# Determinants of Capital Structure of Small Firms: Empirical Evidence from Pharmaceutical Industry in Indore

## Abstract

*Capital Structure Determinants have been a keen concern for experts and researchers of corporate finance since long. This is so because these determinants play a key role in finance arrangements of the firms, which in turn affect the overall performance of the business entity. Time and again, doubts are raised that how smaller firms are differently affected by the key determinants of financing decisions of firms at national and international level. Standing on this premise, this research work has attempted to empirically validate the key internal financial determinants of pharmaceutical firms in Indore. Drawing a sample of 29 firms over a period of 6 years, data analysis was conducted applying Panel Data Regression Model using Strata software. The results of the study revealed that Profitability, Asset Tangibility and Size of the firm are important determinants of capital structure in case of the smaller firms as well.*

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**Key Terms:** *Capital Structure, Internal Financial Determinants, Panel Data Regression Analysis*

## Introduction

The Liberalization policy of 1991, gave way to various reforms especially in the financial markets sector and it is believed that after the introduction of these measures the capital structures of Indian firms have changed significantly. After a series of financial reforms, market forces now increasingly govern the allocation of funds and this has implications for the availability, cost and quantum of funds, which enables the corporate sector to make an optimum combination of sources of funds (Nair P., 2011). There have been numerous studies on the determinants of Capital Structure decisions around the world with different empirical results. This makes it interesting to study the determinants of capital structure decisions of firms located in an area that is largely unexplored. Further, the study attempts to investigate whether and to what extent the main capital structure theories explain the financing decisions of pharmaceutical manufacturing firms located in Indore region. It would provide an understanding of the financial aspects of these firms from Indore region. This generate the very basis of conducting this research work.

## Literature Review

Modigliani and Miller (M-M) were the first to present the formal valuation of capital structure. In their seminal papers (1958, 1963), they state that in the absence of taxes, the cost of capital and the value of the firm are independent of capital structure. It is based on the assumption of perfect capital market. Further they relaxed the assumption of no corporate taxes. David Durrand (1963), criticized M-M model on the ground that the assumptions used by them are unrealistic. During the same period Solomon (1963) argued that cost of debt does not always remain constant. Few

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researchers; Smith (1972); Baron (1974, 1975) and Scott (1976, 1977) supported the M-M model, but only under the conditions of risk-free debt and costless bankruptcy.

Jenson and Meckling (1976), considers the cost of raising funds through debt and equity to be important factor in determining the optimal capital structure. Miller (1977), argued that bankruptcy and agency costs are too small to offset the tax advantage of debt. Further Miller's model was rejected by De Angelo and Masulis (1980). According to De Angelo and Masulis (1980), even if bankruptcy, agency and other costs are ignored, introduction of non-debt tax shields also supports the firm to have optimal capital structure. Empirical work by Titman and Wessels (1985), supports the bankruptcy and agency costs to be partial determinants of leverage and of optimal capital structure.

Few of the studies have been upon the developing countries such as Wiwattanakantong; 1999, Banchuenvijit (Thailand), 2011; Chen; 2004, Huang and Song, 2006 (China); Buferna *et. Al,;* 2005 (Libya); K. J. Baral, 2004 (Nepal); Akhtar and Oliver, 2009 (Japan); Omran and Pointon, 2009 (Egypt); and Shahjahanpour et al, 2010 (Iran). The results confirm that same factors affect the capital structure decisions of firms in developing countries as identified for the firms in developed economies.

'Capital structure determinants' is a widely researched topic but no one has developed a model that incorporates all the factors considered as determinants. The empirical evidence suggests that besides the specific internal factors, the macroeconomic and institutional factors in each country are important determinants of the capital structure (Booth et al., 2005). A majority of the empirical research studies on this topic are based on the developed economies; as Rajan and Zingales (G-7 countries), 1995; Hutchinson and Hunter (UK), 1995; Hongyan, 2009; and Gill *et al.,* (US), 2009 and the results obtained are rather diverse. It suggests that different internal determinants have different effects on financing decisions not only in different countries but in different times as well (Norvaisiene and Stankeveciene, 2007). Most of the studies carried out in this area were conducted for the developed countries and their findings could not be generalized for every country. The basic objective of this study is to explore the significant internal financial determinants of Capital Structure Decisions of Corporate Pharmaceuticals Manufacturing Industry in Indore.

