

# A study analyzes the actual role of R+D's in patents

April 25 2011

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Photomontage: This is a man with a light bulb instead of a head. Credit: Cayusa

A research study at Universidad Carlos III de Madrid, Spain, which analyzes the relationship between R+D and patents, for the first time has estimated the role that secret innovations play, determining that the effects of R+D on patents are not nonlinear, depend on the quality of the patent, are dynamic, and have a large amount of inertia.

For some time now there has been a certain degree of controversy regarding the effect of patents on the [competitiveness](#) of an [economy](#). There are those who maintain that innovation is reduced when rights to a monopoly are given to a [patent](#) holder for a period of time, while others believe that it is the compensation necessary so that firms invest in R+D

without having others take advantage of the innovations. The aim of the work of these researchers is to study the relationship between R+D and patents in a general context to be able to determine what effect innovation and development have on the likelihood of firms obtaining a patent. "Specifically, we analyze the nonlinear and dynamic effects of R+D after controlling for significant collateral effects of innovations on other firms, firm size, and secret innovations," commented one of the authors of this study, Álvaro Escribano, Full Professor at the UC3M Department of Economics, who has published this study in conjunction with Szabolcs Blazsek (currently at Universidad de Navarra) in the *Journal of Econometrics*, one of the most important international journals in the field of Economics.

In order to carry out this study, these researchers have developed sophisticated econometric and probabilistic models with 22 years of observations (from January 1979 to June 2000) from the most important patent office in the world (USPTO) with information on 560,000 patents and 4,500 firms in the United States. The latent factors in this context are those unobservable innovations that companies keep secret. "We have been able to estimate for the first time the effects that unobservable components have and they are significant. This has allowed us to consistently estimate the stable and nonlinear relationship between R+D and the likelihood of obtaining a patent, controlling for endogeneity," Profesor Escribano pointed out.

## Quality patents

Among the main conclusions drawn is that the effects of R+D on patents are not constant, but rather they depend on the quality of the patent. That is, the higher the number of citations that the patents has, the greater the effect of R+D on future innovations. "We have seen that the number of patents that firms request does depend on R+D, but also on the quantity of patents that have been granted in the past," Escribano explained. "For

that reason, the earlier firms begin the innovative process, the higher the number of patents that will be obtained through the increase in the capacity to absorb new ideas," he continued. In addition, according to the researchers, it would be a good idea to reduce the number of the firm's secret innovations, because it reduces the positive collateral effects that one firm has upon others, thereby discouraging global innovation.

Spain and its universities are at the rear of the EU countries with regard to the number of patents. "Innovation is the main source of growth and the number of patents is strictly related to the innovation and productive capacity of a country," Escribano asserted. This article contains precisely some of the chief advantages of patents, such as fomenting inventive activity, and the fact that they are standardized documents that have barely changed over time and are available in many countries during long periods of time. "The main advantage is the generalized diffusion of the [innovation](#) in the patent's description, which increases the positive collateral effects on the productivity of other firms and on the economy in general," the researchers concluded.

Provided by Carlos III University of Madrid

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