Determinants of Capital structure in Indian Pharmaceutical Industry

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Abstract The present paper is an attempt to explore the factors that determine the capital structure of an average Indian firm using a dynamic panel data analysis that uses the data of 104 Indian pharmaceuticals firms over a period of six years from 2011 to 2017. Consistent with several studies we show a significant impact of lag term of leverage ratio, non-debt tax shield, profitability,liquidity and size of the cash flows from operations. However, we did not find any significant impact of size, tangibility, uniqueness, information asymmetry, tax rate, growth and market liquidity on the capital structure choice of an average firm. The negative coefficient of cash-flow from operations and profitability with leverage clearly supports the presence of pecking order theory in Indian pharma sector. The positive association of non-debt-tax-shield with leverage ratio is suggesting that the average Indian pharma firm is financing its long term assets with long term borrowings and hence saving on taxes

Key-words:Pecking order theory, information asymmetry, unlevered beta, capital structure, Pharmaceutical industry, Dynamic panel

I. INTRODUCTION

Over the years, several researchers have proposed a large number of theories that attempt to explain the variation in how the companies raise their capital requirements While debt is considered to be a cheaper source of finance when compared with the equity capital, it does increase the agency and bankruptcy cost of the firm which may ultimately off set the entire gains achieved by employing the debt. With leverage the companies are able to generate upfront cash required for their capital projects at the cost of forgoing future cash flows which, in fact, increases the variability of the returns to the equity shareholders and hence increases their financial risk.The crucial issue is to decide the right capital mix for a firm that maximizes the market value of a firm as at this mix the company minimizes the cost of its capital. Such decision of capital mix is not a possibility unless one is able determine the factors that influence the choice ofsource of capital.

After the contributions of Modigliani and Miller (1958), largely there are three theories that try to conceptualize the capital structure of an average firm-market timing theory, trade off theory and pecking order theory. In 1958 Modigliani and Miller showed that under the assumption of perfect capital market, the value of any firm is not affected due to its choice of capital structure because arbitragers equate the prices in long run. They, however, later repositioned themselves what their assumption and said that in the presence of corporate taxes, the value a firm obtains is always higher than the value of an unlevered firm due to interest tax shield. The trade-off theory extends the work of Modigliani and Miller and proposed an optimum capital structure which balances the benefits of interest tax shield that arise to a firm and the cost it incurred in the formof financial distress. Within a static model of capital structure taxes and bankruptcy costs are the key factors that affectthe level of debt in a firm.

On the contrary the pecking order theory doesn't suggest any target capital structure rather it focuses on the order in which firms raise finance for their capital requirements. According to Myers(1984) the firms prefer internal sources of finance. If the internally-generated cash flows are more or less than investment requirements the firms makes the firm is forced to raise the external finance, the firms issues the safest security first. That is,they start with secured debt, then debt followed by hybrid securities, if required, such as convertible bonds, and they issue equity capital only as a last resort.

Those firms about which the market is better informed enjoy better prices and their stock returns are weakly associated with the market returns i.e. their market beta (β) is low. Greater the information asymmetry greater will be its market beta leading to greater leverage ratio. When there

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is greater symmetry of informationinvestors make decisions based on specific information relating to the firm and they need not use market index as proxy for gathering information about the variability of the stock return. A lower β also means lower systematic risk associated with the stock return that in turn leads to a lower cost of raising funds through equity issue.

The empirical studies in the area of capital structure choices of firms that started appearing in the eighties lack any consensus over the determinants of the capital structure of an avearge firm.While Harris and Raviv (1991) summarized quoting studies by (Bradley, et al. (1984), Castanias (1983), Long and Malitz (1985), Kester (1986), Marsh (1982), and Titman and Wessels (1988) that the firms increase leverage with increase in fixed assets, growth opportunities, firm size and non-debt tax shields while it decreases with increase in volatility, advertising expenditures, expenditures on research and developments, probability of bankruptcy, profitability of the firm and uniqueness of the product in which the firm deals.IndraniChakraborty (2010) established that the profitability, firm size, and uniqueness of the product are having negative influencethe level of debt while tangibility and non-debt tax shields are positively associated with debt ratio. Her observation that low profit firms use more debt is consistent with the predictions made by pecking order theory.