## Research Methodology

The present study is descriptive and empirical in nature and is based on the secondary data i.e., internal financial variables drawn from the financial statements of Pharmaceutical Manufacturing firms in Indore city. The firms operating in organized sector in Indore Pharmaceutical Industry are around 300. The present study focused on the manufacturing firms of the Indore Pharmaceutical Industry and the number of firms reduced to around 100 firms approximately as per the list provided by MPPMO Indore. Further, the study concentrated on the firms that had local origin and hence the national level firms having their unit in this region were deliberately dropped due to the vast difference in the financial positions of these firms. The study concentrated on the corporate firms located in the Indore region and this lead to a sample size of 50 firms. The sample size further reduced to 29 companies based on the availability of financial data from the firms for continuous 7 years i.e., the period of study 2006-12.

## Data Collection

The collection of data required in the present study has been a tough job; at the first place it was difficult to get the list of the pharmaceutical manufacturing firms operating in the Indore region. List of firms registered with the MPPMO association was provided from the MPPMO office at Indore. Following this list, the firms were chosen for the purpose of this study. The financial statements from the firms were collected through personal visits. But only a few firms provided the required statements. Therefore, the financial statements were downloaded from the website of Ministry of Corporate Affairs (http://www.mca.gov.in/MCA21).

## Empirical Model

The choice of empirical model for this study is largely guided by the availability of data. The data set available

from pharmaceutical manufacturing firms of Indore is unbalanced panel data. The present study has considered unbalanced panel data for the purpose of analysis. To assess the level of Auto-correlation and Multi-collinearity in the collected data, Durbin Watson Test and Variance Inflation Factor were considered respectively. Breusch-Pagan /Cook-Weisberg test was conducted to assess the Hetero-skedasticity in the collected data. Hausman Specification Test is used to test fixed effects model against the random effectsmodel. Further, Breusch and Pagan Lagrangian Multiplier test was conducted to finalize between Random Effects Model and Pooled OLS model **(annexure I).** The panel data regression models tested in the study is specified below;

**Regression Model for Determinants of Capital Structure Decisions**

$$LEV_{it} = a_0 + \sum_{i}^{n} a_i X_{it} + E \text{ firm I at time t}$$

$a_0$ he common intercept

$a_0 - a_8$ coefficients of independent variables

E the error term

More explicitly, where model 1 is fully specified, for pooled OLS, fixed effects and random effect respectively, one would obtain the following equations

$LEV_{it} = a_0 + a_1 \, Profitability_{it} + a_2 \, Asset \, Tragibility_{it} + a_3 \, Firm \, Size_{it} +$

$LEV_{it} = a_0 + a_2 \, Profitability_{it} + a_2 \, Asset \, Tragibility_{it} + a_3 \, Firm \, Size_{it} +$

$LEV_{it} = a_0 + a_2 \, Profitability_{it} + a_2 \, Asset \, Tragibility_{it} + a_3 \, Firm \, Size_{it} +$

$LEV_{it} = a_0 + a_5 \, Creditwothiness_{it} + a_6 \, NDTS + a_7 \, Opearting \, Lev_{it} +$

$+ a_8 \, Capital \qquad _{it} +$

(NDTS), operating leverage and capital turnover.:

**Capital Structure – The Dependent Variable**

Several alternative measurements of capital structure have been considered by earlier researchers for the purpose of empirical studies on capital structure. Majority of these measurements have been one or the other form of debt ratio and differs on the basis of book measures or market values of independent variables used in the study.

*Leverage* refers to the extent to which the firms make use of debt financing to increase their profitability. For the purpose of this study, leverage is taken as the ratio of total debts to total assets. A large number of earlier researches including Al-Qudah (2011) have been considered. This measurement of leverage represents the capital structure decisions of the firms. According to Rajan and Zingales (1995), the broadest definition of *Leverage* is total liabilities divided by total assets, which represents the share left for shareholders after the firm pays what it owes to the outsiders in case of liquidation. Chen (2003) and Bevan and Danbolt (2002 and 2004) are of the opinion that the leverage costs of short-term debt and long-term debt may be different.

