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Spring June 30, 2014

Dynamics of Derivatives Usage and Firm’s Value

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Dynamics of Derivatives Usage and Firm’s Value

Abstract

The corporate derivative usage has grown rapidly over the recent decade and firm’s increasingly using derivatives to hedge their risk in order to handle the volatility of interest rate and foreign exchange. The empirical research on the valuation effect of derivative on firm still remains debated. This study seeks to investigate the valuation effect of derivative usage on Pakistani non-financial firms listed in Karachi Stock Exchange.

The empirical analysis was performed by using the data of 75 non-financial firms listed in Karachi Stock Exchange over the period 2007-2011. This study uses secondary data derived from financial statement of the selected firms and quantitative approach was applied in this regard. Firstly, the non-parametric test – Mann-Whitney U (MWU) test – was used to differentiate the dynamics of derivatives users and non-users. However, Pearson correlation matrix was applied to estimate the model whose results were checked through ordinary least square (OLS) model. Tobin’s q was used as a proxy of the market value of the firm and foreign exchange and interest rate derivatives are used as independent variable along with some control variables, namely; size, leverage, profitability and dividend per share.

The results of Mann-Whitney U test characterize derivative user firms as large size, higher profitability and higher dividend which ultimately become the cause and ingredients of high firm’s value. Hence the empirical findings of this paper concluded that the derivative usage has value relevance with firms and it was considered as a value maximizing activity. We found that foreign exchange and interest rate derivatives are significantly and positively related to the firm value.

The bottom line of this study states that the firm’s which uses derivative instruments, enjoys the higher profitability, proper risk management and economies of scale which ultimately leads towards the maximization of market value. However, interest rate and foreign exchange derivatives play their key role in this regard.

This study contributes in the following manner: first, it gives better impending and understanding for decision making about diversification strategy in Pakistan and pin point the relationship between diversification, corporate performance and risk. This study gave a bottom line that the non-diversified firms performs outperform the diversified firms and hence got economies of scale as compared to the diversified firms and secondly it fills the gap of above said core issue which through its empirical examination.
Key Words: Derivatives, Interest Rate Derivatives (IND), Foreign Exchange Derivatives (FXD), Non-Financial Firms, Firm’s Value, MWU Test, Pakistan.

JEL Classification: C13, M41

1. Introduction

Hedging of corporate risks with the use of derivative instruments has been an increasingly popular corporate activity during the last decades. This evolution is directly related to the gradual shift of interest to the volatility of the financial and capital markets worldwide and this volatility has crucial effect on the performance and the profitability of firms. The constantly transforming financial environment and the activation of firms in the contemporary globalized market makes more and more imperative the identification and administration at the management level of the corporate exposure to sources the financial risk, such as the foreign exchange rates, the interest rates, the equity and the commodity prices. According to a survey from the International Swaps and Derivatives Association (ISDA), there were 94% of the world’s largest companies in 2009 used derivatives to manage and hedge their risks. However, foreign exchange derivatives were the most widely used instruments which were 88%, followed by interest rate derivatives which are 83%.

The Modigliani and Miller (1958) paradigm predict that the use of derivatives cannot add value if markets are perfect. However, modern finance theories indicate that there are certain circumstances under which a hedging program using derivatives can be a value enhancing. Smith and Stulz (1985) argued that hedging could reduce the probability of a firm encountering financial distress by reducing the variance in firm value. International Accounting Standards (IAS) 32 and 39 are deals with the measurement and presentation of financial instruments which an organization used during their financial year, so it is mandatory for the firms to declare their derivative usage and also mention the purpose of its usage – either the use of derivatives is for hedging the risks or for the purpose of trading. According to Judge (2003), developments in accounting standards regulation has resulted in an increase in the quantity of risk management and an improvement in the quality of data disclosed in financial statements.

