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Determinant of Return on Assets and Return on Equity and Its Industry Wise Effects: Evidence from KSE (Karachi Stock Exchange)

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Abstract:
"The prime purpose of this research is to find out that from the components of Dupont identity of Return on Equity which component is most consistent or volatile among profit margin, total assets turnover and equity multiplier in Fuel and Energy Sector, Chemicals Sector, Cement Sector, Engineering Sector, Textiles Sector and Transport and Communication Sector of KSE 100 index. The purpose of the study was served by taking data from 2004 to 2012 of 51 companies (falling under six mentioned industries) of KSE 100 as Paradigm of Panel Data. The F-Statistics of One Way ANOVA (Analysis of Variance) show that it is Assets Turnover which significantly varies from industry to industry whereas Equity Multiplier and Profit Margin are not much volatile among indifferent industries. Moreover, Adjusted R Square in Panel OLS Analysis was confirming Industry Effect on Newly established firms that they can have the benefit of profitability if they are from Fuel and Energy Sector, Cement Sector and Transport and Communication Sector whereas others Sectors such as Chemicals Sector, Engineering Sectors and Textiles Sectors does not have that leverage."
Keywords: Profitability, Dupont Identity, Panel Least Square
***JEL Classification*:** G12, G39, C23

1. Introduction

A business is defined as "Any activity which is done for the purpose of profit" but the question arises how to calculate profitability as well as comparing the profitability of it with existing firm of industry. Its answer lies in Profitability Analysis under the area of "Analysis of Financial Statements" where we compare the profitability of firm with other firms as well as with its industry. The famous Dupont Equation in Profitability analysis discuss determinants of profitability in details with three stages of origin. The DuPont Model is a technique that can be used to analyze the profitability of a company using traditional performance management tools. To enable this, the DuPont model integrates elements of the Income Statement with those of the Balance Sheet.

The product of the net profit margin and total asset turnover equals ROA, and this was the original DuPont model, as illustrated in Equation 1 below.

$$Return\ on\ Assets\ = \left(\frac{NP}{S} \times 100\ \frac{S}{TA}\right) = \frac{NP}{TA} \times 100$$

Where
NP = Net Profit, S = Sales & TA = Total Assets

At this point in time maximizing ROA was a common corporate goal and the realization that ROA was impacted by both profitability and efficiency led to the development of a system of planning and control for all operating decisions within a firm. This became the dominant form of financial analysis until the 1970s. (Blumenthal, 1998).

According to Gitman, (1998) the generally accepted goal of financial management became "maximizing the wealth of the firm's owners" and focus shifted from ROA to ROE. This led to the first major modification of the original DuPont model. In addition to profitability and efficiency, the way in which a firm financed its activities, i.e. its use of "leverage" became a third area of attention for financial managers. The new ratio of interest was called the equity multiplier, which is (total assets / equity). The modified DuPont model is shown in Equations 2 and 3 below.

Formula

$$\text{RoE} = \frac{\text{NP}}{\text{Sales}} \times 100 \frac{\text{Sales}}{\text{TA}} \times \frac{\text{TA}}{\text{TOE}}$$

Where
RoE = Return on Equity
NP = Net Profits
TA = Total Assets
TOE = Total Owner's Equity

Or

$$\text{Profitability} = \text{Operations} \times \text{Efficiency} \times \text{Leverage}$$

More recently, Hawawini and Viallet (1999) offered yet another modification to the DuPont model. This modification resulted in five different ratios that combine to form ROE.
The "really" modified DuPont model is shown below in Equation 4.

$$\text{RoE} = \frac{\text{EAT}}{\text{EBT}} \times \frac{\text{EBT}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{IC}} \times \frac{\text{IC}}{\text{E}}$$

Where:
RoE = Return on Equity
EAT = Earnings after Tax
EBT = Earnings before Tax
EBIT = Earnings before Interest and Tax
IC = Invested capital = Cash + Working Capital Requirement + Net Fixed Assets

This "really" modified model has introduce two more ratio one is tax effect ratio related to earning after tax and earning before tax and financial cost ratio discussing earning before tax with earning before interest and tax but still maintains the importance of the impact of operating decisions (i.e. profitability and efficiency) and financing decisions (leverage) upon ROE, but uses a total of five ratios to uncover what drives ROE and give insight to how to improve this important ratio.

