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IMPACTS OF LEVERAGE ON SYSTEMATIC RISK BASED ON CAPITAL ASSET PRICING MODEL: A COMPARISON OF HIGH AND LOW CAPITAL INTENSIVE FIRMS

Mubeen Abdur Rehman [1], Muhammad Kashif Khurshid [1*], Muhammad Iltaf [1], Muhammad Ans Hafeez [1], Muhammad Kashif [2]

[1] *Department of Management Science, National University of Modern Languages (NUML) Islamabad, PAKISTAN.*

[2] *Govt. Degree College Khurrianwala Faisalabad, PAKISTAN.*

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ABSTRACT

This study examines the relationship between leverage and systematic risk using high and low capital intensive firms for a period of six years (2010-2015). With the help of a simple random sampling technique, the data of 94 non-financial firms state the impact of leverage on systematic risk and it is found that degrees of operating leverage (DOL) and Degree of combined leverage (DCL) have significant while degrees of financial leverage (DFL) has an insignificant impact on systematic risk. Secondly, the core objective of this study is to differentiate the outcomes of high and low capital-intensive firms. Hence, the results concluded that in the case of high capital-intensive firms, the result of DOL and DFL is positively significant on systematic risk (beta). On the other hand, by compelling the low capital-intensive firms, the result is insignificant. The empirical results showed that capital intensity does influence leverage due to which leverage has a consistent impact on systematic risk.

Disciplinary: Financial Sciences and Management.

1 INTRODUCTION

Risk is an integral part of every investment and more interestingly, it is harder to predict. In fact, the level of risk should be considered in any investment. The most challenging task for a financial manager is to provide funds for investment. Systematic risk has the characteristics of the whole market. However, any decision taken by a company put the risk in the value of its common, for example, change in capital structure and use of debt may be a cause to reduce the cost of capital for a company (Akbari & Mohammadi, 2013).

Operating leverage (DOL) demonstrates that how and how much operating profit can fluctuate with the help of the degree of operating leverage, which depends upon the volume of sales (Alaghi,

*Corresponding author (M.Kashif Khurshid). Tel: +92-300-9650054 Email: kashif041@gmail.com

2011). Operating leverage has a significant impact on systematic risk (Gahlon & Gentry, 1982; Houmes et al., 2012; Ali et al., 2019). The objective of the work is to discover the impact of leverage on systematic risk by comparing high and low capital intensive firms. The systematic risk of a firm can be enhanced by the help of DOL (Gahlon, 1981). As the DOL increases the systematic risk: firms using more leverage are earning more profit margins with higher risk and those who use more level of equity with the lower partition of debt are more sustainable but with lower profit earnings (Bhatti et al., 2010). If managers of a firm use more debt than equity, they may eliminate projects as they may have outcomes with negative values. This also provides benefits and support to investment theory (Odit & Chittoo, 2008).

Big companies use a lower level of variability of assets return and risk than smaller companies (Beaver, 1970). It is verified that the size of the firm has a strong relationship with sales and hence, ultimately with the firm's earning and total assets are used as proxies. Change in earnings of a firm and sales can affect stock returns (Ball & Brown, 1968; Dimitrov & Jain, 2008; Gupta et al., 2016). Hence, it is associated as well as depends upon the assets return in the portfolio investments (Gahlon & Gentry, 1982). Markets look the same and interchangeable but actually, both emerging and developed markets have some special characteristics, they are different from each other including business structure (Gupta et al., 2016). To achieve the equilibrium level, the investors want high returns (Ahmad, 2011). Financial analysts prefer to evaluate the capital intensity by looking at variation in return on assets that can be calculated by total assets over sales (Elmasr, 2007). Investments and strategies are not for communication channels & attitudes of the goals and hence, these investments are for improving return on investment (Bhatti et al., 2010).

