

Optimal Capital Structure: An Empirical Analysis of Select firms in FMCG Sector

Dr. Nirmala J

Assistant Professor

Department of Studies in Business Administration,

Vijayanagara Sri Krishnadevaraya University,

Ballari, Karnataka.

Abstract:

Well blended capital structure act as a base for the company to raise loans and advances including deposits. Further the optimal capital structure is supporting factor to design capital budgeting techniques. Judicious application of funds is not unlikely to be in vain. A study on optimal capital structure is an empirical analysis of FMCG sector related companies listed in Bombay Stock Exchange. As it mainly depends on secondary data, the researcher has collected data from Capitaline Database. The source of data has been collected for a period of 5 years from 2011 to 2015. The study is analytical analysis in nature.

Keywords: Capital structure, BSE, Empirical analysis, leverage, FMCG, Fixed effect model, Random effect model, Hausman test , market capitalization.

Introduction:

Every company irrespective of the size strives hard to have optimal capital structure. Capital Structure is a combination of debt and equity capital of firm. It is also called as financial structure of a business concern. It is very important as it related to the ability of the firm cater to the needs of its stakeholders, besides expansion, diversification and modernization. The capital in both the forms, as stated above is imperative to undertake large scale operations. The objectives are envisaged by objective clause of Memorandum of Association, which is a charter of the company. Capital is needed for companies to go for the acquisition of fixed assets, intellectual capability and also to maintain modernization to meet the demand periodically. It is the obligatory on the part of firm to send periodical report to the various bodies including Ministry of Company Law Affairs, Government of India. SEBI, OTCEI, Credit Rating Agencies, Stock Exchanges, Income Tax Department, Auditor General of India, Controller of Capital Issues etc., The firm unable to maintain proper capital structure may lose competitive strength, therefore the erosion of value of shares will be very higher. The imbalance of capital structure beyond the ideal situation may be cured provided strategic decisions are taken up at right time. The firms unable to maintain it for indefinite period may face the situation of slough of despondency, in which case dissolution will be unavoidable.

Fast Moving Consumer Goods (FMCG) Sector in India:

The fast moving consumer goods is the fourth largest segment in the India. The sector's market size predicted to increase from US\$ 30 billion in 2011 to US\$ 74 billion in 2018. FMCG sector leads with the market share of 43 per cent of the overall market. By fabric with 22%, Personal care with 22 %. The FMCG sector contributes 14 % GDP. According to the sources by Department of Industrial Policies and Promotion, the FMCG sector in India has received FDI around US\$ 7.47in 2016. From the year 2015to 2019, per capita income is likely to increase at a CAGR of 8.09%. The Indian FMCG sector's revenue is worth US\$ 44.9 in the year 2013. It can be noted that since 2007 there is an increase in revenues from FMCG sector every year. The sector's CAGR is 11.9 per cent in 2016 and expected to increase to US \$103.7 by 2020.

Review of Literature:

In order to find the gap, the researcher reviewed literature on capital structure variables and it is found that there are no research on determinants of capital structure on FMCG sector firms listed in BSE in the selected study period.

Taggart Robert (1980), investigated in incomplete market to find the affect of taxes on capital Structure. The study has made an attempt to expand Miller's analysis between the deliberation and corporate structure to situation of imperfect capital market.

Flath and Knoeber (1980), empirically analysed Optimal Industry Capital Structure and taxes failure and calculated the cost of failure and the tax benefits for 38 industries and an attempted to relate the variables to temporal variation and cross-sectional in the industry's capital structure over the period 1957 to 72.

Sealey (1983) evaluated capital structure and shareholder accord for depository financial Intermediaries and found that there is lack of applicability from the exacting conditions that distinguish non-financial firm from intermediary operations. In his paper a model with in-complete markets is developed and a investor accepted rule for go-between capital structure decisions is imitative.

