



Financial Health and Exports Sales: Evidence from Pakistan's Manufacturing Sector

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ABSTRACT

Purpose: Many developing countries are espousing export promotion strategies for accelerating growth. All the firms in a country are not exporting due to various factors and characteristics. One of the factors is finance or balance sheet that affects the investment decisions and export tendencies and intensities of the firms. This study aims to explain the link between financial health and exports sales.

Design/Methodology/Approach: We have applied the fixed-effect model and Granger Causality test to find the results. We have taken the data of 190 firms related to the manufacturing sector of Pakistan from 2005 to 2016.

Findings: We have taken four financial ratios to measure the financial health of the manufacturing sector of Pakistan. Debt to equity ratio and financial leverage ratio has shown negative sign with the exports sales while coverage ratio and liquidity ratio have appeared with a positive sign with exports sales. Moreover, the effect of total assets, concentration ratio, capital-output ratio and exchange rate have also been probed.

Implications/Originality/Value: The study suggests that the financial health of the firm is an important factor in determining export sales so the financial health of the firm should be good and sound so that export sales may be enhanced.



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Introduction

Foreign trade plays a central role in the economic development of a country. From mercantilism to the latest international trade theories, it can be found that some theories are focusing on export

promotion policies and others are concentrating on import substitution policies. Each of the policies has its pros and cons and various countries are adopting policies according to their circumstances. Foreign trade improves the production and quality of commodities because no country can improve its export without improving its methods of production, packing and price (Roberts and Tybout 1997; Kimura and Kiyota 2006). Foreign trade is also a source of technology and the latest knowledge. Besides, international relations, harmony among the countries improve due to international trade. Trade to GDP is an important indicator that describes the relative significance of the trade sector in any country. World trade to GDP is 58% in 2015 while in 2018 it constitutes 60%. It shows that the share of trade in world GDP is increasing which signify the importance of trade in the world.

Most of the developing countries and the developed countries are pursuing export-led growth policies to enhance their foreign exchange resources and to accomplish the internal and external gaps (Robert and Tybout, 1997). Many developing countries including Pakistan are facing trade deficits and fiscal deficits¹. It is well-admitted fact that exports are the engine of growth. Pakistan is focusing on many export promotion policies including export bonus scheme, export credit guarantee scheme, export market development funds, export financing scheme and export processing zones to enhance the exports of the country.

To improve the export sales, it would be vital to improve the financial health of the firms. Financial health is an important determinant of firms' sales either indigenously or globally. The financial position of the firm shows the solvency position and considered an important factor of firms' survival (Zingales, 1998). If a firm is financially strong, it means that it would be less leverage and more liquid which in turn enhance its market share due to sound financial health. Many studies, for example, Minetti and Zhu (2011) Abbas et al. (2015), Muûls, 2015 and Greenaway et al. 2005 specifically pointed out the nexus between financial health and export sales.

Financially constraints firms do not have much potential to expand their market because if a firm is in a financial crunch, it would not be able to meet its cost and would not enhance the quantity and quality of its output. Resultantly, it would not compete in the market locally and internationally. Cost conditions ultimately affect the price, advertisement and other sales activities in general. So, it is an important research topic to explore the link between the financial health and export of the firm in a country. In this study, we have focused on the manufacturing sector of Pakistan to probe the link between the financial health of this sector and export sales because Pakistan is lacking in exports and the trade deficit is increasing year by year. For example, the trade deficit has been 7.7% of GDP in the last five years, (GOP, 2018). For Pakistan besides the fiscal deficit, the current account deficit is a very serious issue that should be tackled in a better way. For this, one of the solutions is to accelerate the exports so that the trade deficit may be reduced or eliminated. This study would be an addition to the existing literature on international trade in Pakistan's economy as very few studies have explored the link specifically between financial health and exports.

Exports and Financial Health: Concept and Measurement

International trade has two counterparts: **i)** Exports and **ii)** Imports. Exports are defined as the sale of goods and services abroad. When a country sells her commodities, she receives foreign exchange and resultantly the supply of foreign exchange (supply of foreign capital inflows) increases.

¹ There are also some countries who are focusing tourism led growth for their development and some are blessed by natural resources i.e., Saudi Arabia, U.A.E etc. that are generating through oil exports.

Financial health is an important factor that has a strong bearing on firm exports sales. Two ratios are used in the literature to quantify the firms' financial health.

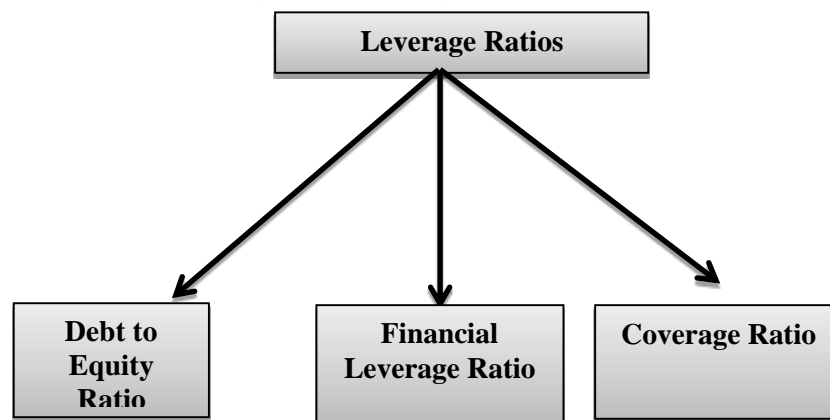
- Leverage ratios
- Liquidity ratios

Leverage Ratios

Leverage ratio (Solvency ratio) can be used to analyze the firm's financial structure. Long term solvency ratios show the ability of the firm for meeting the long-term liabilities and interest expense. It is an amount of debt to support the resources and operation of the company. There are two factors that potential investors necessarily consider before investment.