2 LITERATURE REVIEW

Houmes et al., (2012) and Jiao, (2013) found a positive significant impact of operating leverage on systematic risk. Gupta et al., (2016) indicated the inverse significant relationship between the value of the firm and operating leverage. On the other hand, the degree of financial leverage and firm value were insignificant for firms or portfolio of firms. Operating leverage has a positive significant impact on systematic and overall risk of the common stock and operating leverage is negatively associated with the variable cost of firms (Lev, 1974). Lee and Park (2014) expressed that the overall risk of stock was negatively and positively related to the variable cost and operating leverage, respectively. Mensah (1992) studied the significant impact of operating leverage on systematic risk. Gupta et al. (2016) researched the same variables in India and found insignificant. Moreover, Akbari and Mohammadi (2013) studied the relationship of systematic risk with all three types of leverage and their results showed that these three types of leverage were insignificant. Gahlon and Gentry (1982) found a positive correlation among operating & financial leverages and systematic risk and found significant results of the study. On the contrary, Huffman (1989) found a negative correlation between the financial and operating leverages but it was found that there was an optimistic significant relationship with financial leverage and systematic risk. Operating and financial leverages showed a significant impact on equity risk. DOL and DFL both have a positive impact on systematic risk (Darrat & Mukherjee, 1995). Ghosh and Jain (2000) studied that as the financial leverage increases, the risk attached to the firms also increases. Rayan (2010) studied that as financial leverage increases the value of the company decreases. Hence, leverage was negatively correlated with the value of companies.

Alaghi (2011) showed a positive significant impact of financial leverage on risk. Akhtar et al., (2012) analyzed that financial leverage has a significant impact on financial performance. Mensah (1992) studied market beta including operating and financial leverages and recommended that accounting flow can represent the real determinants of beta including operating & financial leverage and business risk. Bowman (1979) indicated that financial variables were correlated with risk and can make a very fruitful prediction for future risk. As the level of leverage increases, the firms become riskier especially at the time of low productivity (Obreja, 2008).

Mandelker and Rhee (1984) examined the impact of leverage on diversifiable risk for the first time and analyzed the relationship between systematic risk and leverage. Akbari and Mohammadi, (2013) determined the relationship between leverage ratios and systematic risk based on the capital asset pricing model (CAPM). Leverage either individual or combined has a significant impact on stock return, in India, one of the growing markets of the world (Gupta et al., 2016). Bhatti et al., 2010 and Tan et al., (2015) drawn that as the level of leverage increases, the level of systematic risk also increases and vice versa. It was showed that systematic risk was more volatile with the proportionate to leverage. Guo and Whitelaw (2006) developed a model based on CAPM and identified separately the two major components of expected returns, for instance, risk & return and both of two were proved positively significant. Ramadan (2012) analyzed the systematic risk and showed that leverage is a compulsory factor for estimating the risk. The usage of equity can be a result of lower bank liquidity and hence the greater use of debt level enhances the chances of bank liquidations (Acharya & Thakor, 2016). Leverage has a relationship with firm value specifically in riskier and firms having lower growth rates. Further, it was known that debt advantages can be substituted by the management decisions by using other ways in an organization (Ahn et al., 2006).

Elmasr (2007) stated that capital intensity as the process of a firm or an industry to invest the amount of money and financial assets to run a business. Ahmad et al. (2011) indicated that corporate tax has an insignificant relationship with the systematic risk and leverage disclosed a positive and significant relationship. Moreover, it was recommended that operating leverage is a wonderful tool for polices to evaluate the low leverage ratios. Gritta et al. (2010) compared and contrast with several carrier firms to understand the impact of the boom. The impact of financial or combined leverage was expressed and analyzed using some sectors of non-financial firms only. Secondly, the most essential quantity of gap is that there is no comparison found for high and low capital intensive firms simultaneously to see the impact of leverage on systematic.

3 RESEARCH METHODOLOGY

Data for this study is selected from 94 non-financial firms of 14 diverse sectors listed at the Pakistan Stock Exchange (PSX). Hence, it means that almost all the different sectors are taken in the research work to generalize the results. For the selection of a sample from the population, a simple random sampling technique is applied. The unit of analysis for this research work is an "individual firm". Data of every firm including high and low capital intensive firms are chosen for six years, 2010-2015. Secondary data is gathered due to reliability and availability as it is a more useful and reliable source for financial analysis.