1.1 Research Problem

Although Dupont Analysis clearly states that Company's Return on Equity has three factors i.e. Profit Margin, Total Assets Turnover and Equity Multiplier from1970's and onward but Literature is still silent about which of the factor is more influential and powerful factor of Profitability Indicator i.e. Return on Equity. So

"This research will investigate that which factor of return on equity is more powerful/influential factors among factors profit margins, total assets turnover and equity multiplier through its volatility from Six Prominent Industries of KSE 100 index's Non Financial Companies"

1.2 Research Questions

Above Research Problem be investigated by following Research Question?

- Which is the most prominent factor among three factors of DuPont's Extended Return on Equity?
- What are the Possible Factors which may affect the common variable of Profitability which is Net Income?
- Is Possible factor's influence is consistent in all the industries or it varies from industry to industry?

1.3 Objectives of the study

- To determine influential factors of profitability using Return on Equity as benchmark with the help of DuPont Identity.
-
- To give Finance Managers of Corporations to have the idea that What are the Possible Common Factors which may cause the Profitability of Corporations under different Industries.
- To find out that possible factors are from organizations' inside structure or it is Industry driven.

2. Literature Review

Leisz T. J. and Maranville S. J. (2008) have identified that only simple calculation is required for The Du Pont model in Profitability analysis. They also justified that these calculations can lead to understanding the

comparative advantage in financial term and every individual either sole proprietor or Financial Manager of a Giant Corporation want to know precise actions that can be taken that will lead to higher profitability and return? They also contributed that one can get valuable insights to return even with the help of the original model (culminating in ROA), but the more extended versions that explore the components of ROE also allow even small business managers to make good financial decisions that will bring a positive impact on the return to firms' owners.

Majed et al (2012) discovered that three ratios of ROA, ROE and ROI together showed a strong and positive relationship with share prices with 45.7% relationship. He also tried to identify the individual effect of RoA, RoE and RoI and succeeded in concluding that RoA and RoI has positive but low relationship with marketshare price but failed to get the relationship of RoE with market share price individually. For this they take data from Jordanian Insurance Public Companies for the period of 2002 to 2007.

Saleem Q and Naseem MA (2012) hypothesized that highly leveraged oil and gas companies have lower profitability. However, they were failed to support their hypothesis of positive relationship between financial leverage and profitability. It was also tested in their research that highly leveraged businesses are riskier in terms of their return on equity and investment but results indicated that highly leveraged firms were less risky in both market-based and accounting-based measures.

In Jordan, Taani K and Banykhaled AHH (2011) tried to find out the relationship between profitability and cash flows. Their model included EPS as dependent Variable and eight other factors for regression analysis. Based on their regression result, it wasconcluded that financial ratios, return onequity, debt to equity, price to book value, and cash flow from operating activitiesaltogether affect earning per share. For that they used 40 manufacturing companies listed in amman stock exchange and take data from year 2000 to 2009.

Saleem Q and Rehman R (2011) tried to reveal the relationship between liquidity and profitability in case of oil and gas companies of pakistan with data of 2004 to 2009. Their results show that there is a significant impact of only liquid ratio on ROA while insignificant on ROE and ROI; the results also show that ROE is no significant effected by three ratios current ratio, quick ratio and liquid ratio while ROI is greatly affected by current ratios, quick ratios and liquid ratio.

Roaston P and Roaston A (2012) find out in their research with the RMSE criteria that Price-to-Earnings ratio is a better predictor of the financial performances of companies than other indicators. For this purpose they evaluate twelve indicators of 86 companies which were related to financial as well as market indicators.

However, Profitability can not only be indicated by Return on Equity. There are many other variables with are aligned with Return on Equity such as Earning per share (Taani K and Banykhaled AHH, 2011), Return on Assets and Return on Investment (Majed et al, 2012), Price to Earning Ratio (Roaston P and Roaston A, 2012) and Return on Assets. [Naceur (2003) and Alkassim (2005)]. Moreover, Taani K and Banykhaled AHH (2011) also find out that variables which are consistently significant on earning per share areprofitability ratio (ROE), market value ratio (PBV), cash flow from operatingactivities, and leverage ratio (DER).

