Research Article   **Open Access**

Firm Aggressiveness and Respective Performance Empirical Study under Pakistani Setting

Rehman OU*

Lecturer at CFCBE, CECOS University, Peshawar, Pakistan

Abstract

Policy makers Aggressiveness and conservativeness regarding designing optimal capital structure (especially working capital) is a debatable matter from last 50 years. The phenomenon is still vague especially in Pakistan because of the information asymmetry and failure of perfect market hypothesis. The study investigates capital structure of all non-financial listed firms on Pakistan Stock Exchange (PSX) for the period of 2008 to 2014. To test the relation between dependent (ROI and ROA) and independent variables (AIP and AFP), the study employ control variables (ROE, ROCE, GROWTH, SIZE and AGE) and uses exponential generalized least square regression. Results reveals that financial managers aggressiveness regarding financial policy negatively, while aggressiveness regarding investment policy positively effecting the firm's performance. The study also found that with the passage of time, firms in Pakistan devastating their performance. That's why study found negative relation between firms' age and dependent variables.

Keywords: Capital structure; Firm's performance; ROI; ROA

Introduction

Financial performance of firm and its value is greatly affected by the design of its capital structure. This issue is getting immense consideration after the MM hypothesis [1]. MM proposes the perfect market hypothesis, that under such circumstances the firm value is not affected by fluctuating in the capital structure. MM postulates that interest ratio provides tax advantage to the firm and because of that it is decidedly suggested that firms use more debts in their capital structure [1]. Various researcher work on this concept to reveal the main idea, which enrich literature in the following forms (Figure 1):

(a) MM proposes that capital structure design has no relation with firm value

(b) MM contended that interest expense is beneficial to the firm as it work as tax shield for the firm. So their study recommends high use of leverage in the capital structure.

(c) The point L in Figure 1 postulates the optimal capital structure position. If debt is furthermore boost from point L, financial distress cost increases compare to leverage benefits.

(d) This balanced association will supplementary be changed when taking into consideration the effect of other variables like agency conflicts, informational asymmetry, financial distress etc…

(e) The concluding concern of the study integrates the inclination of management towards financial preference selection. By doing this, there is not full control in the finance manager hands plus there's sufficient equity balance for firm's robust solvency position.

Key: W: firm value; L: leverage; L', L'' and L''': optimal capital structure

Problem statement

The corporate level orthodoxy over the few decades is supposing finance manager doing well with running capital. The dilemma bits when managers second, third and/or so forth decision are not up to the mark that mostly deviating from the firm's goal. The study attempts to identify such aggressiveness of finance manager while dealing with working capital during the business course.

Research question

The study attempts to analyze the finance manager's aggressiveness regarding handling working capital of the company at corporate level.

Significance of the study

In Pakistan, there are many factors which play vital role in effecting the firm performance or are uncourageous to the business environment like financial constraints awarded by the govt. impoverished infrastructure, political instability, low transparency position etc. Because of noised and inefficient market structure, it is very difficult for the firms (non-financial) listed on PSX to maintained optimum capital structure. In such scenarios, the role of finance manager in any organization becomes tough as on one hand, he has to boost up the firm's worth by appreciated the firm's performance. The major intention of the research is to investigate the capital structure design effect on performance of the firm during the period of 2008 to 2014 in Pakistan.

Literature Review

Conceptual review

One of the major rationales of fluctuating firm performance is the design selection of capital structure. Major use of leverage yield tax shield but also hoisting insolvency cost distress. So there's a capital structure mix in which tax shield marginal benefit is more than its bankruptcy cost. Harris and Raviv contended that capital structure is associated to the balance between bankruptcy gain from both managers and shareholders and insolvency cost [2]. Therefore because of more benefit of highest leverage ratio, it is beneficial to both managers