- Amount of indebtedness within the financial structure of a firm. The debt-to-equity ratio and equity multiplier measure the amount of debt a company uses.
- The ability of firm's debt servicing. Times interest earned ratio is used to measure the ability of firm debt servicing.

Figure 1: Leverage Ratios



Source: Van Horne and Wachowicz (2008)

Now we explain the various leverage ratios in detail.

Debt to Equity Ratio

DER measures the relative amount of the funds provided by lender and funds provided by owners. It also shows the link between external funds and internal funds. This ratio explains the strong financial long-term policies of the firm. This ratio also shows that the contribution of the owner should be greater than the creditors. The various formulas of DER can be written as:

$$\text{Debt to Equity Ratio (DER)} = \frac{\text{External Funds}}{\text{Internal Funds}} = \frac{\text{Outsider Fund}}{\text{Shareholder's Fund}}$$

In Summary: Debt (in comparison with equity) $\uparrow \rightarrow$ DER $\uparrow \rightarrow$ Default Risk in Loan $\uparrow \rightarrow$ Stock Risk \uparrow (Financial Health \uparrow)

Equity Multiplier

Equity Multiplier is also called financial leverage ratio. It measures a firm's debt usage. This ratio indicates the relation between equity and debt. It also shows the future or long-term solvency position of the firm.

$$\text{Equity Multiplier} = \frac{\text{Total Assets}}{\text{Stockholder Equity}} = \frac{\text{Liabilities(L)} + \text{Equity(E)}}{\text{Equity(E)}}$$

In Summary: EM $\uparrow \rightarrow$ L $\uparrow \rightarrow$ Financial leverage $\uparrow \rightarrow$ Financial health \downarrow

Debt Service Ratio

It is also called Times Interest Earned (TIE) or Interest Coverage Ratio. The ability of the firm can be quantified by judging its capacity for covering its fixed interest payments. The ratio further shows that to meet the periodical interest expenses the firm has earned enough profit.

$$\text{TIE} = \frac{\text{Earnings Before Interest and Tax}}{\text{Interest Expense}}$$

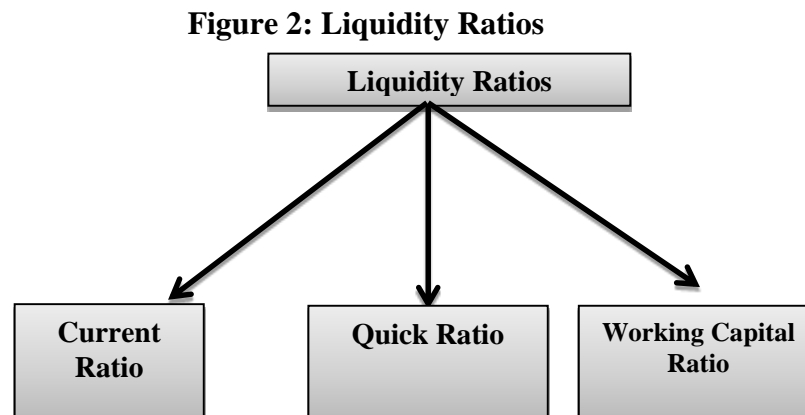
In Summary: TIE↑ → Coverage ↑ → Financial Health ↑

Liquidity Ratios

It shows the firm's capability to fulfil the current liabilities when these become due. To check the liquidity of the firm the following ratios should be calculated. It examines the ability of a firm to fulfil its routine expenses (recurring expenses) and short-term liabilities. When a firm has adequate cash and other liquid assets, it means that it can easily pay its debt and operating expenses.

- **Current ratio**
- **Quick ratio**
- **Working Capital ratio**

Liquidity ratios can be explained with the help of Figure 2.



Source: Van Horne and Wachowicz (2008)

Now we explain the various liquidity ratios in detail.

Current Ratio

It may be described as the association between the current asset and current liabilities. It generally shows the firm's liquidity & extensively utilized for getting the firm's short-term liquidity.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Quick Ratio

It is also described as the liquid ratio or acid test. This ratio has related to the current liabilities as well as the liquid assets. True liquidity elaborates the firm's ability that it can pay the liabilities in the short term when due.

$$\text{Liquid Ratio} = \frac{\text{Liquid Assets}}{\text{Current Liabilities}}$$

Working Capital Ratio

This ratio of working capital explores the working capital's velocity of usage. The ratio shows the time in which working capital has been rotated in a year.

$$\text{Working Capital Ratio} = \frac{\text{Cost of Sale}}{\text{Net Working Capital}}$$

Existing Literature on Financial Health and Exports at a Glance

This section is based on the studies that investigate the nexus between exports and the financial health of firms. Table 1 shows the summary of the studies on exports and financial health. The table has highlighted that various studies on financial health and exports.