*Leverage* is taken as the ratio of total debts to total assets (Al-Qudah, 2011).

**Independent Variables**

Previous studies considered a number of factors that affect the financial decisions of the firms; profitability, asset tangibility, liquidity, creditworthiness, non-debt tax shield, operating leverage, growth, uniqueness, firm size and age. Due to the limitations of variables available, following independent variables have been considered for this research work:

*Profitability***:** There has been huge number of studies on the capital structure decisions considering *Profitability* as a key determinant since the time of Modigliani and Miller (1958) but the theoretical predictions remain to be ambiguous. From the point of view of trade-off theory, more profitable companies have higher leverage as they have more income to shield from taxes. According to the pecking order theory, firms with higher profitability prefer internal sources of financing and then use the external sources of financing. It states that firms prefer to finance new investment, first internally with retained earnings, then debt and finally resort to equity financing. According to Bevan and Danbolt (2002), more profitable firms should hold less

debt as high levels of profits provide high level of internal funds. Most empirical studies confirm the negative relationship between *profitability* and the financial *leverage* (Titman and Wessels, 1988, Rajan and Zingales, 1995; Booth *et al*, 2001; Chen, 2004; Barbosa and Moraes, 2003; Hongyan, 2009; Morri Beretta, K. Mazur, 2007; Al-Qudah, 2011; Nivorizkin, 2002 ;Banchuenvijit, 2011; Caglayan, 2011; Bevan and Danbolt, 2002; Huang and Song, 2006). According to Static- trade off theory, more profitable firms have more debt- serving capacity as well as more taxable income to shield and hence these firms are likely to prefer debt on other sources of financing in order to take advantage from the debt tax shield and therefore a positive relationship is expected between *profitability* and financial *leverage*. Few studies show evidence in favour of static trade off theory. Nunkoo and Boateng (2010) found a significant and positive relationship between profitability and leverage. Broadly; the studies on capital structure suggest that the firms prefer internal financing through retained earnings over debt capital and then through equity capital (Myer's and Majluf, 1984). For the purpose of this study, *profitability* is measured as *Return on Total Assets.* A large number of earlier researches including; Hongyan (2009); Gill A. *et al*., (2009); Al-Qudah (2011); and Novorozhkin (2002) have considered this measurement of profitability.

**H01a:** *Profitability* of corporate pharmaceutical manufacturing industry in Indore has a significant effect on its *Capital Structure Decisions*.

*Operating leverage:* Fixed cost plays an important role in the capital structure decisions. The use of fixed cost in production process affects the capital structure. The high operating leverage i.e., use of higher proportion of fixed costs in total cost over a period of time can magnify the variability of future earnings. The bankruptcy cost theory and agency cost theory both suggest negative relationship between operating leverage and debt level in the capital structure. According to bankruptcy cost theory, higher the operating leverage, greater is the chance of business failure and greater will be the weight of bankruptcy costs on the enterprise financing decisions. Similarly, as the probability of bankruptcy increases, agency problems related to debt become more aggravating. Therefore, as the operating leverage increases, the debt level in the capital structure of a firm should decrease.

Following the earlier studies (see Baral K.J., 2004), operating leverage is measured as the ratio of change in earnings before interest and tax (EBIT) and change in sales.

**H01b:** *Operating Leverage* of corporate pharmaceutical manufacturing industry in Indore has negative and significant effect on its *Capital Structure Decisions*.

*Capital turnover:* Capital turnover is measured as the ratio between sales to total assets of the firms (see Viviani, 2008). Voulgaris*et al*., (2004), has taken capital turnover as a measure of profitability of the firm.

**H01h:** *Capital Turnover* of corporate pharmaceutical manufacturing industry in Indore has a significant effect on its *Capital Structure Decisions*.

