What matters the most? Traditional or Modern Measure of Performance in the context of Operating and Financial Leverage

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Financial leverage and operating leverage are important factors for any firm to generate income and to raise funds for further expansion. Operating leverage is a measure that shows the degree to which a firm can raise operating profit by increasing revenue while financial leverage is the use of debts to acquire additional assets or funds. Two types of measures can be used to represent the performance of a firm; traditional measure such as ROA, ROE, and ROI etc. and modern measures such as economic value added, and market value added. Previous studies investigate the impact of operating and financial leverage on firm's performance but using the traditional measure of performance i.e., Return on Assets and Return on Equity. This study differs from the traditional techniques to a recent measure of performance which is a more modern and sophisticated performance measure referred to as modern measure of performance and is called economic value added. The study uses sample from the non-financial firms form Pakistan Stock Exchange for the period 2014 to 2020. We download data from the relevant websites of firms, Pakistan Stock Exchange, and State Bank of Pakistan for the sample firms and sample period. The data is secondary and panel in nature. Using panel data techniques for analysis, the study finds that operating and financial leverage are significantly but negatively affecting traditional measure of performance while operating leverage is

having a non-significant and negative relation with modern measure of performance (EVA). Moreover, financial leverage is negatively associate with EVA and this association is statistically significant. In terms of magnitude of the coefficients (betas), leverage effect is more on modern measure of performance i.e. economic value added.

Keywords: *Economic Value Added (EVA), Return on Assets (ROA), Return on Equity (ROE), Financial leverage (DFL), Operating leverage (DOP).*

1.   Introduction

Capital structure (CS) is the mix of debt and equity where a firm finance its assets and operations through debt and equity. In any business it is very difficult and important for a finance manager to find an optimum level of CS (Yadav & Salim, 2012). Modigliani and Miller (1958) are the pioneer to present CS theory. They believed firm's value is not affected by CS under some assumptions i.e., no cost of capital, zero taxes and zero chances of bankruptcy, same rate of borrowing and lending and same or equal information is available to all. Jensen and Meckling (1976) criticized the earlier researchers and argue that the cost of bankruptcy, agency cost and taxes are the three factors which influence the optimal CS of a firm. However, a firm can enjoy the benefits of tax shield being offered by the amount of debt used in the capital.

Goyal and Frank (2004) argue that benefits of the debt can be traded off by a firm i.e., reducing the agency problems and tax savings against the real cost of financial distress and debt. Moreover, they state that the firm with great amount of profitability should have to use a greater amount of debts to take advantage of tax shield. However, Myers (2001) criticizes the trade-off model and argues that a firm with most profitability will tend to borrow least. He further states that moderate debt ratio is justified by trade off model. The basic aim of the trade-off model is to enlighten the type of approach that a firm wants to pursue to finance its operations, equity or debt should be that financing. Moreover, he states that weak firms will prefer banking sector to obtain finance for their operations and thus improving their performance.

Prior research uses different accounting measures and determinants of firm performance (FP). For example, Ebaid (2009) uses operating and financial leverage (current debt, noncurrent debt, and total debt ratio) as factors affecting FP using three accounting measures of return on asset (ROA), Gross Profit Margin (GPM) and return on equity (ROE). He finds that CS has a weak association with FP. However, results for short term and total debts ratio have negatively significant relation with FP. Similarly, Yadav and Salim (2012) investigate the effects of CS on the FP and find an

inverse relationship between CS and FP. Both these studies contradict the arguments presented by Modigliani and Miller (1958) that the value of the firm is not affected by CS of the firm.

All the above studies used traditional measures of performance. However, as shown above, due to limitation of the traditional measures of performance, the need of a new measure of performance was felt in the recent extant literature. Traditional measures of performance provide limited insight as they mostly rely on historical figures (Kumar & Sharma, 2010). Alternatively, studies argue that a more comprehensive measure is required which covers whole sum of firm performance. Steward (1991) used a new measure referred to as Economic Value Added (EVA) which more accurately reflects the true value of the firm. EVA is different from the old measures of performance as it considers the cost of equity while calculating value of the firms (Azadinamin, 2011).

Prior literature explores the association of these modern measure of FP and its association with CS. For example, Shahveisi et al. (2012) report a negative association of cash value added, economic value, market value with capital structure for the Iranian Market. Khan et al. (2016) compare the impact of modern measure of performance and traditional performance measure on stock returns but find no support of the claim of EVA's superiority over the conventional measure of performance.