Table 1: Summary of the Studies on Financial Health and Exports Sales

Reference	Time /Firm	Country	Sector	Methodology	Main Results
Kedia and Chhokar (1986)	96 Firms	USA	Manufacturing and Food processing	Rank Orderings	The study points out five types of factors that influence export performance i.e., marketing, international business know-how and practice, procedure, technical adaptation and financial factors. The study infers that financial factors inhibit export sales.
Greenaway et al. (2005)	9292 Firms	UK	Manufacturing	Pooled Probit Random-effects	Exports oriented firms have a better position than non-exporter firms. Further, the impact of financial health on exports has not been found.
Du and Girma (2007)	1999-2002 28000 Firms	China	Manufacturing	Tobit	The findings of the study suggested that financial variables such as bank loans, self-funding had positively related with the exports intensity in all industries and labor and capital-intensive industries except self-funding which was inversely related with export intensity in capital intensive industries.
Bellore et al. (2008)	1993-2005 25,000 Firms	France	Manufacturing	Pooled Probit	Results of the study explored that the countries which were not members of the European Union had poor property rights as compared to European Union countries. So due to poor property rights, those were more polluted due to a higher deforestation rate. The countries with better property rights meet the quality environmental standards.
Grg and Spaliara (2009)	3569 UK Firms 4855 French Firms	UK, France	Manufacturing	Probit	A positive link between financial health and exports.

Berman and Hericourt (2010)	2000-2005 5000 Firms	Nine Economies	Manufacturing	Probit, OLS	The positive link between financial health and exports.
Bernard et al. (2010)	2005-2008-2009	28 Countries	Manufacturing	Logit MLE	Internal finance plays an important role in exporting.
Lancheros and Demirel (2012)	1999-2007	India	Manufacturing, utilities, Services, and Financial Industries	Dynamic Tobit Model	Finance is a cogent factor of exports.
Alvarez and López (2013)	1990-2000	Chile	Manufacturing	Binary choice model, Linear probability model	Financial development increases the exports sales
Secchi et al. (2014)	2000-2003	Italy	Manufacturing	Probit	Financial constraints hamper exports.
Huang and Liu (2017)	2005-2009 389216 Firms	China	Manufacturing	PPML	Firms with better access to finance exports more
Gezici et al. (2018)	1996, 2013-4206 Firms	Turkey	Manufacturing	Logit	Financial constraints hamper exports sales.

The studies have used various financial indicators to measure financial health. The studies show that if the financial health of the firms is better, the performance of the export remains better.

Model, Data and Methodology

Model Specification

To investigate the impact of financial health on the exports sales of the manufacturing sector of Pakistan, the following model may be specified:

$$ESR = f(DER, FLR, TIER, LIQR, LTA, CO4, KO, ER)$$

The econometric form of the financial health and exports sales model is:

$$ESR_{it} = \lambda_0 + \lambda_1 DER_{it} + \lambda_2 FLR_{it} + \lambda_3 TIER_{it} + \lambda_4 LIQR_{it} + \lambda_5 LTA_{it} + \lambda_6 CO4_{it} + \lambda_7 KO_{it} + \lambda_8 ER_{it} + \varepsilon_{it}$$

Where:

ESR= Exports-Sales ratio

DER= Debt-Equity Ratio

FLR= Financial Leverage Ratio

TIER= Time Interest Earned Ratio

LIQR= Liquidity Ratio

LTA= Log of Total Assets

CO4 = Four-Firms Concentration Ratio

KO = Capital-Output Ratio

ER = Dollar-Rupee Exchange Rate

Data and Methodology

We have taken the data of 190 firms related to the manufacturing sector of Pakistan. The data have been extracted from the Balance Sheet Analysis of JSC in KSE. Twelve industries have been focused on the analysis of financial health and exports. The list of industries is given in Table 2.

Table 2: List of Industries

No	Industry
1	Air Lines
2	Foam and Power
3	Paper and Board
4	Fuel and Energy
5	Sugar
6	Chemicals
7	Engineering
8	Textile Spinning
9	Textile Weaving
10	Polyester
11	Yarn and Fabrics
12	Cement

To select the data range, we have paid attention that for all variables data range should be the same. Moreover, the definition of the industry has been intact for consideration of products. To measure the results, we have used the panel data technique.

Results and Discussions

It is imperative to point out the determinants of export sales because most of the developed countries have got economic development by applying the export-led growth hypothesis. In this section, we are describing the results.

Descriptive Statistics and Correlation Analysis

This section exhibits the descriptive statistic of the key variables along with correlation analysis. Table 3 shows the descriptive statistics of the important variables. In this table, export sales revenue is the first variable which has the mean value of 0.10 with a max value of 0.91 and a min value of 0.45. The value of skewness of the said value turns out to be positively skewed by having the value of 11.31. The Kurtosis of ESR is more than 3 value, showing Leptokurtic distribution. The probability value of JB is less than 5% showing the distribution of the variables normal.

The second variable is DER has a mean value of 0.35 with a max value of 1.03 and a min value of 0.01. The value of skewness of the said value turns out to be positively skewed by having the value of 0.58. The Kurtosis of DER is less than 3 value, showing Platykurtic distribution. The probability value of JB is less than 5% showing the distribution of the variables normal. The third variable is FLR has a mean value of 2.37 with a max value of 10.63 and a min value of 0.27. The value of skewness of the said value turns out to be positively skewed by having the value of -0.25. The Kurtosis of FLR is less than 3 value, showing Platykurtic distribution. The probability value of JB is less than 5% showing the distribution of the variables normal.

The fourth variable is TIER has a mean value of 0.61 with a max value of 12.09 and a min value of 6.87. The value of skewness of the said value turns out to be positively skewed by having the value of 0.58. The Kurtosis of TIER is greater than 3 value, showing Leptokurtic distribution. The probability value of JB is less than 5% showing the distribution of the variables normal. The next variable in Table 3 is LIQR has a mean value of 2.46 with a max value of 7.82 and a min value of 0.82. The value of skewness of the said value turns out to be positively skewed by having the value of 2.28. The Kurtosis of LIQR is greater than 3 value, showing Leptokurtic distribution. Moreover, the probability value of JB is less than 5% showing the distribution of the variables normal. The next variable is LTA has a mean value of 5.39 with a max value of 82.74 and a min value of 71.43. The value of skewness of the said value turns out to be positively skewed by having the value of 33.16. The Kurtosis of LTA is greater than 3 value, showing Leptokurtic distribution. The probability value of JB is less than 5% showing the distribution of the variables normal.