3 Theoretical Modeling and Econometrics Methodology

3.1 Research Framework

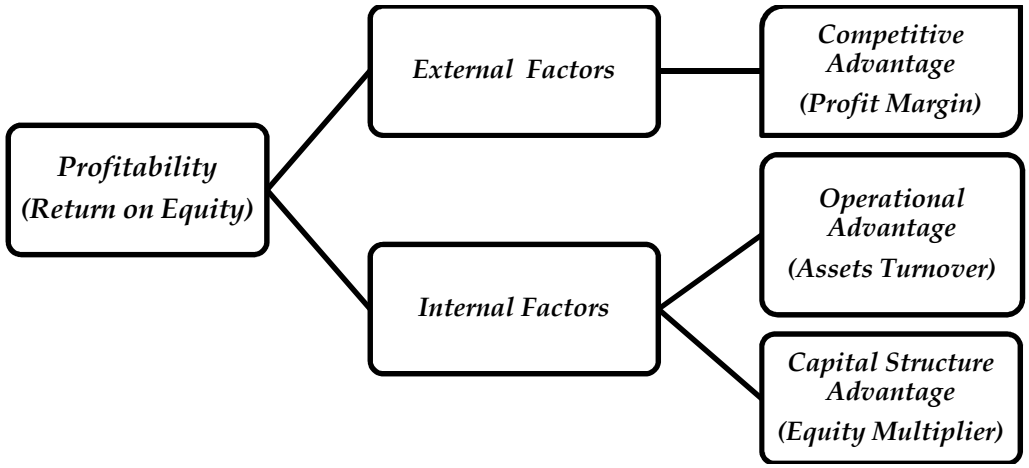

Figure no. 1 *Source: Self Created*

3.2 Research Design

This study will be quantitative in nature and will be done through gathering financial figures of Net Income after Tax, Sales, Total Assets and Total Share holder's Equity of about Listed Companies of Six Industries of Karachi Stock Exchange 100 Index provided by State Bank of Pakistan under their Annual Report name Balance

Sheet Analysis and these industries are Fuel and Energy Sector, Cement Sector, Chemical Sectors, Engineering Sector, Transport and Communication Sector and Textile Sector.

Profitability of these six industries will be regressed by taking Net Income as Dependent Variable and Independent Variables will be Sales, Assets and Shareholder's Equity and Also Industry wise dummy variable will be introduced to identify the industry Effect.

Then above financial figures of said industries these will be converted into Financial Ratios of Return on Equity, Net Profit Margin, Total Assets Turnover and Equity Multiplier for Descriptive and Anova Analysis for Volatility and Consistency.

3.3 Research Procedure

The answer of First Research Objective "**Which is to find out which factor of profitability is playing dominant role?",** will be carried out by using Regression Analysis on statistical model for hypothesis testing that which of the Independent Variable i.e. Sales, Assets or Shareholder's Equity affect Dependent Variable i.e. Net Income or There is Industry Effect which is playing dominant effect on Industry.The Industry Effect will be identified by introducing industry wise dummy variable.

The answer of 2ndobjective **"Which is the more influential factor of profitability among dupont Identity?"** will be find out by applying ANOVA analysis Industry wise for Every Factor of Dupont Identity separately.

3.4 Sampling Framework

The Sampling Framwork and Method in this research, comprises on All the Companies falling under heading of Mentioned Industries of KSE 100 Index which are taken by focused/purposive sampling.
In selecting the sample, the following pre-determined criteria were as follows:

- ✓ The firm has published its complete financial statements for the period of 2012.
- ✓ The firm does not have negative equity at the end of period 2012
- ✓ The firm does not have Net Loss for the Average of Years 2007 to 2012
- ✓ The firm's stock has been actively traded during September 2013.

The purposive sampling with the predetermined criteria above resulted in 51companiesas sample.

See Table 1

Secondary data were available in the form of "Balance Sheet Analysis" published by State Bank of Pakistan for All the Non-Financial Listed Companies registered at Karachi Stock Exchange. However the conversion of available portable document file into MS Excel sheet required extensive filtration process and the Financial Variables of Sales, Net Income after Tax, Total Assets and Total Shareholder's Equity of Sample Companies of KSE have been taken from the year 2004 to 2009

3.5 Hypothesis

Objective 1: Common Factors of Profitability (Regression Based)

For Inside Effect:

H1a: Sales,Total Assets and Shareholders Equity altogether CauseNet Income of Mentioned Industries of listed companies of KSE 100 Index.