Based on the above arguments and prior literature, we argue that majority of such studies have taken place in developed countries. Very less evidence can be found in developing and underdeveloped countries. For example, literature reports that firms in a developing country such as Pakistan mostly rely on short term debt. Moreover, the only source of financing in Pakistan is commercial banks where long-term financing is not encouraged (Shah & Hijazi, 2004). In such a situation, firms do not have many options of financing and thus rely more on short term than long term debt. Additionally, Wood (2000) criticizes that CS has a short focus. Thus, this study uses non-financial sector to investigates the impact of operating and financial leverage on two different measures of performance. The reason of including non-financial sector in the sample is that non-financial sector treat debts and equity similar while financial firms treat these two as different. Based on the above arguments, we premise that such a study is needed to compare which of the firm performance measure matter the most i.e., traditional, or modern one.

This study uses data for the period 2014 to 2020 from non-financial sector Pakistan Stock Exchange (PSX). We collect data from the financial statement analysis duly published by State Bank of Pakistan, Websites of the firms, and Pakistan Stock Exchange. We use EVA as measure of firm performance from modern performance measures while for traditional measures, this study is limited to the accounting performance measures of return on assets (ROA), return on equity (ROE) and Tobin's Q. We also use percentage change in EBIT to percentage change in Sales as

measure of operating leverage this study uses a ratio of while ratio of percentage change in net income to percentage change in EBIT is used a proxy for financial leverage. For short term loans this study uses ratio of current liabilities to total liabilities and for long term loans a ratio of noncurrent liabilities to total liabilities is used. Using secondary data and panel in nature, the fixed effect model techniques are used. We find that CS and leverage effect are not significantly related which means that if a firm is using CS to show its performance, hence the leverage it has taken is not affecting its value. Moreover, traditional measures RoA and RoE both have negative but significant relationship with operating and financial leverage. We find inconclusive results for both long term and short-term debt proxies in the sense that both variables have a negative and statistically significant association with CS.

This study contributes to the existing body of knowledge by comparing new measure of FP with traditional measure of performance for non-financial sector of Pakistan and investigates the effects of leverage on these measures. This study contributes to policy makers particularly bankers to encourage long-term financing. This study also adds to the existing body of knowledge for investors and lenders to consider the modern measure of FP along with traditional measure of FP while making their decision about investments and lending (i.e., Capital Structure).

The rest of the paper is scheduled as follow. Section 2 present methodology of the paper; results and discussion are presented in section 3 while section 4 concludes the paper.

2.   METHODOLOGY

This section presents the methodology of the study. Descriptive statistics, correlation analysis and regression model are presented. Furthermore, source of data collection, sample size and sampling technique is also reported in this section.

2.1   Sampling

This research study includes non-financial sector of Pakistan as its sample. Thus, this study uses census technique to draw its sample size. As per the financial statement analysis there are 14 groups in the non-financial sector and total number of firms are 367. We include all these firms in our sample. We collect data for all these firms from State Bank of Pakistan's Financial Statement Analysis, Websites of the sample companies and Pakistan Stock Exchange for the period 2014-2020.

2.2 Variables of the study

We propose to use two measures of performance i.e., traditional, and modern as our dependent variable for the study. We take return on assets, return on equity, and Tobin's Q as proxies for traditional measure while Economic Value Added is used as a proxy for the modern performance measure. Furthermore, to examine the leverage effects, this study takes degree of operating leverage, degree of financial leverage, short term leverage and long-term leverage as independent variables of the study. Size of the firm and growth are used as control variables.

2.3 Regression Model

To investigate the impact of operating and financial leverage on firm performance, this study proposed to use panel data regressions model. Following is the regression model.

$$FP = \beta_0 + \beta_1\,DOL + \beta_2\,STFL + \beta_3\,LTFL + \beta_4 sz + \beta_5 SG + \beta_5 AG + \varepsilon$$

where FP is firm performance and is proxied by both traditional and modern method of performance i.e., we use RoA, RoE and Tobin's Q as traditional measures while economic value added (EVA) is used as a proxy for modern performance measures; DOL is degree of operating leverage, STFL is short term financial leverage, LTFL is long term financial leverage, SZ is size of the firm and AG is growth in Assets.