The next variable is CO4 has a mean value of 3.17 with a max value of 4.63 and a min value of 0.72. The value of skewness of the said value turns out to be positively skewed by having the value of -0.53. The Kurtosis of CO4 is greater than 3 value, showing Leptokurtic distribution. The probability value of JB is less than 5% showing the distribution of the variables normal. Another variable is KO has a mean value of 16.86 with a max value of 19.94 and a min value of 12.19. The value of skewness of the said value turns out to be positively skewed by having the value of -0.56. The Kurtosis of KO is less than 3 value, showing Platykurtic distribution. The probability value of JB is less than 5% showing the distribution of the variables normal. The last variable is ER has a mean value of 64.90 with a max value of 109.80 and a min value of 29.15. The value of skewness of the said value turns out to be positively skewed by having the value of 0.12. The Kurtosis of ER is less than 3 value, showing Platykurtic distribution. The probability value of JB is less than 5% showing the distribution of the variables normal.

Table 3: Descriptive Statistics of Key Variables (2005-2016)

Variables	Mean	Med.	Max	Min	Std. Dev.	Skew	Kurt.	JB	Prob.
ESR	0.1	0.12	0.91	0.45	0.31	11.31	167.3	1635	0.00
DER	0.35	0.28	1.03	0.01	0.31	0.58	2.07	129.9	0.00
FLR	2.37	5.19	10.63	0.27	4.76	-0.25	1.76	104.9	0.00
TIER	0.61	0.48	12.09	6.87	1.5	13.93	326.7	61.0	0.00
LIQR	2.46	2.46	7.82	0.82	1.64	2.28	8.3	51.23	0.00
LTA	5.39	5.44	82.74	71.43	250.59	33.16	1429.7	24.0	0.00
CO4	3.17	3.29	4.63	0.72	4.77	-0.53	3.76	14.99	0.00
KO	16.86	18.18	19.94	12.19	2.65	-0.56	1.69	349.6	0.00
ER	64.9	61.55	109.8	29.15	22.94	0.12	1.77	184.3	0.00

Now we are discussing the correlation results which are explained in the model. Table 4 demonstrates the correlation matrix of the variables.

Table 4: Correlation Matrix of Key Variables (2005-2016)

Correlation	ESR	DER	FLR	TIER	LIQR	LTA	CO4	KO	ER
ESR	1								
DER	0.01	1							
FLR	0.03	0.08	1						
TIER	0.04	0.5	0.58	1					
LIQR	0.05	0.09	0.16	0.88	1				
LTA	0.09	0.7	0.14	0.26	0.9	1			
CO4	0.40	0.02	-0.01	0.06	0.03	0.03	1		
KO	0.01	0.01	0.49	0.19	0.11	0.1	-0.03	1	
ER	0.02	0.08	0.05	0.05	0.08	0.01	0.02	0.01	1

The first variable in Table 4 is ESR which has a positive and weak correlation with all the variables i.e., DER, FLR, TIER, LIQR, LTA, CO4, KO, and ER. The second variable is DER it is a weak correlation with FLR, LIQR, CO4, KO and ER, while a moderate correlation with TIER and a strong correlation with LTA. Moreover, FLR is positively correlated with all variables except CO4. It has a weak correlation with LIQR, LTA, CO4 and ER. Another variable namely TIER has a positive correlation with all variables. Moreover, TIER has a strong correlation with LIQR, while a weak correlation with LTA, CO4, KO and ER. The variable of LIQR has also a positive correlation with LTA, CO4, KO and ER. It has a strong correlation with LTA, while a weak correlation with CO4, KO and ER. The last variable in the table is KO which has a positive

weak correlation with ER.

Determination of Fixed Effect Vs Random Effect Model

Table 5 displays the result of the Hausman test to determine the fixed or random effects. Table 5 shows the value of the chi-square statistic is 14.62 with the probability value of 0.0034. According to the null hypothesis of the Hausman test, the random effect is appropriate and the alternative hypothesis asserts that the fixed effect is appropriate.

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section	14.6298	7	0.0034
Random			

As the probability value is less than 5%, we can safely reject the null hypothesis and according to fixed-effect appropriate for estimation.

Results of Fixed Effect Model

In this section, we are specifically discussing the result related to financial health and export sales ratio. Table 6 portrays the fixed effect estimates of financial health and export sales. In this table, the dependent variable is the export sales ratio while the regressors are debt to equity ratio, financial leverage ratio, time interest earned ratio, liquidity ratio, total asset ratio, four-firm concentration ratio, capital-output ratio and exchange rate. The financial health of any firm points out the capability and ability to invest either in the domestic market or foreign market. If the financial health or position of a firm is sound, it can enter the new and existing markets. Financial health is a core variable in which we are interested to thrash out the impact of financial variables (financial health) on export sales especially in the manufacturing sector of Pakistan.

