

Corporate R&D and Productivity Relationship: Evidence From Turkish Listed Firms

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Abstract

The research and development (R&D) literature generally assumes that corporate R&D activities have a positive impact on firm productivity. However, there is an ongoing debate that the relationship between R&D and productivity growth is expected to be weaker in high-tech than in low-tech sectors due to the fact that firms in high-tech sectors might be affected by diminishing returns. Following this argument, the main objective of this study is to analyze the impact of corporate R&D activities (measured by knowledge stocks) on firm performance (measured by labor productivity). In doing so, we will try to address the following key questions: Is the impact of R&D activities on productivity equal and significant across sectors? If not, Does productivity of a high-tech firm benefit more from an increase in corporate R&D compared to a firm in a low-tech sector, or vice versa?

The empirical analysis is based on firm level panel data of Borsa Istanbul listed firms from 1998 to 2012. We will specify an interdependent chain of equations, including the propensity to invest in R&D, R&D investment, and productivity. To carry out the empirical analysis of the interdependent chain of equations, a multi-step procedure is used to take care of selectivity and simultaneity biases. First, the probability of engaging in R&D investments and the R&D investment intensity equations are specified and estimated by the Heckman 2-step method. Second, the relationship between R&D investments and productivity is specified as a system of equations and estimated by an instrumental 2SLS approach and GMM method. In this step of the analysis, we control for both sources of potential biases (sample selection and simultaneity equation bias).

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