

Chapter 13

Evaluating the Role of Research and Development and Technology Investments on Economic Development of E7 Countries

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ABSTRACT

This chapter aims to evaluate the effects of research and development on economic growth, export, and unemployment rate in emerging economies. Within this scope, E7 countries are taken into the consideration. Additionally, annual data of these variables for the periods between 1996 and 2016 is tested by using Dumitrescu Hurlin panel causality analysis. It is concluded that research and development expenditure has a positive effect to increase the export amount for these emerging economies. On the other hand, it is also identified that there is not a causality relationship between research and development with economic growth and unemployment rate. Therefore, it is recommended that emerging economies should take necessary actions to increase research and development investment to have higher amount of export. Hence, it can be possible for these countries to minimize the negative effects of current account deficit. In addition to this issue, it can also be seen that making research and development investment plays a key role to improve the economic performance of these countries.

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INTRODUCTION

Research and development refers to the creative working in order to increase the knowledge (Pavlinek, 2017). This subject also includes the usage of this information to increase the development (Rollins et. al., 2017; Leil and Bertz, 2014). While making this kind of analysis, it is aimed to provide improvement in the science and technology. Therefore, it gives a chance to the companies to increase competitive power by developing new product or services. Additionally, it has an important effect on the development of the countries (Gao et. al., 2017).

It is accepted that research and development expenditure plays a key role on many different macro-economic factors. For example, making research and development investment has a contributing effect on the economic performance of the countries (Obinata, 2016). This condition can provide high living standards for the people who live in these countries. Moreover, because economic growth is an important indicator for economic performance of the countries, it will increase the image of these countries (Kotler and Gertner, 2002).

In addition to this aspect, research and development investment gives also the chance to create more qualified products and this situation can have a positive influence on the export amount (Carboni and Medda, 2018; Guarascio et. al., 2017). By increasing the export amount, the countries can decrease current account deficit which is one of the most significant problems for the economies. Furthermore, it can also be said that research and development investment is very beneficial to decrease unemployment rate (Tsai, 2018).

It can also be understood that research and development has a significant role for the emerging economies (Brem and Wolfram, 2014; Hou et. al., 2018). They are the economies which have not developed yet; however, they have a potential to be a developed country. Therefore, these economies should give high importance to research and development. The main reason for this condition is that by focusing on research and development, they can create new products and services to improve financial performance (Ren et. al., 2015).

Similar to this aspect, the main purpose of this study is to understand the effect of research and development on macroeconomic factors, such as economic growth, export amount and unemployment rate. Within this framework, annual data of E7 countries for the periods between 1996 and 2016 is analyzed by using Dumitrescu Hurlin panel causality analysis. Therefore, it can be possible to give recommendations to improve the economic performance of these countries. The novelty of this study is to assess the role of R&D and ICT on 3 different macroeconomic factors at the same analysis. Therefore, by focusing on a significant topic for emerging economies, it is believed that this study makes an important contribution to the literature.

This study consists of 5 different parts. After this introduction part, the second section gives information about the studies related to research and development in the literature. In this part, the missing area in the literature regarding this aspect can be identified. Additionally, the third part explains the quantitative information about research and development in both developed and developing countries. Moreover, an application on E7 countries is detailed in the fourth section. Finally, analysis results and recommendations are shared in the last part.

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