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Do Institutional Investors Affect Stock Market Liquidity? The Moderating Role of Firm Size in Fuel and Energy Sector of Pakistan

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Abstract *The current study is unique due to the consideration of firm size that is moderator variable between Institutional Investors and stock market liquidity in Fuel and Energy sector of Pakistan Stock Exchange because majority of the previous studies have been used SZ as a control variable. The secondary panel data of the sample firms for a period of 10 years (2009-2018) have been analyzed through Gretl software while multiple regression and moderation has been applied. The study concludes that SZ, as moderator, has significant role between I.I and ML along with other explanatory variables like Tobin Q ratio (Tob,Q). Therefore, big size I.I has considerable influence over ML as compared to Small or average size I.I. The study recommends that ML can be increased by reducing the undue influence of the large I.I through establishing proper legislation which will safeguard various parties such as small I.I, medium I.I and individual investors in capital markets.*

Key Words: Fuel & Energy, Firm Size, Moderation, PSE, Tobin Q.

Introduction

There are two types of investors who trade in the stock markets. One is the individual investors and the other is the institutional investors. Further, I.I can be categorized in to three categories, that is, small, medium and large size I.I ([Aggarwal 2011](#)). Assets of the business is key factor to be increased with Corporate investment, the can be simply defined as the amount spent to enlarge the total assets of the business (Jangili & Kumar, 2010). These investments can be in many shapes like internal sources of financing which include accumulated profits, retained earnings, depreciation provisions, or external sources of financing such as debt and equity. The concept of conversion knowledge believes that corporate investment can be determined by financial factors such as cash flows (retained earnings), leverage (debt), Tobin's Q, profitability, and the size that a moderator has assumed. According to [Campello \(2006\)](#), revenue can be maximized with the help of sufficient debt, while high volume of debt decreased the revenue of the companies. [Guney et al. \(2007\)](#) examined that, debt level increase can lead companies generally accumulate vast liquidity reserves to evade the risk of bankruptcy in financial emergencies. Odit and Chittoo (2008) identified that debt has significantly and negatively related to the investment decision for companies that have low growth, while they were also negatively related to high growth companies but statistically insignificant. [Firth et al. \(2008\)](#) examined that corporate debt negatively and significantly related to the investment decision of the low growth companies as compared to the high growth companies. [Singhania and Seth \(2010\)](#) identified that large companies used more debt as compared to the small companies in their capital structure. [Barbosa et al. \(2007\)](#), [Farinha and Prego \(2013\)](#) identified the impact of financial leverage on investment decision of Portuguese companies and found that the company size was negatively and significantly related to the investment decision. There are various types of studies that have been conducted on the relationship between I.I and ML by taking SZ as control variable and SZ has not been taken as a moderator. Therefore, based on this research gap, the study is conducted in order to bridge the gap by taking SZ as a moderator between I.I and ML in the fuel & energy sector of PSE. The study will provide its rich contribution in the present literature as well as it will benefit the relevant stakeholders such as the various categories of I.I, individual investors, brokerage houses, funds, managers and other policy makers in the said area of interest.

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Objectives of the Study

The main focus of the study is to achieve the following objectives

- i) To examine the effect of institutional investors on stock market liquidity in the sample sector of fuel & energy.
- ii) To examine the association between Tobin's Q and ML.
- iii) To examine the relationship between LEV and ML.
- iv) To examine the relationship between GR and ML.
- v) To examine the relationship between SZ and ML.
- vi) To check the role of SZ as moderator between I.I and ML.

Hypothesis of the Study

- H1: There is a significant relationship between I.I and ML.
 H2: There is a significant relationship between Tobin's Q and ML.
 H3: There is a significant relationship between LEV and ML.
 H4: There is a significant relationship between GR and ML.
 H5: There is a significant relationship between firm size and ML.
 H6: There is a significant effect of SZ as moderator between I.I and ML.

