

## Study of Determinants of Textile Exports of India: A VECM Approach

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### Abstract

Exports are considered as viable mode of integration for the developing economies into world economy. It is imperative for developing countries to concentrate in those sectors in which they possess comparative advantage. Textile industry is an important industry and is considered vital for the developing economies due to its labour-intensive and highly export intensive nature. Textile industry is one of those sectors that have played pivotal role in the industrial development of various economies particularly that of China. However, despite possessing almost equal resources and the strength in textile industry that of China, India's performance in textile trade is dismal. Therefore, the present study made an endeavour to find the main determinants of exports and their impact on textile exports of India. The determinants that have been taken are FDI, productivity, capital intensity, exchange rate and MFA phase-out. In this study vector error correction model (VECM) and Granger-Causality test has been applied to achieve the said objective.

**Keywords:** Exports, Textile Industry, VAR, FDI

### Introduction

Higher export growth allows the country to gain from economies of scale as the inclusion of international market to domestic market is seen to permit large scale operations than does domestic market alone (Kunst & Marin 1989). The export led growth is highly appreciated economic model in emerging markets, because it provides the opportunity to grow via increased integration with the world economy (Macmillan, et al. 1999). Hence more and more emerging economies are striving in international market to capture maximum market share. In recent past, China has adopted assertive manufacturing export policy and had become leading manufacturing exporter in the global economy. And more importantly China had first captured the world market through labour-intensive exports particularly textiles and clothes and later had moved towards high tech exports. On the other hand India's manufacturing exports performance had remained in dismal position, in 2013 India contributed just 6.8 percent in world textile trade on the other hand China contributed 34 percent. It indicates the under development of Indian textile manufacturing industry viz-a-viz China.

Textile Industry had played a jump-starter role in the

industrial development of industrialisation economies. The low technology and capital requirement allows this industry to accommodate vast number of people. Apart from creating employment, exports are the chief feature of this industry (Haque & Thaku, 2015). However, despite being such a strategic industry for developing countries to accelerate their industrial development, not all of the developing countries endowed with relatively cheap labour have equally being successful in exporting labour intensive garments and textiles (Khindoker & Kalirajan 2012). The dismal position of Indian textile trade is cause of worry for India as it possesses comparative advantage in this sector.

Against this backdrop, the present paper will try to study the relationship between textile exports of India and its various determinants. The variables that have been frequently mentioned in previous studies as prominent determinants (FDI, Productivity, Capital Intensity, MFA & Exchange Rate) of exports have been studied in this paper. To study the relationship among variables Vector Error Correction Model (VECM) and Granger-Casualty Test has been used.

### Theoretical Framework

Textile industry has played crucial role in both developing and developed economies. From UK to Japan it has played jumpstarted role in the industrial development. Being crucial for economy in terms of employment generation and in earning foreign reserves through exports the leadership of textile trade in the world economy has remained always apprehension for many countries (Lim 2003). The leadership of the textile trade has witnessed frequent changes throughout history, because textile industry is very sensitive to cost rises. This is the reason; low income economies with abundant required resources have always dominated the world textile trade. The export feature of textile industry is one of the most important features of this industry especially for developing economies, as it provides opportunity to developing economies to integrate into world market through exports (McMillan, Pandolfi & Salinger 1999). Exports are being seen as viable options because of two reasons, first, export success is way to economic performance and second, it is important step in internalisation process (Majocchi et al, 2005).

Exports being the chief feature of the textile industry, it becomes highly relevant to study the relationship between textile exports and its various determinants. The port performance of textile industry of India has remained exclusively dependent on the low labour cost and that will not be sufficient after the MFA phase out to compete in international market (UNCTAD 2005:42). In promoting exports foreign direct plays vital role, it has been acknowledged by many previous studies that FDI played an

important role in export performance of host economy. As firms from developing economies seek to expand their export to world market they face immense difficulties in setting of network distribution, keeping close touch with rapid changes in customer tastes, mastering the technicalities of industrial norms and safety standards and building up new product image (Zhang & Song, 2000).

