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

Topic: Input-Output accounts and statistics 1
Author: Jicheng Yang
Co-Authors: Jin Fan

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.