Literature Review

Introduction

According to [Ajina et.al \(2015\)](#), financial markets are the places where rapid circulation of money takes place due to high level of transparency and fair trade, which is normally known as Market Liquidity. Further, the study added that there is always a mismatch between the I.I in terms of the amount of information they hold while large I.I have more easy access to the key top-secret information of the market which brings large profits or control over the management of the firm for I.I. The Financial leverage is projected as a financing resource that has both positive and negative impact on the company. A company must pay interest on the debt they have received and the real sum it has gotten from financial specialists, with more indebted companies using more debt than capital. Not with standing, it can speak to the misfortune to the financial specialist who contributes the obligation, and the aftereffect of the venture may run counter to it, with the goal that FL can be both on the hazard and the benefit side. Subsequently, it is important for the organization to guarantee the FL however endeavor to expand the benefits of the proprietors on the off chance that they don't, as this may endanger or hurt the estimation of the proprietors by the credit hazard ([Mohun& Hemant, 2008](#)). According to [Woon Gyu Choi and David Cook \(2005\)](#), if a market is a liquid financial market, then investors are able to sell large blocks of assets without substantially changing the price. Similarly, the evidence from financial market suggests that liquidity shocks can affect the equity returns of firms during the slump that followed the bursting of Japan's late-1980s bubble. Further, they found in their study the cross-sectional evidence that firms with illiquid balance sheets and illiquid markets for their equity were more exposed to these shocks and that this exposure was a predictor of the performance of the firms during this period. Similarly, the study of [Woon Gyu Choi and David Cook \(2005\)](#) argued that high exposure to equity liquidity shocks of firms with high short-term debt as indicating that the liquidity shocks to the stock market were also correlated with liquidity shocks in broader financial markets, including credit markets. This interpretation is supported by time-series evidence that liquidity shocks have even more persistent effects on money demand than on equity market prices.

Theoretical Reflections

Trade off Theory

The trade-off theory deals the tax advantages of debt financing and financial issues. Financial distress factors to a condition wherein promise to lenders are damaged or difficult to put in force and may end result insolvency. The cost of financial trouble relies upon the chance of distress and insolvency cost. The theory predicts that larger organizations have a tendency to be more diverse and consequently less vulnerable to financial problems. When it's important to stay in control, it's likely that companies are more likely to have debt than equity financing. Controlling concerns therefore additionally assist a high-quality correlation between debt and firm size. Ferri and Jones (2009) tested the influence of size in determining the capital shape and found that large corporations are probably to use greater debt. Therefore, an advantageous correlation among business enterprise size and leverage is predicted. The direct monetary emergency prices are closely associated with the size of the business enterprise (Cassar & Holmes, 2003).

Agency Theory

The agency theory deals with different interests in the separation of company ownership and management. The theory argues that there is an association between the principal (eg. the shareholders) and the agent (eg. the manager). This theory most important assumption is that, how to separate the management and property causes conflicts between agents and clients. The emergence of conflicts in the enterprise creates tensions and ends in high employer costs. It is thought that the ultimate intention of all shareholders is to maximize their wealth. On the opposite hand, marketers may additionally have a unique aim than to maximize customer assets. If the managers do no longer meet the benefits and objectives of the customers, they will battle (Jensen, 1986).

The fundamental argument at the back of agency theory is that the enterprise manager's act for their very own interest. They are looking for task security, fundamentals and, in the worst cases, getting CF and assets into their palms. The ethic of free cash flow principle evolved based on the organization fee method. Managers have incentives to reduce employer worth unless loose cash flow is shared between stakeholders. Jensen (1986) argues that the problem is how managers ought to be encouraged to spend the cash as opposed to investing it beneath capital prices and / or wasting organizational inadequacies. One method to this hassle is to apply greater debt inside the capital structure to restriction the managers. This approach might force the organization to restriction its charges or advantages to be able to keep away from the chance of default.

Signaling Theory

This model states that the company's financial decisions are signals to potential stockholders to offset facts asymmetry. These signals should consequently permit depositor to make knowledgeable selections about business funding. Ross (1977) linked the belief of signaling to the capital structure principle, arguing that the organization is probably to benefit when the enterprise's securities are overvalued and the other is actual. They additionally argue that managers can use a higher financial leverage to sign the enterprise an optimistic destiny, as debt capital represents a contractual responsibility to pay off capital and interest. Otherwise, this could lead to bankruptcy, which can lead to job losses. Additional debt in the company's capital structure can therefore be interpreted as a positive signal for the future of the company.

Research Methodology

Methodology is the combination of various items such as type of study, population and sample size, data collection procedure, unit of analysis, data analysis techniques, model of the study, conceptual framework of the study, Measurement of Variables. The details of these items are as follows

Type of Study

The prevailing study is purely quantitative which is crystal clearly recognized from the title of study.

Population and Sample Size

The study has considered the fuel and energy sector companies traded on (PSX) as population whereas 29 leading companies of the selected population are picked as sample of the study.

Data collection Procedures

Authentic secondary data sources like the annual reports of sample fuel and energy firms, official website of PSE, and yahoo finance have been used for data collection from 2008 to 2019.

Unit of Analysis

The study has taken the fuel & energy sector companies listed at PSX as unit of analysis.