Though the global value chain in textile and clothing are primary buyer driven, but FDI plays an important role at the production stage and foreign affiliates dominates textile exports in many developing economies (UNCTAD 2005:08). Generally labour intensive exports are though as of intra-firm trade but great part of them is arms-length transaction between MNC's and indigenous host firms (Zhang & Markusen 1999). FDI does not have only direct effect on export trade rather it does have indirect impact on local firms by increasing competition and also it can force them to adopt modern means of production that could ultimately lead to enhancing competitiveness of local firms (Zhang & Song 2000). Attracting FDI in labour-intensive industries in developing economies is a viable strategy of market liberalisation and a way of jump-starting labour-intensive export oriented economic strategy in the absence of sufficiently high domestic savings and investment (McMillan et al, 1999). China has managed to realise its comparative advantage in labour intensive sector through attracting foreign investment especially in coastal areas. The presence of foreign manufacturers in textiles had made China able to engage in full package production and made it relatively easy for companies from Japan, Europe, and the US to source reliably complete garments from Chinese factories (UNCTAD, 2005:25).

It has been found by many studies that the more productivity tend to export more, because of their requisite technologies and skills these firms are more competitive in international market. The arguments linking export-orientation positively with productivity are related to increasing return to scale or increasing returns to entrepreneur efforts with exposure to foreign competition (Aw & Hwang 1995). In addition to this, the uncertainties in international market hamper the firms to enter into foreign market and only those firms are able to conquer these obstacles who invest substantially in their R&D so to enhance productivity (Wakelin 1998). There is not only one way causality running from productivity to exports rather the export-led growth models stress that exports are key factor in enhancing the productivity (Kunst & Marin 1989).

The decision to explore the foreign markets compels host country firms to adopt modern means of production. The export markets can be more competitive than domestic markets and makes it difficult for less productive firms to enter into foreign market. FDI is considered one of the vital means to improve productivity in

host economy. Inward FDI is associated with the introduction of additional capital and new production and managerial skills that have direct effect on productive efficiency (Liu, et al. 2001). FDI does not only have direct impact on exports rather it contributes to exports through externalities or indirect effect also. However, it has been asserted by some that though the productivity of firms that receive FDI will increase but it can also lead to decline in overall productivity. As Aitken and Harrison (1999) argue, that the entry of foreign firms producing for the local market can draw demand from local firms, causing them to cut production and hence it could lead to net decline in productivity. After founding mixed result on export and productivity it would be highly useful to find out does productivity cause textile exports in India? Following the Kunst and Marrin (1989), productivity has been measured as output per worker.

Exporters have larger and higher capital intensity than non-exporters (Soderborn 2003). Head and Ries (1999) have found that capital intensity has significant positive impact on manufacturing exports of Japan. Wakelin (1998) has reached on similar conclusion that capital intensity has positive and significant impact on exports. Capital intensity can be taken as proxy for the sophisticated technology and means of production that leads to better quality and higher productivity. It has been mentioned that in modern day knowledge economy, innovation, design and quality are important factors to survive in international market. In eclectic paradigm theory Dunning (1988) has asserted that in order of firms of one nationality to compete with those of another by producing in latter's own countries, they must possess certain advantages specific to their nature of their ownership. As has been asserted by UNCTAD (2005:08) that after MFA phase out Indian textile exports cannot survive merely on basis of low labour cost it must adopt new means and technologies of manufacturing.

However, on the other hand many studies have found that capital intensity has no significant impact on exports and some came to conclusion that it actually has negative impact on exports. Human capital intensity tends to have positive and significant impact on exports while physical capital intensity has weak negative relationship with exports (Branson, 1971). Ma et al (2014), have found that exporters have lower capital intensity than non-exporters. Providing the mixed results from earlier literature on the relationship between capital intensity and export behaviour, it will be highly imperative to include capital intensity as determinant of exports. The capital intensity has been calculated by following (Minetti & Zhu 2011; Rastogi & Swahney, 2013), as the fixed assets per worker.

Though export feature of textile industry is most critical for low income economies, but the high income economies have always remained worried of the rise of

textile trade from low income economies. This is the reasons, despite the advocacy of free trade by western developed economies textile has remained outside the normal ambit of GATT and WTO agreement until 2005. Western economies had played an important role in the development of the textile trade in particular regions through preferential treatments and restrictions. After the World War II, Japan was first Asian economy that benefited from the preferential treatment of the US and soon Japan became leading textile exporter to the US. But in 1960 various restrictions were put on Japan through various agreements (VER, STA, and LTA) to limit its exports to the US market. At the same time when limits were imposed on Japan, East Asian economies were provided preferential treatments in textile trade. Later East Asian were also brought under the ambit of restrictions by enacting the MFA (Multi-Fibre Agreement) in 1974 and finally that was abolished in 2005 and first time textile trade entered into free competition.

