

Select Firm Specific Determinates and Debt Procurement Policy of Small and Medium Sized Indian Health Sectors Firms: A Generalised Methods of Moment Approach

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ABSTRACT

The study of corporate capital structure is no longer limited to listed, large-scale businesses; rather, the global executive growth of small and medium-sized businesses is a pressing concern that necessitates thorough investigation of the "Capital structure" of such businesses. In the current environment, more research is needed to determine how to create a sophisticated model that will be successful in providing Debt capital towards the health sector businesses. In this regard, the authors attempted to determine the impact of a few firm-specific variables on the debt financing choices made by small and medium-sized health sector companies. To conduct the study, the researchers employed 246 observations for the period 2017-2022, used descriptive statistics, panel unit root test, Wald exogeneity and system GMM analysis and concluded that due to the volatility of the debt market, the RBI's interest rate policy, and other variables, SME health sector companies frequently experience financial difficulties. As a result, they are occasionally unable to obtain formal financing. Hence, it is advised that the government, financial institutions, and policymakers adopt a strong SME-focused health sector financing policy in order to increase the sector's financing flexibility and borrower-centricity.

Keywords: health sector, sme firms, debt policy, exogeneity, two step system gmm, arellano-bond test

I. INTRODUCTION

Small and midsize businesses (SMEs) and large corporations differ in that SMEs are made up of a variety of businesses. In developing nations, SMEs can serve as a bridge between the informal economy of family companies and the formal corporate sector. These businesses also make money and add value to the societies of each nation. Because they represent the economic engine of many economies or the least developed countries, SMEs are the business sector that is expanding at the highest rate worldwide (Savlovski and Robu, 2011). According to the Organisation for Economic Co-operation and Development (OECD), SMEs account for 90% of all firms and 63% of all workers worldwide (Munro, 2013). In addition, Vietnam's SME sector confronts various difficulties regarding global integration, just like other emerging and developing countries. Even though financial constraints have roughly twice the impact on small businesses annual development, there is comparatively little research on the financial structure of SMEs when compared to large organizations (Kumar & Rao, 2015; Ayyagari et al., 2007).

Firm finance itself through its capital structure, which combines stock, short-term debt, and long-term debt (Ross et al., 2005; Hsiao et al., 2009). Managers constantly worry about capital structure since it has an impact on financial performance. According to the goals of financial management, maximising business value can help achieve wealth maximisation. The firm's worth can be impacted by several factors, including capital structure. Thus, managers are constantly assessing various combinations to maximise firm value and reduce the weighted average cost of capital.

Health service sector is one of the important component of Human Development Index. Furthermore in a developing country like India it add significant values to the health infrastructure along with government sectors by means of medical service in a package system including pharmaceutical and pathological support. The central Govt. has estimated to contribute 1.25% of GDP to this sector. as per the report published by Government of India, a exquisite growth of 15% is predicted, which is about to reach \$158 billion by December 2022 from \$80 billion in the year 2012 only. (Saini, M.K., 2022, Ghosh et al., 2022). Furthermore, Govt. is initiating to adopt PPP model in health sector, hence an exalted future growth of this sector is predicted by policymakers.

II. THEORITICAL UNDERSTANDING OF STUDY

Now a days study of corporate capital structure doesn't only circumscribed within listed large scaled firms, instead the exegetical growth of small and medium sized firm throughout the world is a burning issue which demands extensive research of "Capital structure" of such firms. Moreover, it is evident that study conducted on large firms doesn't commensurate with the small and medium businesses capital structure as nature of financing of those firms are different from the large firms from the aspect of fund providers, the small businesses are usually financed through private savings or by borrowing debt from bank or any financial institutions instead of owners' equity financing (Allen et al., 2012; Rao et al., 2018).

Modigliani and Miller (MM) introduced the contemporary capital structure theory in 1958. The subject has been thoroughly studied over the past 55 years to explain the capital structure pattern and its causes. All those studies helped us to better understand how theoretical models are applied in the real world of business. Yet, a deeper comprehension of the factors that influence a firm's capital structure remains elusive (Barclay and Smith, 2005).