Data analysis Technique

The highly advanced and authentic techniques like fixed-effect model, correlation and descriptive statistics have been utilized in this study whereas Gretel and E-views research software are also used to get accuracy in results.

Models of the Study

The following econometric model employed in order to perform factors effecting ML.

$$SML_{it} = \alpha + \beta_1 IINST_i + \beta_2 Tob, Q_i + \beta_3 LEV_i + \beta_4 GR_i + e_i \dots (1)$$

$$SML_{it} = \alpha + \beta_1 (IINST_i * SZ) + \beta_2 (Tob, Q_i * SZ) + \beta_3 (LEV_i * SZ) + \beta_4 (GR_i * SZ) + e_i \dots (2)$$

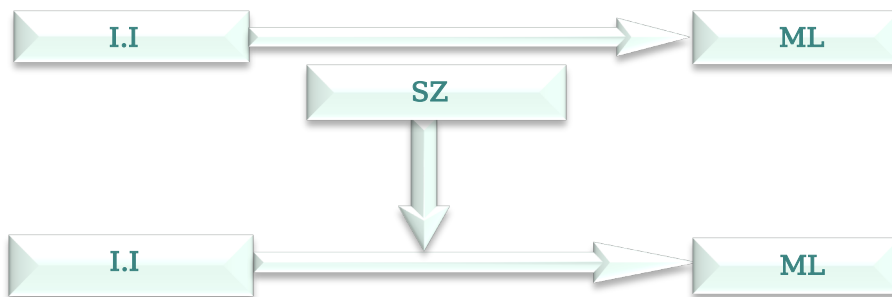
Where SML is the only dependent variable calculated Net Assets for firm i in period t.

Tob, Q is the Tobin's q ratio while [Odit and Chittoo \(2008\)](#) were used the same measure in their study and IINST is the institutional investors of the study.

LEV stands for leverage of the firm to finance its expenditures and it is taken as an independent variable, it can be calculated as total debt divided by total liability.

Similarly, GR represents the growth of the sample firms. β_0 is the intercept and e_i is the disturbance term of firm i in period t. The disturbance term having zero mean and constant variance.

Conceptual Framework of the Study



Identification of Variables

Dependent Variable

The only dependent variable of this study is the stock market liquidity (ML) while the effect of the explanatory variables has been checked on the said mentioned explained variable.

Stock Market Liquidity

ML is a term that is commonly used in both commodities as well as in stock markets. It can be defined in simple words as the limit of the financial market that permit the financial assets such as stocks and bonds to trade (buying and selling of securities) at steady and fair prices with easy ways to trade along with lower cost of trade as well. In other words, if the difference between bid price and ask price, (that is also called spread) grows, then the market will have low liquidity or it can be termed as illiquidity (Amihud 2003). Further, another angle of liquidity covers that without any effect on the prices of shares, how easy the market offers buying and selling of securities to its investors. Similarly, it is an important measure of how many buyers and sellers are present and it also indicates that whether transactions can take place easily or not. Typically, liquidity is calculated by taking the volume of trades or the volume of pending trades currently on the market. High levels of liquidity arise when there is a significant level of trading activity and when there is both high supply and demand for an asset, as it is easier to find a buyer or seller. If there are only a few market participants, trading infrequently, it is said to be an illiquid market or to have low liquidity.

Independent Variables of the study

The present study includes the following explanatory variables.

Tobin's Q: Tobin's Q used as a growth opportunity, described because the market price of the total assets is divided by the book value of the total assets. The market price of the company is the sum of the entire liabilities, the estimated value of the preference stocks and the cost of the stocks. The market price of the inclination stocks is calculated as a preferred dividend multiplied by ten. [Odit and Chittoo \(2008\)](#) used the identical measure of Tobin's Q in his research work.

$$Tobin's Q = \frac{Market Price of Total Assets}{Book Value of Total Assets}$$

Institutional Investors

It is clear from the name that institutional investors are the owners of shares in other firms either to get maximum profits or to take the decision-making control over the key affairs of the company. Due to their financial strength, the Institutional investors have an easy access to the valuable secret

information of the firms in the market and are therefore, the most efficient and educated agents who can ultimately influential on liquidity. In this study the proxy is used that can be the best expression of firm's shareholders' interests ([ajina et.al. 2015](#))

Measurement of the variable

Institutional investors can be measured through shares held with other firms divided by total shares outstanding of the firm, that is, in simple words the shares issued by the firm and the shareholders have paid for.

$$INV = \frac{\text{Shares held with other Firms}}{\text{Total Shares of current Firm}}$$

Financial Leverage

It is a common measure of the outsiders' claims on the assets of the debtor firm. There are many research studies that have used leverage to gauge the ratio of debts to equity financing. For instance, Alcock et al., (2012) has used financial leverage for the said purpose while this study measured leverage as total liability to total assets. Similarly, in the study of [Odit and Chittoo \(2008\)](#), it is measured through book value of long-term debt divided by total equity.