For Outside Effect:

H1b: Along with Sales, Total Assets and Shareholders Equity, It is Industry effect which Cause Net Income of Mentioned Industries of listed companies of KSE 100 Index.

Objective 2: DuPont Factors of Return on Equity (Non Regression ANOVA)

For RoE: Average Return on Equity of Six Industry will be analyzed.

H2a:

$\mu_{(FE)} \neq \mu_{(CM)} \neq \mu_{(CH)} \neq \mu_{(EN)} \neq \mu_{(TC)} \neq \mu_{(TX)}$

For PM: Average Profit Margin of Six Industry will be analyzed.

H2b:

$\mu_{(FE)} \neq \mu_{(CM)} \neq \mu_{(CH)} \neq \mu_{(EN)} \neq \mu_{(TC)} \neq \mu_{(TX)}$

For TATO: Average Assets Turnover of Six Industry will be analyzed.

H2c:

$\mu_{(FE)} \neq \mu_{(CM)} \neq \mu_{(CH)} \neq \mu_{(EN)} \neq \mu_{(TC)} \neq \mu_{(TX)}$

For EM: Average Equity Multiplier of Six Industry will be analyzed.

H2d:

$\mu_{(FE)} \neq \mu_{(CM)} \neq \mu_{(CH)} \neq \mu_{(EN)} \neq \mu_{(TC)} \neq \mu_{(TX)}$

Where,
FE = Fuel and Energy Sector
CM = Cement Sector
CH = Chemical Sector
EN = Engineering Sector
TC = Transport and Communication
TX = Textile Sector
RoE = Return on Equity
PM = Profit Margin
TATO = Total Assets Turnover
EM = Equity Multiplier

3.6 Statistical Model

Following are the statistical models to be utilized.

$$NI_{it} = b_1 Salesit + b_2 Assetsit + b_3 Equityit + eit \quad \textbf{(Eq.1)}$$

$$NI_{it} = b_1 Slit + b_2 Asit + b_3 Eqit + b_4 D1i + b_5 D2i + b_6 D3i + b_7 D4it + b_8 D5i + b_9 D6ti + e\,it \quad \textbf{(Eq.2)}$$

Where,
Sl = Sales, As = Assets,
Eq = Shareholders' Equity,
D***k*** = Industry Dummy Variables

3.7 Plan of Analysis

The Plan of Analysis for the said research will be as follow:

- Hypothesis of H1a regarding Common Factors of Profitability has been tested by multiple regression technique on Statistical Equation (1). T test will be the criteria to Find out Prominent Factors of Net Income.
- Hypothesis of H1b regarding Industry Effect on Profitability has been tested by multiple regression technique on Statistical Equation (2) T test will be the criteria to Find out Industry Effect.
- Hypothesis of H2a, H2b, H2c and H2c regarding Test of Equality on Return on Equity, Profit Margin, Total Assets Turnover and Equity Multiplier in mentioned industries, One Factor ANOVA technique has been applied respectively. F Test will be the criteria for Every One Factor Anova Analysis.

4. Results and Discussion

4.1 ANOVA based Analysis (Non Regression based Analysis)

Here All the component of Dupont Identity will be checked individually as follow:

Research Hypothesis:

$$\mu_{(FE)} \neq \mu_{(CM)} \neq \mu_{(CH)} \neq \mu_{(EN)} \neq \mu_{(TC)} \neq \mu_{(TX)}$$

For RoE: Null Hypothesis

"Average Return on Equity for the Six Industries is Equal"

(See Table 2)

Table 2 shows the ANOVA description of Return on Equity for mentioning industries; we can see that except Transport and Communication other five industries' Coefficient of Variation is not much dispersed.

(See Table 3)

Table 3 clearly rejects our Null Hypothesis of Equality of Return on Equity among selected Industries as F Calculated is 5.44 which is greater than F critical of 2.24 whereas P Value is confirming the rejection of our Null Hypothesis.

For Profit Margin: Null Hypothesis

"Average Profit Margin for the Six Industries is Equal"

(See Table 4)

Table 4 shows the ANOVA description of Profit Margin Analysis for mentioning industries; we can see that Profit Margin of Transport and Communication is much volatile as compared to other five industries. However Table 5 result is not allowed to reject our Null Hypothesis about Profit Margin Analysis

(See Table 5)

Table 5 clearly accepts our Null Hypothesis of Equality of Profit Margin among selected Industries as F Calculated is 0.80762 which is Lesser than F critical of 2.24. whereas P Value is confirming the rejection of our research Hypothesis.