*Asset Tangibility*: The asset structure plays an important role in determining the capital structure decisions of firms. Capital structure theories suggest that decisions on capital structure choices are influenced by the nature and amount of assets held by the firm. The degree to which the firm's assets are tangible should result in the firm having greater liquidation value (Titman &Wessels, 1988; Rajan and Zingales, 1995). Specialized intangible assets are subject to rapid value reduction as compared to tangible ones and it is also difficult to sell intangible assets. In case of bank financing, it is important to have tangible assets as collateral security. If a large proportion of a firm's assets are tangible, it diminishes the risk of the lender. Therefore, the firm having more tangible assets may use more loan capital as compared to the firm whose asset structure is dominated by intangible assets (Norvaisiene and Stankeveciene, 2007). In case of default by the companies having more tangible assets, the assets will be seized but the company may be in a position to avoid bankruptcy. Empirical studies confirm a positive relationship between asset tangibility and leverage [see Al-Qudah (2011), Rajan and Zingales (1995), Deesomsak*et al*.(2004) and Akhtar and Oliver (2009)].

A few empirical studies have shown a negative relationship between asset tangibility and leverage [see K. Mazur (2007); Huang and Song (2006) and Ferri and Jones (1979)]. Booth *et al.* (2001) also find that tangibility is negatively related with leverage in the ten developing countries. For the purpose of this study, *asset tangibility* is measured as the ratio of total fixed assets to total assets [ seeRajanand Zingales (1995); Al-Qudah (2011); Banchuenvijit (2011); Caglayan and Sak (2011) ; and Nivorzhkin E. (2002)].

**H01c:** *Asset Tangibility* of corporate pharmaceutical manufacturing industry in Indore has a positive and significant effect on its *Capital Structure Decisions*.

*Liquidity*:Liquidity ratios are mostly used to judge a firm's ability to meet its short-term obligations. The liquidity ratios may have conflicting effects on the capital structure decisions of a firm. According to Shahjahanpour*et al* (2010), there are two view points on the association between liquidity and capital structure. The first view is based on the trade-off theory which implies a positive and significant relation between liquidity and capital structure. It is argued that companies with more liquidity tend to use more external borrowings due to ability to pay off their liabilities. According to Mahakud J. and Bhole L.M.,(2003), firms with higher liquidity ratios might have higher debt ratio due to their greater ability to meet short-term obligations. The second view is based on the pecking order theory which points to a negative and significant relation between liquidity and capital structure. It is argued that companies with more liquidity rely more on internal funds than the external borrowing in order to finance their investments. A few empirical studies have shown results in support of the pecking order theory such as K. Mazur (2007); and Deesomsak*et al*.(2004). For the purpose of present study, *liquidity* is taken as the ratio of currents assets to current liabilities (see Mahakud J. and Bhole L.M., 2003).

**H01d:** *Liquidity* position of corporate pharmaceutical manufacturing industry in Indore has a negative and significant effect on its *Capital Structure Decisions*.

*Creditworthiness*: Creditworthiness is positively related to bank debt in a market that supplies both public as well as private debt. It is negatively related to preference for bank debt where firms lack access to public debt supply. Creditworthy firms rely less on bank debt as they face less threat of frequent liquidation. Following the work of Ojah and Manrique (2005), *Creditworthiness* is measured by z-score for this study.

H01e: *Creditworthiness* of corporate pharmaceutical manufacturing industry in Indore has a positive and significant effect on its *Capital Structure Decisions*.

### Non-Debt Tax Shield (NDTS)

Many empirical researches have explored the impact of taxation on financing decisions of the firms in developed and developing economies. According to trade-off theory, firms use debt instead of equity for financing their activities in order to save tax. However, firms can make use of *NDTS* in order to pay fewer taxes. Tax shields benefit on the use of debt finance may either be reduced or even eliminated when a firm is reporting an income that is consistently low or negative. Consequently, the burden of interest payments would be felt by the firm. DeAngelo and Masulis (1980) proposed that non-debt tax shields are the substitute of the tax shields on debt financing. The firms with larger *NDTS* have less need to issue debt for the purpose of income tax advantages as they already enjoy tax benefits. Therefore, the tax benefit of leverage decreases with increase in other tax deductions. For the purpose of this study, *non-debt tax shield* is measured as the ratio of depreciation plus amortization to total assets.