Debt ratio = Total Debt / Total Equity.

Expected Growth (GR)

Last but not the least explanatory variable of the study is growth of the firm. In the previously arranged studies, this variable has not been very clear in terms of its effect on the ML. Through expected growth one can measure the performance of a company, that is, the current year performance against the preceding year. Increase in assets of firm in current year as compare to the previous period is a sign of growth of the sample firm and vice versa. The Following measure has been used by Shah and Hijaze, (2004), that is, the percentage change in the firm's total assets to measure the growth of the sample firms.

$$GR = \ln \frac{\text{current year Assets}}{\text{preceeding year Assets}}$$

Moderator Variable

Size of the Firm (SZ)

The firm size is taken as moderator variable of the present study. This variable has been used by many researchers as per their nature and objectives of the study. Further, it can be used as an indicator that shows the volume of the total assets (that is, permanent as well as non-permanent assets of the firm). The larger the size the stronger the company in terms of assets. This variable can be judged with the help of multiple proxies while in present study firm size is used to measure the variable in the following manner, as it is used by [Haque. \(2014\)](#).

$$SZ = \log (\text{Total Assets})$$

Empirical Results and Discussions

Based on the data analysis of the variables of study through Gretel software, the following two tables are given along with interpretations at the end of the tables. Table 1 is showing the simple multiple regression of the variables of the study while table 2 represents the moderation effect of the firm size between I.I and ML.

Table 1. Regression Results

	Coefficient	t-ratio	p-value
const	-8020.28	2.267	0.0403
Ins	1.04264e-05	1.945	0.0512
Tob,Q	2859.06	2.222	0.0425
LEV	7295.42	2.505	0.0300
GR	-2015.58	2.333	0.0421
Mean dependent var	14693.25	S.D. dependent var	7744.309
Sum squared resid	8.20e+09	S.E. of regression	7547.614
R-squared	0.587824		
F (4, 144)	4.123610	P-value(F)	0.033107
Log-likelihood	-1539.298	Akaike criterion	3088.596
Schwarz criterion	3103.616	Hannan-Quinn	3094.698

Model 3: OLS, using observations (n = 29)
 Dependent variable: stock Market Liquidity

The above Table 1 shows the results of multiple regression analysis that is simplified through the help of valid software of Gretel. The results are clear after analysis that shows that the relationship between institutional investors and market liquidity is just significant because t-value is nearer to the value of threshold value of 2 (i.e. 1.945) and same is the case with p-value that should be 0.05 or less than 0.05 but it is (i.e. 0.0512) with 95% confidence interval. So it is clearer from the values of table 1 that institutional investors have affected the stock market liquidity at just the significance threshold values and it can be declared on the bases of the values that there may be some other factors that can play considerable role in determining the SML. Likewise, the results of the other variable of the study shows that the Tob,Q ratio, Leverage and Growth have a positive and significant effect on market liquidity. It is clear from the tables's 1 values that Tob.Q ratio, leverage and growth have t-ratio of 2.222, 2.505, and 2.333 respectively while at the same pace the p-value of the same independent variables is 0.0425, 0.0300, and 0.0421 respectively. The results show that these three variables have significant effect on the SML due to the important role of these variables while it matters the key decisions of the company regarding investment, reinvestment and financing. similarly, leverage and growth prospects are also the significant variables to effect the stock market liquidity that is clear from their respective figures. Additionally, the value of the R-square is also significant because its value is greater than 5, which is 0.587824. In the same way, fitness of the model also indicates a good fitness of the model of the study, that is F-value is greater than 4 while it is stood at 4.123610 that in simple words mean that the model is good fit for the analysis. Likewise, p-value (F) is also significant with its value 0.033107 that is less than the threshold value of 0.05. Summarizing table 1, it can be concluded that the analysis as well as the results of this study is in It is parallel with the study of Demsetz, (1968), who were of the view that investors always take keen interest in the efficient market, that is, backed by frequently quoted bid and ask prices, a low bid-ask spread and small orders. Another study is also parallel with the results of the present study, that is, the study of Brennan and Thakor (1990), which indicated an unfavorable choice theory which states that investors who have larger proportion of shares in a firm accompanied by higher education in terms of up to date information will incline toward repurchases in order to earn profits. In other words it can be interpreted that some factors are responsible to compel the financial markets to provide ease, quickness and cost effectiveness in transactions while this combination is known as market liquidity.