***Corresponding author:** Obaid Ur Rehman, Lecturer at CFCBE, CECOS University, Peshawar, Pakistan, Tel: 09158162912; E-mail: bluechip1122@gmail.com
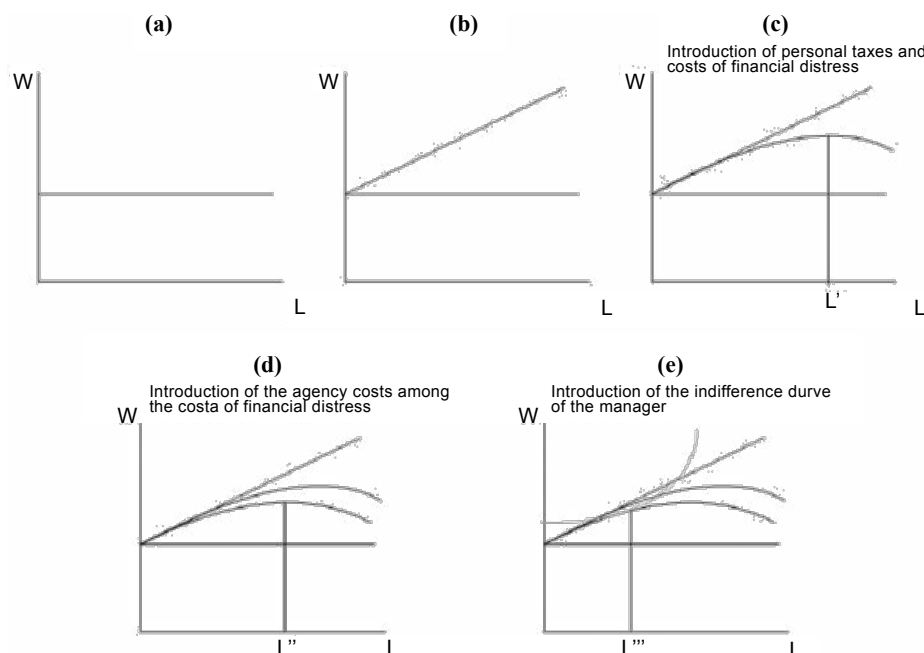
Figure 1: Taken from La Rocca, (2007).

and shareholders. Though literature take too lightly the liquidation overheads of bankruptcy or restructuring, or the united curiosity of shareholders and managers, which direct organizations to employs high leverage ratio than optimal in their capital structure.

Theoretical review

Irrelevant and relevant theory: Modigliani and Miller postulates that firm's worth is impassive under certain assumptions like efficient market hypothesis, no transaction or impoverishment cost and taxation is irrelevant [1]. It means choice of leverage is extraneous and external and internal finances are faultlessly alternate to each other.

Agency cost theory: Berle and Means contended the relation between principal (shareholders) and agent (manager) [3]. This relationship came into being when one or more principals hire one or more agents to work on their behalf in the company. This phenomenon creates opportunity for the manager to put their interest prioritized to principal's interest.

Pecking order theory: Developed by Donaldson assert that firm's financing needs decides the level of leverage. The theory postulates that typically companies used their retain earning at first in priority to sponsor their projects. Secondly company call for external debt and finally the alternative of issuing new share and generating equity is exercise to fuel their project engine. The theory is cited by Akhtar et al. in their research work [2,4].

Empirical literature

Literature exposes that many researcher work on working capital management but particularly the aggressiveness area is still vague in Pakistan. Gupta and Huefner and Gupta apply variant financial ratios in working capital management among industries [5]. Their study found variation among industry w.r.t. leverage, liquidity, profitability and performance. Johnson strengthens the previous work by indulging more samples using random effect test [6]. Pinches et al. categorize

different financial ratios using FCA and concluded that they're constant over the longer period [7].

Various researchers contended that firm capital structure regarding current assets and current liability altered within industry eventually Soenen et al. [8]. The significance of capital structure arrangement especially working capital is analyzed by Filbeck and Krueger by considering manager policy of 32 non-financial listed companies in United State. Their study postulates a momentous variation found among industry sooner or later [9].

