China’s Industrial TFP Measurement and Decomposition——Comparison Based on Value-added Production Function and Gross Output Production Function

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The share of intermediate inputs in gross output is very high of many countries; and it has a multiplier effect on aggregate output; Jones; 2011. Therefore, when measuring industrial TFP; gross output production function which includes intermediate inputs should be chosen; rather than the current popular value-added production function. This paper estimates and compares the three industrial TFP of China’s 28 provinces (autonomous regions and municipalities) in 1997—2007; using data envelopment analysis (DEA) methods based on value-added production function and gross output production function respectively. The results show; there exists the same trend of TFP grows rate based on the two production function; however; the TFP grows rate based on value-added production function exists underestimate phenomenon obviously; the underestimate ratio of the three industries are 11.2%; 6.7% and 9.2% respectively. Further decomposition analysis of TFP shows; the grows rate of all the TFP decomposition indices exists underestimate of primary industry and secondary industry based on value-added production function; while there does not exist integrity underestimated phenomenon of tertiary industry; The grows rate of TFP and it’s decomposition indices based on gross output production function are less volatile; There exists the same sort of contribution for the TFP decomposition indices to TFP of primary industry and secondary industry based on the two production function; while tertiary industry does not; Only the average grows rate of TFP for the secondary industry based on gross output production function increased; and the contribution of technological progress is positive; while technical efficiency is declined.