

## **A Causal Relationship Between Financial Performance, Liquidity, Solvency and Turnover : A Comparative Study of Punjab Textile Companies**

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### **Abstract**

Textile industry is a key contributor in the industrial development of India. Its contribution in total industrial production is 10%, out of total export is 13%, in GDP is 2% and provides employment to more than 45 million people. Punjab is a leading state by contributing 70% best quality production of cotton in India. The total share of textile sector is 38% in export and 23% out of total industrial production of Punjab. The main objective of present study is to investigate the causal relationship between financial performance, liquidity, solvency and turnover over the period 2002 to 2017 (annual data) for selected textile units in Punjab. The Johansen cointegration analysis suggested long-run equilibrium relationship and granger causality result evaluated causal relationship between examined variables.

### **Key Words**

Financial Performance, Liquidity, Solvency, Turnover, Cointegration, Granger Causality

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### **INTRODUCTION**

Textile industry is a key contributor in the industrial development of India. Its contribution in total industrial production is 10%, out of total export is 13%, in GDP is 2% and provides employment to more than 45 million people during 2016-17 (April-Sept.). India's textile products including handlooms and

handicraft products of India, export to more than hundred countries (Annual Report 2016-17, Ministry of Textile). India is ranked second at the global level by producing and exporting best quality textile and clothing with USD 40 bn., as per UN Comtrade Report, 2013. Textile manufacturing industry is working on different textile segments like : cotton textile, silk textile, woolen textile readymade garment, handicraft textile and jute & coir. Many textile companies which are performing excellent in India as well as, at global level are Raymond, Reliance Textile, Vardhman Spinning, Arvind Mills, Century Textiles, Bombay Dying, and Oswal Knit India and so on. The government is taking many initiatives to upgrade textile industry at globe level. In June, 2016 government has given approval to reform to boost employment generation and export in garmenting and made-ups sector. On 7th October, 2016 the Hon'ble Minister of Textile, Govt. of India Smt. Smriti Zubin Irani launched "Pehchan" – an initiative for the registration of handicraft artisans and provide ID cards to them so, that they can better access the benefits which are provided by Ministry of Textile and on 4th January 2017, the Ministry of Textile launched "Bunkar Mitra-Handloom Helpline Centre", under which experts will guide the weavers regarding their professional queries in their field.

To upgrade textile companies in India government provides one time capital subsidy facility, Integrated Skill Development Scheme (ISDS) and Integrated Processing Development Scheme (IPDS). In addition to that, Cotton Corporation of India (CCI) Ltd. has also taken many steps like setting up of Focus Incubation Centre (FIC), Minimum Support Price (MSP) and Technology Mission on Technical Textile (TMTT) to provide guidelines to enter into technical textile.

Some other initiatives taken by Ministry of Textile are as follows :

- Reduce custom duty from 5% to 2.5%.
- Special package of 6000 cr. Approved by Union Government which leads to employment generation and increase export of textile industry.
- Employee Provident Fund contribution has been increased upto 3 years for new workmen under Pradhan Mantri Rojgar Protsahan Yojana. (Annual Report 2016-17, Ministry of Textile)

### **Foreign Direct Investment (FDI) in Textile in India**

India is also providing liberalized and transparent policies of Foreign Direct Investment (FDI) like other developing countries. A study conducted by Department of Industrial Policy and Promotion (DIPP) showed that textile

industry has made Foreign Direct Investment (FDI) worth US\$ 817.26 million between April, 2000 and March, 2010. In case of automatic route, India is offering 100% FDI. According to world investment Report 2015, UNCTAD total inflow of FDI in India has increase by approximately 21% from the period 2013-14. The total FDI inflow of India textile industry is about US \$1.5 billion from 2000-2015. Main attraction of FDI policy in India is 100% FDI allowed in the textile sector through the automotive route i.e. 100% FDI in single brand retail and up to 51% FDI in multi brand retail. Moreover other attractive features of FDI are, cost competitiveness, doing business and benefits available to textile sector investors etc. The top 10 investing countries in India Textile sector contributes approximately 70% of the total FDI inflow of US\$1.5 billion. (FDI Report, Ministry of textile)

### **Punjab and its Textile Sector**

Now, Punjab is presenting itself as a leading hub for textile based industries like apparel manufacturing, spinning, cotton and woolen textile, and hosiery export in India as well as at global level. Punjab is nourished with rich natural resources, eco system for manufacturing and a robust spinning capacity, which make it an idle destination for textile industry. The main industrial units operating in Punjab are agro-based industrial unit, machinery units and chemical units. Punjab is 2nd largest producer of cotton & blended yarn in India and producing approximately 70% best quality cotton production over India. It accounts for 655 million Kg of yarn production. The state contributes around 2.2 million bales (170 Kg. each) cotton production, which is about 14% of total country's cotton production. The total share of textile sector is 38% in export and 23% out of total industrial production of Punjab. Punjab is contributing USD 1300 million and USD 630 million in total export of Yarn and hosiery respectively.