Long-Term Debt Ratio

One of the financial leverage ratios used to determine how much long-term debt is being used to fund a company's assets is the long-term debt ratio. The situation of the company's financial leverage is shown by this ratio. Analysts can gauge the corporation's capacity to pay off its long-term outstanding loans using this ratio. The ratio indicates how reliant the company is on debt if it tends to increase over the course of the year. On the other hand, a declining percentage indicates that the company's reliance on debt is decreasing over time.

Short-Term Debt Ratio

Short term debt comprises the firm's total debt repayable in one year or less, such as current liabilities, bank overdrafts and bank loans; Total assets include both fixed and current assets. This is a source of company's liquid fund which is invested in the business to produce certain amount of goods or service in which the concern is mainly indulged with.

Profitability

According to the pecking order theory, which is founded on works by Myers and Majluf (1984), there is a hierarchy among firms when it comes to choosing how to finance their operations. According to this hypothesis, businesses favour internal funding over external funding. If the need for external financing arises, debt is usually the first option to be considered, followed potentially by hybrid securities such as convertible bonds, and finally equity as a last resort. This behaviour might be brought on by transaction costs, asymmetric knowledge, or the costs associated with issuing new equity. According to the pecking order theory, Myers and Majluf (1984) predicted a negative connection between profitability and leverage, whereas Jensen (1986) predicted a positive relationship (Rajan and Zingales, 1995).

H1: Profitability is supposed to be negatively related to firm's leverage

Tangibility

According to agency cost theory models, this relationship may ultimately be founded on the conflict between lenders and shareholders (see, for example, Jensen and Mekling, 1976; Harris and Raviv, 1991). In a nutshell, this theory contends that conflicts between lenders and stockholders encourage shareholders to make less-than-ideal investment decisions. Lenders therefore take measures to safeguard themselves, in this case by demanding tangible assets as collateral. The ratio of fixed assets to total assets is used as a measure of tangible assets in order to assess the econometric models below.

H2: Tangibility is supposed to be positively related to firm's leverage

Liquidity

The degree to which an asset can be quickly purchased or sold on the market at a price reflecting its intrinsic worth is referred to as liquidity. Due to its ease and speed of conversion into other assets, cash is regarded as the most liquid commodity. Real estate, fine art, and collectibles are examples of tangible assets that are all comparatively illiquid. Other financial assets fall at different points along the liquidity spectrum, from equities to partnership units.

H3: Liquidity is supposed to be negatively related to firm's leverage

Non-Debt Tax Shield

The conclusion is that there is no relationship between non-debt tax shield and overall debt ratio. However, when overall debt is divided into short-term and long-term debts, it becomes significantly more important.

However, non-debt tax shield has a positive impact on short-term debt ratio but a negative correlation with long-term debt ratio, indicating that there is a substantial difference between short-term and long-term debt ratios. We may argue that this result shows that non-debt tax shields are substitutes for the tax benefits of long-term debt financing to

depreciation because we anticipate that an increase in non-debt tax shields will negatively affect leverage; when businesses engage in tax shelter schemes, they primarily consider long-term debt.

H4: *NDTS is supposed to be negatively related to firm's leverage*

Growth Rate

The growth rate is the percentage shift of a particular variable over a predetermined amount of time. The compounded annual rate of growth of a company's earnings, revenue, dividends, as well as ideas like retail sales and gross domestic product, is how the growth rate of a business is defined in terms of investments (GDP).

