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Exploring the Reasons for Low Productivity and Low Technical Efficiency in Unincorporated Manufacturing Industry in India: Stochastic Frontier Analysis with Firm Level Data

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Manufacturing industry has a greater contribution to economic growth of a country compared to other industries. Manufacturing not only has the potential to have increasing returns to scale but also the faster the rate of growth of output in manufacturing, the faster the rate of growth of economy-wide productivity (Kaldor, 1966). This is why manufacturing serves as the “engine of economic growth”. Manufacturing is the driving force for growth, prosperity and sustainable development of the Indian Economy. However, since the organised sector is shrinking at a fast pace in India, unorganised manufacturing sector appears to be the major job-provider for the poor and low-skilled workers. Although unorganised manufacturing sector accounts for 80% of the total manufacturing sector, it generates only 33% of the total income generated from the total manufacturing sector in India. Hence, there exists a lot of opportunity to make this sector to produce effectively in order to make India a manufacturing hub to compete globally. Therefore, it is the need of the hour to search the reasons behind low productivity of unorganised manufacturing industry in India and make necessary corrections.

Under this backdrop, this study tries to measure the productivity and technical efficiency of the enterprises of unorganised manufacturing industry in India and to find out significant reasons behind the low technical efficiency of these enterprises during the period from 2010-11 to 2015-16. In this study, we have used cross-sectional unit level data of unincorporated manufacturing enterprises from 67th (2010-11) and 73rd (2015-16) round survey of unincorporated non-agricultural enterprises (excluding construction) by the National Sample Survey Office of the Government of India. Unincorporated enterprises, as defined in the 17th International Conference of Labour Statisticians (ICLS 2003), are those which are not constituted as separate legal entities independently of their owners. In India, these enterprises are not registered under the Companies Act, 1956, and are not covered under Sections 2m(i) and 2m(ii) of the Factories Act, 1948. Unincorporated enterprises cover production units with very small number of hired labour, as well as the units owned and operated by single individuals working on own account as self-employed persons, either alone or with the help of unpaid family members within or outside the home.

One way of measuring productivity is the estimation of a neoclassical production function, assuming that producers are operating exactly on the production function, implying that they are perfectly efficient in maximising output by the use of available inputs. In many cases, however, firms are likely to produce not on but inside the production frontier in output space implying the presence of inefficiency while conducting the production process. In Farrell (1957), the ratio between actual and potential output is conventionally defined as the level of technical inefficiency. If a firm's actual production point lies on the frontier it is perfectly technically efficient. If it lies below the production frontier then it is technically inefficient. Farrell's work led to the development of two principal methods to compute efficiency scores, namely, stochastic frontiers (SF), based on econometric methods, and data envelopment analysis (DEA), relying on mathematical programming.

In this paper, stochastic production frontier model developed in Battese and Coelli (1992) has been employed using cross-sectional unit level data from 67th (2010-11) and 73rd (2015-16) round survey of unincorporated non-agricultural enterprises (excluding construction) by the NSSO. We have constructed independently pooled cross section from two random samples from the same population over two different time periods. We have used a translog stochastic frontier production function, in which gross value added is assumed to be the output and labour and capital are considered to be the inputs. The technical inefficiency is assumed to be the function of value of assets of the enterprise, working hours of labourers per day in the enterprise, dummy variable for own franchise outlet of the enterprise (equal to 1 if the enterprise has own franchise outlet, 0 otherwise), dummy variable for government assistance received by the enterprise (equal to 1 if the enterprise has received any government assistance, 0 otherwise), dummy variable for working under contract basis (equal to 1 if the enterprise works under contracts, 0 otherwise), dummy variable for rural or urban sector (equal to 1 if the enterprise is rural, 0 if it is urban), dummy variable for location of the enterprise (equal to 1 if the enterprise is home-based, 0 otherwise) and dummy variable for time (equal to 1 if the data of the enterprise is collected during 2015-16, 0 if it is collected during 2010-11).

Our empirical result reveals that all the estimated coefficients of the translog stochastic frontier production function are statistically significant at the conventional levels. Our result also implies that a considerable amount of output variation is due to the presence of technical inefficiency. Our result shows that technical inefficiency declines significantly with the increase in amount of assets of an enterprise. Our result further reveals that with the increase in working hour per day, technical inefficiency declines significantly. The result also indicates that the enterprises with own franchise outlets have greater opportunity to sell their products and therefore they have lower technical inefficiency. Government assistance has been proved to be inadequate and, therefore, ineffective in increasing the technical efficiency of unincorporated manufacturing enterprises. Those enterprises who work on contracts are found to be technically more efficient than the others. Unincorporated rural manufacturing enterprises are found to be technically less efficient compared to urban ones. Unincorporated home-based manufacturing

enterprises are found to have significantly less technical efficiency compared to the others. Finally, the time dummy has a negative and significant coefficient, which implies that there has been a significant decline in technical inefficiency of the unincorporated manufacturing enterprises in India during the period of our study.