Sapra (2002) elaborates that excessive speculation in the derivatives market is possible for mandatory disclosures of the derivative instruments usage.
This major change in the disclosure requirements of the native firms has allowed to investigate whether the use of derivative contracts for hedging purposes is a value increasing strategy for firms with exposure to financial risks and to quantify the impact of hedging on firm value. In order to verify this basic hypothesis nonfinancial firms with exposure to risks such as the foreign exchange risk, the interest rates risk, etc., are considered and are categorized as hedgers or non-hedgers depending on whether they report using derivatives for any of those risk categories in their annual report and differences in their value are recorded and analyzed. According to Hentschel and Kothari (2001), aspect of risk management which reduced the volatility is termed as hedging and that increases the return is called as speculation. In perspective of the usage of hedging, futures, forwards or options are used as hedging devices to protect the risk against any unpleasant future price movements in the market and that risk management leads to the firm’s value maximization at bottom line.

During the last two decades there have been numerous studies trying to analyze the determinants and the theoretical motives behind this corporate activity, as well as its correlation with other corporate aspects such as the capital structure of the firm, the amount of leverage, the size and the growth opportunities of the firm. However, limited is the extent of research with respect to the question of whether hedging with derivatives is a value increasing corporate activity for nonfinancial firms, most likely in case of Pakistan. However, this study seeks to find out the dynamics of derivatives with its value relevance of firms in case of Pakistan.

2. Review of Related Studies

There are several theories of hedging and most of them came with optimal hedging policies with some precedence of classical era researcher Modigliani and Miller (1958) Model, as Smith and Stulz (1985) point out the corporate risk management techniques or implementation of hedging policies through which the firms hedge against financial distress which however ultimately results in value maximization and better circumstances for the corporations. Mian (1996) conduct a study to determine the corporate hedging decisions for risk management. The findings of this study conclude that the hedging activities are resulted in economic exposure which leads to the economies of scale. Allayannis and Weston (2001) examine the foreign currency derivatives for the period 1990-1995. By taking the sample of 720 large U.S. non-financial firms the findings of this study reveal that there is a positive relationship between the use of foreign currency derivatives and
the firm’s value. Moreover by using the Tobin’s $q$ proxy the study also shows that the increase in firms’ value is also happened through hedging techniques.

Hentschel and Kothari (2001) conduct a study to determine the pros and cons of derivative usage in risk management perspective that either it helpful in reducing the risk or it will results in risk enhancement. In this study the data of 425 large corporations are picked to investigate the derivatives’ impact on corporate risk. The study concludes that there is an impact of derivative usage in risk management practices as the companies may differentiate on the basis of positions they hold in their particular sector to which they belong. Pramborg (2004) analyzes foreign exchange exposure specifically for Swedish non-financial firms. However, the findings of this study reveals that hedging transaction exposure is value adding, while hedging translation exposure is not. Smithson and Simkins (2005) conduct a survey that either risk management increases the firm’s value. The findings of this study reveal that there is a positive relationship among risk management practices and firm’s value but the evidence is fairly limited as yet. The main argument offered this study is that the resulting reduction in cash flow volatility reduces the likelihood that the company will become financially distressed or be forced to pass up valuable investment opportunities.

By taking 119 U.S. oil and gas producers from 1998 to 2001 Jin and Jorion (2006), evaluates the hedging activates effect on firm value. The study verifies the hypothesis and fact regarding the derivative usage that it decreases the sensitivity of the stock prices but study didn’t found any significant effect on the change regarding the market value. Carter et al. (2006) investigate the phenomena that the hedging adds value to the firm. The study investigates jet fuel hedging behavior of firms in the US airline industry during 1992-2003 to examine the hypothesis that either the hedging is value enhancing or not. The study follows the footings of Mian (1996) and findings of this study reveal that there is a positive relation between hedging and value maximization. However, value increases in capital investment and that most of the hedging premium is attributable to the interaction of hedging with investment which ultimately results in hedging the under investment cost.

