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AN ANALYSIS OF THE RETURNS TO RTD INVESTMENTS IN INNOVATIVE SPACE ACTIVITIES

Abstract

We propose a new analytical tool to analyze the Grilichesian problem of measuring the returns to research and technological development (RTD) applied to investment in innovative space activities. The main idea is to apply the firm market value to infer returns in the depreciation problem of return to RTD. The problem of return on investments in space activities is new and very important because in the market there are many new-innovative SMEs that search opportunities for collaboration based on their innovational capacity. The main applications of this proposal are: patents and brevets evaluation in market approach, life-cycle of patents and brevets evaluation for analyzing the possibilities of initial financing of ISME. Our contribution is to introduce a new methodology for measuring RTD returns based on the Grilichesian market value approach, in an optimal RTD investment framework (the marginal expected benefit equal marginal cost). The main issues from the literature are: Griliches (1958) proposed for the first time the measure of social return of RTD; Jorgenson (1967) introduced the explanations for the productivity residual via improvements in the measurement of the inputs; Hall, Kim (1999) demonstrated the changes in the marginal productivity of RTD in long run. It was demonstrated that the determining the depreciation rate is rather impossible because: (a) the rate is endogenous to its behavior and that of its competitors, and depends on the progress of public RTD; (b) the identification of the depreciation rate independently from the return to RTD requires determination of the lag structure of RTD in generating returns; (c) the lack of appropriate natural experiments. In our paper we will introduce an important property (Hall, Mairesse, 2005): the log RTD series exhibits close random walk behavior; in this case the idea is to include more than one linear function of the log RTD series in an equation. This resolving framework has the advantage of simplicity and that are based on estimation of evolution of market value of innovation. The main areas of discussion include: the effects of depreciation problem of return to RTD on the space business ISME evolution and the concrete possibilities of financing of ISME that have substantial difficulties to find financing sources.