Akhtar (2005), examined on the capital structure determinants of Multinational and Domestic Corporations of Australia. The study of Multinational Corporations and Domestic corporations sample listed on the Australian Stock Exchange (ASE) from the period from 1992 -2001. The analysis shows the mean leverage between Australian Domestic Corporations and Multinational corporations insignificantly different and stated that either political risk or foreign exchange risk was not significant factor to explain Australian's Multinational Corporation's leverage.

Melgarejo, et al.(2010), analysed the dissimilarities in Financial Performance of Spanish Small Medium Enterprise. The objective of this paper was to assess whether there is differences of financial performance is there between mercantile and labour-managed firms are owing to the differences in their capital ownership arrangement or to the meticulous dimension indexes applied to quantify show.

Songul kakilli acaravci (2015), investigated capital structure determinants Turkey by applying panel data methods. The sample period is 17 years for 79 companies in the manufacturing sector traded on the Istanbul Stock Exchange. Empirical analysis found that there are major relationships between tangibility, profitability, growth opportunities, and size leverage variables. But non-debt tax shields variable has negative relationship on leverage Growth opportunity.

Objectives:

The objectives of the study are:

1. To investigate the Debt-Equity Mix of FMCG firms under the study period.
2. To empirically test the association between the policy and decision variables and firm characteristics with leverage of selected companies in FMCG sector.
3. To evaluate the capital structure policies of selected FMCG firms listed in BSE during the study period.

Research Methodology

To identify the capital structure determinants adjust positively or negatively towards the objective leverage the researcher has used Stata 12.0. Study period is covered from 2012 to 2016. As the data used is time series as well as cross sectional series, Panel data analysis is adopted to identify the association of variables with leverage. Under Longitudinal/panel data analysis there are two models, namely; Fixed effect model and Random effect model. To find out the best method among the two, Hausman test are used. The study restricts the number of companies to 8 out of 10 for examining market capitalization, as 8 companies continuously associated with Bombay stock exchange during the study period.

Determinants of Capital Structure:

Leverage (debt_ta) as the dependent variable, company characteristics variable and company policy decision variable are considered as independent variables.

Firm Characteristics Variable:

1. Total assets (l_ta)
2. Capital intensity (c_i)
3. Research and development expenditures (r_d)
4. Non-debt tax shield (ndts)
5. Net Income (net)
6. Market-to-book equity (mbq)

Policy and Decision Variables

7. Change in firm's debt (cdebt)
8. Dividends (div)
9. Company's sales (fscs)

- 10. Company's stock repurchases (srp)
- 11. Non-Debt Current Liabilities.(ndcl)
- 12. Dummy Variable₁ (d1)
- 13. Dummy Variable₂. (d2)

Regression model:

$$(debt_ta)_{it} = \beta_0 + \beta_1 (cdebt)_{it} + \beta_2 (c_i)_{it} + \beta_3 (d1)_{it} + \beta_4 (d2)_{it} + \beta_5 (div)_{it} + \beta_6 (fscs)_{it} + \beta_7 (net)_{it} + \beta_8 (l_ta)_{it} + \beta_9 (ndcl)_{it} + \beta_{10} (ndts)_{it} + \beta_{11} (r_d)_{it} + \beta_{12} (srp)_{it} + \beta_{13} (mbq_)_{it} + \epsilon_{it}$$

Data Analysis:

Empirical Analysis of Capital Structure determinants of FMCG Sector:

Fixed effect model for estimating Capital Structure determinants of FMCG Sector:

```
. xtreg debt_ta cdebt c_i d1 d2 div_ fscs netinc l_ta ndcl_ ndts_ r_d srp mbq_ , fe noomitted vsqu
> ish noemptycells allbaselevels
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```
Fixed-effects (within) regression      Number of obs      =      40
Group variable: crosssecti~d          Number of groups   =      8

R-sq:  within = 0.7330                  Obs per group: min =      5
      between = 0.2390                  avg =              5.0
      overall = 0.2684                  max =              5

F(13,19) = 4.01
Prob > F = 0.0032

corr(u_i, Xb) = -0.7881
```

debt_ta	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cdebt	-.0367545	.187502	-0.20	0.847	-.4292007	.3556917
c_i	-.3832076	.226086	-1.69	0.106	-.8564111	.089996
d1	.0787833	.0846384	0.93	0.364	-.0983669	.2559336
d2	.2927425	.0630566	4.64	0.000	.1607634	.4247215
div_	.065188	.2080044	0.31	0.757	-.3701701	.5005462
fscs	-8.93958	7.525661	-1.19	0.250	-24.69097	6.81181
netinc	-.4866273	.2393742	-2.03	0.056	-.9876432	.0143886
l_ta	-.5543403	.2447784	-2.26	0.035	-1.066667	-.0420132
ndcl_	-.0770613	.1851091	-0.42	0.682	-.4644991	.3103765
ndts_	.5654592	2.286585	0.25	0.807	-4.220418	5.351336
r_d	4.964652	5.180849	0.96	0.350	-5.87899	15.80829
srp	.4955064	2.908304	0.17	0.867	-5.591643	6.582656
mbq_	.0020924	.0047798	0.44	0.666	-.0079118	.0120967
_cons	2.262304	.788152	2.87	0.010	.612683	3.911925
sigma_u	.30734321					
sigma_e	.07298864					
rho	.94661298	(fraction of variance due to u_i)				

F test that all u_i=0: F(7, 19) = 6.47 Prob > F = 0.0005

Random Effect Model for estimating capital structure determinants of FMCG Sector:

```
. xtreg debt_ta cdebt c_i d1 d2 div_fscs netinc l_ta ndcl_ndts_r_d srp mbq, re noomitted vsqu
> ish noemptycells allbaselevels
```

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Random-effects GLS regression           Number of obs   =       40
Group variable: crosssecti~d           Number of groups =        8

R-sq:  within = 0.4388                   Obs per group:  min =        5
      between = 0.9376                               avg =       5.0
      overall  = 0.8150                               max =        5