Textile and apparel industry is a thrust sector of Punjab, because of its contribution in potential growth and employment generation in future. Under Industrial and Business Development Policy, 2017 Punjab government is providing extra benefits through amended technology upgradation scheme. Punjab has 4 integrated textile parks (Ludhiana Integrated Textile Park, Rhythm Textile and Apparel Park, Lotus Integrated Textile Park and Punjab Apparel Park), which provide infrastructure and necessary clearance to textile production units and all these industrial parks shall be exempted from the provision of Punjab

Apartment and Property Regulation Act (PAPRA), 1995. (Industrial and Business Development Policy, 2017) Ludhiana is the highest manufacturing cluster for textile in Punjab as well as in North India and called as 'Manchester of India'. Northern India Institute of Fashion Technology (NIIFT), Ludhiana which is known as a Center of Excellence for garmenting and high fashion is also a supporting factor by Punjab government. Now, Punjab government is also taking initiative to setting up of 3 Common Effluent Treatment Plants (CETPs) for dyeing industry in Ludhiana. (Textile Punjab Bureau of Investment Promotion)

## LITERATURE REVIEW

Nandha Kumar and Magesh (2017) evaluated the performance of textile and apparel industry in India on the basis of various studies, articles and reports. It is estimated on the basis of various factors like market size, investment, government initiatives and key market and export destinations that Indian Textile and apparel sector has a positive pace of growth. Government is providing various opportunities and initiating various steps to uplift this sector like setting-up of integrated textile park, technology fund for upgradation and provide 100% foreign direct investment and so on.

Gupta (2017) examined to evaluate the performance of textile companies on the basis of their liquidity, solvency, profitability and managerial efficiency. The result showed a significant difference in Return on Capital Employed, Net Profit Margin, Current Ratio, Debt Equity and Fixed Turnover Ratio.

Mohammed (2017) evaluated the financial performance of four selected public sector textile units (Barshi Textile Mills, India United Mill No.5, Polar Mills and Tata Mills) on the basis of their turnover, solvency and liquidity for the period of 10 years starting from 2006- 2016. The author investigated the possible causes for weak performance and also point out the reasons for slow pace of growth of textile companies in Maharashtra. It is found out that solvency ratio and liquidity has significant impact on profitability but turnover ratio has insignificant impact on profitability of selected textile units in Maharashtra.

Das *et al.* (2017) investigated the causal relationship between time series of employment, productivity and wages for registered manufacturing industries in India over the period of 1998-2014 by using Augmented Dickey Fuller unit root test and granger causality test to estimate causal relationship. It has concluded that there is no causal relationship between employment, wage rate and productivity and differential effect of productivity growth on employment

and wages of different manufacturing industries which recommend some corrective policy to be implement in organization for smooth production and stability in labour turnover.

Thaku (2016) examined the impact of FDI, productivity, capital intensity, exchange rate and MFA phase out on textile export of India, Vector Error Correction Model (VECM) and granger causality test have been employed to check causal relationship over the period of Q1: 2000 to Q4: 2002 time series quarterly data collected from CEIC database. The result showed that only productivity, capital intensity, exchange rate and MFA phase out have positive impact on textile export in India. So, it is suggested that India should offer attractive FDI policy to meet competitive advantage of textile industry as China has offered in past years.

Trivedi and Birau (2015) demonstrated the causal linkage between international stock market of two countries i.e. Hungary and Austria by Granger causality methodology from F.Y. 2000 to F.Y. 2013 stock index time series. It is found that there is no causal relationship between Austria market and Hungary market in both ways.

Hirigoyen and Poulain-Rehm (2015) investigated the relationship between corporate social responsibility and financial performance of 329 listed companies over the period 2009 to 2019 (monthly data) by using granger causality methodology. It is conclude that there is no causal relationship between social responsibility and financial performance or both variables affect each other in opposite direction.