Table 2. Moderation

	Coefficient	t-ratio	p-value
const	15802.3	13.21	<0.0001
Inst.SZ	6.97012e-07	2.754	0.0425
Tob,Q.SZ	-8.10805	3.040	0.0443
Lev.SZ	315.544	3.217	0.0322
GR.SZ	-17.3081	2.818	0.0382
Mean dependent var	14659.00	S.D. dependent var	8821.661
Sum squared resid	8.45e+09	S.E. of regression	8304.912
R-squared	0.666894		
F(4, 145)	4.448690	P-value(F)	0.012412
Log-likelihood	-1945.183	Akaike criterion	3103.567
Schwarz criterion	4118.620	Hannan-Quinn	3109.683

Model 4: OLS, using observations 1-29
 Dependent variable: Mkt Liquidity

The above Table 2 is showing the moderation of SZ between ML and Institutional investors. Based on previous research studies, the role of SZ is clear in the capacity of controlled variable but in order to get more reliable results, this study has taken SZ as moderator while each independent variable of the study is multiplied with SZ that is the moderator variable of this study. The analysis clearly indicates after properly applying moderation through software, that the existence of SZ as a moderator between ML and I.I, there is a significant relationship between institutional investors and market liquidity. It can be seen in the table that t-value is exceeding the standard t-value of 2 that is stood at 2.754 and p-value is also up to the mark that is less than 0.05 and stood at 0.0425 with 95% confidence interval. It is clearer from the results that with the application of moderator variable of SZ, institutional investors have a key role in influencing the stock market liquidity. In simple words it can be interpreted that those I.I who are financially and size wise strong, they have

more control over the trading of the stock markets and therefore, they influential on the market liquidity. in the same way, in the presence of the moderator, the results shows that Tob,Q ratio, LEV and GR have significant effect on market liquidity. The figures in the table 2 indicate that Tob,Q, LEV and GR have t-ratios of 3.040, 3.217, and 2.818 respectively while p-value of the same independent variables is 0.0443, 0.0322, and 0.0382 respectively. The results show that these three variables have significant effect on the SML because of the SZ that is very important variable between the dependent and independent variables and therefore, size of the firm matters the key decisions of the company regarding investment, reinvestment and financing. Likewise, leverage and growth prospects are also the significant variables to effect the stock market liquidity that is clear from their respective values in the given table 2. Further, R-square is also significant because its value is greater than 5, which is 0.666894. It also shows that R-square with moderator has greater value than the R-square without moderator, which is indeed a sign of the significance of the moderator of this study. Similarly, fitness of the model that is F-value is greater than 4 while it stood at 4.448690 which mean that the model is good fit for the analysis. Likewise, p-value (F) is also significant with its value 0.012412 that is less than 0.05. This value is also less than the value of p-value (F) of the value given in table 1 for regression without moderator. This is a sign of significance of the moderator in the current study.

It is clear from the results of the current study that are in line with the results of the study of [Aggarwal et al. \(2011\)](#). According to him, the high institutional ownership, based on their influential decision making powers, can have a dominant chance to remove or terminate the poor performers CEO, which ultimately increases the firm value in short as well as in long run. Further, the study added that institutional ownership also can help in controlling the earning of the firm by proper managing these earnings while utilizing these earnings in profitable business ventures and potential future earning spots as well. Further, [Attig et al. \(2006\)](#); Byun et al. (2011) and Farooq & Zarouali, (2016) examined in their studies and concluded that large shareholders or big size firms make their trade decisions on insider information and worsen information asymmetry which may shake the ML in financial markets.

Conclusion

The current study is unique due to the consideration of moderator variable of firm size between I.I and ML in the Fuel & Energy sector of PSX because majority of the previous studies have been used firm size as a control variable. The secondary data of the sample firms for a period of 10 years (2009-2018) have been analyzed through Gretel software while multiple regression and moderation has been applied in the study. The study concludes that SZ, as moderator, has a significant role between I.I and ML. It means that I.I with their large size has a strong financial position in the market due to which their access to the insider secret information is high. Therefore, big size I.I has considerable influence over the ML as compare to the Small or average size I.I. The study recommends that ML can be increased by reducing the undue influence of the large I.I through establishing proper legislation that will safeguard the various parties such as small I.I, medium I.I and individual investors in capital markets. The study is limited in terms of population, sample size, time, and nature of variables. In future, studies can be conducted in other sectors of the economy by taking other variables as well.

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