**H01f:** *Non-debt Tax Shield* of corporate pharmaceutical manufacturing industry in Indore has a negative and significant effect on its *Capital Structure Decisions*.

*Firm size*: According to Titman and Wessels (1988), larger firms are more diversified and are able to tolerate higher debt ratios. The reason is that they have larger assets to and therefore larger resources for interest payments in a situation of low earnings. Larger firms are considered to be less risky as compared to small firms and therefore have better access to debt capital (Rajan and Zingales, 1995). This suggests a positive

relationship between firm size and leverage.

Several empirical studies have reported a positive relation between firm size and leverage such as Sheikh and Wang (2011), Caglayan (2011), Barbosa and Moraes (2003), Norvaisiene and Stankeveciene (2007), Hongyan (2009), Al-Qudah (2011), Buferna *et al*. (2005), Deesomsak *et al*.(2004), Huang and Song (2006), Akhtar and Oliver (2009), Booth *et al*. (2001). Titman and Wessels (1988) find a positive relationship between firm size and the total debt-ratio and the long term debt-ratio.

Rajan and Zingales (1995) also find a positive relationship between size and leverage in their study on G-7 countries. There are other studies confirming a negative relationship between firm size and leverage K. Mazur (2007) and Chen (2004).

On the other hand, the pecking order theory suggests a negative relationship between *firm size* and the debt ratio, because the issue of information asymmetry is less severe for large firms. Owing to this, large firms should borrow less due to their ability to issue informationally sensitive securities like equity. IndraniChakraborty (2010), explored a negative relation between *size* and *leverage* for non-financial Indian firms in her study.

The study by Ozkan (2001) supports the pecking order hypothesis and found meager evidence that firm size has a positive effect on the leverage. The study concluded that firms have relatively higher preference for equity financing relative to debt financing which implies a negative relationship between firm size and leverage.

For the purpose of this study, *Size* of the firm is taken as the natural logarithm of total assets (see Norvaisiene and Stankeveciene, 2007; B. G. Khasnobis and S. N. Bhaduri, 2002; Salawu and Agbula, 2008).

**H01g:** *Size* of corporate pharmaceutical manufacturing industry in Indore has a negative and significant effect on its *Capital Structure Decisions*.

### *Uniqueness*

According to Titman (1984) a firm's capital structure should depend on the uniqueness of its product. If a firm offers unique products its customers, workers and suppliers suffer relatively high costs in case of liquidation and hence bankruptcy cost increases (Titman and Wessels, 1988). Accordingly, trade-off theory predicts a negative relationship between uniqueness and leverage. Ross (1977) found positive relationship between uniqueness and leverage. Chakrabory I. (2010) used research and development expenditure over sales as a measure for uniqueness. Titman and Wessels (1988) used selling expenses over sales to measure uniqueness. Although uniqueness is an important explanatory variable that should be taken in the present study as it attempts to explore the determinants of financial decisions of pharmaceutical firms in Indore region. Research and development expenditure is not seen in the financial statements of majority of the firms chosen for the present. Therefore, due to the limitation of data uniqueness as an explanatory variable could not be considered for the present study.

### Panel data Regression Analysis

As discussed above, Pooled OLS model was found to be more appropriate as compared to Fixed Effects Model and Random Effects Model. But in order to facilitate the comparison amongst these three models, all the three were considered. The same have been reproduced in table below: The overall results of regression analysis with all the three models initially considered are reported in the above table. The co-efficient of determination, r-square, is a measure for variance in the dependent variable as explained by the variance in independent variables considered in the models. As seen from the table, the r-square value for the pooled OLS estimation model is found to be 0.4182 i.e., 41.8%, which is higher as compared to the overall r-square values of Fixed Effects Model (13.99%) and Random Effects Model (38.29%). It implies that 41.8% of the observed variability in the leverage ratio is explained by the differences in the explanatory variables considered in Pooled OLS Model finalized for analyzing the available data set. It also signifies that this finally considered model (Pooled OLS) better explains the dependency of leverage on the explanatory variables considered in the models. Further, the F-value