With the abolition of MFA it has been argued by many studies that the biggest beneficiaries of textile trade would be China and India but the magnitude of benefits may vary (UNCTAD 2005:28). Given the sheer size of their economy, resources and cheap labour these two economies are far ahead of other economies. The abolishment of the MFA has begun the next era in the textile trade and in addition to this it will result in more FDI inflows in China and India to take benefits of cheap labour. Seyoum (2010) asserted that if developing economies would have not been subjected to quotas in major textile importing economies, then these economies would have expanded their international textile trade dramatically. Since India has a natural comparative advantage in cotton and cotton base fibre, abolition of the MFA has implicit potential to benefit India's cotton industry as well as cotton based textile and clothing sector (Elberi et al, 1998).

Though exchange rate uncertainty has been shown to have affected trade flows between countries and sectors, but it has had both positive and negative effect in different studies (Oskoe & Hegerty, 2009). The exchange rate or in other words the value of domestic currency viz-a-viz other foreign currencies have been seen as effective instrument to induce exports. By keeping the value of domestic currency low as compare to currencies of other countries makes the domestic goods cheap in international market. Managing exchange rates or devaluing domestic currency has been effective tool used by China to promote its exports, and this policy has attracted lots of criticism from other economies particularly from the USA. Oskoe and Hegerty (2009) have found that exchange rate uncertainty affected trade flows between USA and Mexico only in short-run. Thorbecke and Zhang (2009), while measuring the impact of appreciation in RMB on labour intensive exports from China; it has found

that appreciation in RMB would reduce labour intensive exports.

### Data and Methodology

Quarterly seasonally adjusted data have been taken for the period of Q1:2000 to Q4:2012, consists of total 52 observations. The data has been collected from various sources, foreign direct investment is textiles and exchange rate has been collected from CEIC data base. Textile exports have been derived from WTO comtrade with annual figures and data on textile production, assets and employment have been derived from Annual Industries Survey of India. As non-availability of high frequency data on national accounts is one of the big hurdles faced by the researchers working with time series data. To cope with this issue researchers suggest different econometric methods in order to convert low-frequency data into high-frequency time series data (Rashid & Jehan, 2013). In this paper to convert low frequency data into high frequency data, in case of textile production, assets and employment, Chow-Lin (1971) method has been applied in R software. Chow-Lin method had been preferred over other simple disaggregation methods, because of its multivariate nature as it identifies a linear relationship between quarterly observations of a variable and related monthly series (Rashid & Jehan 2013).

In order to calculate the various determinants of the textile exports from India a system of structural equations i.e, Vector Autoregressive Model (VAR) has been employed. In recent years, VAR has become the most popular tool for empirical macro-econometrics. Despite having roots in stationary data, the popularity of VAR is attributed to the theoretical developments in analysis of non-stationary data exhibited by many economic time series (Wei 2010:77). While criticizing the exogeneity assumption of simultaneous equation models (SEM), in 1980 Sims advocated VAR as alternative to SEM, in VAR models often all observed variables are treated as a priori endogenous (Lutkepohl, 2001).

If variables are found to be stationary at first

difference I(1) and not at level I(0), then to capture the long-run relationship among non-stationary variables Johansen co-integration test would be employed. Again if variables at I(1) are stationary and potentially co-integrated, the level form of VAR may not be the most useful representation and then vector error correction model (VECM) would be employed, that is observationally equivalent with original VAR with new form facilitates estimation and hypothesis (WEI 2010:78). To capture the causality among variables VAR Granger-causality has been used.

If all the variables are treated as endogenous, the original VAR will be estimated as:

$$Y_t = C + \sum_{i=1}^p A_i Y_{t-i} + B D_t + \epsilon_t$$

Where the vector Y can be set as  $Y' = (\text{FDI}, \text{Exp}, \text{Cap}, \text{Prd})$

The exogenous variable such as MFA and Exg, are included in  $D_t$ . If there any co-integration among the levels of these variables VAR model can be transformed in VECM:

$$\Delta Y_t = C + \Pi_{t-1} + \sum_{i=1}^{p-1} \Pi_i \Delta Y_{t-i} + \dots + B D_t + \epsilon_t$$

FDI= Foreign Direct Investment, Exp = Textile Exports, Cap = Capital Intensity

Prd = Productivity, Exg = Exchange Rate, MFA = MFA Phase out

### Analysis and Interpretation

#### 1. Model Estimation

##### a. Unit Root

Before estimating VAR system, all variables have to be tested for the stationary and also to ensure that all variables entered into VAR are integrated at same order. In order to check the stationary of the variables Augmented-Dickey Fuller test has been employed. The result of the test are summarised in table (1). The variables have been taken at their log values except MFA phase-out that is on binary nature. It has been found that all variables are non-stationary at level I(0) and stationary at first difference I(1) at five percent significance level.

