Original Article

The impact of financial factors on investment decision with moderating role of firm size: Evidence from textile-based firms in Pakistan

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Abstract

The study examines the moderating role of firm size in the relationship between financial factors and investment decision in textile sector of Pakistan stock exchange (PSX). Descriptive statistics, correlation and fixed effect regression analysis was applied on a sample of 20 textile firms for a period of 10 years (2009-2018).The study results a significant positive effect of financial leverage (FL), cash flow (CF), firm size (FZ) and Tobin's Q on Investment Decision (D) whereas profitability has an insignificant effect on Investment Decision. It was also found that firm size positively moderates the relationship between financial leverage, Tobin's Q and investment decision and negatively moderates the relationship between profitability and investment decision. However Firm Size does not moderate the relationship between cash flow and investment decision. The contribution is rare with inclusion of Firms Size as moderator in association between FL, profitability, CF, and Tobin's Q and investment decision of listed textile firms in PSX.

Keywords: Financial factors, investment decision, firm size, textile firms

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Introduction

The study of Vo (2019) found the relationship between leverage and investment decision in Vietnam. The results show a significant direct correlation between leverage and investment decisions, while signifying that an increase in financial leverage will boost new investments in the area of interest. Another recent study of He *et al.,* (2019) found that those companies that are more limited in their investment are normally bigger in terms of leverage used for the said purpose. Furthermore, there are numbers of researchers like Jensen (1986) and Barclay *et al.*,(2003) had gone through empirical context of leverage and suggest further exploration. The study of Aivazian *et al*., (2005) identified that financial leverage was negatively and significantly related to the investment decision in the low growth opportunities companies as compared to the high growth opportunities companies. The growth opportunities can be favorably indicated by a popular Tobin

Q. The more specific work of Tobin Q is the association of the current market value of a business with the substitute or the book value of the assets of the said business. When the value of Tobin-Q exceeds one, in other words it means that firms' market value exceeds the registered value in terms of its assets. Furthermore, there is an indication of higher growth opportunities using the same parameter in order to find valid results. The bigger the Tobin Q of the company is, the greater its growth opportunities. Further, the findings of Nguyen et al., (2020) indicated that there is limited impact of cash flow on the investment decision of the sample firms in Vietnam while the CEOs are more confident with it.

Different empirical studies examined that cash flow was positively related to the investment decision (ANG *et al*., 1982; Aivazian *et al*., 2005; Cassar & Holmes, 2003; and Farinha & Prego, 2013). According to Jensen (1986) the directors tend to leftover free cash flow business projects to a certain extent to allocate and distribute them in their stockholders and investing them in negative NPV projects by investing in and not distributing negative NPV projects in the shareholders. Similarly, Aivazian *et al*., (2005) incorporated the return on assets while conducted the study considering it in regression model that aimed for controlling the companies' profitability as well as performance, and identified a positively significant association, meaning that companies with more profitability clicks the more investment options respectively. The studies by Barbosa et al., (2007) and Farinha & Prego (2013) identified the impact of financial leverage on investment decisions of Portuguese companies. They found that the company size was negatively and significantly related to the investment decision. Larger companies, however, are likely characterized with lesser information asymmetries (Farinha & Prego, 2013 and Haque, 2014) to be highly diversifiable (Antão & Bonfim, 2008) having a lesser risk of insolvency and thus facilitate accessibility to the outside finance. Therefore, there is tendency of less liquid than smaller companies declared by Farinha and Prego (2013) are additional likely to absorb debt support in order to meet financial requirements for their investments (Haque, 2014). Therefore, based on these reasons, there is expectation of a direct association between company size and the respective investment.

