS	Depreciation/ Total Asset	Chaklader & Chawla, 2016; Correia et al, 2015
Asset Turnover Ratio	Net Sales/ Average Total Asset	Chadha & Sharma, 2015
Firm's age	Log of number of years	Chakrabarti & Chakrabarti, 2019
Firm's Size	Log of Total Assets	Chadha & Sharma, 2015; Pandey, 2004

Source: Researcher's Compilation using Literature Review

3.3 SPECIFICATION OF THE MODEL

The following multiple regression model has been used to test the theoretical relation between financial leverage (debt equity ratio) and various determinants of the capital structure.

$$SDR_{it} = \alpha_1 + \beta_1 LIQ_{it} + \beta_2 ROCE_{it} + \beta_3 ETR_{it} + \beta_4 TANG_{it} + \beta_5 ATR_{it} + \beta_6 NDTS_{it} + \beta_7 GR_{it} + \beta_8 AGE_{it+} \beta_9 SIZE_{it+} \varepsilon_{it}$$

$$LDR_{it} = \alpha_1 + \beta_1 LIQ_{it} + \beta_2 ROCE_{it} + \beta_3 ETR_{it} + \beta_4 TANG_{it} + \beta_5 ATR_{it} + \beta_6 NDTS_{it} + \beta_7 GR_{it} + \beta_8 AGE_{it+} \beta_9 SIZE_{it+} \varepsilon_{it}$$

$$TDR_{it} = \alpha_1 + \beta_1 LIQ_{it} + \beta_2 ROCE_{it} + \beta_3 ETR_{it} + \beta_4 TANG_{it} + \beta_5 ATR_{it} + \beta_6 NDTS_{it} + \beta_7 GR_{it} + \beta_8 AGE_{it+} \beta_9 SIZE_{it+} \varepsilon_{it}$$

$$DER_{it} = \alpha_1 + \beta_1 LIQ_{it} + \beta_2 ROCE_{it} + \beta_3 ETR_{it} + \beta_4 TANG_{it} + \beta_5 ATR_{it} + \beta_6 NDTS_{it} + \beta_7 GR_{it} + \beta_8 AGE_{it+} \beta_9 SIZE_{it+} \varepsilon_{it}$$

3.4 HYPOTHESES OF THE STUDY

H0: There is no significant relation between the tangibility, profitability, non-debt tax shield, sales growth, size, age, asset turnover ratio, liquidity and effective tax rate with Financial Leverage.

4 DATA ANALYSIS AND INTERPRETATION

4.1 DESCRIPTIVE STATISTICS

The results of the Descriptive Statistics for Independent variables used in this study are demonstrated in Table 2. The descriptive statistics showed mean, standard error, and standard deviation. In particular, the mean values of LIQ, ROCE, ETR, NDTS, GR, TANG, ATR AGE, and SZ were 1.9162, 0.2099, 0.1930, 0.0278, 0.8250, 0.3030, 1.2888, 3.5327 and 4.0078 correspondingly. The interpretation drawn from the result of BSE FMCG index companies discovered that size plays a substantial role with the value of 4.0078, the highest average value.

Table 2: Summary Statistics of Variables- Financial Performance from Financial Year 2011-12 to 2020-21

Variable	Mean	SE	SD
LIQ	1.9162	0.3321	9.0842
ROCE	0.2099	0.0091	0.2506
ETR	0.1930	0.0119	0.3244
NDTS	0.0278	0.0009	0.0257
GR	0.8250	0.6997	18.9126
TANG	0.3030	0.0065	0.1814
ATR	1.2888	0.0332	0.9221
AGE	3.5327	0.2417	0.6819
SZ	4.0078	0.2222	0.7894

Source: Researcher's Compilation using EViews 12

4.2 STATIONARITY TEST

A significant problem with time series data is non-stationarity, which can lead to erroneous and false regression results. Levin-Lin-Chu (panel unit root) and Augment Dickey Fuller (individual series) tests have been employed to confirm the same. Table 3 provides a summary of the findings. The null hypothesis that the series encompasses a unit root is confirmed by the results of both tests, which are tested at the intercept and trend level with maximum lag selection. It validates that the series is stationary and appropriate for additional examination.