Nindi and Odhiambo (2014) considered the variables like saving and investment in Malawi to find causal relationship over the period of 1973-2011 through granger causality test. The result found the direction of causality flow from investment to savings and short-term bidirectional causality flow from savings to investment. So, more emphasis should be placed on pro-investment policies than short-run polices.

Sharma and Sharma (2014) conducted a comparative causal relationship between gross domestic production and receipts from tourism sector for India and Pakistan over period of 1991-2012, applying Augmented Dickey Fuller (ADF) test Johansen cointegration test to check long-term equilibrium relationship and granger causality test. The result showed unidirectional causality flow from tourism receipt to GDP.

Rahim and Abedin (2014) investigated the impact of trade liberalization

and financial development on economic growth in Malaysia by using granger causality methodology over the period of 1970-2011. A unidirectional causality flow from economic growth to financial development as well as from liberalization to financial development has found.

KAR *et al.* (2014) examined the direction of causality between trade liberalization, financial development and economic growth in Turkey over the period Jan.1989 to Nov.2007 (monthly data) by using linear and non-linear causality test which imply bidirectional causal relationship between economic growth, trade openness and financial development even financial development leads to trade liberalization in Turkey.

Altee *et al.* (2014) investigated causal relationship between financial development, trade openness and economic growth of Sultanate of Oman over the period 1972-2012 by applying different econometric techniques like unit root test, Johansen cointegration test and granger causality model. The test result showed unidirectional causality flow from economic growth to financial development as well from trade openness to financial development and economic growth. So, there is significant impact of trade openness on financial development and economic growth in sultanate of Oman for the examined period.

Ayyappan *et al.* (2014) considered the factors like market place, competitiveness, technology, environment protection and strategic position to evaluate the financial performance of selected textile industries in India for period 1999-2011. The selected textile group of mills are the capital intensive in nature but the policy of purchase of fixed assets should be carefully planned and reviewed so that the funds may be properly utilize.

Yoganandan *et al.* (2013) examined the impact of various factors on export performance of textile industry in study title as Factor affecting the export performance of textile industry in developing countries. The results showed positive relationship between GDP, exchange rate, labour, capital and technology with export performance of textile industry.

Abbas *et al.* (2013) aimed to elaborate the determinants, affecting financial performance of textile companies listed in KSE for the period 2005-2010. A cross sectional fixed effect was present in the regression output so, author has used one way fixed affect model to find out significant effect of independent variables on financial performance.

Sharma and Sharma (2011) attempted to explore the financial performance of textile industry taking three capacity and investment analysis; it can conclude that Arvind Mills is having highly satisfactory financial position as compare to

other companies. But all these companies will have to strengthen its shareholders funds and working capital to compete and enhancing its current performance leading companies i.e. Arvind Mills, Raymond and Bombay Dyeing for the period 2006-2010. On the basis of profitability level, short-term liquidity position, efficiency level, solvency at global business time environment.

Ramasamy and Yeung (2011) examined the causality among stock market and exchange rate by Granger causality test of two markets in nine East Asian economics. The result shows that causality between time series is changing according to change in period of study which implies a lot of attention while interpreting granger result.

Chandran and Seilan (2010) investigated the causal relationship among trade, foreign direct investment and economic growth for India of 37 years (F.Y. 1970- F.Y. 2007). The cointegration test showed, long-term relationship between variables and granger causality test suggested, causal relationship between trade, foreign direct investment and economic growth time series.

Chen (2009) reviewed various theories related to foreign trade and economic growth; concluded arguments based on modern empirical economics and put some questions to be explored in detail for further studies.

Dritsakis *et al.* (2004) aimed to figure out the linkage between Trades, Foreign Direct Investigation and Economic Growth for Greece of 42 years (F.Y. 1960-F.Y. 2002, cointegration analysis and granger causality test have applied to check causal relationship between variables. The result showed long-term relationship and causal relationship between variables.

## **OBJECTIVE AND HYPOTHESES OF THE STUDY**

The main objective of current study is to compare causal relationship between financial performance, solvency, turnover and liquidity of five leading textile units working in Punjab.