Literature review

The findings of Nguyen *et al*., (2020) indicated that there is limited impact of cash flow on the investment decision of the sample firms at Vietnam while the CEOs are more confident with it. Furthermore, companies with high growth opportunities (i.e. when Tobin's Q is more than 1) will expect larger cash flow that alleviates the adverse selection as well as problems of moral hazards in the financial market easing the financial bottlenecks (Aivazian et al., 2005). The studies of Barbosa *et al*., (2007) and Farinha and Prego (2013) identified a significant impact of financial leverage on investment decisions of Portuguese companies. They found that the company size was negatively and significantly related to the investment decision.

Another study of He *et al*., (2019) found that those companies that are more limited in their investments are normally bigger in terms of leverage used for the said purpose. The association between cash flow and investment is based on

information asymmetries between the managers of the firms and outsider financiers. This further argues that such attribute builds a "pecking order" layout/structure in companies in terms of financial strategy. In this context, the managers opt for financing investments from the internal generation of funds which will drop the option of external financing that is a burden for the firms, ultimately this may push them to give up favorable NPV investment decisions. As a result, financing is available in the shape of internal funds which is a key element of investment. Those companies who have abundant cash inflows from various sources can use them in investment undertakings. Similarly, Barclay *et al*., (2003) provided that firms financial leverage is positively influence the level of investment. Further, various studies show that firm is properly managed by the management which result in an increase in the size of the firm. Larger companies, however, are likely characterized with lesser information asymmetries (Farinha & Prego, 2013 and Haque, 2014) to be highly diversifiable (Antão & Bonfim, 2008) having a lesser risk of insolvency and thus facilitate accessibility to the outside finance which will also help in strengthening the firm's performance.

Research methodology

Methodology of this study is composed of population and sample size, data collection procedure, type of study, unit of analysis, data analysis techniques, model of the study, measurement of Variables with required basic analysis as well. The study has taken all registered textile companies in Pakistan Stock Exchange (PSX) as population while 20 leading textile companies are labeled as sample of the study. Secondary data were collected from the annual reports of sample textile firms, official website of PSX, and yahoo finance for a period of ten years i.e. from 2009 to 2018. The unit of analysis is the sample textile firms listed in Pakistan Stock exchange (PSX).

The fixed-effect model, correlation and descriptive statistics have been used in this study whereas Gretel and E-views research software are used for analysis. Investment decision is a function of financial leverage, Tobin's Q, cash flow, profitability and firm size. The models are as follows:

$$I_{i,t} = \beta_0 + \beta_1\left(LEV_{i,t} * FS\right) + \beta_2(CF_{i,t} * FS) + \beta_4(Tob, Q_{i,t} * FS) + \beta_5(SALES_{i,t} * FS) + +\beta_5(PRO_{i,t} * FS) + \beta_5(SIZE_{i,t} * FS) + \mu i, t \quad \ldots \ldots \ldots eq\ (1)$$

$$I_{i,t} = \beta_0 + \beta_1\left(LEV_{i,t}\right) + \beta_2(CF_{i,t}) + \beta_4(Tob, Q_{i,t}) + \beta_5(SALES_{i,t}) + +\beta_5(PRO_{i,t}) + \beta_5(SIZE_{i,t}) + \mu i, t \quad \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots .eq\ (2)$$

I is denoted with investment decision ratio, is dependent variable calculated Net Assets = Total Assets – Depreciation for firm i in period t. LE denotes leverage, is taken as an independent variable, it can be calculated as total debt divided by total liability. CF denotes the cash flow.

It is the total pre-extraordinary items earnings including depreciation, and the cash flows can be measured. Similarly, Farinha & Prego, 2013 used the same

measure in their study. Similarly, Q is the Tobin's q ratio, size and PRO is the profitability ratio,β_0 indicates the intercept in the model and μ denotes the error term of firm i in the given period t.