Following the conceptual framework prepared and clarifies the relation of dependent and independent variables. The aim of the research is to explore the impact of financial and operating

*Corresponding author (M.Kashif Khurshid). Tel: +92-300-9650054 Email: kashif041@gmail.com Volume 11 No.5 ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8 Paper ID:11A05H http://TUENGR.COM/V11/11A05H.pdf DOI: 10.14456/ITJEMAST.2020.88

leverage on systematic risk. Interestingly, there are two control variables including firm size and Tobin's Q. Generally, systematic risk (beta) is measured by a very common method, for instance, with the help of the capital assets pricing model and this model presented trading off between systematic risk and return. As the beta is used to analyze the returns of the market and stock in such a condition when the beta is equal to 1. Hence, the difference in stock return with respect to the market is 1:1. But in such situations, the systematic risk is not ignored and the beta of market risk is taken as a whole (Ramadan, 2012).

3.1 CONCEPTUAL FRAMEWORK

Figure 1 shows all the studied variables.

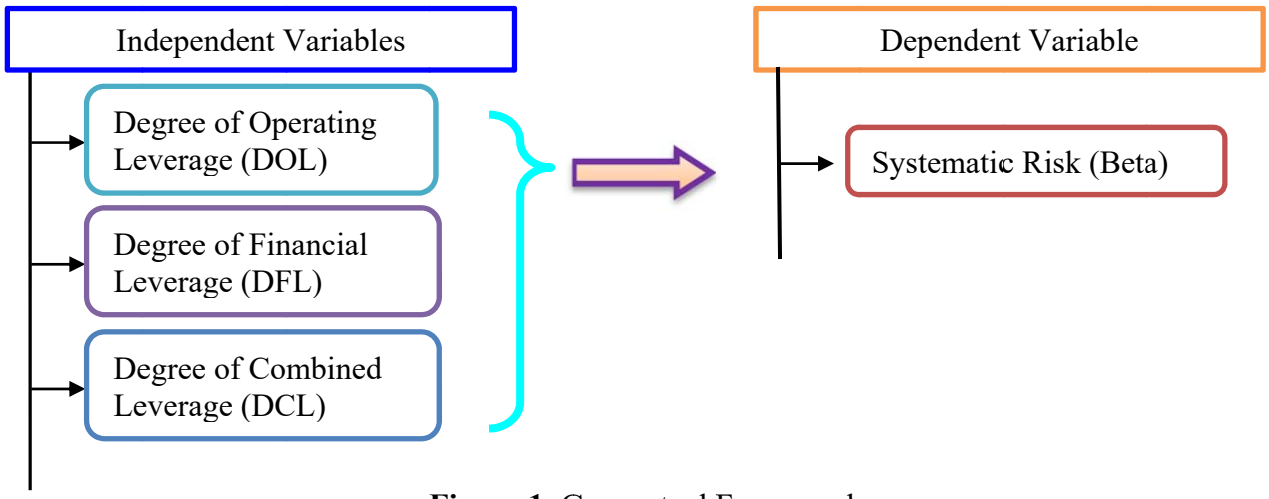

Figure 1: Conceptual Framework.

3.2 HYPOTHESES OF THE STUDY

There are three major hypotheses, using statistical techniques.

H1: There exists a significant relationship between DOL and systematic risk (β).

H1A: There exists a significant relationship between DOL and systematic risk (β) for high capital-intensive firms.

H1B: There exists a significant relationship between DOL and systematic risk (β) for low capital - intensive firms.

H2: There exists a significant relationship between DFL and systematic risk (β).

H2A: There exists a significant relationship between DFL and systematic risk (β) for high capital-intensive firms.

H2B: There exists a significant relationship between DFL and systematic risk (β) for low capital-intensive firms.

H3: There exists a significant relationship between DCL and systematic risk (β).

H3A: There exists a significant relationship between DCL and systematic risk (β) for high capital-intensive firms.

H3B: There exists a significant relationship between DCL and systematic risk (β) for low capital Intensive firms.