Association between conservative and aggressive working capital portion of capital structure is analyzed by Afza and Nazir by taking a total of 263 non financial listed firms on KSE for the period of 1998 to 2003 [10]. Researchers employed LSD and ANOVA test for data analysis. The result shows variant outcomes regarding working capital aggressiveness and conservativeness transversely diverse industries in Pakistan. Furthermore, correlation test corroborated that divergence across industry is significant over 6 years. Researcher found adverse association between firm's profitability and aggressiveness in working capital management policies (AIP and AFP).

The study on hand updates the literature regarding aggressiveness in working capital impact on profitability of the company measured by ROI and ROA.

Methodologies

Universe of the study

The study is conducted for the rationale to provide a complete review about the relationship of the capital Structure design and its effect on firm performance. For this purpose, the study uses all non financial listed companies domiciled at Pakistan Stock Exchange as universe of the study for the period of 2008 to 2014. A total of 527 firms are analyzed at first stage which is slimed to 209 firms after meeting the

sample selection criterion which makes a total of 1869 observations. The whole population is taken as a census for the analysis.

Sampling design

At first stage, 527 non-financial listed firms on PSX are selected whose financial secondary data is available for the study period i.e. 2008-2014. Following firms are excluded from the sample:

1. Banks, investment companies, and insurance companies as their capital structure are different from the non-financial sector firms, which possibly distort our analysis.

2. Incomplete data for study period

3. Firms those are suspended or delisted during the study period.

4. Firms having standard deviation more than 3 at any variable (dependent or independent) (Table 1).

Data collection

Data is collected from the state bank of Pakistan publications, balance sheet analysis of joint stock companies listed on Karachi stock exchange, financial highlights and financial statements which exists in the annual reports downloaded from the company's respective websites of entire non-financial listed firms for the year 2008-2014 based on the subjective sampling.

Justification of variables

Degree of firm's aggressiveness (in working capital) and its marginal role on overall performance is the intent of the study. The study takes firm performance (ROI and ROA) as dependent while aggressiveness (AIP and AFP) as independent variables. In order to cop the more rationalization, the study employs major contributory variables to minimize standard error.

Dependent variable

$$\text{Return on Investment} \left(\text{ROI}\right)_{it} = \frac{\text{Average}(EAT_{it} + EAT_{it-1})}{\text{Average}(Equity_{it} + Equity_{it-1})}$$

$$\text{Return on Assets} \left(\text{ROA}\right)_{it} = \frac{\text{Average}(EAT_{it} + EAT_{it-1})}{\text{Average}(Asset_{it} + Asset_{it-1})}$$

Independent variable

$$\text{Return on Equity (ROE)}_{it} = \frac{(\text{Net Profit before Tax})_{it}}{\text{Average}(Equity_{it} + Equity_{it-1})}$$

$$\text{Return on Capital Employed (ROCE)}it = \frac{(\text{Net Profit before Tax})_{it}}{\text{Average}(\text{Capital Employed}_{it} + \text{Capital Employed}_{it-1})}$$

$$\text{Growth of the firm (GROWTH)}_{it} = \frac{(Sales_{it} - Sales_{it-1})}{(Sales)_{it-1}}$$

$$\text{Size of the firm (SIZE)}_{it} = \text{Logarithm of total assets}$$

$$\text{AGE} = \text{Firm's date of incorporation (Logarithm of Age)}$$

Control variable

Several researcher uses control variable in their studies while measuring firm performance [11-14]. The study on hand employs the following control variables to cope the elucidating aspects of firm performance which eventually curtail standard error.

ROE and ROCE is taken as control variable because of scheming other than ROI and ROA variables [15,16]. GROWTH, SIZE and AGE are taken as control variable because of the modified industry nature.

