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Productivity Dynamics and Competitiveness of India's Textile and Clothing Industry during the post-MFA Regime

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Textile and Clothing is one of the oldest and most important industries in India due to its significant contribution to exports, industrial production, and employment generation. The sector contributes around 7% to total industrial production, 2% to overall GDP and 15% to total exports of the country (Ministry of Textiles, 2018). Today, India is the world's second largest exporter of Textiles and Clothing in the world after China, commanding a share of about 5.8 per cent of the total global textile exports in 2017 (Kim, 2019). While the industry has witnessed an impressive export growth since the economic reforms of 1991, there has been a reversal of trend in recent years, with closure of nearly one-third of spinning capacity across India[1].

This period of slowdown coincides with the phasing out of the Multi-Fibre Agreement (MFA) that governed world trade in textiles and garments till 1995, when during the Uruguay round of trade negotiations, WTO members agreed to progressively phase out MFA quotas on exports of textiles and clothing. It was expected that the Indian textile firms will be the biggest gainers after China, due to the opening up of the global textile and garments market as a result of the phasing out of quotas (Nordas, 2004; Landes, et. al, 2005). While India did benefit to some extent, there was in fact an intensification of competition in the global T&C industry. Consequently, Vietnam, Bangladesh and Pakistan emerged as major exporters of T&C in the global market after the MFA phase-out (Kim, 2019).

While much of the literature has cited rising labour cost as the reason for this loss of competitiveness, declining productivity levels in the sector has often been ignored. A Mckinsey [2001] study, using men's shirts produced per hour, estimated the labour productivity in Indian apparel industry to be as low as 16% of US levels. Hashim (2004) finds negative productivity

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[1] Source: Northern India Textile Mills Association

growth in case of cotton yarn and garment, whereas positive but just over 0.5 per cent in case of man-made textiles between 1989-97. Goldar (2017) found a decrease in total factor productivity growth in textiles from 1.45 per cent to 0.64 per cent. Clearly, the industry has been struggling to enhance productivity growth since the past several years, which may be responsible for its loss in export competitiveness.

In this context, the proposed study examines the productivity dynamics of India's Textile and Clothing sector during the post-MFA regime. The main objective of the study is to decompose the productivity growth of the various sub-sectors in India's textile and clothing industry using firm-level data. We employ the stochastic frontier approach and decompose the changes in total factor productivity ($T\dot{F}P$) growth into four components: technical progress (TP), changes in scale component ($\dot{S}C$), changes in allocative efficiency ($\dot{A}E$), and changes in technical efficiency ($\dot{T}E$). The main data source is Annual Survey of Industries (ASI), which is published by the Central Statistics Office (CSO). ASI data (for the years after 2008), uses NIC-2008 industrial classification, which classifies the textile and clothing sector under 2-digit industrial codes 13 and 14. We obtain data on total output, inputs, net value added, gross value added and wages to employees from the ASI and convert all values to real terms using appropriate price index series. Following Goldar (1986), we use the figures for GVA as the index of output

In order to analyse the technical efficiency change and the role of productivity change in the growth of the sector, we consider the time-varying stochastic production frontier, originally proposed by Aigner, Lovell and Schmidt (1977) in translog form as:

$$lny_{it} = \alpha_0 + \sum_{j=1}^{J} \ln x_{jit} + \alpha_t t + \left(\frac{1}{2}\right) \sum_{j=1}^{J} \sum_{l=1}^{L} \beta_{jjl} \ln x_{lit} + \left(\frac{1}{2}\right) \beta_{tt} t^2 + \sum_{j=1}^{J} t\beta_{tj} \ln x_{jit} + v_{it} - u_{it}$$

Where, y_{it} is the observed output, t is the time variable and x variables are inputs, subscripts j and i index input. The efficiency error u, account for the production loss due to unit-specific technical inefficiency and is always greater than or equal to zero and is assumed to be independent of the random error, v, which is assumed to be IID N($0, \sigma_v^2$).

Total Factor Productivity change is defined as[2]:

$$T\dot{F}P = \dot{y} - \sum_{j=1}^{J} S_j^a \dot{x}_j;$$

Where,

$\dot{y}$: Change in output

$$S_j^a = \frac{w_j x_j}{\sum_{j=1}^{J} w_j x_j}$$

w_j: Price of input x_j

$\dot{x}_j$: Change in input

$$T\dot{F}P = (RTS - 1) \sum_{j=1}^{J} \lambda_j \dot{x}_j + TP + \dot{T}E + \sum_{j=1}^{J} \{\lambda_j - S_j^a\} \dot{x}_j$$

Where,

RTS: Returns to scale;

$(RTS - 1) \sum_{j=1}^{J} \lambda_j \dot{x}_j$: Scale components

$\sum_{j=1}^{J} \{\lambda_j - S_j^a\} \dot{x}_j$:   Allocative efficiency

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[2] See Kumbhakar et al (2015)