Table 6: Fixed Effect Estimates of Financial Health and Export Sales Model (2005-2016)

Dependent Variable: ESR				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.1669	0.0804	2.076	0.0397
DER	-0.001	0.0002	-5.00	0.000
FLR	-2.4984	0.2535	-9.856	0.000
TIER	0.601	0.0097	61.959	0.000
LIQR	2.6336	2.255	1.168	0.243
LTA	2.5212	1.1198	2.251	0.0244
CO4	2.3262	0.8206	2.835	0.0046
KO	0.017	0.0556	0.306	0.76
ER	0.5907	0.2347	2.517	0.0119

The financial health of any firm points out the capability and ability to invest either in the domestic market or foreign market. If the financial health or position of a firm is sound, it can enter the new and existing markets. Financial health is a core variable in which we are interested to thrash out the impact of financial variables (financial health) on export sales especially in the manufacturing sector of Pakistan.

To measure the financial health, we have used two proxies namely leverage ratio and liquidity

ratio.² Leverage ratios are also called solvency ratios and these are used to evaluate the financial structure of the firm. To smooth the functioning and operation of the firm, the resources in the form of debt play a crucial role because these resources provide support to the firm by avoiding the default risk and give guidance to the potential investor. A potential investor focuses on two factors while taking the investment decision i.e. (i) amount of indebtedness and (ii) the firm's ability of debt servicing. We have used three leverage ratios to determine the financial health of the firm which are (a) Debt to equity ratio (b) Equity multiplier (c) Coverage ratio. So far, the existing empirical literature is concerned, the studies have used one or two types of leverage ratios and none of the studies has utilized all the leverage ratios. Now we discuss the results of three leverage ratios in turn.

The first leverage ratio is the debt-to-equity ratio (DER) that turns out with a negative sign which indicates that as the debt increases in comparison with equity, default risk on loan increases along with the stock risk that indicating the reasonable debt load and resultantly financial health of the firm decreases leading to falling in the export sales of the firm. Another solvency ratio is the financial leverage ratio (FLR) which is also called equity multiplier. This ratio specifically measures that how the firm uses its debt. The parameter of (FLR) has appeared with a negative sign with export sales ratio. This negative association can be justified on the following ground when the financial leverage ratio increases or in other words, the equity multiplier increases, the liabilities of the firm accelerate which enhance the financial leverage and resultantly financial health of the firm deteriorate and it has a negative bearing on export sales. The third leverage ratio is called the times interest earned ratio or coverage ratio; it shows the capability of the firm in a manner that how a firm can cover its interest expense from its earnings³.

The parameter of times interest earned ratio (TIER) is positive and statistically significant. The positive link between TIER and export sales ratio is self-explanatory in the sense that as TIER increases the ability of the firm to cover its fixed interest payment increases which shows the good or sound financial health of the firm that may enhance the export sales of the particular firm. Our results are according to the expectation and in line with the theoretical underpinning. The studies by Campa and Shaver, 2002; Greenaway et al. 2005; Stiebale, 2011 and Manova, Wei and Zhang, 2015 also confirm the findings of our study.

Another variable to increase the financial health of the firm is the liquidity ratio (LIQR). This ratio exhibits the ability of the firm to fulfil its routine expenses (recurring expenses) and short-term liabilities. The parameter of the liquidity ratio has appeared with a positive sign and it is also called statistically highly significant. It shows that when the firm has adequate cash and other liquid assets, it means that it can be easily paid its debt servicing and operating expenses. In other words, when a firm has more degree of liquidity, it possesses more resources showing its sound financial health and resultantly these resources may be translated into escalation in export sales. Our results are in accordance with the studies, for example, Campa and Shaver, 2002; Greenaway et al. 2005; Stiebale, 2011 and Manova, Wei and Zhang, 2015.

Now turning towards the other determinants of export sales, the variable of log of the total asset (LTA) has appeared with a positive sign in the equation. The variable of total asset is normally used to show the firm size in the literature. It means that a larger firm has more resources and more tendencies to its exports while the converse is true. The parameter of LTA is indicating the

² Leverage ratios examine the financial structure of the firm. It gives the idea of solvency or insolvency. Moreover, it can also be used to measure the stock risk or default risk on loan. So far as liquidity ratio is concerned, it shows the capability of firm to fulfill its routine expense and short-term liabilities.

³ Earning of the firm may be considered in many ways, for example, earnings before interest and tax (EBIT) earnings before interest, taxes, depreciation and amortization (EBITDA) etc.

positive association between the firm size and export sales. The argument of economies of scale, economies of scope, the learning curve can justify the positive nexuses between the firm size and export sales. (See for example Abbas et al. 2015 for further detail). Moreover, many pieces of empirical works have confirmed the positive association between the firm size and export sales ratio, for example, Baldwin and Gu, 2005; Bellone et al. 2010, Greenaway et al. 2005.

The four-firm market concentration ratio (CO4) is another important determinant of export sale which is the market structure-oriented variable. Market concentration shows that the share of a few large firms is in total market supply. The degree of market concentration varies according to various market structures. It is the indication of market imperfection that leads to the non-competitors' price-fixing.⁴ We have used four firms' concentration ratios to determine the market power in the manufacturing sector of Pakistan. The sign of the parameter CO4 is positive and statistically highly significant. It means that due to more concentration, the export sales increases if there is a high degree of market concentration in a market. It suggests that a few firms are controlling the larger share of total output produced and supplied. So being the fewer substitutes in the market, the degree of the price elasticity of demand decreases and resultantly profitability increases which eventually enhance the export sales. The studies by Abbas et al.2015. Alvarez and Lopez, 2008 also confirm the proposition.