### **Theoretical Framework**

The four variables were used as proxy for checking the causal relationship between financial performance, liquidity, turnover and solvency are Return on Capital Employed (ROCE), Current Ratio (CR), Assets Turnover Ratio (ATR) and Debt Equity Ratio (DER) respectively for five leading textile units working in Punjab based on the studies of Mohammed (2017), Gupta (2017), Pal (2012) and Hyunju and Choosup (2011). The variables for the measurement are given below :

**Table 1**  
**Description of Variables**

Variables	Proxy	Formula
Financial Performance	ROCE	EBIT / Total Assets-Current Liability
Liquidity	CR	Current Assets / Current Liability
Solvency	DER	Total Debt / Total Share Capital + Reserve & Surplus
Turnover	ATR	Sale / Total Assets

Source : Compiled by Researcher

### Hypothesis of Study

To achieve the objective of present study following hypothesis has been formulated :

- H<sub>01</sub> : Current Ratio (CR) time series has unit root or it is non-stationary time series of five selected textile units.
- H<sub>02</sub> : Return on Capital Employed (ROCE) time series has unit root or it is non-stationary time series of five selected textile units.
- H<sub>03</sub> : Debt Equity Ratio (DER) time series has unit root or it is non-stationary time series of five selected textile units.
- H<sub>04</sub> : Assets Turnover Ratio (ATR) time series has unit root or it is non-stationary time series of five selected textile units.
- H<sub>05</sub> : There is no co-integration between ROCE, CR, DER and ATR of five selected textile units.
- H<sub>06</sub> : ROCE does not granger cause CR of five selected textile units.
- H<sub>07</sub> : DER does not granger cause CR of five selected textile units.
- H<sub>08</sub> : ATR does not granger cause CR of five selected textile units.
- H<sub>09</sub> : DTR does not granger cause ROCE of five selected textile units.
- H<sub>10</sub> : ATR does not granger cause ROCE of five selected textile units.
- H<sub>11</sub> : ATR does not granger cause DER of five selected textile units.

### RESEARCH METHODOLOGY

**Type of Study :** The present study is analytical in nature which examined causal relationship between financial performance, liquidity, solvency and turnover of selected textile units of Punjab.

**Population :** The population of the study includes Indian textile industry where sample size is 5 leading textile units working in Punjab i.e. Jindal Cotex, Nahar Spinning, Supreme Tex Mart, Vardhman Polytex and Winsome Yarn.



**Scope of the Study :** The study covered time period of 16 years from F.Y. 2002 to F.Y. 2017. Two years data (2002 and 2003) was missing to apply granger causality test, so researcher has used extrapolation on available time series.

**Data Type and Sources :** The current study is based on secondary data collection method. The collection of quantitative data has been extracted through various sources of information like: annual reports of the textile units available on money control website, Industrial and Development Policy 2017, Punjab Bureau of Investment Promotion, Statistical Abstract of Punjab, annual report of Ministry of Textile, journals etc.

**Techniques for Data Analysis :** Data have been analyzed through unit root test, cointegration test, optimal lag order and granger causality test by E-view 10 version.

### **Specification of Model**

To estimate the causal relationship between financial performance, liquidity, solvency and turnover in present study, following model specification has been done through annual time series from 2002 to 2017. The basic model is mentioned below :

$$ROCE = \beta_0 + \beta_1 (CR) + \beta_2 (DER) + \beta_3 (ATR) + \varepsilon$$

Where,

ROCE = Financial Performance

CR = Liquidity

DER = Solvency

ATR = Turnover

$\beta_0, \beta_1, \beta_2, \beta_3$  = Coefficients

$\varepsilon$  = Error term in the equation

The variable financial performance is estimated by return on capital employed, liquidity is estimated by current ratio, solvency estimated by debt equity ratio and turnover is estimated by assets turnover ratio. Different ratios have been calculated and used to analyzed causal relationship with the help of E-view 10 software.

### **RESULT AND ANALYSIS**

The first crucial step prior to verifying cointegration and checking the causal relationship between variables, econometric methodology needs to verify stationarity for each individual times series. It means mean and variance value of time series does not change over a period of time. If any variable is not so,

asymptotic analysis assumption in Granger test will not be valid, our next step is to convert non-stationary time series into stationary time series by differencing method. Augmented Dickey-Fuller (ADF) test is best method to check stationarity and level difference of time series. This is followed by Johansen cointegration analysis to check long-run equilibrium relationship and granger causality result to evaluate causal relationship between examined variables.