II. LITERATURE REVIEW

Most of the empirical researches on relating to capital structure choices can be referred to eighties where mostly researches related to developed economies (Chakraborty (2010)). Considering the fact that the developing countries are characterized by significantly different institutional structures of corporate firms from that of the developed countries, theresearchers started focusing on developing economies in later years. Majority of such studies used panel data structure using fixed effect, random effect, pooled OLS and dynamic modelsusing Generalized Method of Moments (GMM).

Titman and Wessels (1988) used short-term debt, long-term debt, and convertible debt for measuring leverage rather than using totalitarian measure of total debt using a factor-analytic technique known as linear structural modeling. The data were analyzed over the period from1974 through 1982 of 469 US firms. The analysis of data found no relation between non-debt tax shields, asset structure, volatility, collateral value or future growthto the different leverage measures applied by the authors. The study also found a negative and significant association between leverage and profitability and uniqueness (measured by R&D expenditure to total assets). The authors also observed the firms having low employees quit rates tend to have low leverage ratios. Further there was negative correlation between short-term debt ratios andthe size of the firm.

Ozkan (2001) used three different methods GMM, AH and OLS to estimate the factors that determined the capital structure of firms in UK using a sample of 390 firms and 4132 observations. The regression models were run with the independent variables size, liquidity (measured by current ratio), profitability, NDTS and growth. The regression equations were run with independent variables and along with their lag terms. The author found that the results of GMM model were far superior to AH model and OLS was not an appropriate model for their dynamic model. The findings of the study suggests that the lag term of the leverage ratio, lag term of profits, lag term of liquidity and growth and its lag term were positively related to leverage ratio while profitability, liquidity, lag term of size, NDTS and its lag term were negatively related with the leverage ratio.

In an attempt to identify the capital structure determinants of Indian firms,Khasnobis and Bhaduri (2002) conducted a dynamic panel data considering a balanced panel of annual balance sheet information reported by 697 firms for the period of 1990-1998 obtained from CMIE database. The GMM estimates resulted that the lag term of the dependent variable and size were positively related with the long term borrowings and profitability was negatively related to the leverage ratio.

The study by Huang and Song (2006) for Chinese firms employs the six different measures of leverage ratio. It covers a period of 10 years from 1994 to 2003. Total number of observations in the study includes 1086 observations. Interestingly the study includes trade credit in the leverage ratio reasoning the fact that most of the Chinese firms regularly use trade credits as source of financing.Since the shareholding of most of the listed Chinese firms are controlled by the state and management shareholdings are quite low therefore the author also studied the impact of managerial ownership on the leverage ratio by dividing all the shareholders into four groups the state, institutions, public and others. The findings of the study clearly show that profitability (return on assets), effective tax rate and growth are having a significant negative impact on the debt level of average Chinese firms while tangibility was found to have a significant positive effect on the debt level. The managerial ownership structure was also found to have significant impact on the leverage ratios.

Frank and Goyal (2009) used a long list of factors, in fact 23 in numbers,using Compustat data from 1950 to 2003. The whole period is divided into six periods. The first five periods are for the five decades and sixth period for the remaining years from 2000-2003.The variables were lagged for one year. They found that the factors that explained market leverage were - median industry leverage having a positive impact on leverage, market-to-book assets ratio having a negative impact on debt levels, tangibility which was positively associated with leverage, profitabilitynegatively associated, and positive correlation

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of leverage with the size and expected inflation. The study checked for various classes of firms. It was found that those firms that paid dividend tend to have lower leverage ratio. The results of the study arereasonably consistent with the predictions of trade-off theory of capital structure.