Table 3: Summary Results (measured through intercept & Trend) of ADF & LLC Unit Root Test

Intercept and Trend						
Variables	**H_0**	**ADF Test Statistics**	**Prob* (*p*-value)**	**LLC Test Statistics**	**Prob* (*p*-value)**	**Results**
		First Difference		**First Difference**		
Firm size	Firm size has aunit root	219.816	0.0002	-51.1656	0.0001	H_0 Rejected
Effective Tax rate	Effective Tax rate has a unit root	237.003	0.0041	-13204.0	0.0001	H_0 Rejected
Firm age	Firm age has aunit root	1418.39	0.0001	-26.1348	0.0001	H_0 Rejected
Asset turnover ratio	Asset turnover ratio has aunit root	265.064	0.0001	-27.6337	0.0001	H_0 Rejected
Sales Growth	Sales Growth has a unit root	275.632	0.0001	-21.1944	0.0001	H_0 Rejected
Non-Debt tax shield	Non-Debt tax shield has aunit root	281.369	0.0001	-26.0955	0.0001	H_0 Rejected
Profitability	Profitability has a unit root	231.434	0.0001	-23.9505	0.0001	H_0 Rejected
Liquidity	Liquidity has aunit root	196.554	0.0047	-13.9442	0.0001	H_0 Rejected
Tangibility	Tangibility has a unit root	231.886	0.0001	-22.9485	0.0001	H_0 Rejected
Short term debt to total asset ratio	SDR has a unit root	241.761	0.0001	-23.8407	0.0001	H_0 Rejected

Long-term debt to total asset ratio	LDR has a unit root	225.169	0.0001	-17.8199	0.0001	H_0 Rejected
Debt to equity ratio	DER has a unit root	233.902	0.0001	-30.5893	0.0001	H_0 Rejected
Debt to asset ratio	TDR has a unit root	207.052	0.0028	-23.4324	0.0001	H_0 Rejected
** p value < 0.05*						

Source: Researcher's Compilation using EViews 12

4.3 CORRELATION ANALYSIS

Degree of relationship between selected variables has been analysed using Pearson correlation and outcomes are portrayed in Table 4. However, it's essential to remember that correlation does not suggest causality between the variables; instead, it can show the linearity of the relationship (Apanisile & Olayiwola, 2019). Correlation matrix of the overall industry reveals that profitability and effective tax rate are significantly and adversely related to the DER. At the same time, they are significant and positively related to the LDR and TDR. Liquidity is negative and significant with SDR & and TDR, whereas the firm's size is positive and significant with SDR, LDR, and TDR.

Table 4: Correlation matrix specifying association between CS determinants & Financial Performance-FMCG Sector

Capital Structure Variables				
Determinants	**SDR**	**LDR**	**DER**	**TDR**
LIQ	-0.152**	-0.062	-0.032	-0.162**
AGE	0.027	0.060	0.010	0.057
SZ	0.099**	0.081*	0.007	0.128**
TANG	0.027	0.358**	0.062	0.228**
ATR	0.147**	-0.169**	-0.064	0.025
NDTS	-0.016	0.103**	-0.009	0.045
GR	0.009	0.056	0.028	0.040
ROCE	0.093*	0.123**	-0.179**	0.148**
ETR	0.068	0.104**	-0.074*	0.117**

***** At 0.01 level (2-tailed), correlation is significant.***
****At 0.05 level (2-tailed), correlation is significant.***
Source: Researcher's Compilation using EViews 12