Another variable of the determinants of export sales is the capital-output ratio. It appears with a positive sign in our findings suggesting that a high capital-output ratio would increase the cost competitiveness not only in the domestic market but also in the international market. A firm with more capital can reduce more output that the firm may sell in the overseas market and as a result export sale accelerate. Moreover, Tobin's Q theory also confirms the positive association between capital-output ratio and export sales. Our results are following Abbas et al; 2015, Akarim, 2013; Lancheros and Demirel, 2012.

The last regressor in the model is the exchange rate which has also appeared with a positive sign. It indicates that when the exchange rate appreciates, the local goods become cheaper for the foreigner and eventually the demand for goods by the foreigner enhances. The studies by Kahiya, 2013; Pinho and Martins, 2010 also validate the findings of our study.

Causality Analysis

Now causality analysis has been conducted to find out the direction of causality between variables. But before this, it is necessary to choose the optional lag length to be used in the model. Table 7 shows the various criteria to determine the optional lag selection.

Table 7: Lag Length Selection Criteria

Endogenous Variables: ESR, DER, FLR, TIER, LIQR, LTA, CO4, KO, ER						
Lag	Log L	LR	FPE	AIC	SC	HQ
0	-116888.1	NA	1.05e+36	105.6449	105.6656	105.6525
1	-96520.73	40569.15	1.13e+28	87.29573	87.48125	87.36350
2	-95824.12	1382.522	6.37e+27	86.72401	87.07443	86.85202
3	-92557.53	6459.372*	3.52e+26*	83.82967*	84.34500*	84.01792*

From Table 7, we can infer that the optimal lag for the specified model is 3. All the criteria i.e., LR, FPE, AIC, SC, and HQ have the consensus about the optimal lag of 3. Now we explain the causality result that has been got by applying the Granger Causality Test. Table 8 portrays the Granger Causality Test at lag 2, 3, 4. Even the optimal lag suggested by various lag relation

⁴ There are many methods to calculate market concentration such as Herfindahl index, Lorenz curve and Gini coefficient.

criteria in 3 but we have conducted the causality test at lag 2, 3, 4, for the validity of the result. Now we are explaining the pairwise causing of the variables defined in the model.

Table 8: Granger Causality Test

Null Hypothesis	Lags	F-Statistic	Lags	F-Statistic	Lags	F-Statistic	Conclusion
DER \rightarrow ESR	2	1.8E-06 (0.0000)	3	6.6E-05 (0.0000)	4	0.00045 (0.0000)	DER \rightarrow ESR
ESR \rightarrow DER		0.0048 (0.9952)		0.00300 (0.9998)		0.00253 (1.0000)	ESR \rightarrow DER
FLR \rightarrow ESR	2	0.75284 (0.0711)	3	1.03665 (0.0752)	4	1.19323 (0.0118)	FLR \rightarrow ESR
ESR \rightarrow FLR		0.02480 (0.9755)		0.36817 (0.7760)		1.38044 (0.2382)	ESR \rightarrow FLR
TIER \rightarrow ESR	2	0.06944 (0.0329)	3	0.68990 (0.0582)	4	0.24894 (0.0104)	TIER \leftrightarrow ESR
ESR \rightarrow TIER		0.31625 (0.0289)		0.65543 (0.0795)		0.47436 (0.0546)	
LIQR \rightarrow ESR	2	0.09477 (0.0096)	3	0.40228 (0.0514)	4	0.35801 (0.0386)	LIQR \leftrightarrow ESR
ESR \rightarrow LIQR		0.72385 (0.0850)		0.95274 (0.0142)		0.76890 (0.0454)	
LTA \rightarrow ESR	2	0.07101 (0.0315)	3	0.27536 (0.0432)	4	0.21641 (0.0294)	LTA \leftrightarrow ESR
ESR \rightarrow LTA		0.51863 (0.0954)		0.64151 (0.0883)		0.51579 (0.0242)	
C04 \rightarrow ESR	2	0.00024 (0.0998)	3	0.00026 (0.0000)	4	0.00025 (0.0000)	CO4 \rightarrow ESR
ESR \rightarrow C04		0.00672 (0.9933)		0.00450 (0.9996)		0.00348 (1.0000)	ESR \rightarrow CO4
KO \rightarrow ESR	2	0.62739 (0.5341)	3	1.11375 (0.3422)	4	1.08923 (0.3602)	KO \leftrightarrow ESR
ESR \rightarrow KO		0.33133 (0.7180)		0.74916 (0.5228)		0.44939 (0.7729)	
ER \rightarrow ESR	2	6.95283 (0.0014)	3	3.51861 (0.0145)	4	3.44363 (0.0082)	ER \rightarrow ESR
ESR \rightarrow ER		1.77417 (0.1698)		0.68315 (0.5623)		0.27729 (0.8928)	ESR \rightarrow ER
FLR \rightarrow DER	2	2.16127 (0.1154)	3	1.29523 (0.2744)	4	0.96709 (0.4244)	FLR \leftrightarrow DER
DER \rightarrow FLR		0.35645 (0.7002)		0.51356 (0.6730)		1.86640 (0.1137)	
TIER \rightarrow DER	2	0.42668 (0.6527)	3	0.35077 (0.7886)	4	0.83936 (0.5001)	TIER \leftrightarrow DER
DER \rightarrow TIER		0.06085 (0.9410)		0.04924 (0.9855)		0.30628 (0.8739)	
LIQR \rightarrow DER	2	0.48271 (0.6172)	3	0.38399 (0.7646)	4	0.85412 (0.4909)	LIQR \leftrightarrow DER
DER \rightarrow LIQR		0.10245 (0.9026)		0.08326 (0.9692)		0.44311 (0.7775)	
LTA \rightarrow DER	2	0.00684 (0.9932)	3	0.01639 (0.9971)	4	0.00806 (0.9999)	LTA \leftrightarrow DER
DER \rightarrow LTA		0.00353 (0.9965)		0.01141 (0.9983)		0.78449 (0.5352)	
C04 \rightarrow DER	2	0.83856 (0.0725)	3	0.89379 (0.0436)	4	0.57402 (0.0614)	CO4 \rightarrow DER
DER \rightarrow C04		1.06648 (0.3444)		1.09032 (0.3519)		2.45596 (0.0410)	DER \rightarrow CO4
KO \rightarrow DER	2	1.27404 (0.0809)	3	5.86403 (0.0006)	4	4.67945 (0.0009)	KO \leftrightarrow DER