Measurement of variables and empirical evidences

Table-1 Measurement of variables

Symbol	Variable Name	Measurement	Empirical Evidence
LE	Financial Leverage	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$	(Kuzucu, N. (2015)
PRO	Profitability	$\frac{\text{Net profit}}{\text{Total Assets}}$	Eduardo K.Kayo and Herbert Kimura (2011)
TQ	Tobin's Q	$\frac{\text{Market value of total asset}}{\text{Book value of assets}}$	Aivazain et all., (2005)
CF	Cash Flow	Total earnings before extraordinary item and depreciation	Farinha & Prego, 2013
Size	size	Natural Log of total assets	Haque, (2014)
DP	Investment Decision	Total Asset - Depreciation	Daniel Fernandes Amador Costa Tome (2017)

Analysis

This section covers the analysis carried out in order to test the hypotheses and explanation of the data in the statistical context. The study is segregated into descriptive statistics

Descriptive statistics

Descriptive statistic covenants with the characteristics of data. Investment decisions used in this study as a dependent variable and cash flow, revenue growth, profitability, and company size and financial leverage as independent variables. The descriptive analysis consists of minimum, maximum, median, mean and standard deviation of all variables. Descriptive statistics detailed is label in the table 2.

Table-2 Descriptive Statistics of Textile Sector

Variables	N	Minimum	Mean	Maximum	Std. Dev
INV	200	0.00	6.556	9.511	1.212
CF	200	0.00	5.339	8.724	1.086
TQ	200	-4.15	0.010	0.839	0.415
PROF	200	-0.22	0.017	0.267	0.074
SIZE	200	-6.82	-0.015	6.963	1.248
FL	200	0.00	0.672	1.512	0.227

Table 2 shows the detail summary of all dependent and independent factors for the textile sector of Pakistan. The data have been taken from the yearly financial statements of the textile sector. In the descriptive statistics, the average investment

volume is 6.5563, which means that the investment of the textile sectors is 655% in the last ten years. While the maximum investment of the textile sector was 951%, with the deviation of 121% is fewer than the mean. The first explanatory variable of the study is financial leverage, which indicates the average value of FL is 0.67. This shows that over the past ten years the company used 67% of debt to finance its ventures. In the last ten years, the maximum debt of the organization was 151% with a deviation of 22%.

The average mean value of the cash flow is 5.33 which show the average cash flow of the textile sector is 533%. While in previous ten years maximum cash flow textile sector is 872% with the deviation of 108% which is less than the average value. Tobin's Q of the organization shows the mean value is 0.0104 which indicates that in last ten years of textile sector sales growth was. While maximum growth of the organization is 83% with the STD deviation of 41% which is more than the mean value of Tobin Q.

The average value of the profitability is 0.017 which indicate the profitability of the textile sectors in the last ten years were 1%. While in the previous ten years maximum profitability is 26% with the STD deviation of 7%. The average mean value of the firm size is 0.0155 which point out that in last ten years textile sector firm size was 1%, it means that in the last ten years the size of the textile sector remained unchanged while maximum size of the organization is 696% with the deviation of 124%.

Correlation

The measurement tool that verifies the causal assignment /relationship and the linear relationship between two units. The correlation take a look at used to observe the relationship among financial factors and investment decisions. Table 2 contains the association coefficients among DV and IVs. It is crucial that variables aren't strongly interrelated or that there is minimal association among the variables with the opposite variables. A large relationship between IVs influences their mutual strength in enlargement the DV. Moreover, the coefficient of correlation is also used to check the problem of multicollinearity. Similarly, according to the standard vale of correlation, the relationship among the variables must be less than 0.85. The effects in Table 2 suggest that the model does not have any multicollinearity.