4.4 MULTICOLLINEARITY AND AUTOCORRELATION

The primary factors influencing the dependability of regression outcomes are multicollinearity and autocorrelations. The Durbin-Watson (DW) test, variance inflation factor (VIF), and tolerance values have all been assessed to alleviate these concerns. Since VIF levels and tolerance values are within an acceptable range (<10), the problem of multicollinearity has been addressed (Nautiyal & Kavidayal, 2018; Gujarati, 2003), as shown in Table 5. In addition, across all outcomes, the lowest and maximum DW statistics values are 0.366 and 2.388, respectively, demonstrating an acceptable degree of autocorrelation (Gujarati, 2003).

Table 5: Multicollinearity test of Capital structure Determinants: VIF and Tolerance

Independent Variables	**Variance Inflation Factor (VIF)**	**Tolerance (1/VIF)**	**Results**
LIQ	1.145	0.873	***Absence of Multicollinearity***
AGE	1.207	0.829	
SZ	1.313	0.761	
TANG	2.180	0.459	
ATR	1.430	0.700	
NDTS	2.046	0.489	
GR	1.021	0.979	
ROCE	1.298	0.770	
ETR	1.038	0.963	

Source: Researcher's Compilation using EViews 12

4.5 REGRESSION ANALYSIS

Multiple regression analysis has been employed to analyse the impact of selected determinants on the capital structure of selected companies. Panel regression analysis is this section's only emphasis since, it is more appropriate than pooled regression. Panel regression computes FEM & REM incorporate cross-sections and time-series effects.

Factors affecting the short-term debt ratio and their regression results have been abridged in table – 6. Among selected factors, tangibility, liquidity, profitability, non-debt tax shield, firm's age, and size are significant determinants as their p – values are less than 5%. All significant factors have a negative effect except the NDTS on the SDR, i.e., an increase in these variables will reduce the SDR. Fixed effects are preferred to random effects since they can explain 73.57% of the variations in SDR changes, whereas random effects have a powerful explanation for up to 16.93%.

The outcomes of the Hausman test have been applied to deciding amid random and fixed effects, and the outcomes demonstrate that fixed effect models are preferred to random effects for the data set being used.

Table 6: Panel Regression of SDR (Model 1)- FMCG Sector

$SDR_{it} = \alpha_1 + \beta_1 LIQ_{it} + \beta_2 ROCE_{it} + \beta_3 ETR_{it} + \beta_4 TANG_{it} + \beta_5 ATR_{it} + \beta_6 NDTS_{it} + \beta_7 GR_{it} + \beta_8 AGE_{it+} \beta_9 SIZE_{it+} \varepsilon_{it}$						
	Fixed Effects Model			**Random Effects Model**		
	Co-efficient	**t-value**	**Prob.**	**Co-efficient**	**t-value**	**Prob.**
Intercept	1.4243	11.851	0.0000	0.8695	9.9400	0.0000
LIQ	-0.0291	-8.5084	0.0000	-0.0336	-10.219	0.0000
ROCE	-0.0689	-2.9570	0.0032	-0.0668	-3.008	0.0027
ETR	-0.0179	-1.5614	0.1189	-0.0157	-1.3793	0.1682
TANG	-0.1057	-2.2937	0.0221	-0.0944	-2.1610	0.0310
ATR	0.0105	0.0090	0.2459	0.0204	2.4834	0.0132
NDTS	0.7832	0.3299	0.0179	0.4888	1.5993	0.1102
GR	-3.73	-0.1888	0.8503	-1.98	-0.1012	0.9194
AGE	-0.1348	-3.0946	0.0021	-0.0265	-1.2913	0.1970
SZ	-0.1204	-4.2024	0.0000	0.0801	-4.3983	0.0000
Model Summary			**Fixed Effects**		**Random Effects**	
R-Square			0.7659		0.1794	
Adj. R- Square			0.7357		0.1693	
F-Value			26.4056		17.882	
Significance Value			0.0000		0.0000	
DW Statistic			1.0240		0.8603	
Redundant Fixed Effect Test						
Cross Section – F Test / Sig. Value			19.364758(0.0000)			
Cross Section – 2 Test / Sig. Value			874.644230(0.0000)			
Test of Fixed and Random Effect						
Hausman Test (Significance Value)			74.574181(0.0000)			