DER → KO		24.0868 (0.0000)		16.2544 (0.0000)		17.9623 (0.0000)	
ER → DER	2	1.21167 (0.0979)	3	7.08422 (0.0001)	4	4.98994 (0.0005)	ER↔DER
DER → ER		9.59741 (0.0000)		4.97892 (0.0019)		5.33995 (0.0003)	
TIER → FLR	2	0.46465 (0.0248)	3	5.88845 (0.0005)	4	4.50873 (0.0013)	TIER↔FLR
FLR → TIER		14.9645 (0.0000)		6.77178 (0.0002)		8.00251 (0.0000)	
LIQR → FLR	2	0.44913 (0.6382)	3	0.77380 (0.5086)	4	0.47161 (0.7566)	LIQR↔FLR
FLR → LIQR		1.17745 (0.3082)		0.79735 (0.4953)		0.61890 (0.6491)	
LTA → FLR	2	87.9646 (0.0037)	3	86.1933 (0.0000)	4	60.8195 (0.0000)	LTA↔FLR
FLR → LTA		346.760 (0.0000)		1934.94 (0.0000)		3028.41 (0.0000)	
CO4 → FLR	2	1.89054 (0.1512)	3	1.58037 (0.1921)	4	0.99424 (0.4094)	CO4↔FLR
FLR → CO4		1.44685 (0.2355)		0.57221 (0.6333)		0.99050 (0.4114)	
KO → FLR	2	232596 (0.0979)	3	1.99761 (0.1123)	4	1.35965 (0.2456)	KO↔FLR
FLR → KO		0.69366 (0.4998)		0.30218 (0.8238)		0.62770 (0.6428)	
ER → FLR	2	0.46077 (0.6309)	3	0.58654 (0.6238)	4	0.50026 (0.3756)	ER→FLR
FLR → ER		4.01760 (0.0181)		2.68773 (0.0450)		2.05740 (0.0480)	FLR → ER
LIQR → TIER	2	20.7137 (0.0009)	3	17.5325 (0.0000)	4	12.4506 (0.0000)	LIQR→TIER
TIER → LIQR		2.25450 (0.1051)		1.44797 (0.2270)		1.71884 (0.1262)	TIER→LIQR
LTA → TIER	2	19.5187 (0.0000)	3	18.4133 (0.0000)	4	17.8800 (0.0000)	LTA↔TIER
TIER → LTA		10.6013 (0.0000)		11.1706 (0.0000)		11.4991 (0.0000)	
CO4 → TIER	2	1.22314 (0.2945)	3	0.80051 (0.4935)	4	0.50083 (0.7351)	CO4↔TIER
TIER → CO4		0.67416 (0.5097)		0.66633 (0.5727)		0.74658 (0.5602)	
KO → TIER	2	1.52498 (0.0178)	3	6.44588 (0.0002)	4	5.04771 (0.0004)	KO → TIER
TIER → KO		1.66272 (0.1898)		0.67972 (0.5644)		0.79023 (0.5314)	TIER→KO
ER → TIER	2	0.61454 (0.5410)	3	0.44577 (0.7203)	4	0.28511 (0.8878)	ER↔TIER
TIER → ER		0.43254 (0.6489)		0.48422 (0.6933)		0.46821 (0.7591)	
LTA → LIQR	2	1.14963 (0.0169)	3	5.01503 (0.0018)	4	3.53275 (0.0070)	LTA→LIQR
LIQR → LTA		0.31868 (0.7271)		0.62928 (0.5961)		0.82226 (0.5108)	LIQR→LTA
CO4 → LIQR	2	3.28007 (0.0378)	3	2.11896 (0.0958)	4	1.55296 (0.0843)	CO4 → LIQR
LIQR → CO4		0.43197 (0.6493)		0.13501 (0.9321)		0.1843 (0.9377)	LIQR→CO4
KO → LIQR	2	0.46077 (0.6309)	3	0.58654 (0.6238)	4	0.50026 (0.3756)	KO→LIQR