Table-3 Pearson Correlation Matrix between investment and Financial Factors

	INV	CF	GROWTH	PROF	SIZE	FL
INV	1					
CF	0.727**	1				
TQ	0.332**	0.354*	1			
PROF	0.116***	0.292*	0.211	1		
SIZE	0.578**	0.283*	0.170*	0.034	1	
FL	0.270**	-0.051*	-0.324*	-0.424*	0.320	1

*** P ≤ 0.01, **P ≤ 0.05, *P ≤ 0.10

The table 3 of the study indicates from the correlation value (i.e. 0.116) that association between the profitability and investment decision is positive and significant. The logic behind this association is that the high profitable firms opt for investment decisions to utilize their resources. Therefore, the most significant factor of investment decision is profitability of the firms. The correlation in the middle of FL and investment decision is 0.270. This represent that there is positive and significant association among the investment and FL. This shows that higher debt leads to making more investment. While acquiring assets with the expectation of higher rate of return from loans getting at a certain rate of interest, a firm may augment its return on equity, expand its earnings, and resultantly boost its profitability. Similarly, the frequently tax advantages linked with getting loans due to the fact that paying interest is tax deductible. The correlation between the investment decision and Tobin's Q of the firm is 0.332. This shows that investment decisions and Tobin Q are positively and significantly related to each other. This indicates that companies with strong growth are worried. These companies can leverage any funding possibility through using leverage due to the fact they have sufficient cash flow to minimize the risk of using leverage to leverage investment opportunities. The correlation amongst the investment and CF of the firm is 0.727. This represents a significant positive relationship between the cash flow and investment decision. The cash flow-investment association that is based on information asymmetries between the managers of the firms and outsider financiers. This further argues that such attribute builds a "pecking order" layout/structure in companies in terms of financial strategy. In this context, the managers opt for financing investments from the internal generation of funds which will drop the option of external financing that is a burden for the firms, ultimately this may push them to give up favorable NPV investment decisions. As a result funds are available in the shape of internal funds while a key element of investment. Those companies who have abundant cash inflow from various sources can use them in investing undertakings (Farinha & Prego, 2013). The correlation between the firms size of the textile sector and investment decision is 0.578. This represent that firm size is significantly and positively related to investment decisions. This concave relationship indicates that size of the firm's escalations and its investments also increase. It also shows that firm is properly managed by the management which

results in an increase in size of the firm. Larger companies, however, are likely characterized with lesser information asymmetries (Farinha & Prego, 2013 and Haque, 2014), to be highly diversifiable (Antão & Bonfim, 2008), whereas having a lesser risk of insolvency and thus facilitate accessibility to the outside finance which will also help in strengthening the firm performance.

Regression

Regression is used to measure the dependence of one variable on another variable. In precise, regression shows how value of dependent variable change due to any variation in any one explanatory variable. However, other explanatory variables remain unchanged. In regression analysis biases in results may be eliminated. In this study, fixed and random effect approach is used to determine the impact of financial factors on investment decisions of firms.

Table 4 shows the estimation results of fixed effect for the impact of financial factors on firm's investment decision. The results suggest that the adjusted R-square value is (.829) which shows the change in dependent variable caused by the explanatory variable. Furthermore, value of F-statistic shows that the estimated model is good fit to data and explanatory variables explains sufficient variation in dependent variables.

Table 4: Fixed effect estimation for financial factors on firms investment

Dependent Variable:	Investment Decision			
Independent variable	Coefficient	t-stats	p-value	Std. Error
CF	0.379	6.816	0.000***	0.055
FL	2.745	8.823	0.000***	0.311
SIZE	0.268	7.235	0.000***	0.037
PROF	0.375	0.553	0.580	0.678
TQ	0.326	2.893	0.0043**	0.112
Constant	2.678	8.639	0.000***	0.310
Adjusted R^2	0.8054			
Hausman. Stat	0.0045			
F-statistic	35.164			
Prob (F-stat.)	0.0000			

Notes: (constant), Cash flows (CF), Financial leverage (FL), size, Profitability (Prof), Growth., **, and *** provides significant at the 10 percent, 5 percent, 1 percent level significance, respectively.*

However, by estimating the coefficients of all the independent variables such as cash flow, financial leverage, Tobin's Q, profitability and firm size on investment decision. The estimated coefficient of cash flows shows a significant positive relationship with investment decisions. This suggest that other things remain constant in model, one unit change in cash flow causes 0.379 unit change in investment decision. The relationship is concave in nature, which shows that firms

do over investments by paying less dividend to shareholders and firm's investment is more sensitive to their cash flow. This indicates that more the free cash flow firms have more investment made by firm. These results are also consistent with the results of Aivazian et al., (2005) and therefore accept the hypothesis of this study.