Model specification

Analytical framework and empirical model specification: It's the strength of the study that it uses panel data for a longer period of time (2008-2014). In panel regression estimation, the data is doubly indexed (cross-sectional and time series) which making a huge data as sample of the study. Furthermore panel data has the characteristics of controlling the endogeneity and heterogeneity problems. So the panel regression model analyzes the individual specific factor in different cross sections and in different time series of dependent variable with the independent variables.

The fundamental structure of panel regression model is:

$$Y_{it} = \beta X'_{it} + \alpha Z'_i + \mathcal{E}_{it} \qquad (1)$$

In the above equation (1), the endogeneity is denoted by X'_{it} and the individual effect or heterogeneity is expressed by Z'_t which postulates a stable and recognizable and non-recognizable variables. OLS evaluation supplies proficient and steady approximation of the original considerations (Kyereboah and Coleman, 2007) [17]. Except when Z'_t is non-recognizable and associated with X'_{it} then it need to use the other parametric tests because using of OLS in this situation will ultimately distort the fundamental objective of the analysis.

Model specification: From the literature, the study applies panel data analysis (fixed-effect, random-effect and OLS model) in order to analyse the depiction of capital structure on firm performance. The study has the following models in order to examine the hypothesis:

Firm performance=f (Aggressive Investment Policy, Aggressive Financial Policy, Return on Equity, Return on Capital Employed, Firm Growth, Firm Size, Firm AGE).

Firm performance measured by ROI

Pooled Regression Model

Fixed Effect Model

Random Effect Model

Firm performance measured by ROA

Pooled Regression Model

Fixed Effect Model

Random Effect Model

Data Presentation, Analysis and Interpretation

The study analyses the data on hand in two major parts. In first part, data is expressed using descriptive analysis. While in the second

Total indexed firms at first stage for the study period	527
Less: Firms having incomplete data for the study period	-162
Less: Firms with negative equity	-77
Less: Firms having standard deviation more than 3	-21
Study sample for non-financial listed firms:	267

Table 1: Study sample selection.

part, data is empirically examined using inferential analysis using variant statistical software packages.

Interpretation and analysis of data

Descriptive statistics: This part shows the general nature of data on hand for analysis purpose like mean, Std. Dev., minimum and maximum etc…

Standard deviation value of all the variables in Table 2, Appendix exposes that data used in the study is normally distributed. ROI and ROA values are asymmetrically distributed with a long tail moving towards left. It means firms in Pakistan are recurrently gaining little and few extreme losses. The Kurtosis values of ROI and ROA crossing the high degree of leptokurtic.

Correlation analysis: Table 3 exposes the correlation analysis among variables (dependent and independent) of the study. Correlation analysis (Table 3) postulates that there is high degree of association among return proxies of the study. The study found slight negative impact of aggressive financial policy on firms return. Growth has no concern with the firm performance (ROI and ROA) while Age is statistically significant with ROA while show no association with ROI.

Test of hypothesis

Regression analysis: This part of the study analyzes the panel data on hand to reveal the effect of explanatory variables on performance of the firm in Pakistan for the period of 2008 to 2014. The research work employs OLS model considering identical intercept overtime. The analysis also indulges the consideration of variant intercept for every firm in Pakistan by conducting fixed-effect model and random-effect model.

Capital Structure and firm performance measured by ROI: Table 4 exposes the relation between capital structure and firm's performance (ROI) in Pakistan for the period of 2008 to 2014. The p-value of F-statistics 645.68 (0.000<0.05), 245.93 (0.000<0.05) and 4287.58 (0.000<0.05) contended that all the independent variables are mutually statistically significant at pooled-model, fixed-effect model and random-effect model in explicating deviation in the firm's performance in Pakistan. The p-value of Hausman test (0.000) postulating that difference in fixed-effect and random-effect models coefficients is systematic. So the study accept the alternative hypothesis thus acknowledge and infer the fixed-effect model for data analysis, which contradicting the study of Lawal et al. [18,19].

