Does Policy leads to Structural change in the Small and Medium Enterprises in India

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ABSTRACT The present study analyses the structural changes in the Small and Medium Enterprises in India for the period 1973-2012. Data for the present study has been taken from the RBI Handbook of Statistics on Indian Economy and Annul Reports of the MSMEs. For the breakpoints in the series we have used "strucchange" programme developed by Zeileis, Kleiber, Kramer and Hornik (2003) in R and for the stationarity ADF and PP test have been used.
The OLS based CUSUM test suggests two different points for the structural changes for the linear model and Cobb Douglas Production function Model.
For the linear model the structural change was in the year 1988 and for the C D Production function Model the structural change is found in the year 1996.

The role and importance of Small and Medium Enterprises (SMEs) in the context of Indian industrial development can be traced back to as early as Industrial Policy Resolution of 1956. With relatively low capital investment, larger employment opportunities and unstinct official support, the small scale sector maintained its growth momentum in pre-reform period. In the post-liberalisation era, its importance has not been undermined and as late as Ninth Five Year Plan document.The presence of breaks in series leads to changes in the estimates of the parameters which has serious implications on intercept, changes in correlation and volatility of the series. These breaks are due to structural adjustment programmes, policy implication, shocks, or any other reason. The structural change means that at least one of the estimates of parameters has changed at some point. Bai and Perron (1998, 2003) consider the problem of estimation and inference in a linear regression model allowing for multiple shifts and developed some useful tests for endogenously determining multiple structural breaks.

In the past half a century, the small-scale sector registered impressive rise in investment, employment, production capacities and exports and thus has contributed significantly towards building a stable and sound national economy. The year 1991 marked the dawn of a new era for the Indian economy. Major structural reforms were initiated with the objective of transforming the centrally planned economy to a market-driven one. The regime of wide-spread liberalisation was started in June-July 1991 when the license-permit raj of yesteryears started disappearing and deregulation, decontrol and delicensing regime made the headway in the industrial policy. Trade policies focussed on liberalisation, openness, transparency and globalising the Indian economy. It further included reduction in tariffs, removal of QRs, changes in exchange rate policy and open policy towards foreign direct investment.

In their nature, scope and pattern, SMEs vary from country to country depending upon the economic, political and social environment, prevailing in that country. Broadly, SMEs are based either on the 'number of persons employed' or on the question of investment in 'fixed assets' or on both. For example, in many developed countries it is number of employees determining the size of an enterprise but in a developing country like India, major determinant happens to be the investment size in an enterprise. Nonetheless, the limits in terms of 'investment' and 'employment' are directly related to the state of economic development of a country. As such a small-scale unit in a developed country may be considered a large or medium scale unit in a backward or a developing country. Time to time revisions in both these limits usually indicate performance, trends of SMEs and policies of the government and its orientation towards the development of small-scale sector.

II. Literature Review, Data and Methodology:
The identification of structural breaks in the series is very important for analysing the changes and evaluating impact of shifts due to change in policies in the economy. Shannon and Moazzami (2014), used Bai and Perron's method for detecting multiple, unknown structural breaks to estimate natural rates of unemployment for 19 OECD countries from 1955-2011. Noriega and Ramirez-Iamora (1999) presented the evidence of multiple structural break under the via global and sequential search method in Mexico's Real and per capita real GDP.

The process of liberalisation and globalisation, while providing tremendous opportunities, has thrown up new challenges for the Indian SMEs. Hitherto the small scale sector, which was maintaining reasonable growth under the umbrella of protective environment, was now forced to face challenges of stiff competition both at national as well as international levels. Studies of Murthy's (2004), Sahoo (2004), Bala Subrahmanya (1995) emphasizes the importance of SSI in the Indian economy. Having been nurtured in a sort of protective environment for a long time, now it finds itself vulnerable to cross-border enterprises' activities in the wake of globalisation. The Small and Medium Enterprises that operated in wide areas of industrial activities or export field, are experiencing the impact of globalisation by encountering increased competition in domestic as well as the international markets. Pandey and Sivesh (2007), Dixit and Pandey (2008) have analysed the performance of SMEs in Indian economy in terms of absolute growth in number of enterprises, employment, production and exports both in the pre and post reform period.

The Small and Medium Enterprises require small invest-ments so the entrepreneurs can afford to take risks. The financial institutions have played an important role in the Indian economy for the development of Small Scale Indus-tries (Dixit, 2002). Idris and Ismail (2007) have attempted to analyse sources of output growth in SMEs in different sub-industries in Malaysia. Upender and Sujan (2008) in their studies examine the ADF test, PP test, cointegration and ECM analysis for the labour productivity and wage rate for the Indian industries. Till date it has been found that there is no such study relating SMEs and economic growth in Indian economy by using unit root, cointegration and ECM analysis.

Thus a modest attempt has been made in this study to ex-amine the structural changes in the series of SMEs output, SMEs employment, number of SMEs and their fixed capital during the period 1973 to 2012.