Adam and Fernando (2006) find that derivative hedging by gold and silver mining companies increases the firm’s cash flows. The increased cash flows are not met with a greater risk exposure; however, the derivative usage has a positive effect on firm value. The study also finds that hedging strategy provides a significant increase in cash flows. Davies et al. (2006) examines foreign exchange hedging by Norwegian exporting firms.
Univariate, multivariate and multi nominal analyses are applied on this study which provides evidence consistent with the firm value maximization. However, the evidence regarding the firm’s characteristics and the decision to hedge is not consistent within internal and external foreign exchange hedgers and vary from individual hedging policies and instruments usage.

Mackay and Sarab (2007) estimate the value of corporate risk management. The study show how risk management can add value when revenues and costs are non-linearly related to prices. This study uses sample data of 34 oil refiners and finds that hedging concave revenues and leaving concave costs – exposed each – represent between 2% and 3% of firm value. Moreover the study validates research approach by regressing Tobin’s \( q \) on the estimated value and level of risk management and find results in accordance with the model. According to Nguyen et al. (2007), there is a positive impact of derivative usage on value enhancement; however, the interest rate derivatives are negatively related to the firm’s value. Ameer (2009) conduct a study on derivative instrument in Malaysia. This study provides survey findings on the use of derivatives instruments and their value-relevance in Malaysia and to analyze the risk management practices in through foreign exchange and interest rate derivatives during 2003-2007. The findings of this study conclude that the few firms in Malaysia hedge their risk and there is positive correlation between total earnings and derivative usage.

By taking the sample of 336 non-financial firms quoted in Lisbon, Madrid and Milan stock markets at the end of 2006, Cunha et al. (2009) conduct a study which shows that, increase in the firm’s value is possible through using hedging instruments. By using Tobin’s \( q \) this shows statistical significant premiums for foreign currency and interest rate derivative hedgers in Iberian Market, about 6.37% to 20.75%, whereas Italian Market shows significant value only with interest rate derivative hedging firms.

Yin et al. (2010) conduct a study to examine the relationship of derivatives hedging and the firm value. By using data of the Chinese non-financial over the period 2007-2009, this study applies Tobin’s \( q \) to find out the firm’s value. The findings of this study show that there is a significantly positive relationship between derivatives hedging for risk exposure and firm value in Chinese firm. Moreover this study concludes that the derivatives hedging are better than those who didn’t use derivative instruments in hedging terminologies. By taking the sample of 428 Australian firms, Nguyen and Faff (2010) find that hedging interest rates with derivatives has a negative impact on firm value. However, this study cannot suggest statistical significance that foreign currency derivatives or commodities derivatives affect firm value.
Bartram et al. (2011) examined the effect of derivative use on firm risk and value by using a large sample of non-financial firms from 47 countries. The findings of this study reveal that the use of financial derivatives could reduce both total risk and systematic risk, thus the effect of derivative use on firm value is positive but weak, and is more sensitive to endogeneity and omitted variable concerns.

By taking 105 non-financial firms listed on Karachi Stock Exchange, Afza and Alam (2011) analyze that the decision to use hedging instruments can increase firm value or not. The findings of this study reveal positive impact in this regard which ultimately helps in minimize financial distress costs, financial constraints and foreign exchange exposure. Naito and Laux (2011) investigate the derivative usage is value enhancing or value destroying. The findings of this study conclude that the derivatives usage is value enhancing activity for the firms. While much of the empirical research on the question that either the derivative usage affects the value of non-financial firms show mixed result – positive as well as negative – or this issue still needs attention to pin point. However, after reviewing the extensive literature on this core issue, this study however, fills the gap to point out the derivative’s value relevance with firms in case of Pakistan.

3. Theoretical Frame Work

Market values of the firm are the dependent variable (DV) and Tobin’s $q$ is used as a proxy for firm’s value. Tobin’s $q$ is calculated as the ratio of the sum of the market value of equity and the book value of debt divided by the book value of total assets. However foreign exchange and interest rate derivatives are used as independent variable along with some control variables, namely; size, leverage, profitability and dividend per share. Moreover, we assigned a dummy variable “0” for derivatives non user firms and 1 for firm that use derivatives. After reviewing the above extensive literature there are different view points of the researchers on a single issue and there is a lack of consensus related to relationship of dynamics of derivatives with firm value.