Furthermore, the estimated coefficient of financial leverage suggests a significant positive relationship with investment. This result suggests that keeping the other factors remain fixed, one unit increase in financial leverage may increase firms investment by 2.74 units on average. This concave relationship suggests that firms do not have enough amounts of retained earnings to finance their projects. So firms tend towards debt financing to increase their investment. However, these results are consistent with the results of Barclay et al., (2003) provided that a firm's financial leverage positively influences the level of investment. This result also agrees our Hypothesis and concluded that financial leverage has a positive relationship with investment.

Moreover, the coefficient of firm size suggests a positive relation with investment at 0.01 level of significance. This significant positive relationship means that, as the size of the firm increases the larger investment made by the firm. This shows that keeping the other factors held constant, a one unit increase in size of the firm increases in the investment by .268 units on average. These results are align with the results of Farinha and Prego (2013) and Haque(2014)who revealed that firms financial size is positively related with investment. This result also agrees with the Hypothesis of this study and concludes that financial size has a positive relationship with investment. Furthermore, the estimated coefficient of Tobin Q of companies suggests a significant positive relationship with investment decisions. This result recommended that keeping the other factors remains fixed, one unit increase in the Tobin's Q opportunities of firm may increase firm investment by 0.326 units on average. So, this can be attributed to firms with higher growth and are more worried as well. The said companies can pick any investment chance from the available options with the help of leverage. This is because of their more strong cash flow position to minimize the risk appears, at the same time, from the usage of leverage for picking investment opportunities. Companies with high growth opportunities (i.e. with Tobin's Q of more than 1) will expect higher cash flow, which mitigates the adverse selection and moral hazard problems in the capital markets (Aivazian et al., 2005) easing the financial bottlenecks. Companies with strong growth can therefore leverage opportunities, as they have easier access to capital markets and a lower risk of bankruptcy due to the use of debt. However, these results are consistent with the results of Aivazian et al., (2005) provided that firms Tobin Q is positively influence the level of investment. This result also agrees with the Hypothesis of the present study and concludes that Tobin Q has a positive relationship with investment. However, coefficient of profitability shows positive relationship with investment but this relationship is statistically insignificant.

Moderation results

Table 5: Moderation of size on profitability and investment

Outcome : Investment Decision				
	Coeff	SE	t-value	Sign
Constant	-.0049	.0020	-2.4193	.0165
SIZE	.9986	.0003	3.4104	.0000
PROF	.1363	.0643	2.1202	.0352
PROF*SIZE	0.0195	.0098	1.9868	.0483
R-square	0.82			
p-value	.0000			

In the table above, the moderator i.e. size is estimated between the relationship of profitability and investment. The findings suggest that coefficient of size is 0.998 which has positive significant relationship with investment at 0.05 level of confidence. This implies that one unit change in size increases the investment by 0.998 on average. Furthermore, the coefficient of profitability is positively related with level of investment at 0.05 levels. This revealed that by increasing the profitability by one unit the investment increases by .136 on average. Furthermore, it can be deduced from the results that by introducing the interaction variable firm size the coefficient of moderating variable (profitability*size) shows positive relationship with investment. This implies that by increasing the profitability by enhancing firm size the investment of the firm's increases by 0.019 on average and the moderation effect stood at 0.05 level of significance. The findings conclude that moderation effect of firm size has a significant positive effect on the relationship between profitability and investment.

