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OBJECTIVES

**HYPOTHESES** 

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**RESULTS & DISCUSSION** 

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### DETERMINANTS OF THE PERFORMANCE OF NON-FINANCIAL FIRMS IN INDIA DURING THE PERIOD OF PRE AND POST GLOBAL FINANCIAL CRISIS

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#### ABSTRACT

Prior studies on firm performance offer various factors determining the firm performance. However, relationships among the variables might change with changes in economic environment. Also, the impact of these factors can be sensitive to the kind of firm performance measure used as dependent variable for the analysis. We study the determinants of the performance of non financial firms in India for the period covering pre and post recession periods. Using panel data regression, we find that the impact of independent variables on dependent variable is sensitive to the time period under analysis. Further, we find that the determinants of firm performance not only gain or lose their significance while switching from accounting based measure of firm performance to market based measure of firm performance but also they change their direction to impact the firm performance.

#### JEL CLASSIFICATION

G30, G32, G34, M10, M21.

#### **KEYWORDS**

Firm Performance, Business Groups, Emerging Markets, Global Recession.

#### **1. INTRODUCTION**

nalysis of the determinants of firm performance is utmost important to all stakeholders of a firm, especially to its common equity investors (Kakani et. al. (2001)). Earlier studies on determinants of firm performance examined industry wide factors and firm specific variables. Important industry wide factors studied for their impact on the firm performance are concentration and capital requirement (e.g. Bain (1951) and Comanor and Wilson (1967)). Firm level variables studied for their impact on firm profitability are size, leverage and age etc. (e.g. Amato (1985), Mazumdar (1997), Kakani et. al. (2001), Lee (2009) etc.). Further, researchers tried to analyze the relative importance of industry wide factors and firm specific variables jointly on the firm profitability (Beard and Dess (1979) and Beard and Dess (1981). Khanna and Palepu (2000a), Bertrand et al. (2002) and Lensink and Remco (2010) studied the impact of business group affiliation on the firm performance in India.

However, changes in the economic environment may alter the relationship between variables. Hence, the impact of firm specific variables and industry wide factors might have changed during the recent global financial crisis. Further, the impact of these factors may be sensitive to whether accounting based or market based measure of performance has been chosen as dependent variable. This can be because accounting based measure of firm performance derives itself from ex-post business information relating to the firm. However, market based measure of firm performance may also consider ex-ante information relating to the firm. We find no study which addresses these disparities of the determinants of the firm performance.

Using panel data regression model on Indian non financial firms, we analyze the determinants of firm performance for the period from March 2005 to March 2011. This period coincides with first period of high economic growth from 2005 to 2008 and second period of global recession from 2009 to 2011. We find that the impact of independent variables on dependent variable is sensitive to the time period under analysis. Further, we find that the impact of the factors is sensitive to the kind of firm performance measure used as dependent variable for the analysis. Accounting based measure of firm performance, return on assets (ROA) and market based measure of firm performance, log of price to book ratio (LPBR) are considered as dependent variables for the analysis. Not only these determinants of firm performance gain or lose their significance but they also change their direction to impact the firm performance while switching from accounting based measure of performance to market based measure of performance.

Rest of the paper is organized as follows. Sections 2 and 3 detail existing literature and gaps in the literature respectively. Sections 4 and 5 formulate objectives and hypotheses of the proposed study respectively. Variable construction and study period are provided in section 6. Section 7 provides methodology. Results are discussed in section 8 and section 9 concludes.

#### **2. LITERATURE REVIEW**

Comanor and Wilson (1967) study the impact of various industry specific variables like industry advertisement expenses, concentration, rate of growth in demand, economies of scale and capital requirements on industry profitability. Using the data for 41 industries for the period from 1954 to 1957, they find that advertisement expenses and capital requirements have positive impact on industry profitability. However, Sherman and Tollison (1971) find that advertising expenses do not impact the industry profitability.