The different views of the researchers are highlighted in theoretical frame work, so that we become able to develop their own hypothesis by keeping in view the terms and conditions of Pakistan as well as of the other developing countries. Bartram et al. (2006) conclude that the firms with foreign currency transactions tend to use foreign currency derivatives; this is because foreign currency transaction normally comes with foreign currency risk. Once the risk has been hedged, shareholder wealth maximization will be achieved, therefore firm value will increase. On the other hand Nguyen and Faff (2010), find that hedging interest rates with derivatives has a negative impact on firm value.
Ameer (2009) conclude that the firms in Malaysia hedge their risk and there is positive correlation between total earnings and derivative usage. Naito and Laux (2011) conclude that the derivatives usage is value enhancing at the bottom line. According to Allayannis and Weston (2001), there is a negative relationship between leverage and firm value whereas Graham and Rogers (2002) calculate that the increase in debt capacity and leverage associated with hedging increases firm value by an average of about 1.1%. There are much more mixed results about the relationship of size with firm’s value and there is a lack of consensus on this point.

According to Allayannis and Weston (2001) as compared to larger firm, small firms were associated with higher Tobin’s \( q \). Size is negatively and significantly related to firm value. This result was also expected and follows Pramborg (2004), whereas Mian (1996) concludes that large firms usually use more derivatives and have value relevance of firms. Different researchers conclude that profitability have significant positive relationship with firm’s value (Bartram et al. 2011; Naito and Laux 2011). On the basis of above given scenario, we develop some hypothesis for examining the dynamics of derivatives and their effects on firm’s value.

**H1:** Foreign exchange derivative usage has positive relationship with firm’s value  
**H2:** Interest rate derivative usage has positive association with firm’s value  
**H3:** Dividend per share has a positive relationship with firm’s value  
**H4:** Size of the firm has positive relationship with firm’s value  
**H5:** There is a positive relationship between profitability and firm value  
**H6:** Leverage has negative relationship with firm’s value

4. Methodology

This study seeks to analyze the valuation effect of derivatives used in Pakistan. However, the study adopts quantitative approach and secondary data of 75 non-financial firms listed in Karachi Stock Exchange was collected over the period 2007-2011. Moreover, firms were classified into two categories, derivative user and non-user. However, almost 65% of total sample firms declared their usage of foreign exchange derivatives and 70% firms are identified as interest rate derivative users.
According to IAS 32 and 39 it is mandatory for all the firms to disclose their derivative usage in their financial reports, so we used a dummy variable 1 for firms that use any types of derivatives and 0 for non-users of derivatives. Financial sector has been excluded from the sample data since their derivative instruments usage is for both hedging and speculative purpose. Tobin’s q was used as a proxy of the market values of the firm and foreign exchange and interest rate derivatives are used as independent variable along with some control variable, namely size, leverage, profitability and dividend per share. However, according to model 1, Mann-Whitney U test was used to distinguish between the derivative users and non-users. Pearson correlation matrix was applied whose results will also be checked through ordinary least square (OLS) model, and ultimately it is the application of model 2. However this study point out the dynamics of derivatives in accordance to the value relevance with firms at bottom line.

**Model 1:**

\[
\text{UNDER}_{i,t} = \alpha + \beta_1 \text{SIZE}_{i,t} + \beta_2 \text{LEV}_{i,t} + \beta_3 \text{ROA}_{i,t} + \beta_4 \text{ROE}_{i,t} + \beta_5 \text{DPS}_{i,t} + \epsilon_{i,t}
\]  

(1)

**Model 2:**

\[
\text{TQ}_{i,t} = \alpha + \beta_1 \text{FXD}_{i,t} + \beta_2 \text{IND}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{LEV}_{i,t} + \beta_5 \text{ROA}_{i,t} + \beta_6 \text{ROE}_{i,t} + \beta_7 \text{DPS}_{i,t} + \epsilon_{i,t}
\]  