H5: *Growth Rate is supposed to be negatively related to firm's leverage*

Table 1: Description of variables

Variable type	Name of Variables	Descriptions	Past study reference
Dependent	Long Term Debt Ratio (LTDR)	Long term Debt Ratio = Long-term borrowings excluding current options/ Total Assets	Casser & Holmes(2003); Mateeva et al.(2013), Hasemi(2013); Rao et al.(2018)
	Short Term Debt Ratio (STDR)	Short term Debt Ratio = Short-term borrowings excluding current options/ Total Assets	Casser & Holmes(2003); Mateeva et al.(2013), Hasemi(2013); Rao et al.(2018)
Independent	Profitability(PROF)	Earnings before Depreciation, Interest & Tax/ Total Assets	Chakraborty (2010); Hashemi(2013);Frank & Goyal (2015); Sinha(2017);Rao et al.(2018)
	Tangibility(TANG)	Net Fixed Assets/ Total Assets	Kayo & Kimura (2011);Hashemi(2013); Mateeva et al. (2013) ;Handoo &Sharma (2014); Öz-tekin (2015)
	Liquidity(LIQ)	Current Asset/ Current Liabilities excluding provisions	de Jong et al. (2008); Kaur & Rao (2009); Sbeiti (2010); Mat Nor et al.(2011); Mossa et al. (2011)
	Non-debt Tax Shield (NDTS)	Depreciation & Amortisation (net of transfer from revaluation reserves) ; /Total Assets	Wiwattana kantang(1999); Chen (2004); Deesomsak et al.(2004); Huang & Song (2006); Delcoure(2007);
	Growth Rate (GR)	$(\text{Total Assets}_t - \text{Total Assets}_{t-1}) / \text{Total Assets}_{t-1}$	Hall et al.,(2004); Nguyen & Ramachandran,(2006); Chakraborty(2010); Rao et al.,(2018)

III. REVIEW OF PAST STUDIES

Some of the existing studies from both the national and international contexts are studied minutely which gives us some exciting outcomes that are noted below:

Sogorb, F. (2005) tries to examine the impact of firm characteristics on Small and Medium-Sized Enterprises (SME) capital structure. Using a panel of 6482 non-financial Spanish SMEs, conducted an empirical analysis during the five years 1994–1998. The authors model the leverage ratio as a function of the firm-specific characteristics proposed by the capital structure theory. The study findings indicate that profitability and non-debt tax shelters are both connected to SME leverage negatively, whereas size, growth potential, and asset structure are positively related to SME capital structure, and they also support the maturity matching behaviour in this company category. **Lopez-Gracia and Sogorb-Mira (2008)** tries to examine the pecking order and trade-off theories, two of the most significant theories underlying financial policy in Small and Medium-Sized Companies (SMEs). A sample of 3,569 Spanish SMEs is utilised to test empirical hypotheses across ten years, from 1995 to 2004, using the panel data technique. According to the findings, both theoretical models can be used to explain SME capital structure. Nonetheless, the study findings show that SMEs are more trusted when they try to reach a target or optimum leverage, even though there is clear evidence that SMEs adhere to a funding source hierarchy (pecking order model) (trade-off model). Due to the significant transaction costs, they must bear, this is still true even if SMEs take a while to achieve this level. Growth prospects, internal resources, and non-debt tax shields (NDTS) all appear to be significant factors in shaping SME capital structure. Age and size are discovered to be important determinants as well. Furthermore, **Rao et al. (2018)** introspected the variables influencing SMEs' (small and medium businesses) capital structure decisions in India. There are 174 non-financial companies in the sample. The Generalized Method of Moments (GMM) has been used to identify the firm-specific variables influencing SMEs in India

while choosing a loan option. The study focuses on how the firm's profitability, tangibility, size, age, growth, liquidity, non-debt tax shield, cash flow ratio, and return on equity affect the firm's level of leverage. It supports the pecking order theory's application to SMEs in India. However, *Naik, P. (2020)* introspected the key factors that influence how Indian public sector banks finance their debt. By extracting data from 26 Indian public sector banks (PSBs) for 12 years, from 2005 to 2016. The study uses the pooled OLS as well as static and dynamic panel data approaches, such as the random-effects model and the system GMM model. The analysis shows that the bank's size, tangibility, liquidity, and financial soundness play a key role in determining the bank's debt financing. It demonstrates that whereas financial stability and economic growth are inversely correlated with bank debt levels, bank size, liquidity, and tangibility are positively correlated with bank debt. Also, it has been discovered that the quantity of debt remains stable over time, adjusting at a rate of about 92% annually. However, *Chitta et al. (2020)* stated that Micro, small, and medium-sized businesses play a significant role in the expansion of an economy. They are recognised as major generators of jobs and GDP growth and contribute to balanced regional development. Despite the sector's crucial contribution to the economy, many businesses in it are plagued by financial issues, high borrowing rates, a lack of government incentives, onerous regulatory barriers to business expansion, and the largest issue, a constant lack of capital. A survey done to determine the difficulties small and medium pharmaceutical businesses in Hyderabad have in obtaining the finance they require concerning banks. According to the study, there is a considerable correlation between the ease of obtaining bank financing with interest, business ownership, and the proportion of bank financing in total financing.

