

Production Factor Coefficients Transition through the Lens of State Space Model

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Abstract : Economic growth can be considered as an important element of countries' development process. For developing countries, like Thailand, to ensure the continuous growth of the economy, the Thai government usually implements various policies to stimulate economic growth. They may take the form of fiscal, monetary, trade, and other policies. Because of these different aspects, understanding factors relating to economic growth could allow the government to introduce the proper plan for the future economic stimulating scheme. Consequently, this issue has caught interest of not only policymakers but also academics. This study, therefore, investigates explanatory variables for economic growth in Thailand from 2005 to 2017 with a total of 52 quarters. The findings would contribute to the field of economic growth and become helpful information to policymakers. The investigation is estimated throughout the production function with non-linear Cobb-Douglas equation. The rate of growth is indicated by the change of GDP in the natural logarithmic form. The relevant factors included in the estimation cover three traditional means of production and implicit effects, such as human capital, international activity and technological transfer from developed countries. Besides, this investigation takes the internal and external instabilities into account as proxied by the unobserved inflation estimation and the real effective exchange rate (REER) of the Thai baht, respectively. The unobserved inflation series are obtained from the AR(1)-ARCH(1) model, while the unobserved REER of Thai baht is gathered from naive OLS-GARCH(1,1) model. According to empirical results, the AR(|2|) equation which includes seven significant variables, namely capital stock, labor, the imports of capital goods, trade openness, the REER of Thai baht uncertainty, one previous GDP, and the world financial crisis in 2009 dummy, presents the most suitable model. The autoregressive model is assumed constant estimator that would somehow cause the unbiased. However, this is not the case of the recursive coefficient model from the state space model that allows the transition of coefficients. With the powerful state space model, it provides the productivity or effect of each significant factor more in detail. The state coefficients are estimated based on the AR(|2|) with the exception of the one previous GDP and the 2009 world financial crisis dummy. The findings shed the light that those factors seem to be stable through time since the occurrence of the world financial crisis together with the political situation in Thailand. These two events could lower the confidence in the Thai economy. Moreover, state coefficients highlight the sluggish rate of machinery replacement and quite low technology of capital goods imported from abroad. The Thai government should apply proactive policies via taxation and specific credit policy to improve technological advancement, for instance. Another interesting evidence is the issue of trade openness which shows the negative transition effect along the sample period. This could be explained by the loss of price competitiveness to imported goods, especially under the widespread implementation of free trade agreement. The Thai government should carefully handle with regulations and the investment incentive policy by focusing on strengthening small and medium enterprises.

Keywords : autoregressive model, economic growth, state space model, Thailand

Conference Title : ICFE 2019 : International Conference on Finance and Economics

Conference Location : New York, United States

Conference Dates : June 04-05, 2019