Baumol (1959) has proposed that the profits will increase with the increase in size of the firms due to economies of scale enjoyed by larger firms. Following this, Hall and Weiss (1967) empirically examine the size – profitability hypothesis. They use the data from 1956 to 1962 for the firms which are listed in the top four hundred in at least one of the seven years in 'Directories of 500 Largest Industrial Corporations'. There are 467 such firms out of which 134 firms are removed either due to unavailability of data or because the firms are regulated. Thus the sample size reduces to 334 firms. The pooled cross sectional regression results show that size has positive and significant relationship with return on equity (ROE) and ROA. However, Shepherd (1972) and Amato and Wilder (1985) found negative relationship of size with firm profitability.

Beard and Dess (1981) study the relative importance of industry wide factors and firm specific variables for determining the financial performance of the firms. Industry profitability is used as a proxy for industry wide factors. Firm specific variables have been represented by firm leverage relative to average industry leverage, firm capital intensity relative to average industry capital intensity and firm size relative to the average industry size in which the firm competes. The results show that industry profitability has positive and significant coefficient. Relative leverage and relative capital intensity have negative and significant

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coefficients. Thus the authors find that industry wide factors and firm specific factors both help to explain the variation in firm profitability. Majumdar (1997) studies the impact of firm size and firm age on the performance of Indian non-financial firms after controlling for other variables. The results show that the coefficient for size is positive and significant. The coefficient for age is negative and significant.

Khanna and Palepu (1999) find that group affiliation has positive impact on the profitability for Indian firms during the economic transition due to slow development of market intermediaries and higher transaction cost in the market even after deregulation. Khanna and Palepu (2000a) also study the impact of group affiliation on profitability of firms. Their results show that group affiliation is beneficial after a certain level of diversification. Khanna and Rivkin (2001) find that not only group affiliation has positive impact on the profitability for Indian firms but also profitability among group members is highly correlated as compared with the profitability of firms outside the group. Kali and Sarkar (2005) find that business group affiliation continues to generate higher market valuation vis-a-vis standalone firms for many years into the transition in India. Mishra and Akbar (2007) have confirmed that group affiliation is beneficial in emerging markets. However, they find that the benefits of group affiliation are not equally available to related-diversified and unrelated diversified groups. Unrelated-diversification has no impact on tobin's q.

Another stream of research has opposite view on group affiliation and firm performance. Bertrand et al. (2002) find evidence of tunneling in India among group affiliates. They show negative relationship between group affiliation and firm profitability. Singh et al. (2007) find that diversified firms perform significantly worse than focused firms. Singh and Gaur (2009) find that the performance of group affiliated firms in terms of return on sales (ROS), ROA and ROE is worse than the performance of unaffiliated firms. Lensink and Molen (2010) have tested the robustness of the study of Khanna and Palepu (2000a) for the period 1996–2001. Using 1993 data, Khanna and Palepu show that the relationship between diversification and performance of group affiliated firms is U-shaped. Accordingly, Lensink and Molen tested whether this relationship holds for the 1996–2001 period. After controlling for the firm age, size and leverage the analyses reveal that the results offered by Khanna and Palepu are not robust. Increase of diversification does not increase the performance of group affiliates. Rather group affiliation is profitable due to working of internal capital market within the business group. The authors also argue that group affiliation is particularly beneficial for firms that suffer financial constraints.

Kakani et al. (2001) examine the determinants of financial performance of Indian listed firms in the post liberalization period. The results show that size, marketing expenses, international diversification and net exports have positive impact on the financial performance of the firm. Leverage, age, Domestic institutional holding and public shareholding have a significant negative impact on financial performance of the firm. Lee (2009) studies the determinants of firm performance and particularly the impact of firm size on firm profitability. The results show that size has inverted U shape relationship with profitability. Further, coefficients of previous year's ROA, market share, R & D, market concentration, interaction of advertising expenses and market share, interaction of advertising expenses and capital intensity; and interaction of market concentration and capital intensity are positive and significant.

#### **3. GAPS IN LITERATURE**

The changes in economic environment may alter the relationship between variables. Hence, the impact of firm specific variables and industry wide factors might have changed during the recent global financial crisis. Thus based on the prior study we identify the following research gaps: No study has been done to compare the determinants of firm performance during pre and post periods of global financial crisis.

The riddle of business group affiliated firms being paragons or parasites remains unresolved.

#### 4. OBJECTIVES OF THE STUDY

Based upon the literature review and the research gaps, we formulate the following objectives of our study.