IV. RESEARCH GAP

In India Health service sector demands a grandios amount of capital investment as it require costly medical equipment, modern infrastructure and hospitality and allied purpose. However, in 2017 World Bank published a report exhibits that India has only 0.7 bed per thousand population, and as per the estimation of WHO it requires a single bed per 1000 people, henceforth a clear shortage of bed needs around 3 lakh more beds which require approximately Rs. 75 thousand crore (on an average of 25 thousand per bed). Moreover, 40-65% cost has to be allocated for building hospital and its interiors. (<https://healthvision.in/emerging-trends-of-ppp-model-in-indian-healthcare>)

The startling fact is most private hospitals couldn't exceeded capital and turnover criteria of SME (as per the recent criteria of Ministry of MSME dated w.e.f. 1/07/2020) hence not directly integrated to the developed capital markets that makes those hospitals too much dependent on Bank & Institutional finance. At present scenario, as far as the financing policy of Health sector finance is concerned, it demands more research on how to build an erudite model that will be effective to offer long-term funds before the health sector firms. Therefore, to study select firm level determinates of capital structure and its impact on debt policy of the firm may add some value with existing literature as a very minimal research on this research problem is observed by present researchers.

V. OBJECTIVES OF THE STUDY

On review of several past literatures and in commensuration with the above mentioned literature gap the following objectives of the study can be derived –

- To find out the effect of select firm specific determinates of Debt financing decisions of small and medium sized Health sector firms.
- To observe the most fitted technique to interpret panel data among pooled regression, fixed effect and Difference GMM.

VI. RESEARCH METHODOLOGY

- **Data selection technique:** for analysis of factual information data regarding the study variables has been extracted from the Prowess-IQ database and firms which are listed in the BSE has only been taken to frame samples. Moreover, initially 142 firms listed under Health Service sector in the said database, only the firms have fulfilled the "Capital Employed" (*Investment in Plant & Machinery should be more than Rs.10 million but less than Rs.500 million*) and "Turnover Criterion" (*more than Rs.50 million but Rs.2500 million*) throughout the period of study as per the revised definition of the MSMED Act, 2006 (*revision w.e.f. 01/07/2022*) has been considered. Again firms not having complete data throughout the period under study has also been excluded.
- **Final Sample:** On exercise of the above sample selection technique, 41 firms that belongs to health service sector has been finalised in sample. Study period of 6 years commencing from 2017 to 2022 has been considered to constitute Micro- panel for the study. Hence total 248 observations has been analysed to interpret study findings.
- **Research Instruments:**
 - a) To the outliers and basic nature of dataset Descriptive Statistics has been computed.

- b) To Examining data stationarity, Panel common unit root process Levin, Lin, Chu t test (Levin, et al., 2002) and the non-parametric Fisher Phillips Perron Chi-Square (Phillips & Perron, 1988) test has been conducted to check the unit root using individual unit root test.
- c) To validate the Exogeneity test in dynamic panel data Wald Test of Exogeneity with Parametric F-test and non-parametric Chi-square test have been conducted. (Bun & Sarafidis, 2015)
- d) Pooled Regression is a Regression technique used to interpret panel data as it use the assumptions of normal OLS regression estimation. However, normal pooled regression is not free from endogeneity problem, as irrespective error terms are uncorrelated with the explanatory variables (of past, present and future time periods), control variables and the firm-specific effects. (Sinha, S.,2017)Thus, to make the model exogenous lagged Pooled OLS can be a better measure. Nevertheless, this study has considered lag length 1 of dependent variables just to observe time effect on the model hence the revised Lagged pooled OLS regression model is –

$$LTDR_{it} = \alpha_{0i} + \delta * LTDR_{i(t-1)} + \beta_1 * PROF_{it} + \beta_2 * TANG_{it} + \beta_3 * LIQ_{it} + \beta_4 * NDTs_{it} + \beta_5 * GR_{it} + \varepsilon_{it} \dots\dots\dots (1.1)$$

$$STDR_{it} = \alpha_{0i} + \delta * STDR_{i(t-1)} + \beta_1 * PROF_{it} + \beta_2 * TANG_{it} + \beta_3 * LIQ_{it} + \beta_4 * NDTs_{it} + \beta_5 * GR_{it} + \varepsilon_{it} \dots\dots\dots (1.2)$$