LIQR \rightarrow KO		4.01760 (0.0181)		2.68773 (0.0450)		2.05740 (0.0480)	LIQR \rightarrow KO
ER \rightarrow LIQR	2	20.7137 (0.0009)	3	17.5325 (0.0000)	4	12.4506 (0.0000)	ER \rightarrow LIQR
LIQR \rightarrow ER		2.25450 (0.1051)		1.44797 (0.2270)		1.71884 (0.1262)	LIQR \rightarrow ER
CO4 \rightarrow LTA	2	19.5187 (0.0000)	3	18.4133 (0.0000)	4	17.8800 (0.0000)	CO4 \leftrightarrow LTA
LTA \rightarrow CO4		10.6013 (0.0000)		11.1706 (0.0000)		11.4991 (0.0000)	
KO \rightarrow LTA	2	1.22314 (0.2945)	3	0.80051 (0.4935)	4	0.50083 (0.7351)	KO \leftrightarrow LTA
LTA \rightarrow KO		0.67416 (0.5097)		0.66633 (0.5727)		0.74658 (0.5602)	
ER \rightarrow LTA	2	1.52498 (0.0178)	3	6.44588 (0.0002)	4	5.04771 (0.0004)	ER \rightarrow LTA
LTA \rightarrow ER		1.66272 (0.1898)		0.67972 (0.5644)		0.79023 (0.5314)	LTA \rightarrow ER
KO \rightarrow CO4	2	0.61454 (0.5410)	3	0.44577 (0.7203)	4	0.28511 (0.8878)	CO4 \leftrightarrow KO
CO4 \rightarrow KO		0.43254 (0.6489)		0.48422 (0.6933)		0.46821 (0.7591)	
ER \rightarrow CO4	2	1.14963 (0.0169)	3	5.01503 (0.0018)	4	3.53275 (0.0070)	ER \rightarrow CO4
CO4 \rightarrow ER		0.31868 (0.7271)		0.62928 (0.5961)		0.82226 (0.5108)	CO4 \rightarrow ER
ER \rightarrow KO	2	3.28007 (0.0378)	3	2.11896 (0.0958)	4	1.55296 (0.0843)	ER \rightarrow KO
KO \rightarrow ER		0.43197 (0.6493)		0.13501 (0.9321)		0.1843 (0.9377)	KO \rightarrow ER

DER is causing ESR but ESR is not causing DER. It infers that there is uni-variate or one-way causality between DER and ESR. FLR is causing ESR but ESR is not causing FLR. It means that there is uni-variate causality between FLR and ESR. TIER is causing ESR and ESR is also causing TIER. It suggests that there is a bi-variate or two-way causality between TIER and ESR. LTA is causing ESR and ESR is also causing LTA is exhibiting the bi-variate or two-way causality between LTA and ESR. CO4 is causing ESR but ESR is not causing CO4. It means that there is uni-variate causality between CO4 and ESR. ESR is causing CO4 but CO4 is not causing ESR. It infers that there is uni-variate or one-way causality between ESR and CO4. KO is not causing ESR and ESR is also not causing KO. It shows that there is no causality between KO and ESR. ER is causing ESR but ESR is not causing ER. It infers that there is uni-variate or one-way causality between ER and ESR. FLR is not causing DER and DER is also not causing FLR. So far, the pair of FLR and DER is concerned, there is no causality. There is no causality found between TIER and DER, TIER and DER, LIQR and DER and LTA and DER. CO4 and DER have one-way causality but the reverse is not true. There is no causality between KO and DER, ER and DER. TIER and FLR have bi-variate causality. LIQR and FLR have no causality but LTA and FLR have bi-variate causality. There is no causality found between CO4 and FLR, KO and FLR. FLR has uni-variate causality with ER and LIQR has also one-way causality with TIER. There is two-way causality between LTA and TIER and no causality exists between CO4 and TIER. There is one-way causality between KO and TIER and no causality between ER and TIER. One way causality has been found between LTA and LIQR, CO4 and LIQR, and KO, ER and LIQR. Moreover, bi-variate causality exists between CO4 and LTA. There is no causality between KO and LTA and CO4 and KO. Uni-variate causality runs through ER to LTA, ER to CO4, ER to KO.

Conclusions and Policy Recommendations

In this study, we have analyzed the nexus between financial capability in the form of the financial health of the firms and export sales performance. For this purpose, the manufacturing sector of Pakistan has been focused. We have taken twelve industries related to the manufacturing sector i.e., Airlines, Foam and Power, Paper and Board, fuel and energy, Textile Spinning, Textile Wearing, Polyester, Yarn and Fabric and Cement. 190 firms with respect to the manufacturing sector have been selected based on the definition of industry. Data have been extracted from the Central bank of Pakistan's publication balance sheet analysis of joint-stock companies in the Karachi stock exchange for the period of 2005 to 2016. Export sales ratio is a dependent variable while Debt equity ratio, financial leverage ratio, Times interest earned ratio, Liquidity ratio, Log of total assets, Four-firms concentration ratio, Capital output ratio and Dollar rupee exchange rate are used as predictors. To measure the financial health of the firms, we have taken two financial ratios that have been utilized.

Both debt to equity and financial leverage ratios have turned out with a negative sign while time interest earned ratio or coverage ratio has appeared with a positive sign. So, all financial ratios which are exhibiting the financial health of the firm show the expected sign with the export sales ratio. It means that if the financial health of the firm sound and better, the firm may be able to contribute to the exports of the country. Along with the core variables related to financial health, we have also examined the other co-variants of export sales ratios in the form of total asset concentration ratio, Capital output ratio and exchange rate. All these variables are positively related to the export sales manufacturing sectors of Pakistan.

Based on the findings of the study, we can recommend the following policies:

- The result of the study suggests that the financial health of the firm is that important factor in determining export sales so the financial health of the firm should be good and sound so that export sales may be enhanced.
- Firm size is another important factor that also shows that large firms due to economies of scale or scope and learning contribute to export enhancement. So, the integration of the firms may be promoted.
- The variable of concentration ratio suggests that a high concentration ratio results in more export sales, so concentration may be promoted.
- Capital output ratio is also positively related to export sales suggesting that the firm having more capital tend to export more. So, the capital of the firm with respect to output should be enhanced.
- The exchange rate is a vital factor in international trade so exchange rate policy may be the prime policy of the govt. to enhance export sales in an economy

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