3.3 ESTIMATION MODELS

For the model estimation purpose, three different models are drawn and estimated with the help of considered variables. Following is the overall model of the work

$$(\beta)_{it} = \beta_0 + \beta_1 DOL_{it} + \beta_2 DFL_{it} + \beta_3 DCL_{it} + \beta_4 Size_{it} + \beta_5 Tobin's\ Q_{it} + \varepsilon_{it} \quad (1).$$

The primary purpose of this research is to see the impact of leverage on systematic risk as proved by (Ahmad et al., 2011). All these variables are taken for a specific time period and for a particular firm to realize the control of independent variables. This is a general model, as it includes all the five hundred and sixty-four number of observations for ninety-four different cross-sections.

$$(\beta)_{it} = \beta_0 + \beta_1 DOL_{it} \times CI_{it\,(H,D)} + \beta_2 DFL_{it} \times CI_{it\,(H,D)} + \beta_3 DCL_{it} \times CI_{it\,(H,D)} + \beta_4 Size_{it} + \beta_5 Tobin's\ Q_{it} + \varepsilon_{it} \quad (2),$$

where, CID = 1, if high capital intensive firms are taken, otherwise "0". In model No. 02, all the independent variables are taken for high capital-intensive firms using capital intensity as a dummy variable. The purpose of the model is to evaluate the results for such firms that are more capital-intensive and to segregate the capital intensity; the median value of capital intensity is taken. Firms, which have values greater than median value considered as more capital intensive firms. The dummy variable helps to see the preferred outcomes. So, this work also uses capital intensity as a dummy variable and in this model, such firms are taken which are highly capital intensive. Hence, firms having low capital intensity are ignored.

$$(\beta)_{it} = \beta_0 + \beta_1 DOL_{it} \times CI_{it\,(L,D)} + \beta_2 DFL_{it} \times CI_{it\,(L,D)} + \beta_3 DCL_{it} \times CI_{it\,(L,D)} + \beta_4 Size_{it} + \beta_5 Tobin's\ Q_{it} + \varepsilon_{it} \quad (3),$$

where, CID = 1, if low capital intensive firms are taken, otherwise "0". In this model, such firms are taken whose capital intensity is lesser than the median value of capital intensity. This is the third and the last model of the study that completes the work of non-financial firms used in the study.

The symbols $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are regression coefficients of each respective model. The symbol ε indicates the regression model error.

4 DATA ANALYSIS AND RESULTS DISCUSSION

The detailed interpretations of the financial data are discussed below.

4.1 DESCRIPTIVE STATISTICS

Table 1 shows the descriptive statistics for all the variables.

Table 1: Descriptive Statistics (N = 564).s

Variable	Min	Max	Range	Mean	Median	SD
Beta	-0.97	6.66	7.64	0.28	0.07	0.82
DOL	-221.11	187.02	408.13	6.34	1.02	97.73
DFL	-96.44	191.41	287.85	1.98	0.96	15.44
DCL	-412.63	356.31	768.94	5.29	0.80	199.04
Size	8.77	20.13	11.35	16.22	16.24	1.78
TQ	0.13	96.37	96.24	6.76	3.52	10.56

The above table shows that beta (systematic risk) has -0.98 and 6.67 values for minimum and maximum respectively. It has a mean of 0.28, which is lowest in the tables. The median value of beta is 0.08 while the standard deviation is 0.83 for 564 No. of observations. Minimum and maximum values of degrees of operating leverage are different than financial leverage (DFL) and the values are -221.11 and 187.03, respectively. The mean and median values of operating leverage (DOL) for observations are 6.35 and 1.02 while the standard deviation is 97.74. Financial leverage (DFL) has minimum and maximum values which are -96.44 and 191.42, respectively. Mean and Median values of financial leverage are 1.99 and 0.97 while the standard deviation of financial

*Corresponding author (M.Kashif Khurshid). Tel: +92-300-9650054 Email: kashif041@gmail.com Volume 11 No.5 ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8 Paper ID:11A05H http://TUENGR.COM/V11/11A05H.pdf DOI: 10.14456/ITJEMAST.2020.88

leverage (DFL) is 15.44, which is also lower than other types of leverage. Mandelker and Rhee (1984) showed average financial leverage (DFL) of 0.98 for the years and industries in their research. García-Feijóo and Jorgensen (2010) found a mean of financial leverage (DFL) estimated of 1.23. The minimum and maximum values of combined leverage (DCL) are -412.63 and 356.31, respectively. So, the value range is maximum among all types of leverage, which are 768.94. Mean and Median values of combined leverage are 5.30 and 0.80, while the standard deviation is 199. Similarly, minimum and maximum values for firm size (ln TA) are 8.77 and 20.13 while the range is 11.36. The mean and median values of firm size are greater than the rest of the variables. The standard deviation is 1.78 which shows that all the values are closer to mean.