[Where, $LTDR_{it}$, $STDR_{it}$ are dependent variables; $\delta * LTDR_{i(t-1)}$, $\delta * STDR_{i(t-1)}$ = 1 level lagged dependent variable; δ = coefficient of lagged dependent variable;

β_n = regression coefficient $n= 1, 2,..5$; ε_{it} = error term of model; i = no of companies; t = time period]

- e) Fixed effect model over pooled regression technique considers common cross-sectional difference for all cross-sections, however pooled doesn't consider any cross-sectional difference hence largely considered as intercept. (Guajarati et al., 2021, pp-760-761)

$$LTDR_{it} = \delta * LTDR_{i(t-1)} + \beta_1 * PROF_{it} + \beta_2 * TANG_{it} + \beta_3 * LIQ_{it} + \beta_4 * NDTs_{it} + \beta_5 * GR_{it} + \varepsilon_{it} \dots\dots\dots (2.1)$$

$$STDR_{it} = \delta * STDR_{i(t-1)} + \beta_1 * PROF_{it} + \beta_2 * TANG_{it} + \beta_3 * LIQ_{it} + \beta_4 * NDTs_{it} + \beta_5 * GR_{it} + \varepsilon_{it} \dots\dots\dots (2.1)$$

- f) In panel data methods the fixed effect model either considers within fixed effect of between fixed effects of data. This technique doesn't ensure free from endogeneity as the industry dummy or period dummies have probability to usually get co-related among explanatory and control variables. Hence, to mitigate this problem, (Arellano and Bond, 1991) has developed a difference GMM technique. When the parameters of regression equation has over identified restrictions this GMM technique deals with the problem by minimising the moment conditions using GMM vector parameter (Mora, R, 2013)

$$\theta \text{ is a } k \times 1 \text{ vector of parameters such that } E[m(w_i, \theta)] = 0_{q \times 1} \dots (3.1)$$

[where, m is a $q \times 1$, $q \geq k$, vector of known functions and w_i is data on person i .]

Hence, $\theta^{GMM} = \text{argmin } m_N(\hat{c}) = A_N m_N(c)$ [where, A_N is a $q \times q$ matrix]

$$\text{First Order Conditions: } 2 \nabla m_N m_N A_N m_N (\hat{\beta}^{GMM}) = 0_K \dots (3.2)$$

2 stage GMM estimation equation can be derived as, For a particular A_N

$$y_i = \beta x_i + u_i \dots (3.3); E[u_i / z_i] = 0;$$

GMM estimator is defined by, $\nabla m_N * m_N * A_N * m_N(\widehat{w}_i, \beta^{GMM}) = 0 \dots (3.3)$; With instrument z_i .

Moreover, it considers the impact of instrumental variables which are strictly exogenous variables by nature.

Now, the difference GMM model upto one level lagged has been considered as –

$$LTDR_{it} = \beta_0 + \omega * LTDR(-2) + \beta_1 * PROF(-1)_{it} + \beta_2 * TANG(-1)_{it} + \beta_3 * LIQ(-1)_{it} + \beta_4 * NDTs(-1)_{it} + \beta_5 * GR(-1)_{it} + \varepsilon_{it} \dots\dots\dots (4.1)$$

$$STDR_{it} = \beta_0 + \omega * STDR(-2) + \beta_1 * PROF(-1)_{it} + \beta_2 * TANG(-1)_{it} + \beta_3 * LIQ(-1)_{it} + \beta_4 * NDTs(-1)_{it} + \beta_5 * GR(-1)_{it} + \varepsilon_{it} \dots\dots\dots (4.2)$$

[Where, $LTDR_{it}$, $STDR_{it}$ are dependent variables; $\omega * LTDR_{i(t-2)}$, $\delta * STDR_{i(t-2)}$ = 1 level lagged dependent variable; ω = coefficient of dynamic lagged dependent variable;

β_n = regression coefficients; $X_{i(t-1)}$ = instrumental variables; $n= 1, 2,..5$; ε_{it} = error term of model; i = no of companies; t = time period]