Expected outcome of determinants of capital structure as per theories and existing researches;

| Determinants | Theoretical predictions | Results of Majority Empirical Research |
|---|---|---|
| **Profitability** | +/- | +/- |
| **Asset tangibility** | + | + |
| **Liquidity** | - | - |
| **Creditworthiness** | | |
| **Non-Debt Tax Shield(NDTS)** | - | - |
| **Operating leverage** | | |
| **Growth** | +/- | +/- |
| **Uniqueness** | - | - |
| **Size** | + | + |
| **Age** | +/- | +/- |
| **Capital Turnover** | | |

**Variables: Dependent variable-Leverage = Total debt to total assets ratio Independent variables**

| | |
|---|---|
| **Profitability** | Return on total assets (ROTA)= EBIT to total assets ratio |
| **Asset tangibility** | Asset structure =Total Fixed Assets to Total assets ratio |
| **Liquidity** | =Current assets to current liabilities ratio |
| **Creditworthiness** | = z-score= [Sales/Assets+3.3(EBIT/Sales)+1.4(RE/Assets)+1.2(NWC/Assets] |
| **Non-Debt Tax Shield(NDTS)** | = Depreciation & Amortization/Total assets |
| **Operating leverage** | = $\Delta$ in EBIT/$\Delta$ in Sales |
| **Growth** | Growth rate of Total assets = $(TA_t-TA_t-1) *100/ TA_t-1$ |
| **Uniqueness** | =R & D Expenses / Sales |
| **Size** | = Natural logarithm of Total assets (Dummy) |
| **Capital Turnover** | =Sales/Total assets |

is 4.90 significant at 1% level of significance (p = 0.0000) indicates that the proposed model is a good fit model explaining 41.8% of the variance in the dependent variable (leverage ratio).

The results explored that under the pooled OLS estimation model, the variables *Asset tangibility* and *Liquidity* are found to be **significantly and positively** related to *Leverage Ratio*. Further, *Profitability* and *Firm size* are **significantly and negatively** related to dependent variable. Though the explanatory variables *Creditworthiness* and *Non-debt Tax Shield (NDTS)* are found to be positively related with the *Leverage Ratio*, and *Operating leverage* and *Capital turnover* are found to be negatively related with *Leverage Ratio*, but these relationships are found to be insignificant. The value of

Constant is also found to be significant and positive in all the three models.

The beta values of the explanatory/predictor variables give an indication of the relative importance of each variable in uniquely accounting for the variance of the dependent variable. Hence, higher value of the beta of *Profitability* in all the three models viz., pooled OLS, Fixed effects and Random effects model, as compared to the other predictor variables indicates that this variable is more important predictor variable accounting for the variance of the dependent variable i.e., *leverage ratio*. This is followed by *Asset tangibility* (with beta co-efficient of 0.52 and p value of 0.00), *Liquidity* (with beta co-efficient of .038 and p value of 0.04) and *Firm size* (with beta co-efficient of -.037 and

**Regression results for Determinants of Capital Structure Decisions**

| Dependent variable : Leverage | | | |
|---|---|---|---|
| Independent variables | Fixed Effects Model | Random Effects Model | Pooled OLS |
| *Profitability* | -.6529198 | -.7815973 | -.9524315 |
| | (0.029)** | (0.002)* | (0.001)* |
| *Asset tangibility* | .2948046 | .4284669 | .5194784 |
| | (0.042)** | (0.000)* | (0.000)* |
| *Firm Size* | -.1177328 | -.0560548 | -.036945 |
| | (0.005)* | (0.011)** | (0.029)** |
| *Liquidity* | .03451 | .0374942 | .0381421 |
| | (0.096) | (0.026)** | (0.046) ** |
| *Creditworthiness* | .0714062 | .0898248 | .0882817 |
| | (0.167) | (0.050) ** | (0.085) |
| *NDTS* | -.0258139 | -.0124053 | .0079623 |
| | (0.840) | (0.911) | (0.938) |
| *Operating leverage* | .0000299 | -.0000111 | -.0000341 |
| | (0.843) | (0.938) | (0.839) |
| *Capital turnover* | -.0602531 | -.0812236 | -.0803537 |
| | (0.252) | (0.084) | (0.119) |
| Cons | 2.410084 | 1.140746 | .7586543 |
| | (0.002) | (0.004) | (0.011)** |
| Observations | 87 | 87 | 87 |
| R-square | | | 0.4182 |
| Adjusted R-square | | | 0.3329 |
| R-square Within | 0.4347 | 0.3765 | |
| R-square Between | 0.0528 | 0.4521 | |
| R-square Overall | 0.1399 | 0.3829 | |
| F-statistic | 3.92 | | 4.90 |
| Probability> F | 0.0003 | 0.0000 | 0.0000 |

