

Rural e-commerce and agricultural total factor productivity: Evidence from China

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Electronic supplementary material (ESM)

Supplementary text
Supplementary Table S1

Measurement of total factor productivity in agriculture

Table 1 shows the estimation results of Equation (3). Based on this parameter estimation result, combined with Equations (4–7), the agricultural technical efficiency, agricultural technical progress and agricultural total factor productivity of the sample counties can be measured. In addition, since the conclusions of the stochastic frontier analysis (SFA) are highly dependent on the function setting, this paper employs the likelihood ratio test to test three assumptions about the model setting to ensure that the econometric results are robust: first, the frontier production function follows the Cobb-Douglas production function form. Second, there is no technological progress. Finally, technological progress conforms to Hicks-neutral. The LR test results reject the three original hypotheses and most of the coefficients are significant at the 1% statistical level, indicating that the SFA model selected to transcend the logarithmic function fits better.

Table 1. Results of estimating the parameters of the stochastic frontier production function

Variables	Estimated coefficients
$\ln L_{it}$	0.173*** (0.019)
$\ln K_{it}$	0.038 (0.041)
$\ln M_{it}$	1.736*** (0.048)
$(\ln L_{it})^2$	0.001*** (0.000)
$(\ln K_{it})^2$	−0.001*** (0.000)
$(\ln M_{it})^2$	0.092*** (0.002)
$\ln L_{it} \times \ln K_{it}$	0.001 (0.004)
$\ln L_{it} \times \ln M_{it}$	−0.004 (0.003)
$\ln K_{it} \times \ln M_{it}$	−0.000 (0.002)
$t \ln L_{it}$	−0.007*** (0.000)
$t \ln K_{it}$	0.005*** (0.000)
$t \ln M_{it}$	−0.005*** (0.001)
t	−0.066*** (0.004)
t^2	0.002*** (0.000)
σ_u^2	5.853*** (0.076)
σ_v^2	0.000** (0.000)
n	33 873
LR	19 571.57***

*** and **significance at 1% and 5% levels, respectively; robust standard errors are in parentheses; LR – Likelihood ratio

Source: Author's compilation