Source: Researcher's Compilation using EViews 12

Table – 7 specifies the panel regression result of determinants of LDR. Results indicate that liquidity, tangibility, asset turnover ratio, NDTS, and firm size are the major determinants of long-term debt in the overall FMCG sector.

Tangibility positively impacts LDR, whereas liquidity, asset turnover ratio, NDTS, and firm size have adverse effects on long-term borrowings. Further, the Hausman test indicates that the FEM is appropriate ($p < 0.05$), and it also explains 66.25% changes in LDR, which is higher than the random effects model.

Table 7: Panel Regression of LDR (Model 2)- FMCG Sector

$LDR_{it} = \alpha_1 + \beta_1 LIQ_{it} + \beta_2 ROCE_{it} + \beta_3 ETR_{it} + \beta_4 TANG_{it} + \beta_5 ATR_{it} + \beta_6 NDTS_{it} + \beta_7 GR_{it} + \beta_8 AGE_{it+} \beta_9 SIZE_{it+} \varepsilon_{it}$						
	Fixed Effects Model			**Random Effects Model**		
	Co-efficient	**t-value**	**Prob.**	**Co-efficient**	**t-value**	**Prob.**
Intercept	0.5775	6.9831	0.0000	0.3970	6.003	0.0000
LIQ	-0.0093	-3.3860	0.0008	-0.0105	-4.0224	0.0001
ROCE	0.0335	1.7924	0.0735	0.0362	2.0561	0.0401
ETR	-0.0164	-1.7773	0.0760	-0.0164	-1.8006	0.0722
TANG	0.1122	3.0326	0.0025	0.1556	4.5031	0.0000
ATR	-0.0439	-6.0336	0.0000	-0.0357	-6.5495	0.0000
NDTS	-0.5140	-1.9401	0.0528	-0.5346	-2.2159	0.0270

GR	0.0002	1.8482	0.0650	0.0003	2.1859	0.0291
AGE	0.0239	0.6830	0.4948	-0.0040	-0.2719	0.7857
SZ	-0.1150	-4.9964	0.0000	-0.0521	-3.8325	0.0001
Model Summary			**Fixed Effects**		**Random Effects**	
R-Square			0.6921		0.1018	
Adj. R- Square			0.6525		0.0908	
F-Value			17.4600		9.2708	
Significance Value			0.0000		0.0000	
DW Statistic			1.0307		0.8725	
Redundant Fixed Effect Test						
Cross Section – F Test / Sig. Value					13.296029(0.0000)	
Cross Section – 2 Test / Sig. Value					692.763470(0.0000)	
Test of Fixed and Random Effect						
Hausman Test (Significance Value)					37.037516(0.0000)	

Source: Researcher's Compilation using EViews 12

Regression results of the total debt ratio and its determinants have been summarized in table – 8. Out of the selected nine variables, liquidity, effective tax rate, asset turnover ratio, firm age, and firm size significantly affect the total debt ratio. Asset tangibility positively affects TDR, whereas other significant factors affect it adversely. All significant factors have a negative effect on the total debt ratio, i.e., an increase in these variables will reduce the debt-asset ratio (TDR).

Fixed effect models can account for changes in TDR of 80.96%, whereas random effects models can only account for 23.89%. Fixed effects thus provide a more accurate estimate than the random effects approach. Fixed effects models have larger DW test statistics, i.e., 0.9959, than random effects models; problems with autocorrelation could occur and degrade the regression output.