4.2 CORRELATION MATRIX

Table 2 describes the correlation relationship of variables with each other including all the independent and dependent variables.

Table 2: Correlation Matrix.

Variables	Beta	DOL	DFL	DCL	Size	TQ
Beta	1					
DOL	0.29	1				
DFL	0.06	0.01	1			
DCL	0.25	0.34	0.05	1		
Size	-0.19	0.18	-0.00	-0.02	1	
TQ	0.27	0.01	-0.01	0.01	0.08	1

Beta is highly correlated with DOL and its value is 0.29 in a positive direction and it has the weakest correlation is equal to 0.06 with DFL. DFL has a positive correlation with the beta, DOL, and DCL while it has a negative relationship with firm size and Tobin Q. Financial leverage (DFL) is highly correlated with systematic risk and its value is 0.06 in a positive direction while its lowest correlation is with firm size having a value of -0.01. Combined leverage (DCL) has a positive correlation with systematic risk, DOL, DFL, and Tobin Q while the firm size is negatively correlated with the degree of combined leverage. Combined leverage (DCL) has the strongest positive correlation with operating leverage (DOL) which is 0.34 while it has the weakest correlation with the size that is -0.02. Size is positively correlated with DOL and Tobin Q. Tobin Q is positively correlated with systematic risk, DOL, DCL, and size.

There are two hypotheses H_0 and H_A as described below. If the null hypothesis is accepted, then this research work can use a common effect model and vice versa.

Ho: Constant of variables is common and the Pooled Ordinary Least Square technique is suitable.

H_A: Constant of variables is not common and the Pooled Ordinary Least Square technique is not suitable.

In the results there includes 93 dummy variables and the constants of these dummy variables are insignificant. Only a few constants are not common but the rest of them are common in nature. So, the alternative hypothesis is rejected and the null hypothesis is accepted. Hence, the pooled ordinary least square data regression model is suitable for the research. DOL, DCL and Tobin Q are significant while DFL and firm size are insignificant (Houmes et al., 2012) and p-value (F) is 0.05, which is significant. R-square value is 0.30 and the adjusted R-square is 0.26.

Table 3 specifies the P-value (F) that states the overall significance of the model and the value is 8.17, which is highly significant. R-square describes all the independent variables that are 30 %

defining the systematic risk. DOL is positively significant (<0.001) with systematic risk (Houmes et al., 2012; Lee & Park, 2014). DFL is insignificant as it has 0.70 and 0.39 values for p-value and t-ratio, respectively (Darrat & Mukherjee, 1995; Mensah, 1992). Ahmad et al., (2011) and Ramadan, (2012) found a positive significant relationship between the degree of combined leverage and systematic risk it is, therefore, systematic risk is also positively significant with combined leverage. The outcomes verify that if the DCL increases then the value of systematic risk can also increase. Ramadan (2012); Yoon and Jang, (2005) found a significant relationship between the size of the firm and systematic risk. To elaborate on this study, the results of firm size and systematic risk are also significant but in the inverse track. It clarifies that the increase in the size of a firm causes to decrease the degree of systematic risk.

Table 3: Pooled ordinary least square (General Model)

Variables	Coefficient	SE	t-ratio	p-value	
Const	123.30	62.08	1.99	0.05	**
DOL	0.13	0.02	5.49	<0.001	***
DFL	0.17	0.43	0.39	0.69	
DCL	0.09	0.04	2.53	0.01	**
Size	-6.59	3.79	-1.74	0.08	*
TQ	3.11	0.63	4.94	<0.001	***
R-squared		0.30	F(6, 556)		12.11
Adjusted R-squared		0.28	P-value(F)		8.17

Table 4: Pooled Ordinary Least Square (For High Capital Intensive Firms)

Variables	Coefficient	Std. Error	t-ratio	p-value	
Constant	56.94	22.16	2.57	0.01	**
DOL_HCI	0.18	0.03	5.72	<0.001	***
DFL_HCI	0.08	0.60	0.13	0.90	
DCL_HCI	0.14	0.02	5.70	<0.00	***
Size	-5.54	2.42	-2.29	0.02	**
TQ	2.19	0.43	5.07	<0.001	***
R-squared		0.30	F (6, 556)	12.57	
Adjusted R-squared		0.26	P-value (F)	0.00	