Fixed effect model organize the lost variables that are variant in cases while constant overtime.

This let the data alter overtime and exposing independent variable impact on dependent variable.

For i cases within j group

Therefore α_j is a separate intercept for each group

It is equivalent to solely at within group variations:

$\overline{X}$-bar-sub-j means of X for group j, etc.

Model is within group because all the variables are centered on mean of each group.

Variables	Mean	Std. Dev.	Skewness	Kurtosis	Minimum	Maximum
ROI	0.068071	0.25162	-2.116738	19.616974	-2.08677	1.771462
ROA	0.041206	0.09953	-3.23484	50.811686	-1.65149	0.406255
AIP	0.462992	0.204154	0.177328	-0.27124	0.000874	0.999594
AFP	0.375796	0.170659	0.072003	-0.557938	0	0.892639
ROE	0.12765	0.320601	0.243567	13.056689	-1.95829	2.800278
ROCE	0.106261	0.229753	1.364374	18.46689	-1.94783	2.319279
GROWTH	1.067346	0.585424	6.05462	56.659875	0	8.369427
SIZE	6.479196	0.712418	0.091951	0.428504	3.841172	8.695685
AGE	1.438564	0.28394	-2.050464	8.197873	0	2.10721

Table 2: Descriptive statistics.

Description		1	2	3	4	5	6	7	8	9
ROI	Pearson	1	0.841	0.189	-0.053	0.829	0.744	0.089	0.238	0.045
(1)	Sig		0	0	0.023	0	0	0	0	0.051
ROA	Pearson	0.841	1	0.233	-0.15	0.684	0.729	0.098	0.268	0.103
(2)	Sig	0		0	0	0	0	0	0	0
AIP	Pearson	0.189	0.233	1	0.422	0.205	0.285	0.071	-0.051	-0.018
(3)	Sig	0	0		0	0	0	0.002	0.027	0.432
AFP	Pearson	-0.53	-.150	0.422	1	0.026	0.029	0.059	0.028	-0.076
(4)	Sig	0.023	0	0		0.269	0.206	0.011	0.219	0.001
ROE	Pearson	0.829	0.684	0.205	0.026	1	0.92	0.173	0.229	0.047
(5)	Sig	0	0	0	0.269		0	0	0	0.041
ROCE	Pearson	0.744	0.729	0.285	0.029	0.92	1	0.183	0.234	0.081
(6)	Sig	0	0	0	0.206	0		0	0	0
GRTH	Pearson	0.089	0.098	0.071	0.059	0.173	0.183	1	0.168	-0.016
(7)	Sig	0	0	0.002	0.011	0	0		0	0.502
SIZ	Pearson	0.238	0.268	-0.051	0.028	0.229	0.234	0.168	1	-0.02
(8)	Sig	0	0	0.027	0.219	0	0	0		0.399
AGE	Pearson	0.045	0.103	-0.018	-0.076	0.047	0.081	-0.016	-0.02	1
(9)	Sig	0.051	0	0.432	0.001	0.041	0	0.502	0.399	

Table 3: Pearson bivariate correlations analysis.

Variables	Pooled		Fixed Effect		Random Effect	
	ROI	ROA	ROI	ROA	ROI	ROA
AIP	0.120***	0.079***	0.291***	0.189***	0.126***	0.111***
AFP	−0.164***	−0.137***	−0.266***	−0.203***	−0.168***	−0.158***
ROE	0.766***	0.043*	0.680***	0.051*	0.760***	0.044***
ROCE	−0.204	0.231***	−0.253	0.154***	−0.205***	0.204***
GROWTH	−0.025***	−0.007**	−0.021***	−0.009***	−0.025***	−0.009***
SIZE	0.027***	0.018***	0.167***	0.084*	0.028***	0.022***
AGE	0.006	0.014*	−0.254	−0.178	0.007	0.012*
Const	−0.160***	-0.107**	−0.721****	−0.276	−0.167***	−0.134***
No. of Obs.			1869			
R2	0.7083	0.594	0.5191	0.4194	0.7083	0.589
F (p-value)	645 (0.00)	388 (0.00)	245 (0.00)	164 (0.00)	4287 (0.00)	1958 (0.00)
	Hausman (ROI)		212.33 (0.000)			
	Hausman (ROA)		934.94 (0.000)			