Wald chi2(13) = 114.55
corr(u_i, X) = 0 (assumed)               Prob > chi2     = 0.0000
```

debt_ta	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
cdebt	.1348983	.2007607	0.67	0.502	-.2585854	.528382
c_i	-.1987507	.1098481	-1.81	0.070	-.414049	.0165477
d1	-.1737418	.0519141	-3.35	0.001	-.2754915	-.0719921
d2	.3076693	.0692559	4.44	0.000	.1719303	.4434083
div_	.1820453	.2887558	0.63	0.528	-.3839057	.7479962
fscs	-3.421144	8.243468	-0.42	0.678	-19.57805	12.73576
netinc	-.0414661	.2466182	-0.17	0.866	-.5248288	.4418966
l_ta	.0659015	.0889963	0.74	0.459	-.1085281	.2403311
ndcl_	-.2190608	.2378546	-0.92	0.357	-.6852473	.2471257
ndts_	-.3105099	2.553294	-0.12	0.903	-5.314873	4.693854
r_d	-2.05513	5.036648	-0.41	0.683	-11.92678	7.816517
srp	-.5898436	2.508955	-0.24	0.814	-5.507306	4.327619
mbq_	-.0019027	.0040414	-0.47	0.638	-.0098236	.0060182
_cons	.1996584	.2445156	0.82	0.414	-.2795835	.6789002
sigma_u	0					
sigma_e	.07298864					
rho	0	(fraction of variance due to u_i)				

To identify the best model among the two, the following hypothesis is drawn to examine under Hausman test.

H₀: Random effect model is accurate to test determinants of capital structure of FMCG sector.

H_a: Fixed effect model is accurate to test determinants of capital structure of FMCG sector

Hausman test for estimating Capital Structure determinants of FMCG Sector:

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	Coefficients			
	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
cdebt	-.0367545	.1348983	-.1716528	.
c_i	-.3832076	-.1987507	-.1844569	.1976064
d1	.0787833	-.1737418	.2525251	.0668475
d2	.2927425	.3076693	-.0149268	.
div_	.065188	.1820453	-.1168572	.
fscs	-8.93958	-3.421144	-5.518435	.
netinc	-.4866273	-.0414661	-.4451612	.
l_ta	-.5543403	.0659015	-.6202418	.2280266
ndcl_	-.0770613	-.2190608	.1419995	.
ndts_	.5654592	-.3105099	.8759691	.
r_d	4.964652	-2.05513	7.019783	1.213829
srp	.4955064	-.5898436	1.08535	1.470841
mbq_	.0020924	-.0019027	.0039951	.0025522

b = consistent under H₀ and H_a; obtained from xtreg

B = inconsistent under H_a, efficient under H₀; obtained from xtreg

Test: H₀: difference in coefficients not systematic

$$\text{chi2}(13) = (b-B)' [(V_b - V_B)^{-1}] (b-B)$$

$$= 408.13$$

$$\text{Prob} > \text{chi2} = 0.0000$$

(V_b - V_B is not positive definite)

From the above Hausman test, b is consistent under H₀ and H_a, and B is inconsistent under H_a. Therefore, fixed effect model is accurate model to examine the relationship between the leverage and its determinants of FMCG sector companies

Interpretation:

In the above analysis of fixed effect model for 8 companies, Overall R square shows that 26.84% variance of debt/total assets is explained by the 12 independent variables. Prob>F=0.000 which is less than 0.05. This shows the model is appropriate. The coefficient of independent variables is explained according to firm characteristics determinants and policy and decision determinants. The first determinant under firm

characteristics variables is Firm size measured by natural log of total assets of firms in FMCG sector. The coefficient of l_ta indicates negative relationship with capital structure. The coefficient is -0.5543 . The P value of this determinant is 0.035 . T-value is $-2.26 < 1.95$ (at 95% confidence level), this shows that firm size has insignificant influence on the dependent variable debt/total asset. Accordingly the relationship is insignificant with leverage of FMCG sectors. The second determinant is Capital intensity which is measured by tangible assets/Total assets of companies in FMCG sector. The coefficient of c_i is -0.3832 . The P value of this variable is 0.106 . T-value is $-1.81 < 1.95$ (at 95% confidence level), this shows that capital intensity has negative influence on the dependent variable debt/total asset. Hence the relationship is statistically insignificant with leverage of FMCG firms. The third determinant is Research and development expenditure which is measured as R and D/Total assets. The coefficient of r_d is 4.9646 . The P value of this determinant is 0.350 . T-value is $0.96 < 1.95$ (at 95% confidence level), this shows that R&D has insignificant influence on the dependent variable debt/total asset. For that reason the relationship is not significant with leverage. The fourth determinant is non debt tax shield which is measured as $ndts$ /Total assets. The coefficient of $ndts$ is 0.5654 . The P value of this determinant is 0.807 . T-value is $0.25 < 1.95$ (at 95% confidence level), this shows that non-debt tax shield has insignificant influence on the dependent variable debt/total asset. Henceforth the relationship is insignificant with leverage. The fifth determinant is net income which is measured as Net income/Total assets of FMCGs sector. The coefficient of net is -0.4866 . The P value of this determinant is 0.056 . T-value is $-2.03 < 1.95$ (at 95% confidence level), this shows that net income has significant influence on the dependent variable debt/total asset. As a result the relationship is highly significant with leverage of FMCGs sector.