(2)

Where:

- \(\text{TQ}_{i,t}\) = Tobin’s q of firm i for the period t
- \(\text{FXD}_{i,t}\) = Fair value of foreign exchange derivatives of firm i for the period t
- \(\text{IND}_{i,t}\) = Fair value of interest rate derivatives of firm i for the period t
- \(\text{SIZE}_{i,t}\) = Log of total assets of firm i for time period t
- \(\text{LEV}_{i,t}\) = Leverage of firm i for time period t
- \(\text{ROA}_{i,t}\) = Return on assets of firm i for time period t
- \(\text{ROE}_{i,t}\) = Return on equity of firm i for time period t
- \(\text{DPS}_{i,t}\) = Dividend per share of firm i for time period t
- \(\text{UNDER}\) = Dummy variable, 0 for non derivative users and 1 for user of firm i for the period t

5. Empirical Results and Discussion

Variations in firm’s specific operating characteristics for both users and non-users were examined through Mann-Whitney U (MWU) test. However, model 1 was prepared for application of MWU test which highlights the dynamics or characteristics of derivative users and non-users.
Results of MWU test are presented in table 2 and findings characterized users as large size higher profitability and higher dividend per share which ultimately become the cause of higher market value. However, MWU test characterize non derivative users as small size, higher leverage, low dividend and less market value as compared to the derivative users. A descriptive result regarding ranks and mean ranks shows that the variables with higher rank have more influence factor. The variables included in the model are compared on distinguishing variable, UNDER (Users and Non Users of Derivatives). Dividend per share (DPS), SIZE, and Tobin’s q (TQ) shows significant results at 1% and profitability (ROA) show its significance at 5% level of significance, whereas ROE and LEV are the insignificant factors according to MWU test.

[INSERT TABLE 2 HERE]

Table 3 reports the Pearson correlation coefficients matrix between market value (Tobin’s q) and explanatory variables. The correlation coefficients suggest that the market value of firm firms have significant positive correlation with foreign exchange derivatives usage (FXD), interest rate derivatives (IND), and profitability (ROA, ROE). However, a significant negative relationship of leverage (LEV) and SIZE with firm’s value and study does not find any significant correlation between dividend per share (DPS) and firm’s value. Whereas FXD, ROE, SIZE and LEV are significant at 5%; ROA and IND are significant at 1% and 10% respectively. As hypothesized earlier that there are mixed views about size, and our study conclude negative relation of size with firm’s value and it is not unexpected as many of the researchers conclude its negativity with firm’s value. The correlation between foreign exchange derivative and Tobin’s q was 0.475, the correlation between Tobin’s q and interest rate derivatives derivative was 0.221, correlation of Tobin’s q with ROA and ROE was 0.443 and 0.329 respectively, where as leverage and size both shows -0.327 and -0.276 correlation respectively, hence both are correlated negatively.

[INSERT TABLE 3 HERE]

Results of ordinary least square (OLS) model are shown in table 4. The results show that foreign exchange derivatives have positive significant relationship with firm value and it was significant at 1% level of significance. This indicated that the firm value would increase as firms use more foreign exchange derivatives. However, the results of interest rate derivatives are also consistent with the results of foreign exchange derivatives, as the IND was significant and positively related to firm value at 5% level of significance.
This study also conform the study of Batram et al. (2006) which pointed out that firm that using interest rate derivatives have a positive valuation effect. Dividend per share also shows significant positive results in case of firms value, which indicates that DPS is also a significant icon for measuring the firm’s value. However the results related to the relationship between DPS and firms value follow the footings of previous empirical researches and the sum up of these researches are that, dividend announcement would affect the stock price of a firm; because market believed that valuable information about the firm future prospect and growth could be conveyed by an announcement of dividend. However, DPS is also significant at 5% level of significance.