3. DATA ANALYSIS

Since the data for the study is panel in nature and simple regression model is not applicable, thus the study proposes to use panel data analysis technique. As a procedure, we need to determine which of the panel data techniques is a suitable one for this study (pooled effect model, fixed effect model, or random effect model). To determine the above, this study employs Chow, Breusch Pagan and Hausman tests. Results of these tests suggest that fixed effect model is the suitable model for estimating the causal association of this study. The following table shows results of these tests.

Table 1   Results of Chow, Breusch Pagan and Hausman Tests Model Selection

		Results for EVA		Results for ROA		Results for ROE		Results for Tobin's Q		Conclusio	Final
Test	**Comparison**										**Fixed Effect Model**
Chow Test	Pooled vs Fixed Effect Model	F test all	0.000	F test all	0.000	F test all	0.00	F test all	0.00	Fixed Effect	
		F(266,	3.31	F(266,	13.30	F(266,	4.40 / 0.00	F(266,	16.0 / 0.00		
		P value	0.000	P value	0.000	P value		P value			

Breusch-Pagan Test	Pooled vs Random Effect Model	sigma_u	0.597	sigma_u	0.073	sigma_u	0.16	sigma_u	6.60	Random Effect	
Hausma-	Random Effect vs Fixed Effects	Chi2 (7)	179.67	Chi2 (7)	247.7	Chi2 (7)	128.	Chi2 (7)	20.8	Fixed Effect	
		Prob>	0.000	Prob>	0.000	Prob>	0.00	Prob>	0.00		

3.1 Fixed Effect Model

To investigate the effect of operational and financial leverage on firm performance, this research study after conducted several model selection test uses fixed effect model for estimation. This study for robustness investigates individual effect different types of leverage on all dependent variables as well as combined effect of leverages on dependent variables. Both methods of model estimations have different results.

Table 2   Fixed effect Regression of EVA with Operating, and Financial Leverage and Short-term and long-term Loan

Variables	Dependent Variable EVA	
DOL	-0.126*	-0.095*
SIZE	2.336***	2.361***
SG	0.110	0.250**
AG	-0.448***	-0.217
DFL	-0.170**	
STFL		-2.732***
LTFL		-3.298***
Constant	-22.98***	-22.04***
Adj R-squared	0.331	0.360

***, **, * represent 1%, 5% and 10% level of significance

Table 2, column-2 shows the results for combined impact of operating leverage and financial leverage and control variables on EVA. We use both operating leverage and financial leverage in one model, and we see that operating leverage has a negative and weak significant relationship with EVA; while DFL i.e., financial leverage has negative relationship with EVA and this relationship too is statistically significant at 5%. These results are consistent with previous study of Ali (2020), Shameli and Hassan (2014).

The last column of Table 2 shows the results of EVA with operating leverage, short term financial leverage, long term financial leverage and control variables of size, sales growth, and assets growth. Operating leverage is negative and weakly significant with EVA; short term financial leverage has a negative and significant relationship; and long-term financial leverage has a

negative and significant relationship with EVA.

Table 3   Fixed effect Regression of RoA with Operating, and Financial Leverage and Short-term and long-term Loan

Variables	Dependent Variable:	ROA
DOL	-0.045***	-0.035***
SIZE	-0.058***	-0.069***
SG	0.044***	0.050***
AG	-0.004	0.010
DFL	-0.014***	
STFL		-0.102***
LTFL		-0.147***
Constant	1.10***	1.084***
Adj. R-squared	0.224	0.235

***, **, * represent 1%, 5% and 10% level of significance

Tabel 3, Column 2 presents regression results of RoA with the combined impact of operating and financial leverages along with control variables. We find that both operating and financial leverage are negatively related to RoA and that both associations are statistically significant. We also show that like previous regression models of ROA except that assets growth now has a negative relationship, though not significant. Financial leverage is now also significant at 5% level of significance. These results are also consistent with the theory that higher levels of debt financing, i.e., short term and long term, tend to reduce the profitability because of higher financial costs. These results are consistent with the studies of Ahmed et al (2012), Salim and Yadav (2012), and contradictory with Ebaid (2009).

Column 3 of Table 3 shows the regression results of ROA with both short term and long-term debt financing along with other control variables. Short term and long-term debt still have the same relationship with ROA even when both are considered in the model simultaneously. This is consistent with the theory that higher levels of debt financing, i.e., short term and long term, tend to reduce the profitability because of higher financial costs.