Table 4 displays that leverage is taken for high capital intensive firms only and the median value is used as a tool to segregate the high and low leverage firms. The R-square value is 30 %, which indicates that all independent variables are defining the systematic risk of up to 30 %. Operating leverage (DOL) is positively significant with beta while financial leverage (DFL) is insignificant with beta. On the other hand, combined leverage (DCL) is significant with beta. It means that for high capital-intensive firms, the change in DCL can change the systematic risk in the parallel course. Elmasr (2007) stated that companies that have high capital intensity can enjoy more return as compared to low capital intensive firms. Yoon and Jang (2005) analyzed that high levered restaurant firms are a more profitable and ultimately higher level of risk is involved with such firms. It is found that capital intensity has a significant impact on systematic (Stickney & McGee, 1982). It is, therefore, the impact of such firms, which are highly capital intensive is significant on systematic risk as compared to the low capital-intensive firms.

In Table 5, all three types of leverages including DOL, DFL, and DCL are taken for those

*Corresponding author (M.Kashif Khurshid). Tel: +92-300-9650054 Email: kashif041@gmail.com Volume 11 No.5 ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8 Paper ID:11A05H http://TUENGR.COM/V11/11A05H.pdf DOI: 10.14456/ITJEMAST.2020.88

firms, which have low capital intensity. Opposite to Table 4, all the three types of leverages (DOL, DFL, and DCL) are insignificant with beta. On the contrary, firm size is significant with beta. Firm size and systematic risk have a negative relationship, which means that the increase in size can decrease the systematic risk and vice versa. For low capital intensive firms, Tobin Q is also significant.

Table 5: Pooled ordinary least square (For Low Capital Intensive Firms)

Variable	Coefficient	Std. Error	t-ratio	p-value	
Const	89.88	29.71	3.03	0.001	***
DOL_LCI	0.13	0.18	0.73	0.47	
DFL_LCI	0.18	0.68	0.28	0.78	
DCL_LCI	0.10	0.27	0.37	0.71	
Size	-6.52	2.38	-2.75	0.01	***
TQ	3.16	0.65	4.89	<0.001	***
R-squared	0.10		F(6, 556)	6.70	
Adjusted R-squared	0.08		P-value (F)	0.00	

5 CONCLUSION

In this study, three different hypotheses were generated to calculate the study variables. Systematic risk (beta) is chosen as a dependent while 05 variables as independent are analyzed. Regression analysis showed that the overall significance level of the study. It means the overall study is consistent with the previous work and theoretical models. Firstly, the degree of operating leverage is positively significant with systematic risk (beta). DOL was significant with the beta, which was proved by the work of (Houmes et al., 2012; Lee & Park, 2014; Lev, 1974). All these studies proved that the degree of operating leverage shows a positive impact on systematic risk. On the contrary, the degree of financial leverage is insignificant with the dependent variable. In this case, the null hypothesis is accepted that the degree of financial leverage doesn't have any effect on systematic risk. Darrat and Mukherjee (1995) also studied such variables with the same relationship and found that the degree of financial leverage was insignificant. In Pakistani firms, DFL is irrelevant to the systematic risk as proved in section 4. Ramadan (2012) studied the relationship of combined leverage with systematic risk and his outcomes were significant. To carry on with such variables, this work proved the previous work. Non-financial firms of Pakistan Stock Exchange showed that in Pakistan systematic risk is affected by combined leverage in a positive direction. Yoon and Jang (2005) found that size is negatively significant with systematic risk. Parallel to their work, in Pakistan, the results are the same as in the United Kingdom. It is found that size is significant with beta. As the size of the firm increases, the level of risk decreases and on the other hand if the size of the firm is small or decrease, the percentage of risk increases. In the end, TQ was positively significant with systematic risk.

High Capital Intensive Firms

In high capital-intensive firms, leverage is positively significant with systematic risk. Outcomes of DOL stated that the degree of operating leverage is highly significant with systematic risk. It showed that as the value of DOL increases, the value of beta also increases. On the other hand, DFL is insignificant with systematic risk. It showed that in the context of Pakistan, DFL has no impact on systematic risk for high capital-intensive firms. Likewise, DFL was also insignificant

in model-1 that was used for all types of firms including high and low capital intensity and for firms having high capital intensity, DCL is significant at a 1% level. The change in DCL can pass the change in systematic risk in the same direction. Likewise, the decrease in operating or combined leverage can bring the change in systematic risk, again in the same direction.