Note: *, ** and *** shows the significance level at 10%, 5% and 1% level of significance.

Table 4: Capital Structure Aggressiveness and Firm Performance (measured by ROI and ROA).

The results at Table 4 exposes that firm's aggressive policy regarding investment has statistically positive impact on firm performance. While aggressive financial policy negatively impacts the firm performance. It means firms in Pakistan if uses more fixed liability instead of current liability, it'll perform better. On the other hand, if firms put into practice high degree of current assets, it has positive impact on its performance. Furthermore; all the other control variables (except ROE and SIZE of the firm) negatively effecting the firm performance. ROCE and AGE shows negative and statistically non significance with respect to ROI in measuring firm performance [20].

Capital Structure and firm performance measured by ROA: Table 4 exposes the connection between capital structure design and firm's performance (measured by ROA) in Pakistan for the period of 2008 to 2014. The F-statistic p-value postulates that 388.96 (0.000<0.05), 164.56 (0.000<0.05) and 1958.97 (0.000<0.05) contended that all the independent variables are strongly statistically significant at pooled-model, fixed-effect model and random-effect model in explicating variation in the firm's performance in Pakistan. The p-value of Hausman test (0.000) postulating that difference in fixed-effect and random-effect models coefficients is organized. So the study accept the alternative hypothesis, which means fixed-effect model fit for data analysis, which is also contradicting with the study of Lawal et al. [18,21].

The results at Table 4, exposes that firm's aggressive policy regarding investment has statistically positive impact on firm performance. While aggressive financial policy negatively impacts the firm performance [22]. It means firms in Pakistan if uses more fixed liability instead of current liability, it'll perform better. On the other hand, if firms put into practice high degree of current assets, it has positive impact on its performance. Furthermore; all the other control variables (except GROWTH and AGE of the firm) has positively affecting the firm performance. AGE shows negative and statistically non-significance with respect to ROA in measuring firm performance.

Table 5 postulates the Levin-Lin-Chu panel unit root testing at level (1) and at first difference.

The hypothesis of unit root testing are:

H_0: Panels contain unit roots

H_1: Panels are stationary

The p-value of dependent and independent variables contended

Variables	Levin-Lin-Chu	p-value	Hadri LM Stationary	
	Statistics		Statistics	p-value
ROI	-34.2511	0	20.2354	0
D_ROI	-5.40E+02	0	0.3135	0.377
ROA	-44.9769	0	22.5098	0
D_ROA	-34.2511	0	3.9294	0
AIP	-47.254	0	18.4439	0
D_AIP	-1.30E+02	0	7.8984	0
AFP	-4.40E+03	0	19.9799	0
D_AFP	-6.60E+02	0	5.9114	0

Table 5: Unit root testing at level (1) and first difference.

that all the variables are stationary at level and first difference. While the Hadri LM stationary test postulates that ROI data contain unit root at level (1) and at first difference, it is stationary. After this, the study run the panel co-integration model because the pre-condition of panel co-integration model is the variable must unit root at level but when converted into first difference, then it will become stationary. Hadri LM test can fulfill the condition of panel co-integration model, so it can be considered as benchmark of the study. The result in Table 5 exposes that except D_ROI, all the other variables at level (1) and at first difference contains some unit roots because of the longer period of time and high number of cross sections [23].