For TATO: Null Hypothesis

"Average Total Assets Turnover for the Six Industries is Equal"

(See Table 6)

Table 6 shows the ANOVA description of Assets Turnover Analysis for mentioning industries; we can see that Average Assets Turnover here is changing from one industry to another. As Average Asset Turnover for Fuel and Energy Sector is 2.29 whereas it is only 0.62 in Cement Industry.

(See Table 7)

Table 7 clearly rejects our Null Hypothesis of Equality of Assets Turnover among selected Industries as F Calculated is 17.7858 which is much greater than F critical of 2.24 means Average Assets Turnover insignificantly different from industry to industry.

For EM: Null Hypothesis

"Average Equity Multiplier for the Six Industries is Equal"

(See Table 8)

Table 8 shows the ANOVA description of Equity Multiplier for mentioning industries; we can see that Equity Multiplier of Fuel and Energy Is much volatile as compared to other five industries. However the result of Table 9are not allowing to reject our Null Hypothesis about Equality of Averages of Equity Multiplier

(See Table 9)

Results of Table 9are accepting our Null Hypothesis of Equality of Equity Multiplier among selected Industries as F Calculated is 2.03 which is Lesser than F critical of the 2.24 (95% Significance Level, However Our Null Hypothesis will reject if we test it at 90% Significance Level, but that will lead to Type 1 error)

4.2 Regression based Analysis

For Inside Effect:

H1a: Sales,Total Assets and Shareholders Equityaltogether Cause Net Income of Mentioned Industries of listed companies of KSE 100 Index.

(See Table 10)

Table 10 shows that Net Income is significantly affected by Sales Assets and Equity as their t statistics are 6.05, -10.45 and 20.14 respectively. The coefficient of above results shows that

- 1 Million Increase in Sales Will result in 44,000 Increase in Net Income.
- 1 Million Increase in Assets will result in 241,000 decrease in Net Income.
- 1 Million Increase in Shareholder's Equity will result in 730,000 increases in Net Income.

For Industry Effect:

H1b: Along with Sales, Total Assets and Shareholders Equity, It is Industry effect which Cause Net Income of Mentioned Industries of listed companies of KSE 100 Index.

(See Table 11)

In comparison of Table 10 when Dummy Variable of Industries are introduced Table 11 shows that Net Income is still significantly affected by Sales, Assets and Equity as their t statistics are 3.85, -9.23 and 20.41 respectively which are approximately same as Table 10 however coefficient of them slightly decreased which resulted in 29,000 Increase, 216,000 degrees and 716,000 increase in net income respectively when there will be One million increase in Sales, Assets and Shareholder Equity respectively and Adjusted R^2 has also improved

slightly. Moreover Table 11 also confirms that there is industry effect also there which may drive Net Income, as Fuel and Energy Sector (t-statistics, 2.39**), Cement Sector (t-statistics, 1.74*) and Transport and Communication Sector (t-statistics, 3.639***) are the industries which may affect Net Income of the respective companies, However, Industry Effect of Chemicals, Textiles and Engineering is not dominant due to their lower t- statistics.
*[Note: Significance Level * = 90%, ** = 95%, *** = 99%]*

In Table 11, there is an alarming number which is Durbin-Watson stats. 0.65 of Durbin-Watson stats show that there is positive autocorrelation. To remove the effect of autocorrelation further analysis has been done by introducing 1 period lag variable.

Further Analysis for Industry Effect with Introduction of Lag Variable

(See Table 12)

Table 12 shows improved durbin-watson stat of 2.26 as compared to 0.65 durbin-watson stat of Table 11, But Introduction of Lag variable has nullified the industry effect as all the t-statistics of industry wise dummy variable has become insignificant resulting in significance of Sales, Assets, Equity and AR(1) [Lag Variable of Net Income] as their t-statistics are significant with 3.39, 6.28, 8.64 and 14.80 respectively which shows that It is mainly the Net Income of Previous Year which may result in Net Income of This Year, then 2nd important factors is corporations equity which may drive Net Income, 3rd Assets and Last Sales of the Corporations. T-Statistics values confirm this conclusion.

