

PRODUCTIVITY EFFECTS OF INNOVATION MODES

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Abstract

Since the seminal contribution by CDM, many empirical studies have confirmed the positive impact of innovation on productivity at the firm level. The focus is usually on product innovation, the main reason being that this type of innovation is the only one for which an output measure is readily available (e.g. share of innovative products in sales from innovation surveys, or patent data). However, as recognized in the current innovation surveys, there are various types of innovation, e.g. process innovation, organisational innovation and other types of non-technological innovation. In addition, it can be argued that a firm investing in a new ICT based technology is innovative. There is evidence that the use of ICT has a positive effect on both the innovativity and productivity of a firm (Van Leeuwen, 2008). To investigate the effect of different types of innovations on productivity, and their complementarity, we extend the CDM framework to include (besides product innovation) process and organisational innovation. ICT is treated as an input to innovation, analogous to R&D. We therefore have two innovation input equations, and the knowledge production function is a system of three-equations (a trivariate probit). The results show that R&D leads to increased product and/or process innovation. ICT affects all three types of innovation. Organisational innovation has the strongest effect on productivity. There is also some evidence for complementarity between different types.

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