Table 1: Augmented-Dickey Fuller Test (Unit Root)

| Variables          | At Level I(0) |              |        | At Difference I(1) |              |        |
|--------------------|---------------|--------------|--------|--------------------|--------------|--------|
|                    | C & T*        | t-statistics | Prob.  | C & T*             | t-statistics | Prob.  |
| Log(Export)        | N             | 2.3149       | 0.9945 | C                  | -7.9867      | 0.0000 |
| Log(FDI)           | N             | 0.1943       | 0.7384 | N                  | -9.1526      | 0.0000 |
| Log(Productivity)  | N             | 2.7885       | 0.9983 | N                  | -2.0114      | 0.0435 |
| Log(CAP)           | N             | 2.4431       | 0.9960 | C                  | -3.3874      | 0.0161 |
| Log(Exchange Rate) | N             | 0.7923       | 0.8809 | N                  | -4.5238      | 0.0000 |

\*C&T: Constant and Trend \*\*N: None

b. Lag Length

It is necessary to specify optimal lag length, as too few lags means that regression residuals does not behave like white noise processes and too many lags reduces the power of the test to reject the null hypothesis of unit root (Enders 2014:216). To define optimal lag length Eviews software contains function of lag selection criteria. The result of lag selection criteria is given in table (2), the table offers various

options to choose one. The “\*” represents the desirable lag length, according to Schwarz information criterion(SC) optimal lag length is 1 and rest options shows optimal lag length 4. Though it is desirable to choose lowest possible lag length, in this case that is 1, but the model suffered from serial correlation so to remove serial correlation model has been regressed on 4 lags.

Table 2: Lag Selection Criteria

| VAR Lag Order Selection Criteria                         |          |           |           |            |            |            |
|--|----------|-----------|-----------|------------|------------|------------|
| Endogenous variables: LOG(EX) LOG(FDI) LOG(CAP) LOG(PRD) |          |           |           |            |            |            |
| Exogenous variables: C LOG(EXG) MFA                      |          |           |           |            |            |            |
| Date: 08/27/15 Time: 19:07                               |          |           |           |            |            |            |
| Sample: 3/01/2000 12/01/2012                             |          |           |           |            |            |            |
| Included observations: 48                                |          |           |           |            |            |            |
| Lag  | LogL     | LR        | FPE       | AIC        | SC         | HQ         |
| 0  | 65.12199 | NA        | 1.29e-06  | -2.213416  | -1.745616  | -2.036634  |
| 1  | 238.2222 | 295.7129  | 1.86e-09  | -8.759260  | -7.667726* | -8.346767  |
| 2  | 250.8235 | 19.42700  | 2.20e-09  | -8.617647  | -6.902379  | -7.969445  |
| 3  | 264.7153 | 19.10123  | 2.53e-09  | -8.529805  | -6.190804  | -7.645893  |
| 4  | 322.9858 | 70.41011* | 4.79e-10* | -10.29107* | -7.328339  | -9.171452* |

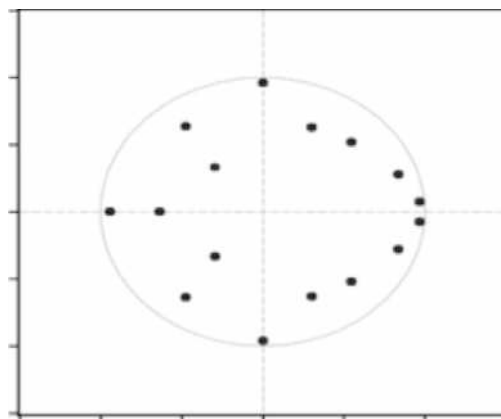
\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)  
 FPE: Final prediction error  
 AIC: Akaike information criterion  
 SC: Schwarz information criterion  
 HQ: Hannan-Quinn information criterion

c. Residual tests

The desirable VAR model must qualify the various residual tests. The prominent among them are AR stability test, Serial Correlation, Normality and Heteroskedasticity. The model has been first checked for AR stability test and the result has been provided in Fig (1). The model has been found stable as all the dots lies inside circle, it means that all the modulus values are less than one and we can go for

further analysis. Residuals have been also checked for serial correlation, normality and heteroskedasticity tests. LM test has been applied for serial correlation. The null hypothesis that there is no serial correlation has been accepted at 5 percent level of significance with P value of 0.4090. Model has also satisfied the normality and heteroskedasticity test at 5 percent level of significance with respective P values of 0.3146 of Jarque-Bera test for normality and 0.7488 respectively for heteroskedasticity.