Chakraborty (2010) applied two methods of estimation – fully modified OLS and GMM to analyze the factors influencing the capital structure of the Indian firms. The paper used data of fourteen years from 1995- to- 2008 for 1169 non-financialIndian firms which were listed either at BSE or NSEThe OLS estimation of eight models that she used revealed that Profitability, Size and growth were negatively affecting the choice of capital structure and Tangibility, Non-Debt Tax Shield (NDTS) and Uniqueness were positively associated with the leverage ratio. The positive association of NDTS is in contradiction of several previous studies such as Prowse (1990), Ozkhan (2001) and Huang and Song (2006).

III. RESEARCH OBJECTIVES AND HYPOTHESIS

3.1 Objectives of the study

The review of literature suggests that there is lack of consensus over the factors that impact choice of capital structure of the firms, hence the present study attempts to find out answer for the following major questions that are still to be reliably answered by the researchers:

1. Which theory nearly explains the financing mix adopted by the firms?
2. Which theory explains the financing mix of the firms for any particular given industry?
3. Has the existing capital structure of the firm in any given industry any impact on the future capital structure of the firm?
4. Whether information asymmetry has any role in determining the capital structure of the firms?

The present empirical work tries to answer these questions considering Indian Pharmaceutical Industry. Indian Pharmaceutical Industry has recorded a tremendous average growth rate of 17 percent (approximately) during the period from 2005 to 2016. Its market has gone up from US$ 6 billion in 2005 to US$ 37 (approximately) billion in 2016. It is expected to grow by an annual growth rate of 16 percent (approximately) to US$ 55 billion by 2020 (McKinsey& Company report: India Pharma 2020 and www.ibef.org) which is more than double the growth rate of Indian economy. Indian pharmaceutical sector contributes about 2.4 percent of the global pharmaceutical industry in terms of value and 10 per cent in terms of volume. Currently it is the largest supplier of generic medicine accounting for 20 percent of global market export of generic medicines. Considering the fact that soon the patent drugs worth US$ 255 Billion are expected to go off-patent (http://www.makeinindia.com), there are tremendous opportunities in this industry. Considering all these facts it is expected that Indian pharmaceutical industry has huge opportunities for investments and therefore they need huge amount of capital that can be financed through any of the sources available i.e. debt or equity. This makes a case for selecting pharma industry to identify the factors affecting capital structure decisions.

3.2 Research hypothesis

The present study proposes to test the following null hypothesis:

H1: Size has no effect on leverage of the average firm

H2: Profitability has no effect on leverage of the average firm

H3: Uniqueness has no effect on leverage of the average firm

H4: Liquidity has no effect on leverage of the average firm

H5: Market liquidity has no effect on leverage of the average firm

H6: Size of cash flows has no effect on leverage of the average firm

H7: Information asymmetry has no effect on leverage of the average firm

H8: Non-debt tax shield has no effect on leverage of the average firm

H9: Tangibility has no effect on leverage of the average firm

H10: Growth of the firm has no effect on leverage of the average firm

H11: Tax rate has no effect on leverage of the average firm

IV. DATA AND METHODOLOGY

4.1 Data

The present study is an attempt to determine the factors that influence the choice of capital structure in a given Industry taking the case of Indian Pharmaceutical Industry. The annual data of Indian pharmaceutical firms that are listed either in BSE or in NSE has been obtained from the CMIE database Prowessiqfor the period of 2011-2016. The sample was obtained for all those companies which were listed on Prowessiq. A balanced panel of 104 companies was finally selected as sample after dropping the firms for which continuous data set didn't exist over the sample period.In all 624 observations were used for the Dynamic Panel Model.