Table 6: Moderation of size on cash flows and investment

Outcome : Investment Decision				
	Coeff	SE	t-value	Sign
Constant	-.0019	.0031	-.6214	.5350
SIZE	.9980	.0006	2.2632	.0000
Cash Flows	-.0007	.0008	-.9005	.3690
CF*SIZE	.0001	.0001	1.0694	.2862
R-square	0.46			
p-value	.0000			

By applying moderation effect of size on the relationship between cash flow and investment. The findings suggest that coefficient of size .998 has positive significant relation with investment at 0.05 level of confidence. This implies that one unit change in size increases the investment by .998 on

average. Furthermore, the coefficient of cash flow has insignificant negative relationship with investment. Moreover, the interaction variable firm cash flow size has also insignificant relationship with investment this shows that firms size has no moderation effect on the relationship between the cash flow and investment.

Table 7: Moderation of size on Tobin's Q and investment

Outcome : Investment Decision				
	Coeff	SE	t-value	Sign
Constant	-.0063	.0023	-2.7238	.0070
SIZE	.9987	.0003	2.4241	.0000
Growth	-.0069	.0034	-2.0105	.0458
TQ*Size	.0014	.0006	2.3923	.0177
R-square	0.92			
p-value	.0000			

Moreover, looking at the table, we find interesting results by estimating the moderation effect of size on the relationship between Tobin's Q and investment. The findings suggest that coefficient of size .998 has positive significant relation with investment at 0.05 level of confidence. This implies that one unit change in size increases the investment by .998 on average. Furthermore, the coefficient of Tobin's Q has negatively related with level of investment at 0.05 levels. This revealed that by increasing the growth opportunities by one unit the investment decreases by .006 on average. Furthermore, by including the moderations effect of Tobin's Q *size) with investment.

The results suggest that interaction term (Tobin's Q *size) has significant positive relationship with investment at 0.05 level. The positive coefficient of Tobin's Q *size suggest that by introducing the moderation effect the growth opportunities (Tobin's Q) and investment has positive relationship with investment.

Table 8: Moderation of size on financial leverage and investment

Outcome : Investment Decision				
	Coeff	SE	t-value	Sign
Constant	-.0001	.0021	-.0431	.9657
SIZE	.9987	.0004	2.7990	.0000
FL	-.0287	.0066	-4.3868	.0000
FL*Size	. .0044	.0011	3.8118	.0002
R-square	79.08			
p-value	.0000			

Table 8 provides the moderation results of firm size and financial leverage on investment. By including the moderation variable financial leverage*size, the results suggest that the coefficient of financial leverage*size has significant positive relationship with investment at 5% level. This shows that in the presence of size the effect of financial leverage on investment is positive. The finding provides that by increasing the level of debt by one unit by large size firms that level of investment improves to 0.004 on average. The findings conclude that moderation effect of firm size has significant positive effect of the relationship between financial leverage and investment.

Conclusion

The findings of the study identifies that financial leverage, cash flow, firm size and Tobin Q have significant and positive effect on the investment decision whereas profitability has insignificant relationship with investment decision. The results of moderator show that firm size have positively moderate between financial leverage and investment decision, Tobin's Q and investment decision, and negatively moderate between profitability and investment decision and insignificantly moderate between cash flow and investment decision. The study concluded that major shareholders should consider the role of their experienced managers in key decisions like taking loans, utilization of loans, production related matters etc., because majority of the textile firms are owned by families and their relatives like cousins and in-laws. The study recommended for stakeholders like actual investors, corporate managers, Board of Directors, research scholars, and potential investors for formulating and reviewing their investment decisions, taking into account the factors that have been shown to have a notable effect on the investment decision by keeping in view the moderating role of firm size that has a considerable effect on the dependent variable. It is also recommended that large firms should utilize their financial leverage in profitable ventures which will increase the rationality in investment decisions of the concerned firms. Furthermore, the study is limited to sample size, variables and time frame whereas future studies can be conducted in the same area of interest by taking other sectors of the economy as well.

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