The sixth and the final determinant of firm characteristics of FMCG sector is Market to book equity ratios. The coefficient of $mbq_$ is 0.0020 . The P value is 0.666 . T-value is $0.44 < 1.95$ (at 95% confidence level), this shows that change in debt has insignificant influence on the dependent variable debt/total asset. Hence the market to book equity ratios is insignificantly related to Leverage of FMCG sector. The coefficient of independent variables will be explained according to policy and decision determinants of capital structure. The first determinant of Policy and decision of FMCG sector is change in debt. The variable is measured by change in debt over the period/total assets. The coefficient of $cdebt_$ is -0.0367 . The P value is 0.847 . T-value is $-0.20 < 1.95$ (at 95% confidence level), this shows that change in debt has insignificant influence on the dependent variable debt/total asset. Consequently the Change in debt variable is negatively correlated related to Leverage of FMCG sector. The second determinant of Policy and decision of FMCG sector is dividends. The variable is measured by dividends /Total assets. The coefficient of div is 0.0651 . The P value is 0.757 . T-value is $0.31 < 1.95$ (at 95% confidence level), this shows that dividends has insignificant influence on the dependent variable debt/total asset Thus the dividends variable is highly insignificant to Leverage of FMCG sector. The third determinant of Policy and decision of FMCGs is firm sale of common stock. The variable is measured by firm sales of equity shares /Total assets. The coefficient of $fscs$ is -8.9395 . The P value is 0.0250 . T-value is $-1.19 < 1.95$ (at 95% confidence level), this shows that firm sale of common stock has significant influence on the dependent

variable debt/total asset So the firm sale of common stock variable is negatively significant to Leverage of FMCG sector. The fourth determinant of Policy and decision of FMCGs is stock repurchase. The variable is measured by buy back of shares/Total assets of firms in the sector. The coefficient of srp is 0.4955, P value is 0.867. T-value is $0.17 < 1.95$ (at 95% confidence level), this is shows that firm stock repurchase has significant influence on the dependent variable debt/total asset Hence, the stock repurchase variable is statistically significant to Leverage of FMCG sector. The Fifth determinant of Policy and decision of FMCG sector is Non debt current liabilities. The variable is measured by Current liabilities of firms over the period/Total assets of firms in the sector. The coefficient of ndcl is -0.0770 , P value is 0.682. T-value is $-0.42 < 1.95$ (at 95% confidence level), this is shows that non-debt current liabilities has significant influence on the dependent variable debt/total asset. Consequently, the non-debt current liabilities variable is statistically significant to Leverage of FMCG sector.

The sixth determinant of Policy and decision of FMCGs are Dummy1 variable. Dummy 1 variable coefficient is 0.00787 and P value is 0.364. T-value is $0.93 < 1.95$ (at 95% confidence level), this is shows that dummy 1 variable has insignificant influence on the dependent variable debt/total asset As a result, Dummy 1 variable is highly insignificant with leverage of FMCG sectors.

The final determinants of Policy and decision of FMCG firms is Dummy2. The coefficient is 0.2927. P value 0.000, T-value is $4.64 > 1.95$ (at 95% confidence level), this is shows that firm the dummy2 variable has significant influence on the dependent variable debt/total asset which is positively significant which indicates that, companies that had extremely high leverage in 2011 continue to have higher leverage till 2015.

Conclusion and Suggestion:

It is found that the speed of adjustment towards the target leverage is 5.82%. The speed is too slow. Therefore, it is suggested for the selected companies of FMCG sector may increase the speed of adjustment by reducing the beta co-efficient of desired leverage. So that the companies cost of capital will be minimal. Five out of eight companies depends upon the internal financing. It is suggested for these companies to consider the burden of tax while using the retained earnings. The burden of tax will reduce the earnings. Therefore, the companies may restructure their capital in order to reach optimal level of debt-equity mix. By analysing the capital structure determinants, it is found that change in debt, dividends, capital intensity market-to- book ratios and non-debt tax shield have no association with target leverage. Therefore, it is suggested to the manager of the selected companies may look after these determinants and there by company can reach the target leverage which maximizes the value of the firm.

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