Table 8: Panel Regression of TDR (Model 3)- FMCG Sector

$TDR_{it} = \alpha_1 + \beta_1 LIQ_{it} + \beta_2 ROCE_{it} + \beta_3 ETR_{it} + \beta_4 TANG_{it} + \beta_5 ATR_{it} + \beta_6 NDTS_{it} + \beta_7 GR_{it} + \beta_8 AGE_{it+} \beta_9 SIZE_{it+} \varepsilon_{it}$						
	Fixed Effects Model			**Random Effects Model**		
	Co-efficient	**t-value**	**Prob.**	**Co-efficient**	**t-value**	**Prob.**
Intercept	2.0019	16.2671	0.0000	1.4067	14.8669	0.0000
LIQ	-0.0384	-10.965	0.0000	-0.0428	-12.6218	0.0000
ROCE	-0.0353	-1.4819	0.1388	-0.0302	-1.3144	0.1891
ETR	-0.0343	-2.9190	0.0036	-0.0322	-2.7603	0.0059
TANG	0.0065	0.1384	0.8899	0.0427	0.9441	0.3454
ATR	-0.0334	-3.5982	0.0003	-0.0197	-2.2883	0.0224
NDTS	0.2691	0.7968	0.4258	0.0226	0.0712	0.9432
GR	0.0002	1.2651	0.2062	0.0003	1.5088	0.1318
AGE	-0.1109	-2.4864	0.0131	-0.0375	-1.6056	0.1088
SZ	-0.2355	-8.0232	0.0000	-0.1588	-7.9721	0.0000
Model Summary			**Fixed Effects**		**Random Effects**	
R-Square			0.8313		0.2481	
Adj. R- Square			0.8096		0.2389	
F-Value			38.2794		26.9866	
Significance Value			0.0000		0.0000	
DW Statistic			0.9959		0.7852	
Redundant Fixed Effect Test						
Cross Section – F Test / Sig. Value					26.875158 (0.0000)	
Cross Section – 2 Test / Sig. Value					1051.634082 (0.0000)	
Test of Fixed and Random Effect						
Hausman Test (Significance Value)					109.339312 (0.0000)	

Source: Researcher's Compilation using EViews 12

Table – 9 indicates the regression output of DER and its determinants. Liquidity and profitability significantly negatively affect the debt-equity ratio of selected companies. Other determinants do not show a significant relation with the debt-equity ratio.

The Adj. R^2 values lead to a finding that the fixed effects model more closely reflects the data than the random effects model. Although random effects can account for 1.70% of the change in the dependent variable, fixed effects models may account for 51.76% of the total variation in the Debt-equity ratio. The redundant fixed effect test indicates that panel

regression is preferable to pooling. The current dataset is more suitable for a FEM than a REM, pursuant to the Hausman test (p-value < 0.05). For FEM & REM, respectively, the DW statistics value is 1.1762 and 1.0341.