Fig1: Inverse Roots of AR Characteristic Polynomial



### Co-Integration and Granger-Causality Test

As it has been found that variables are integrated at I(1), the next step is to check whether variables are co-integrated. Variables are said to be co-integrated if they have long-term or, equilibrium relationship between them (Gujarati et al 2014:805). For the said purpose Johansen co-integration test has been applied and results have been reported in table (3). The null hypothesis that there is no co-integration has been

rejected and it has been found that there are two co-integration equations. This indicates that there is causality between textile exports, FDI, and other variables at least in one direction. After finding causality between variables, next logical step would be to check the direction of causality and long-run and short causality. For direction of causality VAR Granger-Causality test has been carried out and for short and long run relationship vector error correction has been employed.

Table 3: Co-Integration Test

| Date: 08/27/15 Time: 19:31                                    |            |                    |                        |         |
|---|------------|--------------------|------------------------|---------|
| Sample (adjusted): 6/01/2001 12/01/2012                       |            |                    |                        |         |
| Included observations: 47 after adjustments                   |            |                    |                        |         |
| Trend assumption: Linear deterministic trend                  |            |                    |                        |         |
| Series: LOG(EX) LOG(FDI) LOG(CAP) LOG(PRD)                    |            |                    |                        |         |
| Exogenous series: LOG(EXG) MFA                                |            |                    |                        |         |
| Warning: Critical values assume no exogenous series           |            |                    |                        |         |
| Lags interval (in first differences): 1 to 4                  |            |                    |                        |         |
| Unrestricted Cointegration Rank Test (Trace)                  |            |                    |                        |         |
| Hypothesized<br>No. of CE(s)                                  | Eigenvalue | Trace<br>Statistic | 0.05<br>Critical Value | Prob.** |
| None *  | 0.703898   | 108.3889           | 47.85613               | 0.0000  |
| At most 1 *   | 0.540673   | 51.18759           | 29.79707               | 0.0001  |
| At most 2   | 0.245866   | 14.62187           | 15.49471               | 0.0674  |
| At most 3   | 0.028505   | 1.359178           | 3.841466               | 0.2437  |
| Trace test indicates 2 cointegrating eqn(s) at the 0.05 level |            |                    |                        |         |
| * denotes rejection of the hypothesis at the 0.05 level       |            |                    |                        |         |
| **MacKinnon-Haug-Michelis (1999) p-values                     |            |                    |                        |         |

VAR Granger-Causality has used to test the directional causality. The Granger-Causality test is a statistical hypothesis for determining whether one time series is useful in forecasting another (Granger, 1969). The results of granger-Causality test has been summarised in table (4). It has been found that FDI does not cause exports, but the productivity and capital intensity have significant impact on exports at one percent significance level. It has been also found that FDI is caused only by Capital Intensity at five

percent significance level. Capital intensity is caused by exports and productivity at five percent level and by FDI at one percent level. FDI does not cause productivity while capital intensity and exports causes productivity at five percent and one percent significance level respectively. The direction causation between exports and productivity has important implication for the way industrial policy can stimulate productivity growth (Kunst & Marrin 1989).

Table 4: VAR Granger Causality/ Block Exogeneity Wald Test

| Equation | Exp      | FDI       | Cap      | Prod.    |
|----------|----------|-----------|----------|----------|
| Exp      | ---      | ---       | 11.364** | 33.551*  |
| FDI      | ---      | ---       | 13.978*  | ---      |
| Cap      | 21.296*  | 10.118**  | ---      | 12.961** |
| Prod.    | 97.836*  | ---       | 10.845** | ---      |
| Joint    | 125.183* | 19.007*** | 41.733*  | 42.746*  |

Chi-Square test reported in each cell with their associated P value. Significant at 1% (\*), 5% (\*\*)

## VECM

Though the co-integration approach confirms the long run relationship among variables, but it does not provide any useful information regarding short run dynamics in system. The co-integration approach assumes the short run process are not well defined across agents, goods and time, differing forms of expectations, learning, habits and dynamics adjustments (Burkee and Hunter, 2009:70). Therefore, it is desirable to use vector error correction model (VECM), because it allows us to study the both short run and long run dynamics among variables (Wooldridge 2009:645; Ali 2011:72). In addition to that when co-integration relation are present in system of variables at I(1), the VAR form is not convenient model setup, in this case specific parameterization that support the co-integration structure should be used and that is called VECM (Lutkepohl 2004:87).