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4.2Definitions of leverage and the other variables

The data have been obtained using the following definitions of variables:

Leverage: The previous studies have used various definitions of leverage. For instance Titman and Wessels (1988) used three different measures of debt; short-term debt, long-term debt, and convertible debt that were divided by the book value of the equity shares and by the market value of equity share making it to 6 leverage ratios. Khasnobis and Bhaduri (2002) used book values for measuring the two leverage ratios that they applied; the ratio of book value of long-term debtto book value of total assets and the ratio of book value of short-term debt to book value of total assets. In the present study the focus is on capital structure which is a long term decision and therefore the leverage has been measured as the ratio of **Non_Current_LiabilitiestoTotal_Assets.**

Profitability: The trade-off theory predicts a positive association of profitability and leverage as the firmsthat earn higher profits would be able to save more taxes by employing debt capital will face a lower cost of financial distress. However, many of the previous studies have clearly established a negative relationship (Titman and Wessels (1988);Chakraborty (2010);Ozkan(2001))between profitability with leverage. Such findings are consistent with the predictions of pecking order theory.The firms with large profits will use their internally generated funds to finance their investment requirements and hence they will observe a lower leverage ratio. There is no consensus about how profitability affects the financing decision of a firm. In the present study the Profitability has been defined as **PBDITA (profit before depreciation, interest, tax and amortization)/ Total_Assets.** Similar definition has been used by Huang and Song (2006).

Size: Large and older firms are more diversified and are subject to a lower cost of financial distress and hence we expect a positive relationship of size with leverage. However, there is a counter argument that the smaller firms have to pay comparatively a higher price for equity issue than the large firms and therefore they prefer to remain leveraged. But smaller firms also face higher cost of financial distress and hence it is difficult to come to a conclusion as to what may be expected sign of correlation between size with leverage. Following the definitions used by Khsnobis and Bhaduri (2002) and Frank and Goyal (2009) we have used**natural log of total assets** as proxy for size.

Liquidity: Financing through debt requires a firm to make commitment of periodic payments in the form of interest. The firms that don't enjoy sufficient liquidity positions are prone to higher cost of financial distress as they may find it difficult to serve the debt which may turn them near bankrupt. Therefore short-term liquidity may be an important influencing factor that determine the capital structure. The firms with a low liquidity will have low leverage ratio as the cost of financial distress is higher for them than those firms having higher liquidity.We have used current ratio (**Current Assets/ Current Liabilities**) as a measure of liquidity.

Cash Flow: The firms that are able to generate large amounts of cash flow from their operations should be able to finance a greater portion of their investment requirements and hence reduces the requirement of external finances. In case, the cash flow generated are in access of the funds required for the investments that can be used to redeem the debt. Therefore, we expect that the relationship with cash flow from operating activities be negatively related with the leverage ratio.In the present study **Cash Flow from operating activities/ Total Assets** has been used as a measure for cash flow.

Non Debt Tax Shield: The firms prefer debt to finance their capital requirements as it provides them tax savings and adds value to the firm in the form of present value of interest tax shield. However, if the firms have other tax saving sources such as depreciation and investment tax credits it is expected that the firms will use lower amount of debt, DeAngelo and Mausulis (1980). This relationship has been further supported by the studies of Wald (1999) and Huang and Song (2006). We have used **(Depreciation+Amortisation +Write_Offs)/ Total_Assets**to measure Non-Debt Tax Shield as all these items provide a tax benefit to the firms.

Growth: According to the predictions of pecking order theory the firms with better growth opportunities will accumulate more debt, provided the profitability held constant. And hence,for such firms, it is expected to have a positive correlation between growth and leverage ratios while the trade-off theory expects a negative association between growth opportunities and leverage ratio as there is a possibility the managers may end up making sub optimal investmentswhich may increase the cost of financial distress and hence the creditors may not be willing to finance the projects under consideration.FollowingFrank and Goyal (2009) we have used **Price to book Value** as a measure for growth opportunities.

Beta: The firms that release greater information enjoy better prices in the market as investors take informed decisions. Such prices generally don't observe a fall in price post issue. The investors get direct access to information and hence they are not dependent on stock indices for information. This leads to weak association of stock return with market return leading to a lower beta (β). A lower β leads to lower systematic risk and hence a lower cost of capital. Those firms which have a lower β should find it easier and less costly to issue the fresh equity and hence should have lower debt. We expect β to be positively related with the leverage ratio. Since the sample has been

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collected for levered firms from Prowessiq, the provided β is levered beta which has been converted to unlevered beta (ULBeta) using Hamada's equation $\beta_U = \beta_L*(1+(1-T)*debt/equity$.