- To examine the factors impacting firm performance during the period of pre and post global financial crisis.
- To examine the impact of business group affiliation on firm performance.

#### **5. FORMULATION OF HYPOTHESES**

Following hypotheses have been developed based upon the research objectives.

#### PROMOTERS' HOLDING

Anderson and Reeb (2003) study firms forming S & P 500 index. The authors find that family firms perform better than non-family firms. Phani et al. (2004) find that higher insider ownership is associated with higher employee productivity and lower human resource expenses. Thus higher promoter's holding can lead to higher efficiency in business operations. This leads us to formulate the following hypothesis.

 $H_1:$  Promoters' holding and firm performance are positively related.

#### LEVERAGE

Modigliani and Miller (1958) argue that the financial structure is irrelevant for firm performance in a perfectly competitive world. However, leverage imposes covenants on the use of the funds such that firms are not allowed to invest in risky and profitable projects. The capital structure of a firm also affects its governance. Much of the positive effects of leverage on the corporate governance depend on the ability of debt-holders to perform a better monitoring role (Kakani et al., (1996 and 2001)). However, it is argued by Phani et al. (2004) that most public banks and financial institutions who are debt holders are ineffective monitors in India. Beard and Dess (1981) and Kakani et al., (2001) find negative impact of leverage on firm performance. Thus we hypothesize as follows. H<sub>2</sub>: Leverage and the firm performance are negatively related.

#### SIZE

Size can have a positive effect on firm performance, since larger firms can leverage their size to obtain better deals in product and factor markets. Hall and Weiss (1967), Majumdar (1997), Kakani et al. (2001); and Lensink and Molen (2010) find positive relationship of size with the firm performance among Indian firms. However, it can be difficult for any business to increase profits indefinitely with the increase in its size. The total profits decreases after a certain level of size as there operates the law of diminishing marginal productivity. Lee (2009) finds inverted U shape relationship between size and firm performance. We can account for this nonlinear relationship between size and firms' financial performance by including the squared term of size as an independent variable. Thus the following hypothesis is formulated.

H<sub>3</sub>: The relationship between the firm size and the firm performance is of inverted U shape.

#### FIRM EFFICIENCY

A firm having higher asset turnover ratio has better utilization of assets. This will generate higher sales which will lead to higher profitability. DuPont analysis shows that ROA is driven by profit margin and asset turnover ratio. Thus, firm efficiency, measured in terms of asset turnover ratio has positive relationship with firm performance. Thus we formulate the following hypothesis.

H<sub>4</sub>: Asset turnover ratio and firm performance are positively related.

#### AGE

Older firms are inflexible and unable to appreciate changes in the economic environment. Kakani et al. (2001) and Lensink and Molen (2010) find negative relationship of age with the firm performance. However, older firms can leverage their reputation and contacts in labor, product and capital markets for their benefit.

 $H_{\text{S}}\text{:}$  Age of the firm and the firm performance are positively related.

#### EXPORT INTENSITY

Exporting firms in India have access to EXIM (Export and Import) credit facilities with EXIM Bank of India. Further, exporting firms can benefit if the price for their products in the international market is higher than the domestic market price. Kakani et al., (2001) and Mazumdar (1997) find positive impact of export intensity with the firm performance. However, India being a developing country, domestic market price is expected to be more than the price in the international markets

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due to inefficiency prevalent in Indian industries. In spite of getting higher profit margin due to higher prices in domestic market, firm may export to have goodwill in domestic market. Further, exporting firms are better hedged against the domestic business cycles. Hence we expect negative relationship between export intensity and firm performance. Thus we hypothesize as follows.

H<sub>6</sub>: Export intensity and the firm performance are negatively related.

#### SELLING AND DISTRIBUTION EXPENSES

Comanor and Wilson (1967) and Kakani et al., (2001) find positive impact of advertising expenses and marketing expenses on the profitability. However, Sherman and Tollison (1971) find that advertising expenses is not a significant variable. We have considered selling and distribution expenses instead of advertising expenses as it is a more comprehensive measure of marketing efforts. It includes advertising expenses, marketing expenses and distribution expenses. Advertising expenses create entry barriers for firms' competitors by building assets such as brands (Comanor and Wilson (1967)). This can result into higher profitability for the firm. These expenses in building brands can also help firms get over difficult years and protect their market share and sales volume, and defy industry trends. From the above discussion, the following hypothesis is formulated.