[INSERT TABLE 4 HERE]

In terms of the relationship between profitability and firm’s value, two proxies were used in this study to point out the relationship between profitability and firm’s value and these two proxies are return on assets (ROA) and return on equity (ROE), the result showed that ROA was significantly and positively related to firm value and are significant at 5% level of significance. As the ROE was concerned it shows insignificant results in accordance to the firms value and these results are very much related to Modigliani and Miller (1958) empirical study which shows that firm’s value could be maximized by using more debt in its capital structure. However, debt would help the firm to decrease their average cost of capital and enhance profitability as long as its ROA was greater than the before tax interest paid on debt. ROE was found to be insignificant in determining the firm value. The results related to leverage and size shows that both are negatively significant relationship with the firm’s value. The value of R square is 0.591, which means that 59% changes in depended variable is due to the independent variable. However, the value of F statistics shows significant results, which indicates the overall goodness of fit of the model.

6. Conclusion

The study examined the dynamics and impact of derivatives on the firm’s value by using a sample of 75 Pakistani non-financial firms listed on Karachi Stock Exchange over the period 2007-2011. However, this study first fiber gates the derivatives users and non users through a non-parametric test – Mann-Whitney U test. Hence, this test characterizes the dynamics of derivatives user as large size, higher dividend per share, higher profitability and higher firm’s value.

[INSERT FIGURE 2 HERE]
By applying Pearson correlation coefficients matrix, the empirical results of this study reveals the relationship between the derivatives usage and firms value at bottom line. Interest rate and foreign exchange derivatives were the independent variable along with the other control variable; size, dividend per share, profitability. Moreover, profitability was proxies by two items, namely ROA and ROE. The correlation coefficients suggest that the market value of firm firms have significant positive correlation with foreign exchange derivatives (FXD) usage and interest rate derivatives (IND). However, among the control variables, ROA, ROE and dividend per share also shows significant positive results in accordance to the relationship with firm’s value, but size and leverage shows expected negative results with the firm’s value.

For verification of the results of correlation matrix, Ordinary Least Square (OLS) model was applied and its results show consistency with the results of correlation matrix. The above given hypothetical sign’s proof diagram shows that the variables gave bottom line related to the expected sign, as we expect before the study. However, the beta coefficient of interest rate derivative and foreign exchange derivatives was 0.133 and 0.341 and are significant at 5% and 1% level of significance. Size and leverage are negatively related and both are significant as it is hypothesized earlier, while dividend per share shows significant positive impact on firm’s value. ROE shows positive but insignificant results in this regard.

The value of R square is 0.591 which means that 59% of the changes in depended variable are due to independent variable. The value of F statistics is also significant which reveals the overall goodness of the fit of the model. This means that there is some joint effect on dependent variable is due to independent variables. Our results showed that the use of financial derivatives towards the impact on firm’s value is significant. However, it can be concluded on the above given scenario that the firm’s which uses derivatives instruments have value effect on its profitability, and returns. Moreover, in the scenario of Pakistan derivative usage and risk management practices are not very common and likewise the other majority of researches – the empirical results of this study reveal that size of a firm matters in accordance of the derivative usage.

The bottom line of this study states that the firm’s which uses derivative instruments, enjoys the higher profitability, proper risk management and economies of scale which ultimately leads towards the maximization of market value.
For academics this research will open up a new chapter related to the dynamics of derivatives, as there are few published researches on the value relevance of derivatives in case of Pakistan. Moreover, this study will help to the corporate sector by giving know how about the value relevance of derivative usage and its dynamics in the form of profitability and economies scale. The dynamics of derivatives with value relevance is a controversial and debatable topic which needs more in-depth analysis. However, this is a limitation as well as a recommendation for further research.

