Economic Impacts of the Government Investment Policy: Dynamic CGE Model

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ABSTRACT

The abundant natural resources can bring either positive or negative impact to the country’s economy depending on the macroeconomic policies. Mongolia has massive mineral resource dominated by coal, copper, and gold. The Government of Mongolia has started to implement a number of infrastructure projects to decrease the mining project’s cost burden caused from the country’s weak infrastructure. This paper aims to assess the economic impact of the government investment policy towards the mining sector. In order to investigate the alternative options of the government investment policy, it uses a simulation analysis using the Dynamic Computable General Equilibrium (CGE) model which is developed for Mongolian economy. In the empirical analysis, this paper considers following two policy scenarios: Power plant and Copper refinery. The results suggest that both the policy scenarios have positive impact on the domestic economy, of which making the investment to power plant is the better option for the policy makers.

Keywords: Dynamic CGE Model, Forecasting, Natural Resources, Public Investment Policy, Simulation Analysis, Social Accounting Matrix

INTRODUCTION

The economic impact of the natural resource sector boom can be either positive or negative, and which was seen from the multiple experiences of resource-rich countries. For instance, whilst economies of the Asian Tigers (Hong Kong, the Republic of Korea, Singapore, Malaysia, and Taiwan) with deficiency of natural resource grew faster between 1960 and 1990 while the countries in Latin America and Sub-Saharan Africa which has large reserves of natural resources fell down in contrast. Researchers tend to explain the reason of the negative impact of natural resource sector considering an inappropriate policy of the policy makers.

The common policies have been implemented toward the mining sector management, such as allocating cash to the public, accumulating Sovereign Wealth Fund (SWF) and making the investment in the domestic economy. In this paper, we only examine the public investment policy and its impact on the long-term economic development. Therefore, we aim to compare the efficiency of those government investment policies and recommend the optimal
policy analyzing the Mongolian case. Mongolia is a resource abundant country which located between China and Russia and its economy’s dependence from the mining sector has been growing year to year since the early 2000s.

The literature in this field of study generally concludes that investing in non-mining sector by the government influence in long-term economic pattern positively during rapid growth of mining sector. Moreover, making investment to the non-mining sector which is strongly correlated with other sectors, restricting government intervention, and avoiding corruption and bribe are crucial factors of the efficient investment. In other words, economic efficiency of the policy alternatives should be evaluated precisely in order to make up an optimal package of investment.

Many countries such as United States, Australia, New Zealand and Norway use a general equilibrium theory widely to examine the impact of economic policy, and the Dynamic Computable General Equilibrium (Dynamic CGE) model is mainly applied in empirics in recent years. In Mongolia, Fisher et al. (2011) assessed the impact of the development of Oyu Tolgoi copper project on the key Mongolian macroeconomic variables focusing on alternative uses of government revenue generated by the project. However, they neglected the policy impact of investing in domestic economy. Moreover, Mongolian policymakers do not use the CGE model for their policy analysis and the government of Mongolia has been trying to conduct the policy of investing in domestic economy.

Thus, this paper aims to examine the impact of government investment policy on the domestic economy by simulation analysis based on the world input-output table of 2004 and the Dynamic CGE model considering baseline and policy scenarios. In our empirical analysis, except the baseline scenario, we have considered two policy scenarios: Power plant and Copper refinery. Choosing the appropriate policy by comparing the economic impacts of these two alternatives allows the government to make the better decision.

The baseline case describes the trajectory of macroeconomic variables in the economy in which the government of Mongolia will not invest in both power plant and copper refinery. In the policy scenario, the Government of Mongolia invest in power plant or copper refinery.

The rest of the paper is organized as follows. Section II discusses the literature review of government investment policy and empirical models used in an analysis, and country cases which are experienced public investment policy successfully. Section III describes the methodology used for the long-term macroeconomic forecast. Section IV highlights the empirical results of baseline and policy scenario. The final section provides conclusion and directions of the future works.

RELATED WORKS

As an abundant natural resource country, economic diversification is one of the major factors to avoid the resource curse in Mongolia. In this section, we will discuss the approaches of government investment policy, country cases, and empirical methods that used widely to evaluate the economic impacts.

Government Investment Policy

Since natural resource abundant developing countries tend to be scarce in development of infrastructure, investing the mining revenue in public services and infrastructure might be an optimal policy. Moreover, investing in non-mining sectors generates diversification and becomes a way of avoiding the resource curse (Kremers, 1986).

Resource-rich developing countries face policy options in what sectors they should invest by their windfall revenue. For instance, Auty and Kiiski (2001) concludes that key factor which leads resource-rich developed countries to success was an industrialization and in case of resource-rich developing countries, the opportunity of transition to industrialization is likely limited and in order to generate an
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