H<sub>7</sub>: Selling and distribution expenses and the firm performance are positively related.

#### **GROUP AFFILIATION**

Business groups are expected to fill up the institutional voids existing in the economy for their member firms (Khanna and Palepu, (1997)). Many business costs are shared and opportunities are well captured by the member firms of the business groups. Khanna and Palepu (1999, 2000a and 2000b), Khanna and Rivkin (2001) and Mishra and Akbar (2007) find that group affiliated firms perform better than stand-alone firms. Kali and Sarkar (2005) show that group affiliated firms perform better due to propping through profit transfers and better monitoring through group level directorial interlocks. Further, Gopalan et al (2007) study the working of internal capital markets among Indian business groups and find the evidence of propping among Indian business groups. Thus we hypothesize that group affiliation has impact on the firm performance.

However, Bertrand et al. (2002) show evidence of tunneling in India. Johnson et al (2000) have defined tunneling as transfer of resources from any other company to a company where its controlling shareholders have comparatively higher cash flow rights. Singh et al. (2007) and Singh and Gaur (2009) find that group affiliated firms perform worse than unaffiliated firms. Based on the above discussion, we formulate the following hypothesis.

 $H_8:$  Performance of standalone firms is higher than the performance of group affiliated firms.

#### CONCENTRATION

Industries having high concentration will have less number of significant sellers. One will find on an average more effective collusion among the sellers in such industries. On the other hand there will be higher profit destructive competition among sellers operating in industries having less concentration (Bain (1951)). Thus we expect positive impact of industry concentration on the profitability of firms operating in that industry. Bain (1951) and Lee (2009) find positive relationship of industry concentration with the firm performance. Based on the above discussion, we formulate the following hypothesis. H<sub>9</sub>: Industry concentration and the firm performance are positively related.

#### 6. VARIABLE CONSTRUCTION AND STUDY PERIOD

#### 6.1 VARIABLE CONSTRUCTION

Notation and measures used for all variables are defined in table 1 given below.

#### TABLE 1: NOTATIONS AND MEASURES OF THE VARIABLES

| Dependent Variables            |                       |  |  |  |  |  |
|--------------------------------|-----------------------|--|--|--|--|--|
| Variable                       | Notation              | Measure  |  |  |  |  |
| Return on Assets               | ROA <sub>it</sub>     | PBITDA / Total Assets  |  |  |  |  |
| Ln (Price to Book Value Ratio) | LPBR <sub>it</sub>    | Ln(Market Price per Share / Book Value per Share)  |  |  |  |  |
| Independent Variables          |                       |  |  |  |  |  |
| Promoters' Holding             | PH <sub>it</sub>      | Promoters' Holding / Total Shares  |  |  |  |  |
| Leverage                       | LEV <sub>it</sub>     | One year lagged values of long term debt to total assets ratio   |  |  |  |  |
| Size                           | Size <sub>it</sub>    | (Ln(Net Sales) - Mean of Ln(Net Sales))  |  |  |  |  |
| Squared Term of Size           | Sizesq <sub>it</sub>  | (Ln(Net Sales) - Mean of Ln(Net Sales))^2  |  |  |  |  |
| Firm Efficiency                | FIRMEFF <sub>it</sub> | $\frac{NetSales_i / NetSales_j}{TotalAssets_i / TotalAssets_j}$  |  |  |  |  |
|                                |                       | Where the firm "i" is excluded from the industry j.  |  |  |  |  |
| Age of the firm                | AGE <sub>it</sub>     | Respective year - Year of Incorporation  |  |  |  |  |
| Export Intensity               | EXP <sub>it</sub>     | (Net Exports / Gross Profit)   |  |  |  |  |
| S&D Expenses                   | SDE <sub>it</sub>     | $\frac{SD_{i}}{SD_{j}}$ Where SDi and $\overline{SD_{j}}$ = Sum of current and last four years of selling and distribution expenses<br>for the firm i, and mean of the sum of current and last four years of selling and distribution<br>expenses for the industry j respectively, where the firm "i" is excluded from the industry j. |  |  |  |  |
| Business group dummy           | BGD <sub>it</sub>     | It takes value '1' if a firm is business group affiliate and '0' otherwise   |  |  |  |  |
| Concentration                  | HHI <sub>ijt</sub>    | $\sum_{i=1}^{n} S_{i}^{2}$ Where, S <sub>i</sub> = Market share of the firm i and Market share = Net Sales of the firm i operating in the industry j/ Net sales of all the firms operating in the industry j other than the firm itself.   |  |  |  |  |

