

# **Estimating Production Functions with R&D Investment and Endogeneity**

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## **ABSTRACT**

This study analyses the production function estimation when there is an unobservable idiosyncratic productivity shock and the series of the productivity shock follows a first-order endogenous Markov process which is controlled by R&D investment.

The production function approach, in general, suffers from endogeneity problems when there are determinants of production which are not observed by the econometrician but are observed by the manager of a firm. To control for this problem, recently developed econometric methods are applied to the production function estimation. The results show that there is a possibility that other estimation methods such as OLS estimation and fixed effect estimation underestimates the contribution of capital. The results also suggest that the rate of return to R&D varies considerably across industries and within an industry.

JEL Classification Numbers: D24, O32

















































