**Unit Root Test Result**

Augmented Dickey Fuller (ADF) test has applied to test stationarity in Current Ratio (CR) time series of five selected textile units at three levels (1%, 5% and 10% level) of significance, but all series except Vardhman Spinning Mills have unit root problem in Current Ratio (CR) time series. So, non-stationarity series were converted into stationarity series through differencing shown as (CRD) to remove trend and seasonality from time series. The computed ADF test statistics for Current Ratio (CR) have been shown in Table 2.

**Table 2**  
**Result for Augmented Dickey Fuller Test for Current Ratio of Five Textile Units**

		Jindal Cotex (CRD)		Nahar Spinning Mills (CRD)		Supreme Tex Mart (CRD)		Vardhman Ploytex (CR)		Winsome Yarn (CRD)	
		t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*
ADF Test Stat.		-4.772378	0.0164	-4.857182	0.0141	-4.553022	0.0043	-4.294677	0.0341	-4.401425	0.0310
Test	1%	-4.057910		-4.057910		-4.057910		-3.959148		-4.057910	
Critical	5%	-3.119910		-3.119910		-3.119910		-3.081002		-3.119910	
Values	10%	-2.701103		-2.701103		-2.701103		-2.681330		-2.701103	

Source : Data compilation by researcher based on secondary data using E-views

Note (\*): Show level of significance at 5%

CRD : Differenced Current Ratio Time Series, CR : Non-differenced Current Ratio Time Series

The ADF values have been shown in Table 2 for Jindal Cotex, Nahar Spinning Mills, Supreme Tex Mart, Vardhman Polytex and Winsome Yarn are greater than critical value at (1%, 5% and 10%) level of significance ignoring + sign and – sign and p value is less than 5%, therefore null hypotheses ( $H_{01}$ ) of unit root in Current Ratio (CR) at 5% level of significance has rejected for all five textile units. So, Current Ratio (CR) is a stationary time series and doesn't have a unit root problem therefore available time series of Vardhman Spinning

Mills and differenced time series if remaining textile units of Current Ratio (CR) can be used for further study.

**Table 3**  
**Result for Augmented Dickey Fuller Test for Return on Capital Employed of Five Textile Units**

		Jindal Cotex (ROCED)		Nahar Spinning Mills (ROCE)		Supreme Tex Mart (ROCE)		Vardhman Ploytex (ROCE)		Winsome Yarn (ROCED)	
		t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*
ADF Test Stat.		-9.312603	0.0000	-5.858084	0.0004	-3.620201	0.0199	-3.379614	0.0292	-3.401425	0.0310
Test	1%	-4.200056		-4.004425		-4.004425		-3.959148		-4.057910	
Critical	5%	-3.175352		-3.098896		-3.098896		-3.081002		-3.119910	
Values	10%	-2.728985		-2.690439		-2.690439		-2.681330		-2.701103	

Source: Data compilation by researcher based on secondary data using E-views

Note (\*) : Show level of significance at 5%

ROCED : Differenced Return on Capital Employed Time Series, ROCE : Non-differenced Return on Capital Employed Time Series

Similarly, ADF test has applied to test stationarity in Return on Capital Employed (ROCE) time series of five selected textile units at three levels (1%, 5% and 10% level) of significance, but all series except Supreme Tex Mart and Vardhman Spinning Mills have unit root problem in Return on Capital Employed (ROCE) time series. So, non-stationary series were converted into stationary series through differencing at first level shown as (ROCED) to remove trend and seasonality from time series. The computed Augmented Dickey Fuller test for unit root on differenced series at first level difference have been shown in Table 3. The ADF test statistics is greater than critical values at (1%, 5% and 10%) level of significance ignoring – sign and moreover p value is less than 5%, therefore null hypothesis ( $H_{02}$ ) has been rejected, which denotes stationarity in the time series and does not have unit root problem for Return on Capital Employed (ROCD) variable of five selected textile units and can be used for further study.

**Table 4**  
**Result for Augmented Dickey Fuller Test for Debt Equity Ratio of Five Textile Units**

		Jindal Cotex (DERD)		Nahar Spinning Mills (DERD)		Supreme Tex Mart (DER)		Vardhman Ploytex (DERD)		Winsome Yarn (DERD)	
		t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*
		ADF Test Stat.		-4.682530	0.0207	-4.354156	0.0378	-3.523158	0.0224	-4.714293	0.0181
Test	1%	-4.121990		-4.200056		-3.959148		-4.057910		-4.057910	
Critical	5%	-3.144920		-3.175352		-3.081002		-3.119910		-3.119910	
Values	10%	-2.713751		-2.728985		-2.681330		-2.701103		-2.701103	

Source: Data compilation by researcher based on secondary data using E-views

Note (\*) : Show level of significance at 5%

DERD : Differenced Debt Equity Ratio Time Series, DER : Non-differenced Debt Equity Ratio Time Series

The results of unit root are shown in Table 4 and Table 5 for Debt Equity Ratio (DER) and Assets Turnover Ratio (ATR) time series of five selected leading textile units of Punjab at three levels (1%, 5% and 10% level) of significance. Most time series data are non-stationary i.e. they have unit root problem.