The results of the VECM model have been presented in table (5). As VECM model presents both long run and short run associations it has usually two parts. The first part is C(1) that represents the long run associations and second part from C(2) to (21) represents short run association, C(19) is constant term. As the first term C (1) represents the speed of adjustment to be effective it should be negative and significant for the robustness of the model (Khan et al.). In addition to this strength of model is necessary to check. The

model is believed to be optimal if its  $R^2$  is high and F-statistics is significant and Durbin-Watson test must be near two. In present model all most all conditions have been fulfilled as  $R^2$  0.878, F-statistics is significant at one percent level, and Durbin-Watson is 2.32 that is near to two. The model has been also tested for autocorrelation, normality and heteroskedasticity and it has been found that model does not suffer from any of the above problems.

To check short run association between the textile exports and its determinants Wald statistics have been applied. The results of the Wald test have been summarised in table (6). The null hypothesis of Wald test is that there is no short run causality running from independent variable to dependent variables. The null hypothesis has been rejected at five percent significance level except in the case of FDI. There runs short run causality from determinants to textile exports of India except is case of FDI. The finding is in line with earlier study (Sharma, 2000) that FDI in India is market seeking rather efficiency-seeking. However, indirectly FDI does cause textile exports of India through capital Intensity. MFA phase out have also significant impact on exports; it is clear that Indian textile manufacturing has benefitted from lifting of quotas. As exchange rate has also shown significant on textile exports of India, the falling Indian rupees could boost more textile exports from India.

Table 5: VECM Results for Exports

|                          | Coefficient     | Std. Error                | t-Statistic     | Prob.  |
|--------------------------|-----------------|---------------------------|-----------------|--------|
| C(1)                     | -0.160804       | 0.047981                  | -3.351419       | 0.0025 |
| C(2)                     | -0.009403       | 0.012081                  | -0.778317       | 0.4434 |
| C(3)                     | -0.457176       | 0.131213                  | -3.484218       | 0.0018 |
| C(4)                     | -0.492163       | 0.142178                  | -3.461600       | 0.0019 |
| C(5)                     | -0.603730       | 0.145100                  | -4.160791       | 0.0003 |
| C(6)                     | -0.693273       | 0.149934                  | -4.623840       | 0.0001 |
| C(7)                     | 0.021553        | 0.010573                  | 2.038374        | 0.0518 |
| C(8)                     | 0.028394        | 0.011163                  | 2.543620        | 0.0173 |
| C(9)                     | 0.023935        | 0.009972                  | 2.400189        | 0.0238 |
| C(10)                    | 0.018202        | 0.007990                  | 2.278250        | 0.0312 |
| C(11)                    | 1.069760        | 0.536020                  | 1.995748        | 0.0565 |
| C(12)                    | 0.674165        | 0.531803                  | 1.267696        | 0.2161 |
| C(13)                    | -0.963186       | 0.515942                  | -1.866849       | 0.0732 |
| C(14)                    | -1.524194       | 0.572990                  | -2.660073       | 0.0132 |
| C(15)                    | -1.220631       | 0.191402                  | -6.377303       | 0.0000 |
| C(16)                    | -1.048976       | 0.163438                  | -6.418177       | 0.0000 |
| C(17)                    | -0.833806       | 0.161181                  | -5.173114       | 0.0000 |
| C(18)                    | -0.009272       | 0.124491                  | -0.074477       | 0.9412 |
| C(19)                    | -0.771243       | 0.390405                  | -1.975494       | 0.0589 |
| C(20)                    | 0.225883        | 0.101535                  | 2.224678        | 0.0350 |
| C(21)                    | 0.121659        | 0.033077                  | 3.678008        | 0.0011 |
| <b>R-squared</b>         | <b>0.878566</b> | Mean dependent var        | 0.023397        |        |
| Adjusted R-squared       | 0.785155        | S.D. dependent var        | 0.070805        |        |
| S.E. of regression       | 0.032819        | Akaike info criterion     | -3.694045       |        |
| Sum squared resid        | 0.028004        | Schwarz criterion         | -2.867383       |        |
| Log likelihood           | 107.8101        | Hannan-Quinn criter.      | -3.382966       |        |
| F-statistic              | 9.405390        | <b>Durbin-Watson stat</b> | <b>2.321778</b> |        |
| <b>Prob(F-statistic)</b> | <b>0.000000</b> |                           |                 |        |