Table 9: Panel Regression of DER (Model 4)- FMCG Sector

$DER_{it} = \alpha_1 + \beta_1 LIQ_{it} + \beta_2 ROCE_{it} + \beta_3 ETR_{it} + \beta_4 TANG_{it} + \beta_5 ATR_{it} + \beta_6 NDTS_{it} + \beta_7 GR_{it} + \beta_8 AGE_{it+} \beta_9 SIZE_{it+} \varepsilon_{it}$						
	Fixed Effects Model			**Random Effects Model**		
	Co-efficient	**t-value**	**Prob.**	**Co-efficient**	**t-value**	**Prob.**
Intercept	13.9746	3.0074	0.0027	3.1508	1.4507	0.1473
LIQ	-0.1241	-0.9782	0.3283	-0.2422	-2.1793	0.0296
ROCE	-2.5736	-2.2841	0.0227	-2.6852	-3.1353	0.0018
ETR	-0.5048	-1.1893	0.2347	-0.4625	-1.1186	0.2637
TANG	-0.4840	-0.2810	0.7788	0.2694	0.1935	0.8466
ATR	-0.3246	-0.8928	0.3723	-0.1538	-0.6287	0.5297
NDTS	12.363	1.0002	0.3176	0.5699	0.0594	0.9526
GR	0.0038	0.5320	0.5949	0.0046	0.6686	0.5040
AGE	-2.1801	-1.2723	0.2037	0.0801	0.2097	0.8339
SZ	-0.9699	-0.7634	0.4455	-0.2569	-0.6016	0.5476
Model Summary			**Fixed Effects**		**Random Effects**	
R-Square			0.5089		0.0292	
Adj. R- Square			0.5176		0.0170	
F-Value			3.3826		2.4040	
Significance Value			0.0000		0.0000	
DW Statistic			1.1762		1.0341	
Redundant Fixed Effect Test						
Cross Section – F Test / Sig. Value					3.14221 (0.0000)	
Cross Section – 2 Test / Sig. Value					230.554517 (0.0000)	
Test of Fixed and Random Effect						
Hausman Test (Significance Value)					11.321181 (0.0343)	

Source: Researcher's Compilation using EViews 12

5. DISCUSSION OF RESULTS AND IMPLICATIONS

The statistical test indicates that the SDR, LDR, TDR & DER models benefit most from fixed effects panel regression. Consequently, subsequent analysis and interpretation are based on fixed effects regression results.

The result of hypothesis testing shows that model 1 (SDR) is found significant with Firm's age, liquidity, firm's size, profitability, NDTS, tangibility, model 2 (LDR) is found significant with firm's size, ATR, Tangibility, model 3 (TDR) is found significant with ATR, ETR, liquidity and model 4 (DER) is found significant with profitability. Regression results indicate profitability, asset turnover ratio, tangibility and liquidity are major determinants of the CS of the FMCG sector in aggregate

Out of nine selected factors, the firm's size, firm's age, NDTS, profitability, tangibility, and liquidity are found significant with short-term debt ratio (SDR). The significant determinants in the debt-equity ratio (DER) are profitability and effective tax rate. Total Debt ratio (TDR) was found to be significant with the firm's age, size, effective tax rate, asset turnover ratio, and liquidity. The firm's size, asset turnover ratio, tangibility, and liquidity are found to be significant with long-term debt ratio (LDR).

The outcome will benefit the executives of foreign companies seeking to participate in the Indian FMCG sector by acquainting them with regional financial customs and encouraging them to comprehend how these practices vary from those in their home countries. To help financial managers make better decisions, the current study will provide additional insight into financial management techniques in the Indian FMCG sector.

The outcome of the present study presents management at companies' guidance. This analysis can be employed to either discontinue or sustain the company's present financial policies.

6. LIMITATIONS AND FUTURE RESEARCH

Due to significant time and financial constraints, the findings of this study are derived from a report that spans a decade, which may limit their relevance to other periods. The selection of sample companies is based on the accessibility of comprehensive data for all relevant factors throughout the entire study period, resulting in the elimination of certain companies where data was not readily available. To validate the results of the current research, econometric models and statistical tests are employed; however, various restrictions and assumptions inherent in these models and tests may influence the final outcomes.

The current study focuses exclusively on firm-specific factors that influence financial performance and corporate sustainability, intentionally excluding industry-level factors such as competitive forces, clusters, and the effects of Porter's five forces. Future research could be expanded to include these variables, potentially yielding a broader range of insights. Additionally, most previous investigations have relied on quantitative data obtained from secondary sources, suggesting an opportunity to incorporate qualitative factors, such as investor behavior and managerial perspectives on borrowing programs, in subsequent studies. Moreover, macroeconomic factors, including inflation, GDP growth, and fluctuations in the stock market and interest rates, have not been considered; their inclusion could significantly enhance the relevance and applicability of future research findings.

CONFLICT OF INTERESTS

None.

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