#### 6.2 STUDY PERIOD

We use the relevant data from Prowess maintained by CMIE. The period under study is from March 2005 to March 2011. Data is not reliable for the years March 2012, March 2013 and March 2014 in prowess. So we limit our analysis till March 2011. The period from March 2005 to March 2008 has witnessed high growth period as suggested by GDP growth rate. During March 2005 to March 2008 GDP growth rate ranged from 7.05 percent to 9.57 percent. Indian economy was negatively impacted by the global financial crisis. As a result we find the GDP growth rate ranging from 6.72 percent to 8.91 percent during March 2009 to March 2009 to March 2009 to March 2011 (Planning Commission of India Website). Thus we divide our period of regression analysis into two panels. First panel is from 2005 to 2008 reflecting high growth period and second panel is from March 2009 to March 2011 representing subdued growth of Indian economy due to global recession.

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#### 7. RESEARCH METHODOLOGY

In order to examine the impact of independent variables on dependent variable we estimate panel data regression including year and industry effects. Firm performance has been measured using an accounting based measure, ROA, as well as a market based measure LPBR. The variable PBR is bound by zero on the lower side because the market price of a share cannot fall below zero. Therefore we have taken log values of PBR (LPBR).

Differing from the previous studies we use lagged value of leverage as current value of leverage is impacted by current performance and vice versa resulting in endogeneity of variables (Rajan and Zingales (1998)). Similarly as non linear relationship might exist between firm size and the firm performance, we include squared term of size as an independent variable in the regression. To identify the multi-co-linearity among independent variables, we calculate variance inflation factors.

The regression of the following form is estimated to capture the impact of independent variables on firm performance.

Similar regression has been estimated taking LPBR as dependent variable.

#### 8. RESULTS

#### **8.1 DESCRIPTIVE STATISTICS**

Table 2 indicates the nature of the firms under study. Descriptive statistics are calculated for both the panels.

| TABLE 2: DESCRIPTIVE STATISTICS FOR PANEL 1 (P1) AND PANEL 2 (P2) |           |           |             |             |          |          |  |
|---|-----------|-----------|-------------|-------------|----------|----------|--|
|   | Mean - P1 | Mean - P2 | Median - P1 | Median - P2 | STD - P1 | STD - P2 |  |
| ROA   | 0.12      | 0.11      | 0.12        | 0.11        | 0.10     | 0.09     |  |
| PBR   | 2.78      | 2.01      | 1.31        | 0.86        | 13.86    | 8.14     |  |
| LPBR  | 0.32      | -0.05     | 0.27        | -0.15       | 1.02     | 1.02     |  |
| PH%   | 47.15     | 49.68     | 48.67       | 51.33       | 19.80    | 18.41    |  |
| Lev %   | 28.35     | 28.44     | 27.79       | 27.71       | 0.20     | 0.27     |  |
| Age   | 27.59     | 29.32     | 22.00       | 24.00       | 18.33    | 18.11    |  |
| TA (Rs. in crores)  | 612.41    | 1163.15   | 92.70       | 153.59      | 3402.80  | 7132.29  |  |
| NS (Rs. in crores)  | 467.84    | 767.44    | 83.33       | 122.98      | 2743.34  | 4957.28  |  |
| EXPINT  | 1.41      | 1.07      | 0.06        | 0.01        | 15.22    | 19.10    |  |
| SDE   | 2.89      | 3.39      | 0.36        | 0.27        | 12.51    | 69.63    |  |
| FIRMEFF   | 1.28      | 1.33      | 1.01        | 1.07        | 2.98     | 1.39     |  |

Note: P1 consists of the period from the year March 2005 to March 2008 and P2 consists of the years from March 2009 to March 2011.

