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## Innovation and economic growth: An empirical analysis for CEE countries

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### Abstract

The innovation, R&D expenditures and the investments in technology are premises for ensuring competitiveness and progress, and through them a sustainable economic growth. A sustained level of education of the workforce, increasing investments in research area, the creation of the new products and the facile access of investors to stock markets, firstly, will ensure the development of the private and public sectors, and secondly, will improve the living conditions of the population. The purpose of this paper is to analyze if the long term economic growth is influenced by the innovation potential of an economy. Our analysis was performed by using multiple regression models estimated for the following CEE countries, namely Poland, Czech Republic and Hungary. In order to quantify the innovation we have used various variables, such as number of patents, number of trademarks, R&D expenditures. The results provide evidence of a positive relationship between economic growth and innovation. JEL Classification: O31, O30, O47, O52

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### 1. Introduction

The advantages offered by the globalization, the development of information technology and media represent the premises for economic growth and for the improvement of companies' financial performance (OECD, 2007). Thus, we mention that innovation and technology, the increase in research and development expenditures are the

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prerequisites for ensuring competitiveness and progress, and through them a sustainable economic growth. Furthermore, a sustained training level of workforce, an increase in the level of investments, facile access of investors to stock markets will generate positive effects, firstly, on the private and public sectors development and secondly, on the improvement of standards of living of the population. We consider relevant the assumptions of (Gurbiel, 2002), according to which the innovation potential of an economy is influenced by both macroeconomic and microeconomic factors: GDP/capita, R&D expenditures, international trade, competitiveness, technological gap, level of profit recorded by foreign companies in a country.

According to (OECD, 2007) the innovation and the increase in the level of R&D expenditures are influenced by the following factors:

- adequate rules regarding market competition, which stimulates innovation, in conjunction with an adequate level of foreign direct investment, so as to stimulate cross-border transfers of information;
- the existence of a stable economic climate and low real interest rates to encourage innovation activity by creating a stable environment for investment in sectors that support the development of technology and information;
- availability for internal and external funding;
- the expansion of public research, which can further support the research in private sector, which will require adequate human resources
- tax incentives for companies that have as main object of activity, research and development;
- usage of foreign capital for R&D, which is associated with higher levels of productivity.

Moreover, we focus our attention on the Schumpeter mentions, that refer to the concept of “creative destruction”, according to which innovations replace old products and technologies, having a positive impact on the turnover evolution. Therefore, the competition in the market caused by the entry of new innovations and the exclusion of old technologies, comes to support the strengthen of economic growth (Aghion et al., 2010).

The financial literature (Cameron, 1998) highlighted the externalities arising from innovations:

- technology spillover effect, which reduces the cost of competitors, imperfect patent, movement of skilled labor force to other companies;
- the failure of companies to acquire all the social gains generated by innovations;
- the replacement effect generated by innovations, in that new ideas will make the current production technologies to become old.

The objective of the current paper is to examine the connection between economic growth and innovation for some Central and Eastern European countries, namely: Poland, Czech Republic and Hungary. In order to quantify the innovation, we have used the following variables: the evolution of R&D expenditures, number of trademarks, number of patents. The paper is structured as follows: Section 2 reviews the financial literature, Section 3 presents the data and the methodology, Section 4 analyzes the empirical results obtained and Section 5, concludes.

## 2. Literature Review

The connection between economic growth and innovation presents a great interest for researchers, as a result, the concept is a well debated topic in the financial literature. This concept has its origin in the research realized by (Solow, 1956), who pointed out the existence of a long term relationship between economic growth and innovation. (Schumpeter, 1912, 1939) makes the distinction between economic growth and economic development. Thus, from his point of view, the economic growth represents a slowly and progressive change of the economic system, resulting from exogenous factors of the economic system and on the other hand, the economic development which is generated by discontinuous internal changes caused by economic innovations, coming from the economic system. The economic growth model developed by Schumpeter argues competition through innovation and the importance of education in ensuring economic growth, these assumptions are supported also by empirical studies (Aghion et al., 2005, 2009).

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