



The role of IT on the Korean economy under IMF control

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Abstract

During the period of IMF control of the Korean economy in 1997, development of IT was emphasized as a potential breakthrough for easing the crisis. This paper will analyze the potential of the IT industry for increasing the productivity of the Korean economy. Using the VIO model, the changes in Korea industries before and after IMF control are derived. However, the response to the change in the IT sector falls short of our expectations. Therefore, we conclude that IT policy should be market-oriented in order that even non-IT industries may be positively affected by the development of IT.

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1. Introduction

In 1997, when the Korean economy was under IMF control, the development in the Information Technology (IT) sector was emphasized as a breakthrough for easing the economic crisis since this sector has been more heavily invested than

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others. Furthermore, there was worldwide trust that IT would enhance efficiency in production.

There has been considerable research concerning increase in productivity resulting from the development of IT. Morrison and Berndt (1991), Lichtenberg (1993), Oliner and Sichel (1994), Dewan and Kraemer (2000), and Pohjola (2001), analyzed whether IT contributed to an increase in productivity. The techniques they used were econometric models to find the effectiveness of IT on production with a view toward testing Solow's productivity paradox.

In this paper, we are going to analyze the Korean economy case using a Variable Input–Output (denoted, “VIO” hereafter) model, a supplemented and modified model in place of existing Input–Output analysis model, to analyze how the development of IT contributes to the production growth in other sectors. By comparing the change in production in 1995 and 1998 due to the cost change in IT industry, we can trace IT's influence on the other sectors in the Korean economy. In particular, the role of IT as a measure for overcoming the Korean economic crisis will be analyzed. The IT industry's proportionate share of the Korean economy has increased from about 7% of GDP in 1995, to almost 10% of GDP in 1998, and to 13% of GDP in 2000. This rapidly growing industry is tested to be a breakthrough for easing the IMF crisis in Korea.

The data to be used are 1995 and 1998 Input–Output tables issued by the Bank of Korea. These tables were originally composed of 402 industries, which were reduced down to 31 industries. The IT industry was adjusted according to the IT industry classifying system arranged by the Ministry of Information and Communication.

This paper consists of four chapters: Chapters 2, 3, and 4 describe a basic model in this analysis using a VIO model, empirical results, and policy suggestions for main and significant data revealed in this research, respectively.

2. Model

Leontief's Input–Output (IO) analysis is unable to predict the changes in production of other industries due to the change in cost of a certain specific industry. Because it assumes a unique production method for each industry, it cannot trace the change of the input substitution of each industry. The VIO model (Liew & Liew, 1979) we use enables us to trace the change in output of each industry caused by production cost reduction through technological improvement in the IT industry.

The VIO model was established by transforming a Cobb–Douglas' production function into log-linear type and including intermediate inputs and primary inputs forming value added items such as employee pay, business surplus, depreciation of fixed capital, and indirect tax.

$$\ln x_j = \alpha_{oj} + \sum_i \alpha_{ij} \ln x_{ij} + \sum_k \beta_{kj} \ln L_{kj} \quad (1)$$

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