Market Liquidity: Frequently traded firms release more information than the firms that are less traded. Such firms enjoy greater market access along with greater liquidity. Such firms can easily raise money from issue of fresh capital to finance their level of investments. Therefore, we expect a negative relationship between market liquidity and leverage ratio. We have used **natural log of shares traded** as a proxy for market liquidity.

Tangibility: Several studies have shown that the asset structure has an impact on the leverage ratio. Those firms which have high levels of tangible assets will be able to provide collaterals against the funds raised through debts. Such collateral will reduce the cost of borrowing by the firm due to reduced risk. On the other hand the firms with intangible assets those firms with intangible assets will find it difficult to value those intangible assets and hence will have a greater risk. While Titman and Wessels (1988); Rajan and Zingales (1995) reported that tangibility and total debt are positively related, Huang and song (2006) found a negative association between tangibility and leverage.The ratio of **Gross Fixed Assets *plus* Inventories to Total Assets** has been used as proxy for tangibility.

Tax Rate: Modigliani and Miller (1958) proposed that the firms that are subject to high tax rates will have higher levels of debt to reap the benefits of tax saving by employing more and more debt. High tax rates will motivate the managers of the firm to go for higher levels of debt due to the interest tax shield. We have used **Corporate tax / PBT** as a proxy for tax rate**.**

Uniqueness: The firms which produce unique products are less diversified and they spend great amount on research and development of the products. In case the firm goes for liquidation the suppliers of the funds have a greater risk and they are subject to high bankruptcy cost. Such investments don't have alternative uses. Therefore, the firms producing unique products are expected to have lower debt levels (Titman (1988)). We have used ratio of **R&D expenses to Total Assets** have been used a proxy for uniqueness. Titman (1988) also used similar definition. However, titman scaled data of R&D to sales while here the R&D expenses have been scaled by total assets.

1.3 Data description and analysis

The following table shows the summary statistics of the selected variables over the investigation period.An average firm is using 15% non-current debt while the average firm in the industry is paying 19.31% of taxes. The average firm is making a profit of 13.27% over the sample period.

The variables were tested for stationarity using Levin, Lin and Chu (LLC) (2002) test and no unit root was observed at level. Hence all variables were found to be stationary at the level.

Table 1: Summary Statistics

	Mean	Standard Error	Median	Mode	Standard Deviation	Kurtosis	Skewness
NDTS	0.0317	0.0009	0.0300	0.0200	0.0224	7.9641	2.1959
Tangi	0.6878	0.0129	0.6800	0.7600	0.3220	2.2164	0.8945
ULBeta	0.6375	0.0199	0.6268	0.4300	0.4967	66.8894	3.5593
CashFromOperation_TA	0.0676	0.0038	0.0700	0.0200	0.0951	18.9596	1.6166
Current_ratio	1.7232	0.0478	1.3900	1.1700	1.1936	9.6915	2.5252
Debt_to_TA	0.1572	0.0058	0.1200	0.0000	0.1460	2.3178	1.4480
Price_to_bookValue	2.5592	0.1278	1.3200	0.0000	3.1922	9.7934	2.8160
Profitability	0.1327	0.0046	0.1200	0.1000	0.1138	26.2042	2.9732
RnD_TA	0.0120	0.0008	0.0000	0.0000	0.0195	7.6804	2.5132
Size	7.9870	0.0796	7.8848	8.9727	1.9896	-0.5848	0.0232
Tax_Rate	19.3116	0.6035	20.3850	0.0000	15.0747	2.3179	0.7246
Mkt_Liq	6.7287	0.2255	8.8110	0.0000	5.6340	-1.6636	-0.1871

In order to ensure whether the data is free from the problem of multi-collinearity the correlation matrix has been produced in Table 2.

