

Study on the Influence of Types and Uses of Natural Resources on Economic Growth

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(天然資源の種類および利用方式が経済成長に及ぼす影響についての研究)

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論 文 内 容 の 要 旨

This thesis questions whether it is appropriate to treat all natural resources alike if economic outcomes of exporting 1) fuels, 2) metals, 3) agricultural raw materials and 4) food are not the same. Focusing more on naturally existing resources, this research suggests that the nature of how resource is utilized- consumed instantaneously as energy source, like most fuels, or transformed continuously as input in production process, like metals- defines its relationship with economic growth.

Review of existing literature in Chapter 2 indicates that despite abundant literature on negative relationship between natural resource endowment and economic growth, there are not so many that differentiate resource types. Furthermore, the theoretical framework of so called “resource curse” is based on the assumption of raw resource export. Consequently, transforming resources through industrial production process into value-added goods, instead of exporting, can be regarded as a way to break the curse.

Empirical analysis with disaggregated resource variables in Chapter 3 shows that metal and food exports have persistent, statistically significant negative relationship with economic growth, whereas export of agricultural raw materials is insignificant. The association of fuel export with growth has been varied: it was either statistically insignificant or negative with the coefficient twice less than that of metals, depending on the time period considered for the analysis. When time invariant variables are held constant only metal export along with fuel import continued to exert negative effect on growth. These results confirm that it is not appropriate to treat all natural resources alike and economic outcomes of exporting fuels, metals, agricultural raw materials and food are not the same.

In order to provide theoretical explanation for empirical results, Chapter 4 extends Sachs-Warner-van der Ploeg’s Dutch disease model to consider the resource boom driven by commodity price increase. It follows that in case of fuel price boom and subsequent distribution of dividends as money transfers, capital-intensive non-traded sector can be able to sustain economic growth in fuel exporting countries, despite the de-industrialization taking place. For metal exporters, the situation is more

complicated. The more metals are utilized in traded sector, the better economy would be. However, it is the capital-intensive traded sector which keeps the growth rate, if labor in traded sector increases following the metal price boom. This chapter further extends the Krugman's dynamic comparative advantage model and examines how resource exporters, especially metal exporters are more vulnerable to losing its production share to foreign country compared to fuel exporters. Exporting resources and distributing resource wealth as pure money transfers results in loss of domestic industries to foreign country. In contrast, utilizing resources as inputs and producing import substituting goods, while changing domestic demand preferences for traded and non-traded goods would have positive outcomes for the comparative advantage.

Based on those outcomes of empirical and theoretical analysis, Chapter 5 and Chapter 6 provides country-level case studies of China and Mongolia. The comparison of economic performance between fuel rich and iron rich provinces in China confirms empirical results as fuel rich provinces displayed better economic performance, compared to iron rich provinces during last decade. Within fuel rich provinces, provinces with higher investments in other non-resource sectors such as education, research and manufacturing, are tended to have better performance. Within iron rich provinces, high-end steel producing provinces benefited more compared to iron-ore producers. Then, Chapter 6 shifts its focus on resource rich Mongolia, which lacks industrial sector that could absorb its resources and therefore exports its resources mainly to neighboring China. A quantitative analysis using socio-economic indicators present that Mongolia experienced negative influences such as spikes in price levels as well as increase in mortality and hospitalization rates, following direct cash distribution from its mineral wealth.

Finally, Chapter 7 summarizes major findings from this thesis and concludes that fuel exporting countries can benefit from their resource wealth easier, compared to metal exporting countries. Fuel exporters can achieve economic growth with capital intensive non-traded sector despite deindustrialization effect. However, they should invest in non-resource sectors and human capital development, in order to continue their growth. In case of metal rich countries, utilization of metals in industrial production is essential for their economic welfare. Structural transformation to high-productivity activities and economic diversification are equally important for both metal and fuel exporters to protect from negative consequences of commodity price fluctuations.