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RBI releases DRG Study on "Productivity, Efficiency and Competitiveness of the Indian Manufacturing Sector"

The Reserve Bank of India today released a DRG Study entitled, "Productivity, Efficiency and Competitiveness of the Indian Manufacturing Sector". The study is co-authored by Prof. Pushpa Trivedi (Indian Institute of Technology Bombay), Shri L. Lakshmanan (Assistant Adviser, Internal Debt Management Department), Dr. Rajeev Jain (Assistant Adviser, Department of Economic and Policy Research) and Dr. Yogesh Kumar Gupta (Assistant Adviser, Department of Statistics and Information Management) of the Reserve Bank.

This study focuses on the productivity and efficiency of India's manufacturing sector. The study covers the time-span 1980-81 to 2007-08 in the case of overall organised manufacturing sector. It undertakes disaggregate analysis for: 18 states of India (to highlight the regional dimensions); six major component industries within manufacturing sector; organised versus unorganised segments of the manufacturing sector, *etc*. This empirical exercise has been done for the period 1980-81 to 2003-04. The productivity and efficiency of 'Selected Public Ltd. Manufacturing Companies' has also been measured for the period 1993-94 to 2004-05. The methodology used in the study covers both parametric and non-parametric approaches.

The major findings of the study are summarised below:

- For the period 1980-81 to 2003-04, the total factor productivity growth (TFPG) for organised manufacturing sector is estimated as 0.92 per cent per annum (pcpa) by Growth Accounting Approach (GAA) which is almost half of that obtained by the Production Function Approach (PFA), *i.e*., 1.81 pcpa. Hence, the contribution of TFPG to growth of output by these two approaches lies between 13 to 25 percent. Based on the RBI dataset on public limited companies, TFPG of about 1.5 pcpa is estimated for the period 1993-94 to 2004-05.
- As regards the industry-wise TFPG performance of organised manufacturing sector (measured by the GAA), Food, Beverages and Tobacco (FBT) industry, followed by the Textiles (TEX) industry are the worst performers while Machinery and Transport Equipment (MTE) and Chemical (CHEM) industries are the best performing industries. The TFPG varied between -0.41 (for FBT) and 1.47 pcpa (for MTE). The PFA estimates provide us with the range of TFPG between 3.05 for TEX and 0.97 pcpa for Leather (LEATH).
- The inter-State performance of TFPG of organised manufacturing sector (as measured by the GAA) indicates that Bihar (including Jharkhand), Rajasthan

and Andhra Pradesh turn out to be best performers while the worst performers are Tamil Nadu, Gujarat and Punjab. Bihar exhibits the highest TFPG and Tamil Nadu exhibits the lowest TFPG. This has to be juxtaposed with the fact that Bihar witnessed a negative growth rate of employment and Tamil Nadu witnessed a significantly higher growth rate of employment in comparison to the corresponding national figure.

- Using the RBI dataset, efficiency of 449 companies for the period 1993-94 to 2004-05, employing both data envelopment (DEA) and stochastic frontier production function (SFPF) approaches has been estimated in this study. The mean efficiency levels estimated under the alternative assumptions highlight the fact that there exists an ample scope for improving efficiency in the Indian manufacturing sector. The SFPF approach highlights the lowest mean efficiency of Food, Beverages and Tobacco (FBT) and Textiles (TEX) and thereby validates the measurement of TFPG emanating from GAA. Moreover, the TFPG measured using the Malmquist Index for this dataset also identifies the FBT and TEX as the poorest performers while top performers are the MTE and METAL industries. This throws some light on why the TEX has been one of the poorest performers on exports front and why metal and engineering goods industries have been the top performers.
- The estimation of TFPG for the unorganised sector was constrained due to the data limitations in terms of the construction of capital stock series. In view of this, labour productivity for the unorganised sector has been estimated and compared with that for the organised manufacturing sector. It is found that growth of labour productivity in unorganised sector has increased more or less in tandem with that in the organised sector during the period under study. However, the disparity in the 'levels' of labour productivity between organised and unorganised sectors are rather sharp and have perpetuated. Organised manufacturing sector had labour productivity which was 13, 14 and 15 times of that observed in its unorganised counterpart in years 1989-90, 1994-95 and 2000-01, respectively.
- While examining whether TFPG for the organised manufacturing sector was higher or lower for the various industries and States during the post-liberalisation period, it was found that TFPG has witnessed either deceleration or no acceleration across industries (except for Metal industry) and across States (barring West Bengal and Haryana) as per the GAA. The policy dummy in production function approach indicates a shift in production function only for Maharashtra. However, if the averages of TFPG over shorter periods are taken, there seems to be revival of TFPG in the post-nineties.
- In the post-reform period, trade barriers (proxied by the ratio of import duties to import payments) turned out to be a significant determinant of TFPG of organised manufacturing sector with a negative sign, indicating that the dismantling of the trade barriers has had a positive impact on TFPG. The increasing openness of the manufacturing sector (as captured by the growth of exports) also turned out to be positively associated with TFPG of the organised manufacturing sector.

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