

# **The Impact of Capital Measurement Error Correction on Firm-Level Production Function Estimation**

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## **Abstract**

Estimation of TFP and returns to scale hinges on the first-stage correct identification of the underlying production functions. We argue that production function estimation is significantly affected by measurement errors. In particular, we show that measurement error in capital sizeably impacts its coefficient estimate. Using a large panel of Czech manufacturing firms in 2003–2007, we estimate firm-level production functions using the Levinsohn and Petrin (2003) and Wooldridge (2009) approaches, correcting for the measurement error in capital. As our labor and material inputs are measured in physical rather than financial units, we are able to pin down the effect of various measurement issues of capital, including deflator choice. Our results suggest that the capital coefficient estimate approximately doubles (depending on the particular industry) when we control for capital measurement error. Consequently, while the majority of industries exhibit constant or (in)significantly decreasing returns to scale when the standard methods are used, increasing returns cannot be rejected in some industries when the estimation is corrected for capital measurement error.

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