- g) To interpret fitness of the model, J-statistics & Prob. Value of J-Statistic have also been interpreted.
 - ✓ Null hypothesis $E[g(X_i, \theta)]=0$,
 - ✓ Alternative hypothesis $\neq 0$

- h) Finally to find out most fitted regression method among lagged Pooled regression, Fixed effect model with lag and difference GMM a system GMM conclusion can be drawn (Arellano & Bover, 1995) –
1. Consider the co-efficient value of lagged Pooled regression of dependent variable as Upper Limit.
 2. Consider the co-efficient value of fixed effect model with lag dependent variable as lower Limit.
 3. If the coefficient of difference GMM is between the range of upper and lower limit as said in above pt. no. 1&2 then difference GMM (Arellano and Bond, 1991) is the best measure, otherwise Fixed effect Model is preferred over difference GMM.
- i) Moreover, to check the serial correlation of GMM regression, Arellano-Bond Serial Correlation Test for GMM of idiosyncratic error term of AR(1) and AR(2) are considered,
 Null hypothesis: AR (1) has serial correlation if p-value >0.05, otherwise reject null and go for AR(2) or higher order. (<https://www.statalist.org/forums/general-stata-discussion/general/1570681-ar-1-and-ar-2-test-in-dynamic-panel-gmm-estimation>)

VII. ANALYSIS & FINDINGS

➤ Descriptive Statistics

	LTDR	STDR	LIQ	PROF	TANG	NDTS	GR
Mean	0.365	0.103	0.721	0.118	0.573	0.069	2.422
Median	0.218	0.062	0.814	0.125	0.611	0.063	2.456
Maximum	2.077	0.552	34.582	0.463	0.911	0.203	2.950
Minimum	0.000	0.000	-13.278	-0.280	0.041	0.008	1.732
Std. Dev.	0.423	0.111	1.116	0.102	0.198	0.035	0.242
Observations	287	287	287	287	287	287	287

The above table no.1 describes the features of the dataset in the study. The mean value of LTDR 36.5% is higher than that of STDR 10.3%. GR 2.42 is the most influential explanatory variable of health sector’s debt policy. Standard deviation for all variables ranges 0.035 to 1.116 i.e. within tolerable range, hence we can move forward for further analysis.

➤ Panel Unit Root Test

		Levin, Lin Chu Test (with individual intercept & Trend)				Fisher PP Test (with individual intercept & Trend)			
		At Level		At 1st Difference		At Level		At 1st Difference	
Variable	t-Statistic	Prob.	t-Statistic	Prob.	Chi-Sq. Statistic	Prob.	Chi-Sq. Statistic	Prob.	
LTDR	-3.207	0.001***	-7.725	0.000***	77.192	0.000***	131.738	0.000***	
STDR	-7.909	0.000***	-8.818	0.000***	98.383	0.000***	179.458	0.000***	
PROF	-1.521	0.064	-2.914	0.002***	65.601	0.007***	127.480	0.000***	
TANG	-2.825	0.002***	-7.088	0.000***	68.531	0.003***	190.633	0.000***	
LIQ	-5.263	0.000***	-32.616	0.000***	121.551	0.000***	165.627	0.000***	
NDTS	-6.802	0.000***	-10.927	0.000***	67.952	0.012***	138.559	0.000***	
GR	-5.509	0.000***	-10.727	0.000***	59.734	0.023***	113.127	0.000***	

Note: *p-value significant at 0.95 C.I, **p-value significant at 0.99 C.I

The above table no. 2 infers about the panel unit root test results of Random walk with drift. The above mentioned variables under study has been examined using parametric Levin, Lin Chu Test common unit process and all variables are found significant at 99% C.I at level except PROF, however it is found stationery at 1st difference. Moreover, non-parametric Phillips-Perron (Fisher test) tells data set is stationery at level. Henceforth, both test has concluded that data set is free from unit root.