5. Conclusions

Based on ANOVA results of Table 2, 4, 6 and 8, we can conclude that out of three factors of Return on Equity under DuPont identity which are Profit Margin, Assets Turnover and Equity Multiplier, It is Total Assets Turnover which is most influential factor among three factors with F-Statistics of 17.78 (Significant at 99.99%) which means that it is total asset turnover which vary from industry to industry due to the nature of their operations. However F-Statistics of Equity Multiplier are only 2.03 (Significant at 90%) which shows its lower effect on Return on Equity whereas Profit Margin does not affect Return on Equity at all due to its lowest F-Statistics of 0.8 only.

Based on Regression results of Table 12, we can conclude that It is mainly Net Income of Previous Years which may result in the Profitability of the coming year due to its high t-statistics of 14.80*. The second prominent factor which may cause net income is the Shareholder's Equity of corporations as t-statistics is 8.64*. Then It is Assets and Sales which may driven Net Income as their t-statistics are 6.28* and 3.39* respectively.

However from Table 11, for Newly started Organization, when we exclude the effect of the Profitability of Previous Years, There are some Industries which may drive the Net Income of Organization which are Fuel and Energy Sector (t-statistics, 2.39***), Cement Sector (t-statistics, 1.74****) and Transport and Communication Sector (t-statistics, 3.639*) whereas the Effect of Other Industries are not dominant.
*[Note: Significance Level * = 99.9%, ** = 99%, *** = 95%,**** = 90%]*

6. Future Study

Based on Results of this study we have concluded that it is Assets Turnover which has influentially affected Return on Equity so

- It can further be verified by taking more time series data i.e. from 1990's till date as this study has only taken 6 years (2007 to 2012) data on its panel meter.
- Effect of Assets Turnover may also be verified by taking more companies in same study i.e. All KSE Index as this study has only taken companies of KSE 100 Index.
- Moreover, in this study Assets Turnover effect on Return on Equity has been confirmed in all six industries but in which pair of industry this effect is more prominent can be finding out in further study.

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Appendix

Table 1 Sample Companies of KSE 100 Index

Types of Industry	*KSE 100*	*Excluded*	*Revised*
Financial institutions & banks	**26**	**26**	**0**
Fuel & energy	**17**	**2**	**15**
Miscellaneous	**12**	**12**	**0**
Chemical	**12**	**2**	**10**
Engineering	**11**		**11**
Cements	**7**	**2**	**5**
Transport and Communication	**7**		**7**
Others	**3**	**3**	**0**
Textile	**3**		**3**
Paper & board	**2**	**2**	**0**
Total	**100**	**49**	**51**

TABLE 2: DESCRIPTIVE SUMMARY of Return on Equity – Industrywise

Groups	*Count*	*Average*	*Variance*	*Standard Deviation*	*Coefficient of Variation*
Fuel and Energy	87	0.38446	0.378	0.614816228	159.9175864
Cements	29	0.1415	0.03756	0.193801954	136.9651655
Chemicals	55	0.39891	0.0864	0.293938594	73.68543328
Textiles	18	0.14669	0.01604	0.126650491	86.33871383
Engineering	66	0.28413	0.06059	0.246156776	86.63566556
Trans. & Communication	36	0.02121	0.28762	0.536303427	2528.3685

TABLE 3: ANOVA analysis of Return on Equity – Industry wise

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F Value*
Between Groups	5.01518	5	1.00304	5.44472	0.000083968	2.245676788
Within Groups	52.5032	285	0.18422			
Total	57.5183	290				

Note: Significance level 5%

Table 4: DESCRIPTIVE SUMMARY of Profit Margin – Industry wise

Groups	*Count*	*Average*	*Variance*	*Standard Deviation*	*Coefficient of Variation*
Fuel and Energy	87	0.14912	0.04401	0.209780646	140.6818519
Cements	26	0.10468	0.0304	0.174355016	166.556164
Chemicals	55	0.233	0.09193	0.303198735	130.1268318
Textiles	18	0.08549	0.00759	0.087105716	101.8929842
Engineering	66	0.05285	0.01869	0.136719487	258.6759306
Trans. & Communication	36	0.67992	20.595	4.538174267	667.4614585