**Table 5**  
**Result for Augmented Dickey Fuller Test for Assets Turnover Ratio of Five Textile Units**

		Jindal Cotex (ATRD)		Nahar Spinning Mills (ATRD)		Supreme Tex Mart (ATRD)		Vardhman Ploytex (ATRD)		Winsome Yarn (ATRD)	
		t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*	t-Stat.	Prob.*
		ADF Test Stat.		-4.596290	0.0238	-5.734346	0.0006	-4.196595	0.0439	-4.759880	0.0182
Test	1%	-4.121990		-4.057910		-4.057910		-4.121990		-4.057910	
Critical	5%	-3.144920		-3.119910		-3.119910		-3.144920		-3.119910	
Values	10%	-2.713751		-2.701103		-2.701103		-2.713751		-2.701103	

Source: Data compilation by researcher based on secondary data using E-views

Note (\*) : Show level of significance at 5%

DERD : Differenced Debt Equity Ratio Time Series, DER : Non-differenced Debt Equity Ratio Time Series

We should now conduct Augmented Dickey Fuller test for unit root on differenced series at first level difference. The ADF test statistics is greater than critical values at (1%, 5% and 10%) level of significance ignoring – sign and moreover p value is less than 5%, therefore null hypothesis (H03) and (H04) have rejected, which denotes stationarity in the time series and does not have unit root problem for Debt Equity Ratio (DER) and Assets Turnover Ratio (ATR) variables of five selected textile units and can be used for further study.

### Cointegration Test

Cointegration test is an important aspect of time series analysis to determine long-term economic relationship between two or more non-stationary time series, moreover it is also verify, whether variables are best fit to be applied in the Granger causality model or not. Cointegration test developed by Johansen (1988, 1991) have been used to examine equilibrium relationship, based on two statistics i.e. trace statistics and max-Eigen statistics, between ROCE, CR, DER and ATR of five selected textile units of Punjab. Table 6 show result of the cointegration analysis, the null hypothesis ( $H_{05}$ ) of no cointegration between

**Table 6**  
**Johansen Cointegration Test Result**

	Hypothesed No. of CE(s)	Trace Statistics				Eigen Statistics			
		Eigen Value	Trace Statistics	0.05 Critical Value	Prob.	Eigen Value	Trace Statistics	0.05 Critical Value	Prob.
Jindal Cotex	None	0.992824	103.1207	54.07904	0.0000	0.992824	64.18173	28.58808	0.0000
	At	0.836764	38.93901	35.19275	0.0188	0.836764	23.56322	22.29962	0.0332
	Most 1								
Nahar Spinning Mills	None	0.996451	119.9710	54.07904	0.0000	0.996451	73.33516	28.58808	0.0000
	At								
	Most 1	0.899278	46.63585	35.19275	0.0020	0.899278	29.84010	22.29962	0.0037
Supreme Tex Mart	None	0.996873	119.6406	54.07904	0.0000	0.996873	74.98020	28.58808	0.0000
	At	0.938391	44.66045	35.19275	0.0036	0.938391	36.23035	22.29962	0.0003
	Most 1								
Vardhman Polytex	None	0.933051	75.62858	54.07904	0.0002	0.933051	35.14978	28.58808	0.0063
	At	0.817893	40.47880	35.19275	0.0123	0.817893	22.14110	22.29962	0.0526
	Most 1								
Win-some Yarn	None	0.995927	151.0567	54.07904	0.0000	0.995927	71.54402	28.58808	0.0000
	At	0.962908	79.51271	35.19275	0.0000	0.962908	42.82676	22.29962	0.0000
	Most 1								