Table 6: Result of Short Run Causality in VECM Exports (logEX)

|          | Restrictions                | Chi-Square | P Value |
|----------|-----------------------------|------------|---------|
| Log(FDI) | $C(7)=C(8)=C(9)=C(10)=0$    | 7.936      | 0.0943  |
| Log(Cap) | $C(11)=C(12)=C(13)=C(14)=0$ | 21.858     | 0.0002* |
| Log(Prd) | $C(15)=C(17)=C(18)=C(19)=0$ | 97.834     | 0.0000* |
| Log(exg) | $C(20)=0$                   | 4.949      | 0.0261* |
| MFA      | $C(21)=0$                   | 13.527     | 0.0002* |

(\*) Rejected at 5% level of Significance

## Conclusion

Export led growth is viable option for the emerging economies to integrate into world economy. By competing in the international market it encourages them to use sophisticated technologies and means of production so as to improve their competitiveness. However, to enter into foreign market emerging economies should concentrate on those products in which they possess comparative advantage. For India textile industry is an industry in which it can become top exporter in world market, as after china no country can match the size of resources and man power with India. Despite this India has very dismal position in world textile trade as compare to China. In this light, the present study endeavoured to find out the relationship between the determinants of exports with textile exports of India. To achieve this objective VECM and Granger causality analysis were carried out.

The paper manages to find out that FDI does not cause textile exports in India and the findings consistent with earlier studies that India mostly attracts market seeking FDI rather efficiency seeking. However, it was found that productivity and capital intensity causes textile exports in India significantly both in short and long run and FDI causes exports indirectly as it causes capital intensity and productivity. It has been also confirmed that there runs bi-directional causation between exports and productivity and between capital intensity and exports, means they cause each other. Exchange rate and MFA phase-out has also significant positive impact on the textile exports of India. It is apparent that India has benefited from the MFA phase-out and has confirmed the earlier studies. It will be highly in the interest of India to attract efficiency seeking FDI so as to realise the comparative advantage in textile industry as China has done in recent past.

## References

- Aitken, B. J. & Harrison, A. E. (1999), "Do Domestic Firms Benefit from Foreign Direct Investment: Evidence from Venezuela," *American Economic Review*, Pp. 605-618, June.
- Ali, E. H., (2011), "The Effects of FDI and Other Foreign Capital on Growth and Investment in Developing Economies", Department of Economics, University of Glasgow, UK.
- Aw, B. Y. & Hwang, A. R. (1995), "Productivity and the Export Market: *A Firm Level Analysis*", *Journal of Development Economics*, 47, Pp. 313-332.
- Branson, W. H. (1971), "US Comparative Advantage: Some Further Results", *Brookings Papers on Economic Activity*, 3, Pp. 754-759.
- Burkee, S. P. & Hunter, J. (2005), "*Modelling Non-Stationary Time Series: A Multivariate Approach*", Palgrave Macmillan, New York.
- Chow G. C. & Lin (1971), "Best Linear Unbiased Interpolation, Distribution, and Extrapolation of Time Series by Related Series", *Review of Economics and Statistics*, (53), Pp. 372-375.
- Dunning, J. H. (1988), "The Eclectic Paradigm of International Production: A Restatement and Some Possible Extensions", *Journal of International Business Studies*, 19(1), Pp. 1-31.
- Elberi, et al, (1998), "Estimating the Impact of Trade Reform on the Indian Cotton and Textile Sector: A General Equilibrium Approach", Mimeo, Department of Agricultural Economics, Purdue University.
- Enders, W., (2014), "*Applied Econometric Time Series*", 3<sup>rd</sup> Edition, Wiley India Pvt. Ltd, New Delhi.
- Granger, C. W. J. (1969), "Investigating Casual Relations by Econometric Models and Cross Spectral Methods", *Econometrica*, 37(3), Pp. 424-438.
- Gujarati, D. N., et al (2014), "*Basic Econometrics*", 5<sup>th</sup> Edition, McGraw Hill Education,



New Delhi, India.