Table 5: ANOVA for Profit Margin – Industry wise

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F Value*
Between Groups	10.4773	5	2.09547	0.80762	0.544998542	2.246015185
Within Groups	731.679	282	2.59461			
Total	742.156	287				

Significance level 5%

TABLE 6: Descriptive Summary for Assets Turn Over – Industry wise

Groups	*Count*	*Average*	*Variance*	*Standard Deviation*	*Coefficient of Variation*
Fuel and Energy	87	2.29411	3.09896	1.760385265	76.7348317
Cements	26	0.62424	0.13393	0.365963477	58.6257912
Chemicals	55	1.18905	0.28386	0.532784199	44.807409
Textiles	18	0.7004	0.12785	0.357566825	51.0521123
Engineering	66	1.61552	0.49482	0.703437203	43.5424164
Trans. & Communication	36	0.77106	0.9811	0.990506259	128.46067

TABLE 7: ANOVA Analysis of Assets Turnover – Industry wise

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F-Vlaue*
Between Groups	111.591	5	22.3182	17.7858	0.000000	2.24601519
Within Groups	353.863	282	1.25483			
Total	465.453	287				

Significance level 5%

Table 8: Descriptive Summary for Equity Multiplier – Industry wise

Groups	*Count*	*Average*	*Variance*	*Standard Deviation*	*Coefficient of Variation*
Fuel and Energy	87	3.23076	13.4886	3.672676331	113.6784771
Cements	30	2.13762	0.66896	0.817898132	38.26211395
Chemicals	55	2.2374	0.80573	0.897623693	40.11908283
Textiles	18	2.78366	1.56959	1.252831627	45.00655187
Engineering	66	2.95065	1.50991	1.228784461	41.64452638
Trans. & Communication	36	2.47024	2.78378	1.668466795	67.54263553

TABLE 9: ANOVA Analysis of Equity Multiplier – Industry wise

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F-Value*
Between Groups	51.3023	5	10.2605	2.03053	0.074427107	2.245565578
Within Groups	1445.18	286	5.05309			
Total	1496.49	291				

Significance level 5%

Table 10: Panel Least Square Regression for Inside Effect
Dep. Variable: Net Income

Variable	Coefficient	Std. Error	t-Statistic	P-Value.
SALES	0.044298	0.007314	6.056289	0.0000
ASSETS	-0.241253	0.023071	-10.45698	0.0000
EQUITY	0.732032	0.036338	20.14507	0.0000
R-squared	0.676025		F-statistic	301.5227

Significance level: 5%

Table 11: Panel Least Square Regression for Industry Effect
Dep. Variable: Net Income

Variable	Coefficient	Std. Error	t-Statistic	P-Value.
SALES	0.029826	0.007740	3.853561	0.0001
ASSETS	-0.216948	0.023498	-9.232502	0.0000
EQUITY	0.716622	0.035107	20.41251	0.0000
FE	2085.799	872.3583	2.390989	0.0175
CEMENT	-1957.365	1120.853	-1.746317	0.0818
CHEMICALS	990.8017	842.0398	1.176668	0.2403
TEXTILES	-1888.816	1440.832	-1.310920	0.1909
ENGINEERING	11.59631	749.9113	0.015464	0.9877
TNC	-4193.411	1152.176	-3.639557	0.0003
R-squared	0.706909		F-statistic	85.32119

Significance level: 5%

Table 12: Panel Least Square Regression for Inside Effect with Lag Variable
Dep. Variable: Net Income

Variable	Coefficient	Std. Error	t-Statistic	P-Value.
SALES	0.053854	0.015884	3.390465	0.0008
ASSETS	-0.230084	0.036590	-6.288075	0.0000
EQUITY	0.593525	0.068631	8.648089	0.0000
FE	7138.661	5126.993	1.392368	0.1651
CHEMICALS	3396.212	4701.217	0.722411	0.4708
CEMENT	-1844.270	6110.355	-0.301827	0.7631
ENGINEERING	-601.9645	4076.180	-0.147679	0.8827
TEXTILES	-3009.397	7845.994	-0.383558	0.7017
TNC	-8509.363	6145.830	-1.384575	0.1675
AR(1)	0.846269	0.057153	14.80711	0.0000
R-squared	0.847668		F-statistic	142.8244

Significance level: 5%

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