Table 4   Fixed effect Regression of RoE with Operating, and Financial Leverage and Short-term and long-term Loan

VARIABLES	ariable: ROE	
DOL		
SIZE		
SG		
AG		
DFL		
STFL		
LTFL		
Constant		
Adjusted R-squared		

***, **, * represent 1%, 5% and 10% level of significance

Column 2 of Table 4 shows the regression results of ROE with both operating and financial leverages along with control variables. All results are like previous regression models. After including financial leverage with operating leverage, financial leverage is turns significant at 10% level of significance. Column 3 of Table 4 shows the regression results of ROE with both short term and long-term debt financing along with other control variables. All results are similar to previous regression models reported above.

Column 2 of Table 5 shows the regression results of Tobin's Q with both operating and financial leverages along with control variables. All results are like previous regression models. Operating and financial leverages still have the same relationship with Tobin's Q as in previous columns even when both are considered in the model simultaneously. Column 3 shows the regression results of Tobin's Q with both short term and long-term debt financing along with other control variables. Long term debt is positive but significant at 10% level of significance. Still the value of coefficient of short term is positive and significant. This shows that firm has used more short-term debt as compared to the long-term debt in order in finance its assets. The above results indicate that lenders do not encourage long term loans to non-financial sectors. Moreover, these results also indicate an opportunity for the investors to invest in the stocks of the non-financial sector of Pakistan.

Table 5   Fixed effect Regression of Tobin's Q with Operating, and Financial Leverage and Short-term and long-term Loan

VARIABLES	Dependent Variable:	TQ
DOL	-0.311	-0.414
SIZE	-0.774*	-1.040**
SG	-0.122	-0.239
AG	1.262*	0.779
DFL	-0.144	
STFL		9.561***
LTFL		3.644*
Constant	15.41**	15.62**
Adjusted R-squared	0.006	0.038

***, **, * represent 1%, 5% and 10% level of significance

4.   Conclusion

The purpose of this study is to investigate the impact of operating leverage and financial leverage on firm performance. To achieve the stated aim, 367 non-financial sectors of Pakistan are considered for the time span of eight years i.e., from 2014 to 2020. Due to non-availability of the data of several firms, the sample size is modified and reduced to 306 non-financial firms. Further this study uses two types of performance measures to explore the stated impact. One measure is known as the traditional accounting measures while the other one is referred to as modern measure of performance. In tradition accounting measure, we use three accounting measures, i.e., RoA, RoE and Tobin's Q as being referred in prior literature.

Economic Value Added (EVA) is taken as the modern measure of performance. For leverage effect, we use degree of operating and financial leverage, short term financial leverage and long-term financial leverage. Since the data is secondary and Panel in nature, we run diagnostic tests to determine which panel data analysis technique best suits to the study. We run Chow, Breusch Pagan and Hausman tests to reach to a conclusion that the fixed effect model is suitable for estimation. Results of this study show that both measure of performance i.e., modern and traditional are affected by leverage. Thus, this support the traditional theory of CS wherein it is stated that CS affect the value of the firm. We also conclude that CS has a significant and negative impact on operating leverage while with financial leverage it has an insignificant and negative association. This negative relation is because of increase of more debts which, as a result, increase the cost of debt thus finally decreasing FP. The negative relationship between leverage and FP is linked with the Trade-Off Theory of Capital Structure which states that the excessive use of debt

may leads towards financial distress. Furthermore, the negative relation can also be linked with the theory of Modigliani and Miller (1963) who argue that increasing the level of debt also increase the risk of the firm. Results of the study indicate that non-financial sector in Pakistan is not using an optimal mix of debt which is evident from the negative relation of debt with FP. Increase in debt will decrease the performance this is explained by the fact that the cost of debt is high as compared to cost of equity. This study also support the study of Jensen and Meckling (1976) in which they revealed that the firm decision regarding CS affect its value.

This study shows a very sensitive relationship between firm's performance and leverage. Non-financial sector of Pakistan is a highly leveraged sector; thus, the top management of this sector should take care of operating and financial leverage to manage risk which ultimately affect the performance of the firm. Lastly firms in non-financial sector should also reduce their cost of debt in order to gain optimal benefits from debt.

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