Low Capital Intensive Firms

Opposite to high capital concentrated firms, in low capital concentrated firms, the results showed the impact of degrees of leverage is insignificant on the dependent variable (systematic risk). Model-3 showed that all three types of leverage including DOL, DFL, and DCL are insignificant. Hence, low capital-intensive firms are not related to systematic risk. The results of model-3 are contradictory in nature. It means that capital intensity has an impact on systematic risk. In the case of low capital intensity, the insignificant results showed that the low capital-intensive firms have a lower effect on systematic risk, opposite to the high capital-intensive firms.

6 AVAILABILITY OF DATA AND MATERIAL

Data can be made available by contacting the principal and corresponding author.

7 REFERENCES

Acharya, V. V, & Thakor, A. V. (2016). The dark side of liquidity creation: Leverage and systemic risk. *Journal of Financial Intermediation*, *28*, 4–21.

Ahmad, F., Ali, M., Arshad, M. U., & Shah, S. Z. A. (2011). Corporate tax rate as a determinant of systematic risk: Evidence from Pakistani cement sector. *African Journal of Business Management*, *5*(33), 12762–12767.

Ahn, S., Denis, D. J., & Denis, D. K. (2006). Leverage and investment in diversified firms. *Journal of Financial Economics*, *79*(2), 317–337.

Akbari, P., & Mohammadi, E. (2013). A study of the effects of leverages ratio on systematic risk based on the capital asset pricing model among accepted companies in Tehran stock market. *J. Educ. Manage. Stud*, *3*(4), 271–277.

Akhtar, S., Javed, B., Maryam, A., & Sadia, H. (2012). Relationship between financial leverage and financial performance: Evidence from fuel & energy sector of Pakistan. *European Journal of Business and Management*, *4*(11), 7–17.

Alaghi, K. (2011). Financial leverage and systematic risk. *African Journal of Business Management*, *5*(15), 6648–6650.

Ali, F., Fareed, Z., Khan, T.M., Hamid, R. (2019). Impacts of Leverage on Investment: A Brief View of Pakistani Listed Firms. International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies. 10(17), 10A17G: 1-8.

Ball, R., & Brown, P. (1968). An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, 159–178.

Beaver, W., Kettler, P., & Scholes, M. (1970). The association between market determined and accounting determined risk measures. *The Accounting Review*, *45*(4), 654–682.

Bhatti, A. M., Majeed, K., Rehman, I., & Khan, W. A. (2010). Affect of leverage on risk and stock returns: evidence from Pakistani companies. *International Research Journal of Finance and Economics*, *58*, 32–49.

*Corresponding author (M.Kashif Khurshid). Tel: +92-300-9650054 Email: kashif041@gmail.com Volume 11 No.5 ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8 Paper ID:11A05H http://TUENGR.COM/V11/11A05H.pdf DOI: 10.14456/ITJEMAST.2020.88

Bowman, R. G. (1979). The theoretical relationship between systematic risk and financial (accounting) variables. *The Journal of Finance*, *34*(3), 617–630.

Darrat, A. F., & Mukherjee, T. K. (1995). Inter-industry differences and the impact of operating and financial leverages on equity risk. *Review of Financial Economics*, *4*(2), 141–155.

Dimitrov, V., & Jain, P. C. (2008). The value-relevance of changes in financial leverage beyond growth in assets and GAAP earnings. *Journal of Accounting, Auditing & Finance*, *23*(2), 191–222.

Elmasr, H. (2007). Capital intensity and stock returns. *Journal of Investment Strategy*, *2*(1), 61.

Gahlon, J. M. (1981). Operating leverage as a determinant of systematic risk. *Journal of Business Research*, *9*(3), 297–308.

Gahlon, J. M., & Gentry, J. A. (1982). On the relationship between systematic risk and the degrees of operating and financial leverage. *Financial Management*, 15–23.

García-Feijóo, L., & Jorgensen, R. D. (2010). Can operating leverage be the cause of the value premium? *Financial Management*, *39*(3), 1127–1154.