References


Figure 1: Hypothesis Model Diagram

Figure 2: Hypothesis Empirical Proof Diagram
Table 1: Theoretical Linkage for Hypothesized Relationships.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>HS</th>
<th>Theoretical Linkage</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPS</td>
<td>Total dividend/ Number of outstanding ordinary shares issued</td>
<td>(+)</td>
<td>Miller and Modigliani's (1958), Allayannis and Weston, (2001), Carter et al. (2006), Naito and Judy (2011)</td>
</tr>
<tr>
<td>ROA</td>
<td>Net income available to common stockholders/ Book value of total assets</td>
<td>(+)</td>
<td>Modigliani and Miller (1958), Bartram et al. (2011), Naito and Judy (2011),</td>
</tr>
<tr>
<td>ROE</td>
<td>Net income available to common stockholders/ Stockholders’ equity.</td>
<td>(+)</td>
<td>Modigliani and Miller (1958), Cunha and Dias (2009), Bartram et al. (2011),</td>
</tr>
</tbody>
</table>

1 Hypothesized Sign
### Table-2: Mann-Whitney U Test

<table>
<thead>
<tr>
<th></th>
<th>DPS</th>
<th>SIZE</th>
<th>ROA</th>
<th>ROE</th>
<th>LEV</th>
<th>TQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Ranks (Users)</td>
<td>33.98</td>
<td>31.17</td>
<td>32.24</td>
<td>28.21</td>
<td>29.44</td>
<td>34.85</td>
</tr>
<tr>
<td>Mean Ranks (Non-Users)</td>
<td>27.24</td>
<td>29.87</td>
<td>28.64</td>
<td>32.65</td>
<td>31.64</td>
<td>25.84</td>
</tr>
<tr>
<td>Mann-Whitney U Test</td>
<td>-1.495</td>
<td>-0.288</td>
<td>-0.799</td>
<td>-0.984</td>
<td>-0.488</td>
<td>-1.997</td>
</tr>
<tr>
<td>Sig. Level</td>
<td>0.030*</td>
<td>0.000**</td>
<td>0.0420*</td>
<td>0.135</td>
<td>0.321</td>
<td>0.001**</td>
</tr>
</tbody>
</table>

Note: ** and * shows significance at 1% and 5% respectively

### Table-3: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>TQ</th>
<th>FXD</th>
<th>IND</th>
<th>DPS</th>
<th>SIZE</th>
<th>ROA</th>
<th>ROE</th>
<th>LEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQ</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXD</td>
<td>0.475**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IND</td>
<td>0.221*</td>
<td>0.410***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPS</td>
<td>0.165</td>
<td>0.156</td>
<td>-0.210*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.276**</td>
<td>0.431***</td>
<td>0.425***</td>
<td>0.117</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.443***</td>
<td>0.267**</td>
<td>0.364***</td>
<td>0.114</td>
<td>-0.272*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>0.329**</td>
<td>0.293**</td>
<td>0.472***</td>
<td>0.145</td>
<td>-0.485***</td>
<td>0.878***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>LEV</td>
<td>-0.327**</td>
<td>0.108</td>
<td>0.113</td>
<td>-0.123</td>
<td>-0.357***</td>
<td>-0.188</td>
<td>0.097</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: ***, ** and * shows significance at 1%, 5% and 10% respectively
### Table-4: Regression Results of the Factors Affect Firm Value

<table>
<thead>
<tr>
<th>Variables</th>
<th>BETA Coefficient</th>
<th>T Statistic</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-</td>
<td>3.793</td>
<td>0.000</td>
</tr>
<tr>
<td>FXD</td>
<td>0.341</td>
<td>2.876</td>
<td>0.006</td>
</tr>
<tr>
<td>IND</td>
<td>0.133</td>
<td>0.695</td>
<td>0.032</td>
</tr>
<tr>
<td>DPS</td>
<td>0.276</td>
<td>2.563</td>
<td>0.013</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.625</td>
<td>-4.344</td>
<td>0.000</td>
</tr>
<tr>
<td>ROA</td>
<td>0.526</td>
<td>1.980</td>
<td>0.043</td>
</tr>
<tr>
<td>ROE</td>
<td>0.189</td>
<td>0.654</td>
<td>0.516</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.452</td>
<td>-3.326</td>
<td>0.002</td>
</tr>
</tbody>
</table>

**R Square =** 0.591  
**F = 7.176**  
(0.000**)  

N= 75

*Note: ** and * shows significance at 1% and 5% respectively*