Total numbers of observations for panel 1 are 7234 and for panel 2 are 6343. Mean and median of ROA in first period are the same and it is 0.12. During second period mean and median of ROA decrease to 0.11. Mean of PBR is 2.78 in the first period. Mean of PBR decreases to 2.01 in the second period. Median of PBR is 1.31 in the first period. It decreases to 0.86 in the second period. The decrease in the average values of ROA and PBR are possibly because of the recession and hence as per our expectation. Similarly, mean and median of LPBR are 0.32 and 0.27 respectively in the first period. Mean and median of LPBR decrease to -0.05 and -0.15 respectively in the second period. Means of PH are 47.15% and 49.68% in the first and second periods respectively and medians are 48.67% and 51.33% in the corresponding periods respectively. Mean leverage in first period is 28.35% whereas it is 28.44% in the second period. Similarly, Median leverage is 27.79% and 27.71% in the corresponding periods respectively. Means and medians of leverage during pre and post recession periods are approximately the same for the firms under the study. On an average, firms are 27.59 years old in the first period, whereas they are 29.32 years old in second period. Median age of firms is 22 years and 24 years in the first and second periods respectively. On an average, firms have Rs. 612.41 crores of total assets in the first period which increase to Rs.1163.15crores in the second period. Median total assets for the firms are Rs. 92.70crores in the first period which increases to Rs. 153.59crores during the second period. Average net sales of firms during the first period are Rs 467.84 crores and it increases to Rs 767.44 crores during the second period. Median net sales are Rs. 83.33crores which increases to Rs. 122.98crores during the second period. Mean export intensity is 1.41 and 1.07 during these two periods and median export intensity is 0.06 and 0.01 during these two periods. Thus export intensity decreases during the period of global recession for firms under the study. The decrease is in line with our expectation. Mean SDE is 2.89 during the first period. It increases to 3.39 during the second period. Median SDE is 0.36 which decreases to 0.27 during the second period. Mean firm efficiency is 1.28 and 1.33 during the first and second periods respectively and median is 1.01 and 1.07 during the corresponding periods. Thus firm efficiency increases during the period of global recession in line with our expectation. HHI is used as a proxy to capture industry concentration. Its mean during first and second periods respectively are 0.08 and 0.09. Median HHI during the corresponding periods is 0.05 and 0.06. HHI increases during the period of global recession.

#### 8.2 RESULTS OF PANEL DATA REGRESSION

The result of panel data regressions for study variables ROA and LBPR are given in table 3.

|              | ROA - 20 | 005 to 2008 | LPBR - 2005 to 2008 |         |      |  |
|--------------|----------|-------------|---------------------|---------|------|--|
| Variable     | Coeff    | t-Stat      | Coeff               | t-Stat  | VIF  |  |
| С            | 0.12     | 13.24**     | 0.77                | 2.87**  | 0.00 |  |
| PH           | 0.01     | 5.95**      | 0.01                | 10.98** | 1.14 |  |
| Lev          | -0.03    | -2.44*      | 0.48                | 6.19**  | 1.33 |  |
| Size         | 0.02     | 22.61**     | 0.06                | 4.15**  | 2.00 |  |
| Sizesq       | -0.01    | -5.42**     | 0.02                | 6.03**  | 1.78 |  |
| FirmEff      | 0.01     | 1.41        | 0.01                | 2.52*   | 1.05 |  |
| Age          | -0.01    | -0.50       | 0.01                | 4.02**  | 1.22 |  |
| ExpInt       | -0.01    | -2.19*      | -0.01               | -0.98   | 1.06 |  |
| SDE          | 0.01     | 1.77a       | 0.01                | 1.83a   | 1.31 |  |
| BGD          | -0.02    | -7.23**     | 0.11                | 4.04**  | 1.44 |  |
| ННІ          | -0.01    | -0.23       | 0.22                | 1.32    | 2.00 |  |
| Ν            | 7234     |             | 7234                |         |      |  |
| F            | 21.63    |             | 30.99               |         |      |  |
| Adj R Square | 0.1833   |             | 0.2437              |         |      |  |

TABLE 3: PANEL DATA REGRESSION HAVING ROA AND LPBR AS DEPENDENT VARIABLE FOR PANEL ONE

Note: \*\*, \* and a represent significance levels of 1%, 5% and 10% level respectively.