Table 2: Correlation matrix

	NDTS	*Tangi*	*UL Beta*	*Cash From Operation TA*	*Current Ratio*	*Debt to TA*	*Price to book Value*	*Profitability*	*RnD TA*	*Size*	*Tax Rate*	*MktLiq*

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NDTS	1.000											
Tangi	0.566	1.000										
UL Beta	0.022	0.063	1.000									
Cash From Operation TA	0.159	0.077	-0.019	1.000								
Current Ratio	-0.142	-0.213	0.039	0.040	1.000							
Debt to TA	0.044	0.068	-0.404	-0.150	-0.265	1.000						
Price to book Value	-0.025	-0.169	-0.051	0.170	-0.005	-0.084	1.000					
Profitability	0.021	-0.134	0.019	0.489	0.134	-0.226	0.207	1.000				
RnD TA	-0.051	-0.074	-0.038	0.168	-0.033	0.013	0.246	0.234	1.000			
Size	-0.186	-0.378	-0.051	0.076	-0.121	0.164	0.364	0.254	0.449	1.000		
Tax Rate	-0.194	-0.271	0.071	0.157	0.210	-0.332	0.061	0.289	-0.043	-0.015	1.000	
MktLiq	0.009	-0.166	0.086	0.075	-0.061	0.094	0.288	0.204	0.391	0.796	-0.103	1.000

The correlations obtained above donot show any significant correlation between two independent variables. However, to ensure that the model is free from the problem of multi-collinearity, variance inflation factors (VIF) have been computed and presented in table 3 as a double check.

Table 3: Variance Inflation Factor (VIF) Scores

NDTS	***Tangi***	***ULBeta***	***CashFromOperationTA***	***Current Ratio***	***Price tobook Value***	***Profitability***	***RnDTA***	***Size***	***Tax Rate***	***MktLiq***
1.578	1.903	1.068	1.396	1.173	1.20	1.553	1.328	4.093	1.265	3.227

Since all the VIF scores are less than 10 we conclude that the model is free from the problem of multi-collinearity.

In order to make a case for panel data analysis the model was tested for presence of heterogeneity either across units or across time or both. The Redundant Fixed Effect test results showed that there exists heterogeneity, at least, across units. This analysis paved way for applying a panel data analysis than a simple pooled regression.

The next decision was to determine whether there exists fixed effect or random effect. The Hausman test result, presented in table 4, with null hypothesis that there exists a random effect was rejected and suggested the presence of cross section fixed effects.

Correlated Random Effects - Hausman Test			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. (d.f.)	Prob.
Cross-section random	50.557666	11	0.0000

Table 4: Hausman Test result

There was no fixed effect or random effect observed across periods. The model was tested for any possible autocorrelation by analyzing residuals using correlogram, presented in table 5.

Table 5: Results of residual analysis

	AC	PAC	Q-Stat	Prob
1	0.265	0.265	44.177	0.0000
2	-0.107	-0.19	51.311	0.0000
3	-0.267	-0.205	96.306	0.0000
4	-0.252	-0.16	136.47	0.0000

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5	-0.139	-0.109	148.65	0.0000

The analysis of residuals confirmed the presence of autoregressive term and therefore a dynamic model was used with a lag term of the dependent variable i.e. debt-to-total assets ratio. The final model has been presented in table 6.with white corrected coefficients estimated using Generalized Methods of Moments (GMM) involving instrument variable.