➤ **Wald Test of Exogeneity**

Table 4: Wald Test of Exogeneity						
Null Hypothesis: Normalized Restriction (= 0)						
PROF	LTDR			STDR		
	Value	df	p-value	Value	df	p-value
F-statistic	4.29	(1, 280)	0.04**	11.82	(1, 280)	0.00***
Chi-square	4.29	1	0.02***	11.82	1	0.00***
TANG						
F-statistic	11.22	(1, 280)	0.00***	12.57	(1, 280)	0.00***
Chi-square	11.22	1	0.00***	12.57	1	0.00***
LIQ						
F-statistic	0.07	(1, 280)	0.04**	9.22	(1, 280)	0.00***
Chi-square	0.07	1	0.02***	9.22	1	0.00***
NDTS						
F-statistic	11.73	(1, 280)	0.00***	29.71	(1, 280)	0.00***
Chi-square	11.73	1	0.00***	29.71	1	0.00***
GR						
F-statistic	7.22	(1, 280)	0.01***	6.76	(1, 280)	0.04**
Chi-square	7.22	1	0.01***	6.76	1	0.01***

Note: *p-value significant at 0.95 C.I, **p-value significant at 0.99 C.I

Above Table-4 describes the Test of Exogeneity of each variable. Normalised restrictions Null hypothesis is considered = 0, where the alternative hypothesis is ≠ 0. Conditions of exogeneity: If the value of both F-statistic and Chi-square statistics of explanatory variables are found significant (at respective degree of freedom) then found no endogeneity. Study results exhibits that p-value of F-statistic and Chi-square statistics of explanatory variables of two regression models are found significant at 0.05 level. Hence, Explanatory variables are not normally restricted hence exogenous in nature.

➤ **Pooled Regression, Fixed Effect Model and System Gmm**

Table 5: System GMM Analysis						
Explanatory Variable	Lagged Pooled Regression (lag length 1)		Fixed Effect Model (lag length 1)		Difference GMM (up to lag length 1)	
	LTDR	STDR	LTDR	STDR	LTDR	STDR
LTDR(-1)	0.863	N.A	0.681	N.A	0.317	N.A
<i>p-value</i>	0.000***	N.A	0.00***	N.A	0.000***	N.A
STDR(-1)	N.A	0.759	N.A	0.523	N.A	0.845
<i>p-value</i>	N.A	0.000***	N.A	0.064*	N.A	0.000***
PROF	-0.030	-0.439	0.009	-0.520	-0.231	-1.191
<i>p-value</i>	0.522	0.162	0.86	0.173	0.013**	0.000***
TANG	0.021	0.018*	0.043	-0.026	0.664	0.429
<i>p-value</i>	0.549	0.544	0.60	0.733	0.005***	0.033**
LIQ	0.014	0.058	0.099	-0.227	0.096	-0.137
<i>p-value</i>	0.480	0.002**	0.38	0.251	0.583	0.338
NDTS	0.175	0.130	0.332	-0.400	0.519	-0.839
<i>p-value</i>	0.002***	0.125	0.02***	0.316	0.181	0.000***
GR	0.037	-0.053	0.056	-0.057	0.116	-0.075
<i>p-value</i>	0.091*	0.005***	0.03***	0.002***	0.008***	0.164
<i>Effect Specification</i>						
R-squared	0.791	0.666	0.848	0.763		
Adjusted R-squared	0.787	0.659	0.813	0.708		
S.E. of regression	0.128	0.147	0.120	0.136	0.155	0.220
Durbin-Watson stat	1.761	1.546	2.048	1.678		

Table 5: System GMM Analysis						
Explanatory Variable	Lagged Pooled Regression (lag length 1)		Fixed Effect Model (lag length 1)		Difference GMM (up to lag length 1)	
	LTDR	STDR	LTDR	STDR	LTDR	STDR
J-statistic					7.652	6.200
Prob.(J-statistic)					0.634	0.961
<i>Arellano-Bond Serial Correlation Test for GMM</i>						
Test order					LTDR	STDR
AR(1)					-0.138	-2.08
Prob.					0.890	0.04**
AR(2)					-0.844	0.37
Prob.					0.399	0.71
Observations	246		246		205	

The above table no.5 exhibits the regression results of System GMM the two models. Now the system GMM is a threefold process to determine the regression results.