The table 3 shows that the VIFs are smaller and it suggests that multi-co-linearity does not exist among independent variables.

#### DETERMINANTS OF ROA FOR THE PERIOD 2005-08

The results for regression having ROA as dependent variable show that promoter's holding and selling and distribution expenses have positive and significant coefficients as per the hypothesized relationship. Phani et al. (2004) find positive relationship of insider ownership with the firm performance. The coefficients of leverage, export intensity and BGD are negative and significant in line with our hypotheses. Beard and Dess (1981) and Kakani et al., (2001) find negative impact of leverage on firm performance. Bertrand et al. and Lensink and Molen (2010) find negative relationship of group affiliation with firm performance. The impact of size on firm performance is positive and significant and the coefficient of squared term of size is negative and significant. This suggests that there is inverted U shape relationship between size and firm profitability. This is as per our hypothesized relationship and confirms the operation of the law of diminishing marginal productivity. Lee (2009) finds inverted U shape relationship between size and firm performance.

#### DETERMINANTS OF LPBR FOR THE PERIOD 2005-08

The table 3 shows that the impact of these independent variables on LPBR is different from that of ROA. The notable differences are as follows. Unlike in ROA, the impact of leverage is positive and significant on LPBR. Higher leverage will directly benefit shareholders, as with the increase in leverage earning per share (EPS) increases. As a result, the share price will have positive relationship with leverage. Size shows positive and exponential relationship with LPBR possibly because investors value larger firms higher than smaller firms. The coefficients of firm efficiency and age are positive and significant in line with our hypotheses. Unlike in ROA analysis, the coefficient of BGD is positive and significant for LPBR analysis. This suggests that shares of group affiliated firms are more valuable as investors are more confident to invest in group affiliated firms rather than in standalone firms.

Table 4 shows the results of panel data regression for the second period 2009 to 2011.

#### TABLE 4: PANEL DATA REGRESSION HAVING ROA AND LPBR AS DEPENDENT VARIABLES FOR PANEL TWO

|              | ROA - 20 | 009 to 2011 | LPBR - 2009 to 2011 |         |      |
|--------------|----------|-------------|---------------------|---------|------|
| Variable     | Coeff    | t-Stat      | Coeff               | t-Stat  | VIF  |
| C            | -0.01    | -1.48       | -0.58               | -4.18** | 0.00 |
| PH           | 0.01     | 9.74**      | 0.01                | 13.26** | 1.16 |
| Lev          | -0.01    | -1.36       | 0.09                | 1.07    | 1.16 |
| Size         | 0.01     | 19.75**     | -0.04               | -3.47** | 1.89 |
| Sizesq       | -0.01    | -0.61       | 0.03                | 10.91** | 1.54 |
| FirmEff      | 0.01     | 7.02**      | 0.07                | 6.31**  | 1.27 |
| Age          | 0.01     | 1.82a       | 0.01                | 3.80**  | 1.19 |
| ExpInt       | 0.01     | 0.62        | -0.01               | -2.28*  | 1.02 |
| SDE          | 0.01     | 2.13*       | 0.01                | 1.00    | 1.50 |
| BGD          | -0.01    | -3.65**     | 0.11                | 3.99**  | 1.40 |
| нні          | 0.01     | 1.25        | 0.16                | 0.96    | 1.95 |
| N            | 6343     |             | 6343                |         |      |
| F            | 25.89    |             | 27.45               |         |      |
| Adj R Square | 0.2325   |             | 0.2431              |         |      |

Note: \*\*, \* and a represent significance levels of 1%, 5% and 10% level respectively.

Table 4 shows the results of estimated panel data regressions for the period containing global financial crisis.

#### DETERMINANTS OF ROA VIS-À-VIS LPBR

As the table 4 indicates, the impact of independent variables on ROA differs from that of LPBR. Impact of selling and distribution expenses is positive and significant only on ROA. Impact of export intensity is negative and significant only on LPBR. The coefficient of size is positive and significant for ROA analysis, but it is negative and significant for LPBR analysis. The coefficient of size is not significant for ROA, but it is positive significant for LPBR analysis. This suggests U shape relationship between size and LPBR. These determinants of firm performance is bound to impact ROA and LPBR differently because the variable ROA is derived from ex-post business data, whereas the variable LPBR is also driven by ex-ante expectations of investors about the firm value.