Summary, Conclusion and Recommendations

Summary

The research is about to find the finance manager's aggressive and conservative behavior regarding restructuring the capital structure of the firm (esp. working capital). The study tries to find (in the context of Pakistani setting) that what style of manager's is successful in boosting the firm's performance.

The study found that finance manager's aggressiveness in working capital regarding investment policy shows favorable impacts. But with the passage of time, such policy need to be reconstructed otherwise it'll shows unfavorable outcomes in the long run.

On the other hand, finance managers aggressiveness in working capital holding financial policy shows unfavorable outcomes. But in the long run, such decision shows fruitful results. Concisely finance managers in Pakistan need to be aggressive in working capital regarding investments policy but for the short run. While finance manager need to be conservatives regarding financial policy for the

long run. If the above hypothesis is followed by the finance manager's, they'll successful in their decision up to 51.91% in investment policy and 41.94% in financial policy.

Conclusion

The study discloses the relation between dependent variables (ROI and ROA) and independent variables (AIP and AFP). A sample of 267 non-financial listed firms from all sectors of PSX (after meeting the sample selection criterion) for the period of 2008 to 2014 making a total of 1869 observations. The R^2 value in case of ROI is 51.91% and 41.94%

in case of ROA (Table 4). Standard Deviation (Table 2) shows normality of data distribution in all variables (as their respective standard deviation is >1). However the Skewness and Kurtosis results (in case of dependent variables) data is negatively skewed and showing high degree of leptokurtic. Pearson correlation (2-tailed at 5% significance level) (Table 3) reveals that AFP is negative and significant while AIP is positive and significantly associated with dependent variables. All the control variables are positively and statistically significantly associated (at 5% level of significance) with the firm performance except AGE in case of ROI (Figures 2 and 3).
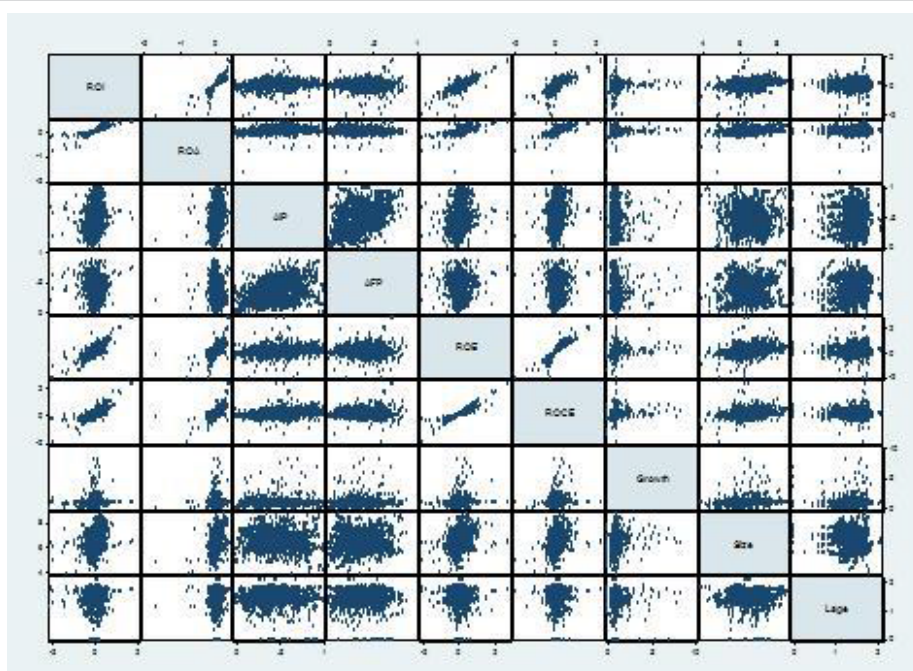