p value of .029) respectively.

## Conclusion

Capital structure decisions of commercial firms have gained momentum as key area of research and investigation after the gradual initiation of financial sector reforms since 1991.With this framework, this study has attempted to explore the internal financial determinants of capital structure determinants of corporate manufacturing pharmaceutical firms in Indore. Though, similar studies have been undertaken across the globe by keen researchers, academicians and industry captains, no serious attempt has been made to conduct a comprehensive study for pharmaceutical manufacturing firms in Indore city.

The empirical evidences obtained in this study are indicative that *profitability* and *asset tangibility* along with *firm size* and *liquidity* are relevant specific determinants affecting the *capital structure decisions* of the respondent firms. The negative coefficient on *profitability* suggests the acceptance of pecking order

**Summarized results of Hypotheses testing**

| H. No. | Hypothesis | Result |
|---|---|---|
| 1a | *Profitability* of corporate pharmaceutical manufacturing industry in Indore has a significant effect on its *Capital structure decisions* | Not rejected |
| 1b | *Asset tangibility* of corporate pharmaceutical manufacturing industry in Indore has a positive and significant effect on its *Capital structure decisions.* | Not rejected |
| 1c | *Size* of corporate pharmaceutical manufacturing industry in Indore has a negative and significant effect on its *Capital structure decisions* | Not rejected |
| 1d | *Liquidity* position of corporate pharmaceutical manufacturing industry in Indore has a negative and significant effect on its *Capital structure decisions* | rejected |
| 1e | *Operating leverage* of corporate pharmaceutical manufacturing industry in Indore has negative and significant effect on its *Capital structure decisions* | Partially rejected |
| 1f | *Creditworthiness* of corporate pharmaceutical manufacturing industry in Indore has a positive and significant effect on its *Capital structure decisions* | Partially rejected |
| 1g | *Non-debt Tax Shield* of corporate pharmaceutical manufacturing industry in Indore has a negative and significant effect on its *Capital structure decisions* | rejected |
| 1h | *Capital turnover* of corporate pharmaceutical manufacturing industry in Indore has a significant effect on its *Capital structure decisions* | rejected |

theory, which advocates that more profitable firms tend to use less debt in financing their business activities. It implies that large corporate pharmaceuticals manufacturing firms in Indore are less inclined to including debt in their capital structure.

**ANNEXURE I**

**Durbin-Watson Test**

| Durbin-Watson |
|---|
| 2.075 |

**Breusch-Pagan / Cook-Weisberg test**

| chi2(1) | 1.87 |
|---|---|
| Prob> chi2 | 0.1711 |

**Variance Inflation Factors of Explanatory Variables**

| Variables | Collinearity Statistics | |
|---|---|---|
| | Tolerance | VIF |
| *Asset tangibility* | .937 | 1.067 |
| *Size* | .958 | 1.043 |
| *Liquidity* | .980 | 1.020 |
| *Creditworthiness* | .929 | 1.077 |
| *NDTSOperating leverage* | .906 | 1.104 |
| *Profitability* | .984 | 1.016 |
| *Capital* | .943 | 1.061 |
| *turnover* | .947 | 1.056 |

**Hausman Specification Test**

| chi2(1) | 7.83 |
|---|---|
| Prob> chi2 | 0.4499 |

**Breusch and Pagan Lagrangian Multiplier test**

| chi2(1) | 0.33 |
|---|---|
| Prob> chi2 | 0.5660 |

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