Source : Data compilation by researcher based on secondary data using E-views



ATRD DNGC* CRD	1.82468	0.2039	1.07882	0.3213	0.13098	0.7243	0.54901	0.4742	2.98325	0.1121
CRD DNGC* ATRD	0.02796	0.8702	14.3449	0.0030	1.53489	0.2412	2.16294	0.1694	0.01796	0.8958
DERD DNGC* ROCED	0.94339	0.0323	0.07396	0.0407	36.4124	0.0302	3.83696	0.0360	1.37320	0.0260
ROCED DNGC* DERD	24.1618	0.0005	0.04830	0.8301	0.00164	0.9684	20.4956	0.0009	2.10012	0.1752
ATRD DNGC* ROCED	1.75274	0.2124	0.55784	0.4708	0.53665	0.4791	0.06014	0.8108	2.85768	0.1190
ROCED DNGC* ATRD	0.26666	0.6158	3.22154	0.1002	0.37053	0.5551	1.16340	0.3038	0.61804	0.4484
ATRD DNGC* DERD	0.80617	0.3885	0.02228	0.8840	0.41168	0.5343	0.00885	0.9267	8.15678	0.0156
DERD DNGC* ATRD	2.06371	0.1787	2.74309	0.1259	1.54204	0.2401	2.63019	0.1331	2.2E-05	0.9964

Source : Data compilation by researcher based on secondary data using E-views

\* DNGC- Does not granger cause

Null hypothesis (H08) showed unidirectional relationship from ATR to CR only for Nahar Spinning textile unit. Moreover null hypothesis (H09) DER granger cause ROCE rejected in both ways for Jindal Cotex and Vardhman Spinning meaning thereby bidirectional causality relationship between DER and ROCE. Finally null hypothesis (H11) showed unidirectional causal relationship from DER to ATR only for Winsome Yarn.

## CONCLUSION

Punjab is flourished with many natural resources, eco-system for manufacturing, large geographical infrastructure etc. Punjab is also a leading hub for textile industry and significant contributor to the Indian economy in terms of its domestic share and export. The share of Punjab's textile sector in total country's production is 14% and 38% of the total export from Punjab. The government of Punjab is also supporting and taking many initiatives to promote

its textile sector at national and global level. Even than this industry lag behind at global level competition and facing many structural problems. As Punjab's textile sector is an important factor which affect state as well as national development. So, it is required to analyses the financial performance of textile companies in Punjab.

The traditional regression model only considered the impact of independent variables on dependent variable on the happening of certain event. But it doesn't provide sufficient results regarding causal relationship and direction of relationship among variables. So, Granger Causality model is much sophisticated econometric model as compare to traditional regression model. Granger causality model estimate the causal relationship among present observations of explained variables and observations of different time period of independent variable. So, result obtained by Traditional Regression model and Granger Causality model regarding relationship can't be similar.

Many studies have been conducted in this field out of which some were discussed in review of literature. In support of previous studies, present research paper examines the direction of the relationship between financial performance, liquidity, solvency and turnover for five selected leading textile units working in Punjab by applying Unit Root test, Johansen Cointegration test and Granger Causality test over the period of 16 years (F.Y. 2002 - F.Y. 2017). The empirical analysis shows that all variables used in the study don't have unit root problem, Johansen Cointegration Analysis suggest long-run equilibrium relationship between variables and finally Granger Causality test infer bidirectional causality between ROCE & CR and ROCE & DER for Jindal Cotex, Vardhman Spinning Mills and Winsome Yarn textile units as p-value is less than 5% level of significance in both case meaning thereby liquidity and financial performance as well as solvency and financial performance affect each other in both ways. While unidirectional causality exists from ROCE to CR meaning thereby no causality relationship from CR to ROCE for Jindal Cotex and Nahar Spinning Mills. The unidirectional of causality relationship from ATR to CR which means there is no causality relationship from CR to ATR of Nahar Spinning Mills. The direction of causality from DER to ATR and there is no causality relationship from ATR to DER. Further, DER & CR and ATR & ROCE don't have any causality relationship in case of all textile units. In other words, liquidity and solvency have significant and turnover has insignificant causality impact on financial performance of selected textile units in Punjab.

The results of Granger Causality suggest that Jindal Cotex, Nahar Spinning Mills and Winsome Yarn are comparatively performing well; their



financial position is found sound as these textile units are utilizing their available resource, to the maximum extent. Due to strong liquidity position, companies are able to maintain required funds to meet short-term obligation as well as repay outside liabilities on time. But Supreme Tex Mart and Vardhman Polytex management should try to utilize their productivity resources to maximize their financial efficiency.

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