Table 6: Final results of dynamic panel regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DEBT TOTA(-1)	0.642496	0.184035	3.491169	0.0005
CASHFROMOPERATIONTA	-0.115483	0.066781	-1.729276	0.0845
CURRENT RATIO	0.015594	0.009079	1.717698	0.0866
MKT LIQ	-0.001163	0.001590	-0.731263	0.4650
NDTS	0.589060	0.286434	2.056527	0.0404
PROFITABILITY	-0.155110	0.036009	-4.307569	0.0000
TAX RATE	-0.000186	0.000294	-0.631515	0.5281
ULBETA	-0.010833	0.016745	-0.646981	0.5180
TANGI	0.005201	0.039297	0.132350	0.8948
RND TA	0.095121	0.481473	0.197563	0.8435
PRICE TOBOOKVALUE	-0.000863	0.002075	-0.415775	0.6778
SIZE	-0.006137	0.017546	-0.349749	0.7267

Sargan Test (J- Statistics) tests the validity of the instrument variable with the null of valid instrument variables. The J-statistics confirmed the validity of instrument variables. The results of Sargan test has been presented in table 7.

Table 7: Sargan Test

Effects Specification			
Cross-section fixed (first differences)			
Mean dependent var	0.002115	S.D. dependent var	0.069949
S.E. of regression	0.081405	Sum squared resid	2.677246
J-statistic	10.47693	Instrument rank	21
Prob(J-statistic)	0.313271		

A further enquiry about the length of autocorrelation was conducted using Arellano-Bond serial correlation test. The test results show the presence of first order auto-correlation but no second order auto-correlation. Hence the model reported in table 6 is the final model that is available for final interpretations. The Serial correlation test results have been reported in table 8.

Table 8: Arellano-Bond Serial Correlation Test

Test order	m-Statistic	rho	SE(rho)	Prob.
AR(1)	-2.265980	-0.823834	0.363567	0.0235
AR(2)	-1.056503	-0.097877	0.092643	0.2907

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The results of dynamic panel regression reveal that considering the data available, there is no evidence to reject the null hypothesis numbered 1, 3, 5, 7, 9, 10 and 11. Hence, the data used in the study failed to show any significant impact of size, tangibility, uniqueness, information asymmetry, tax rate, growth and market liquidity on the capital structure choice of an average firm.

However, the results reported in table 6 clearly show a significant impact of lag term of leverage ratio, non-debt tax shield and profitability at 5% significance level and of current ration and cash flow from operations at 10% significance level on capital structure decisions of the average firm. The negative coefficient of cash-flow from operations profitability with leverage clearly supports the presence of pecking order theory in Indian pharma sector. The positive association of non-debt-tax-shield with leverage ratio is suggesting that the average Indian pharma firm is financing its long term assets with long term borrowings and hence saving on taxes. The positive sign of current ratio with leverage ratio is in line with our expectation that the firm with higher liquidity will hold higher debt levels as their financial distress cost is lower.

The final equation that can estimate the leverage is given as under:

Leverage = 0.643* leverage(-1) – 0.1155*Cashflow from operation+0.016*Current ratio +0.589*NDTS – 0.155* Profitability

Where:

Leverage = Long trem debts/ Total assets,

Cash-Flow from Operations = Cash-Flow from Operations/Total Assets,

Current Ratio = Current Assets/ Current Liabilities,

NDTS = (Depreciation + Amortization +Write-off's)/ TotalAssets,andProfitability = PBDITA/Total Assets

V. CONCLUSION

This paper investigates for the factors that derive the capital structure of pharmaceutical firms in India through an empirical study between 2011-2016. These factors gain importance since Indian pharma sector being one of the fastest growing sectors in India and having great potential in the near future. The paper uses dynamic model using GMM to analyze the data collected in the form of a large set of variables ranging from corporate factors to market factors. It was observed that size, tangibility, uniqueness, information asymmetry, tax rate, growth and market liquidity don't have any significant impact on the capital structure choices of the firms. It was also observed that profitability, liquidity, size of cash flows and non-debt tax shield do not significantly influence the capital structure choice of the firm. The average Indian pharma firm is building long term assets using long term borrowing. This behavior of managers is just opposite to the argument that if there are more tax saving options the firm will borrow lesser.

However, the present study suffers from the fact that it is using short panel of only six years. Had there been more periods under consideration the information asymmetry could have been a significant factor. The results are also dependent on the kind of data provided by CMIE.

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