For this study, time series data (for the period 1973 to 2012) related to SMEs output, SMEs employment, number of SMEs (registered and unregistered), fixed capital in the SMEs have been utilized. Data for the above variables have been collected from various issues of Economic Survey, Handbook of Statistics on Indian Economy, First, Second and Third Census of SSI and Annual Reports of the MSMEs.

II.1 Structural Change: CUSUM Test:
For detecting structural change in the MSMEs sector in the Indian economy, two different types of model have been used. First model is Classical Linear Model i.e.

$$Y_t = \alpha + \beta K_t + \gamma N_t + v_t$$

And the other is Cobb Douglas Production Function

$$\log\left(\frac{Y_t}{n_t}\right) = \alpha + \beta \log\left(\frac{K_t}{n_t}\right) + \gamma \log\left(\frac{N_t}{N_t}\right) + u_t$$

Where $\frac{Y_t}{n_t}$ is per firm output, $\frac{K_t}{n_t}$ per firm capital and $\frac{N_t}{n_t}$ per firm labour.

The Above two models are used for fluctuation tests that capture the fluctuation either in residuals or in estimates. In the present paper CUSUM process is used to know fluc-tuation process which contains cumulative sums of stand-ardized residuals.[1] In this fluctuation test the null hypoth-esis is "no structural change"[2].

If OLS-based CUSUM process exceeds its boundary, there is evidence for a structural change.

III Breaks in the Multivariate series for the MSMEs:

To know the structural change in the MSMEs sector we have estimated two models: first is Classical Linear Model and second is Cob Douglas type model as presented in the methodology section and the regression results are presented in the table 2. In Model first the coefficient of employment and fixed capital are significant at 0.001. In the second model the coefficient of per firm employment and per firm fixed capital are significant at 0.000.

Zeileis and etal (2015) developed test in the programme 'strucchange' for CUSUM (Cumulative Sum Control Chart) processes, which contain cumulative sums of standardized residuals. Figure 5 shows the plot of the OLS based CU-SUM test for the linear model 1. It can be seen that the OLS-based CUSUM process exceeds its boundary in the

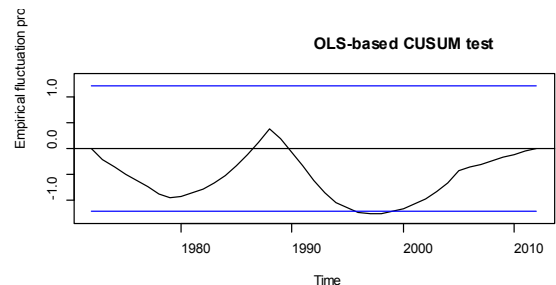year 1988 hence there is evidence for a structural change.

Table 2: Regression Results for the Empirical Fluctuation Process

Variables	Model	
	OLS Model	CD Model#
Fixed Capital	0.7735	0.8351
	(3.262)**	(4.496) ***
Employment	94.445	0.7862
	(3.211)**	(4.521) ***
Constant	-634.163	0.5690
	(-2.307)*	(0.521)
R-squared:	0.9927	0.3771

Note: # Output, Capital and labour are in terms of MSMEs output/Number of firms, Fixed investment in MSMEs/Num-ber of firms and Employment in MSMEs/Number of firms; 0 '***' 0.001 '**' 0.01 '*'
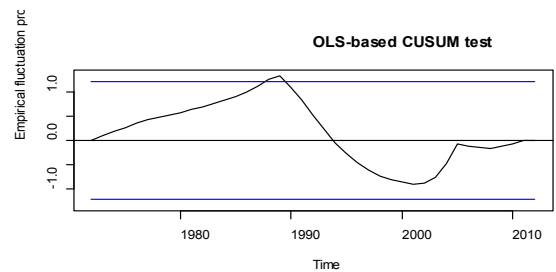
Graph5: OLS based CUSUM plot For the First Model

Graph 6: OLS based CUSUM plot For the Second Model

Graph 6 is the plot of the OLS based CUSUM test for the CD production function. OLS-based CUSUM process ex-ceeds its boundary in the year 1996 hence there is evi-dence for a structural change. Medium and small enter-prises sector is facing structural changes based on OLS CUSUM test for different years.

IV Findings of the study:
The present study analyses the structural changes in the Small and Medium Enterprises in India for the period 1973-2012. Data for the present study has been taken from the RBI Handbook of Statistics on Indian Economy and Annul Reports of the MSMEs. For the breakpoints in the series we have used "strucchange" programme devel-oped by Zeileis, Kleiber, Kramer and Hornik (2003) in R. Two models used for detecting structural changes based on OLS based CUSUM test. The OLS based CUSUM test suggest two different points for the structural changes for the linear model and C D Production function Model. For the linear model the structural change was in the year 1988 and for the C D Production function Model the struc-tural change is found in the year 1996.

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