- Gutierrez, C. E. C., et al. (2007), "Selection of Optimal Lag Length in Co-Integrated VAR Models With Weak Form of Common Cyclical Features", *Working Paper Series, Brasila*, No. 139, PP. 1-35, June.
- Haque, S. M. I. & Thaku, I. A., (2015), "Development of Textile Industry of India and China: Flying Geese Model Revisited", *Pacific Business Review International*, 8(2), Pp. 68-75, Aug.
- Head, K. & Ries, J. (1999), "Overseas Investment and Firm Exports", *Review of International Economics*,
- Khan, R. A. (n.d), "Vector Error Correction Model for Causality Among the Construction, Manufacturing and Mining & Quarrying Sector in Malaysia (1991-2010)", *Recent Advances in Mathematics, Statistics and Economics*  
<http://www.europment.org/library/2014/venice/bypaper/FI-MATH/FIMATH-36.pdf>
- Khondoker, M. & Kalirajan, K. (2012), "Determinants of Labour Intensive exports by Developing Countries: A Cross Country Analysis", ASARC Working Paper 09.
- Kunst, R. M. & Marin, D. (1989), "On Exports and Productivity, A Casual Analysis", *The Review of Economics and Statistics*, 71(4), Pp. 699-703, Nov.
- Lim, M. (2003), "The Development Pattern of Global Textile Industry and Trade Part I: Evidence From Textile Exports of the EC, the Far East, and Emerging Textile Exporting Countries in 1980s", *The Journal of Textile Institute*, 94(1-2), Pp. 32- 52.
- Liu, X., et al. (2001), "The Impact of Foreign Direct Investment on Labour productivity in the Chinese Electronic Industry", *International Business Review*, 10, Pp. 421- 439.
- Lutkephol, H. (2001), "Econometric Analysis with Vector Autoregressive Model", In Belsley, D. A. & Kontoghiorghes, J. (Eds), *Handbook of Computational Econometrics*, John Wiley & Sons, UK.
- Lutkephol, H. (2004), "Vector Autoregression and Vector Error Correction Models", In Kratzig, M. (Eds), "Applied Time Series Econometrics", Cambridge University Press, UK.
- Ma. Y., et al. (2014), "Factor Intensity, Product Switching, and Productivity: Evidence from Chinese Exporters", *Journal of International Economics*, 92, Pp. 349-362.
- Majocchi, A. et al. (2005), "Firm Size, Business Experience and Export Intensity in SME's: A Longitudinal Approach to Complex Relationship", *International Business Review*, 14 Pp. 719-738.
- Mcmillan, M., et al, (1999), "Promoting Foreign Direct Investment in Labour-Intensive Manufacturing Exports in Developing Economies", CAER Research Report, June 14.
- Minetti, R. & Zhu, S. C. (2011), "Credit Constraints and Firm Export: Macroeconomic Evidence from Italy", *Journal of International Economics*, 83, Pp. 109-125.
- Oskoe, M. B. & Hegerty, S. C. (2009), "The Effects of Exchange-Rate Volatility on Commodity Trade Between the United States and Mexico", *Southern Economic Journal*, 75(4), Pp. 1019-1044.
- Rashid, A. & Jehan, Z. (2013), "Derivation of Quarterly GDP, Investment Spending, and Government Expenditure Figures from Annual Data: The Case of Pakistan", MPRA Paper no. 46937, May.
- Rastogi, R. & Swahney, A. (2013), "What Attracts FDI in Indian Manufacturing Industries", Discussion Paper 13/02, Centre for International Trade and Development, School of International Studies, JNU, India.
- Seyoum, B. (2010), "Trade Liberalisation in Textiles and Clothing and Developing Countries: An Analysis with Special Emphasis on the US Import Market", *The International Trade Journal*, 24(2), Pp. 149-167.
- Sharma, K. (2000), "Export Growth In India: Has FDI Played Role", Economic Growth Centre, Discussion Paper no. 816, Yale University.
- Sodernborn, M. (2003), "Are Manufacturing Exports Key to Economic Success in Africa", *Journal of African Economics*, 12(1), Pp. 1-29.

- Thorbecke, W. & Zhang, H. (2009), "The Effect of Exchange Rate Changes on China's Labour-Intensive Manufacturing Exports", *Pacific Economic Review*, 14(3), Pp. 298-409.
- UNCTAD (2005), "*TNCs and Removal of Textiles and Clothing Quotas*", United Nations, New York and Geneva.
- Wakelin, K. (1998), "Innovation and Export Behaviour at the Firm Level", *Research Policy*, 26, Pp. 829-841.
- Wei, H. (2010), "Foreign Direct Investment and Economic Development in China and East Asia", Department of Economics, The University of Birmingham, UK.
- Wooldridge, J. M. (2009), "*Introductory Econometrics: A Modern Approach*", 4<sup>th</sup> Edition, South-Western Cengage Learning, Mason USA.
- Yang, C. H. & Chen, Y. H. (2012), "R&D, Productivity and Exports: Plant Level Evidence from Indonesia", *Economic Modelling*, 29, Pp. 208-216.
- Zhang, K. H. & Markusen, J. R. (1999), "Vertical Multinationals & Host Country Characteristics", *Journal of Development Economics*, 59, Pp. 233-252.
- Zhang, K. H. & Song, S. (2000), "Promoting Exports: The Role of Inward FDI in China", *China Economic Review*, 11, Pp. 385-396.