- ✓ From the Difference GMM analysis it is observed that the coefficient value of TANG and GR are positively associated with LTDR and both are significant at 1% level, conversely coefficient value of PROF is negatively associated with LTDR and significant at 5% level.
- ✓ Moreover, coefficient value of TANG & NDTs are positively significantly correlated with STDR and both are significant at 1% level. Conversely coefficient value of PROF is negatively associated with STDR and significant at 1% level.
- ✓ R² of Fixed effect model shows this regression model is 84.8% efficient to find the effect on LTDR. S.E regression outcome, D-W stat is 2.048 under the tolerable range so the model doesn't suffer for autocorrelation.
- ✓ R² of Fixed effect model shows this regression model is 76.3% efficient to find the effect on STDR. S.E regression outcome, D-W stat is 1.678 under the tolerable range so the model doesn't suffer for autocorrelation.
- ✓ The value of J-statistic value of both the models i.e. LTDR (7.652) and STDR (6.200) are not too much far from 0 and i.e. the Null hypothesis $E[g(X_i, \theta)] = 0$ is rejected, however p-value of j-statistics [LTDR (0.634); STDR (0.961) is very far from 0 thus the model is fitted and the predictability of model is moderate.
- ✓ At 1st we are required to find out the coefficient value Lagged pooled regression of dependent variable for LTDR (-1) the coefficient is 0.863 and for STDR (-1) 0.759 both are significant at 1% level. Thus it is the upper limit of Regression model.
- ✓ Secondly, using the Fixed effect Regression at lag level 1 results dependent variable for LTDR (-1) the coefficient is 0.681 significant at 1% level and for STDR (-1) 0.523 significant at 10% level. Thus it is the lower limit of Regression model.
- ✓ Finally, the dynamic lagged LTDR (-1) is 0.317 significant at 1% level and is within the range of Upper limit and lower limit as found in above. Thus, difference GMM Regression model is the best fitted model among other two i.e. Pooled regression and Fixed Effect model.
- ✓ Finally, the dynamic lagged STDR (-1) is 0.845 significant at 1% level and it exceed the lower and upper limit as found in above. Thus, difference GMM Regression model is not the best fitted model among other two i.e. Pooled regression and Fixed Effect model.
- ✓ Furthermore, the AR test of serial correlation confirms that LTDR model is likely to have serial correlation as idiosyncratic error term even for higher order exists. Conversely, STDR model confirms that it is not serially correlated with AR test of serial correlation in AR (1). (System GMM model [Ref: https://youtu.be/xuJwPuv4PKY](https://youtu.be/xuJwPuv4PKY))

VIII. CONCLUDING REMARKS

As far as the Long-term debt procurement is concerned, it is found that Asset Tangibility is positively associated with Long-term debt as this might be Health sector SME firms often need long matured funds to procure capital intensive instruments, moreover, a Growth rate which is a proxy of incremental capital asset in firms financial structure so, it is also indicating towards more requirement of long term finance. Nevertheless, profitability is inversely associated with long term debt as more profitable firms probably finance the long-term assets from their own source whereas it substitutes much need of long-run funds for those firms as it also expands the scope of the firm to enter into capital market for getting long-term owners fund. Furthermore, short term debt of firms is also significantly positively associated with asset tangibility as more fixed assets helps the firms to increase the capacity of production and thus it require shot-mature funds to procure raw material and other allied things. Non-debt tax benefit is also positively associated with short-term funds as

because usage of more fixed assets in capital structure give scope to the health sector firms to enjoy more tax benefits which in turn also enhances business risk that may affect profitability of health sector SME firms. Thus, they took conservative policy and use much short-term debt instead long-matured borrowed funds. On contrary the profitability also inversely affecting short term financing decisions as health sectors firms having high rate of profit may allocate internal funds even if to procure working capital.

Therefore, from an overall point of view, it is clear that the SME health sector firms often face financing crunches due to debt market volatility, RBI interest rate policy and other factors this is because sometimes they won't be able to get formal finance. Hence, a SME focussed robust Health sector financing policy by government, financial institutions and policymakers is recommended just to make the financing of this sector more flexible and borrower-centric.

LIMITATIONS & FUTURE SCOPE

This study have only been conducted based on few select determinates of Debt policy decisions, however consideration of more firm-level and other aspects can introspect a deeper view on the other factors associated with health sector finance. Moreover, only a basic 2 stage GMM modelling of panel data is considered as for this study, however, consideration of much more in-depth econometric model instead may exhibit better results.

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