#### COMPARISON OF DETERMINANTS OF ROA DURING FIRST AND SECOND PERIODS

Further, the results show that as compared to high growth period, determinants of firm performance not only gain or lose significance but also they change in direction to impact the dependent variable during the period of global recession. Considering ROA analysis, the coefficients of leverage, squared term of size and export intensity are not significant. The coefficients of these variables are negative and significant during the first period. This can be because the debt covenants may restrict profits during high growth period, but it will lose significance during recession. No inverse U shape relationship is found between size and ROA. This suggests that during the recession, firms may try to innovate their production, financing or marketing capabilities leading to cost reduction and / or revenue enhancement. Further, the profitability may suffer if firms choose to export ignoring the high domestic demand and high prices during the high growth period. But export intensity should lose significance during global recession. Coefficient of age is positive and significant. However, it is not significant during the first period. This suggests that older firms are able to outperform newer firms during the recession.

#### COMPARISON OF DETERMINANTS OF LPBR DURING FIRST AND SECOND PERIODS

The results of LPBR analysis show that leverage and selling and distribution expenses lose their significance. The coefficients of these variables are positive and significant. Leverage and selling and distribution expenses will have positive impact on profits and eventually on EPS only when sufficient demand and sales can be predicted. During the period of uncertainty, like that of recession, the positive impact of these variables on profits vanishes. The coefficient of export intensity is negative and significant. However, it is not significant during the high growth period. It seems that the investors are penalizing the firms for their exports. The coefficients of size and squared term of size show U shape relationship between size and LPBR. This suggests that during the period of global recession and high volatility of stock prices, investors may ignore to invest in very small firms and very large firms.

#### 9. SALIENT FINDINGS AND CONCLUSIONS

- Few factors gain or lose significance while switching from accounting based measure of firm performance to market based measure of firm performance as a dependent variable. Also, the independent variables change their direction to impact the dependent variable.
- During the first period, the impact of leverage and export intensity is negative and significant on ROA. Whereas leverage has positive impact on LPBR. The coefficient of export intensity is not significant for LPBR analysis. Impact of firm efficiency and age is positive and significant on LPBR. These variables are not significant for ROA analysis. As per ROA analysis, performance of standalone firms is higher than performance of business group affiliated firms. However, as per LPBR analysis, performance of business group affiliated firms is higher than the performance of standalone firms. The impact of size differs while considering accounting based and market based measures of firm performance. Size and ROA has inverted U shape relationship and size and LPBR has positive and exponential relationship. The law of diminishing marginal productivity does not apply to market based measure of firm performance, LPBR.
- During the second period, the coefficient of selling and distribution expenses is positive and significant only on ROA. The coefficient of export intensity is negative and significant only on LPBR. The coefficient of squared term of size is negative and significant for LPBR analysis. This suggests U shape relationship between size and LPBR.
- Further, these determinants of firm performance change their significance and direction while switching from one period to another period.

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- Comparing ROA analysis between first and second period we get the following notable differences. The coefficients of leverage, squared term of size and export intensity are negative and significant during the first period. However, these variables are not significant during the second period of global recession. The impact of age is positive and significant in the global recession period. However, it is not significant during the first period.
- The results of LPBR analysis show that leverage and selling and distribution expenses lose their positive significance during the second period. The coefficient of export intensity is negative and significant during the period of global recession. However, it is not significant during the high growth period. The coefficients of size and squared term of size show U shape relationship between size and LPBR during second period. Size shows positive and exponential relationship with LPBR during first period.

This study focuses on the performance of listed non financial firms in India during the period from 2005 to 2011. This period coincides with first period of high economic growth from 2005 to 2008 and second period of global recession from 2009 to 2011. We find that the impact of the factors is sensitive to the kind of firm performance measure used as dependent variable for the analysis. Not only these determinants of firm performance gain or lose their significance but they also change their direction to impact the firm performance while switching from accounting based measure of performance to market based measure of performance. Further, the impact of these determinants is sensitive to the time period under analysis. The study can be further substantiated by analyzing firms at industry level.

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