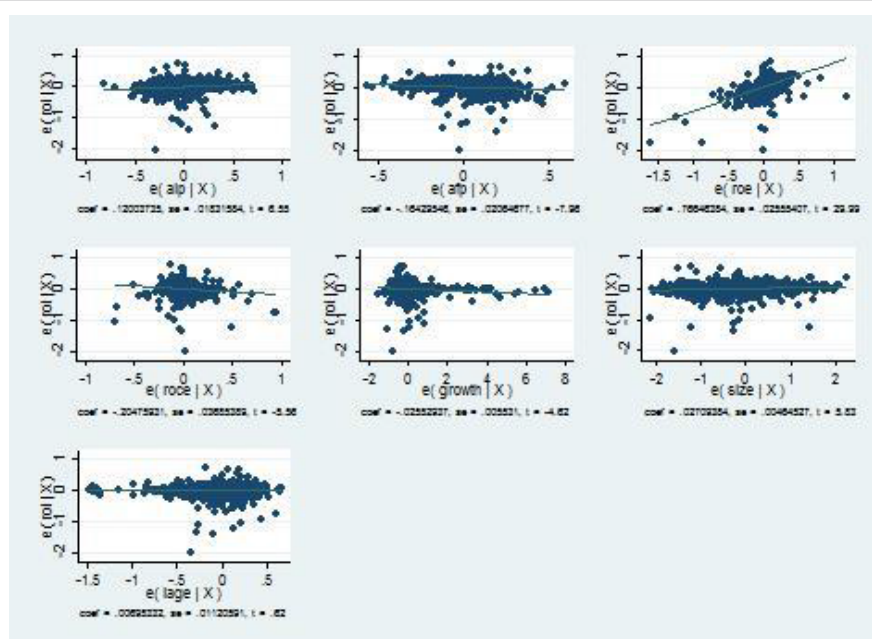**Figure 2:** Data Normality Diagram.

Figure 3: Regression Line.

Table 4 shows the degree of aggressiveness of finance manager on firm's performance. The results reveal that explanatory variable has significantly explaining its impact on firm performance measured by ROI and ROA. It has been concluded from the Hausman test in diagnostic analysis that fixed effect within regression test is appropriate for data analysis for both proxies of dependent variable (ROI and ROA). The findings of the study reveal that aggressiveness of the finance manager regarding current liability adversely affecting the firm's performance. It means in designing capital structure of Pakistani non financial listed firms on PSX, finance manager needs to be conservative regarding short term financial policy. Elaborately when increasing in the company's short term debt compare to its total assets yields negative results on firm's performance in Pakistan (−26.6% in case of ROI and −20.3% in case of ROA).

On the other hand, aggressiveness regarding firm's investment policy postulates a positive impact on overall performance of the firm (seen from AIP respective coefficient). It means Pakistani non financial firms when designing the capital structure employee the current assets on maturity financial policy basis, it yield fruitful results in the short run. It is also observed from the results in Table 4 that with the passage of time, firms in Pakistan devastating their performance. That's why study found negative relation between firms' age and ROI (−25.4%) and ROA (−17.8%).

Hausman test score favor to pick fixed effect model for data analysis (p-value=0.000 from Table 4) in case of ROA. The study found that ROA is adversely affected when firms in Pakistan increase their long term debt compare to capitalization or their leverage ratio. The study found that as the time passes, Pakistani firm's performing well which is displayed in the form of favorable statistical significance in the Table 4. Leverage ratio has little concern with the firm's performance (ROA).

Recommendation

From the above findings, the study recommends certain actions directing the corporate governance and finance manager of the companies in Pakistan. Most of the firms in Pakistan finance tangible fixed assets by short-term debts. Regarding short-term debt, this research work found unfavorable results with the firm performance (in both ROI and ROA cases). So the study recommends analyzing a scale on which aggressiveness of the finance manager regarding funding postulates negative impact on firm performance.

The research work gave direction to finance manager that if he want to create firm value and boost up its performance in the market, it need to design an optimal capital structure which congruence the firms current assets with the maturity matching policy.

Acknowledgement

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