Ghosh, A., & Jain, P. C. (2000). Financial leverage changes associated with corporate mergers. *Journal of Corporate Finance*, *6*(4), 377–402.

Gritta, R. D., Adams, B., & Adrangi, B. (2010). Operating, Financial and Total Leverage and the Effects on US Carrier Returns, 1990-2003. *Journal of Transportation Research Forum*. 45.

Guo, H., & Whitelaw, R. F. (2006). Uncovering the risk-return relation in the stock market. *The Journal of Finance*, *61*(3), 1433–1463.

Gupta, P. K., Kumar, S., & Verma, P. (2016). Value relevance of the degree of leverages. *International Journal of Business and Emerging Markets*, *8*(2), 166–182.

Houmes, R. E., MacArthur, J. B., & Stranahan, H. (2012). The operating leverage impact on systematic risk within a context of choice: an analysis of the US trucking industry. *Managerial Finance*, *38*(12), 1184–1202.

Huffman, S. P. (1989). The impact of the degrees of operating and financial leverage on the systematic risk of common stocks: another look. *Quarterly Journal of Business and Economics*, 83–100.

Jiao, D. (2013). Demand volatility, operating leverage and systematic risk in hospitality industry. *Universiteit van Tilburg*.

Lee, S., & Park, S.-B. (2014). A study on the association between operating leverage and risk: The case of the airline industry. *International Journal of Economics and Finance*, *6*(3), 120–125.

Lev, B. (1974). On the association between operating leverage and risk. *Journal of Financial and Quantitative Analysis*, *9*(4), 627–641.

Mandelker, G. N., & Rhee, S. G. (1984). The impact of the degrees of operating and financial leverage on systematic risk of common stock. *Journal of Financial and Quantitative Analysis*, *19*(1), 45–57.

Mensah, Y. M. (1992). Adjusted accounting beta, operating leverage and financial leverage as determinants of market beta: a synthesis and empirical evaluation. *Review of Quantitative Finance and Accounting*, *2*(2), 187–203.

Obreja, I. (2008). Financial leverage and the cross-section of stock returns. In *VI Encontro Brasileiro de Finanças*.

Odit, M. P., & Chittoo, H. B. (2008). Does financial leverage influence investment decisions? The case of Mauritian firms. *Journal of Business Case Studies (JBCS)*, *4*(9), 49–60.

Ramadan, Z. S. (2012). Does leverage always mean risk? Evidence from ASE. *International Journal of Economics and Finance*, *4*(12), 150–158.

Rayan, K. (2010). Financial leverage and firm value. University of Pretoria.

Stickney, C. P., & McGee, V. E. (1982). Effective corporate tax rates the effect of size, capital intensity, leverage, and other factors. *Journal of Accounting and Public Policy*, *1*(2), 125–152.

Tan, N., Chua, J., & Salamanca, P. (2015). Study of the overall impact of financial leverage and other determinants of systematic risk. In *Proceedings of the Research Congress, Philippines* (Vol. 3, pp. 1–7).

Yoon, E., & Jang, S. (2005). The effect of financial leverage on profitability and risk of restaurant firms. *Journal of Hospitality Financial Management*, *13*(1), 35–47.

Mubeen Abdur Rehman works as a Business Finance Partner, Finance Department at Haleeb Foods Limited since January 2018. He has completed his MS Business Administration from National University of Modern Languages, Islamabad. He is interested Financial Leverage, Risks.

Muhammad Kashif Khurshid is a Lecturer at Department of Management Science, National University of Modern Languages. He did his MS in Business Administration (Finance) from Mohammad Ali Jinnah University. Currently, he is pursuing a Ph.D. from GC University Faisalabad. He research are Corporate Governance and Corporate Finance.

Muhammad Iltaf is working as a Lieutenant in Pakistan Navy. He has completed his MS in Business Administration from National University of Modern Languages, Islamabad. He is interested in Financial Management.

Muhammad Ans Hafeez is working as an Office Coordinator in the Education Department. He completed his MS in Business Administration from National University of Modern Languages, Islamabad.

Muhammad Kashif is a Lecturer in Commerce at Govt Post Graduate College Sahiwal. He got his MS degree in Finance from National University of Modern Languages Faisalabad Campus. He focuses on Capital Market Imperfections with relative to Investment and Cash Flow.