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内容の要旨

Summary

I refer to the literature of natural resource curse, and it is known as a theory that the resource-rich countries perform much worse than resource-poor countries. Dutch disease and rent-seeking are both considered as the symptoms of the resource curse theory. The Dutch disease is the paradox that comes from the extent of boom (resource abundance or technological advancement) in energy sector and the discovery of resources harms a country's broader economy. Dutch disease induces stagnation of non-resource sectors along with the rapid development of resource sector. It is comprised of resource movement and spending effects. The resource movement effect is the movement of labor inputs from services to energy sector. The spending effect is considered as an increasing consumption (higher spending) due to the higher incomes coming from the energy sector by boosting aggregate demand. Moreover, rent-seeking is a phenomenon where resources are wasted for inefficient activities for creating profitable opportunity by inducing welfare loss to society.

The six chapters of the thesis will concentrate on Dutch disease and rent-seeking for analyzing the behaviors of firms in energy sector. In the beginning five chapters, theoretical analysis is applied through stylized facts. In the last sixth chapter, new model and supplementary empirical analysis is applied in the case of Azerbaijan. In the first chapter, rent seeking activities of a monopoly is

analyzed and the oil discovery (boom) induces rent-seeking in this case. Furthermore, resource movement effect is also facilitated. In the second chapter, I analyze rent seeking duopoly collusion by showing that the resource movement effect and rent-seeking may occur depending on parameter values. The third chapter analyzes rent seeking vertical mergers, and rent-seeking will be definitely facilitated under this case but resource movement effect depends on parameter values. In the fourth chapter, Stackelberg rent-seeking is analyzed by demonstrating that resource movement effect and rent-seeking occurrence depends on parameter values. In the all above mentioned chapters the reduction of national income depends on parameter values. The fifth chapter analyzes spending effect by focusing on the previous four chapters, and it shows that resource movement effect and rent-seeking are facilitated along with increasing national income. Hence, spending effect is much stronger than resource movement effect in our rent-seeking analysis in energy sector in the Dutch disease context. In the sixth chapter, the model explains how energy monopolies engage in rent-seeking activities in Azerbaijan. Supplementary time-series analysis is also used in order to describe these activities. The model and results of data analysis show that the monopolies in the country use increasing gasoline prices as a rent-seeking tool during the times of crises.

Chapter 1. Resource Movement Effect and National Income under Rent Seeking Monopoly

In this chapter a new model is developed by referring to the literature of Dutch disease and rent-seeking for explaining how a natural resource boom in energy sector decreases national income and induces resource movement effect under a rent seeking monopoly. In the rent seeking monopoly model, it is shown that resource movement effect certainly occurs during the boom where labor inputs will move to energy sector from services sector. The reason is that the rent seeking monopoly uses some labor inputs for making profits through production, and some labor inputs will be used in order to engage in rent-seeking activities. Moreover, the boom definitely facilitates rent-seeking but decreases national income under parameter values. Dutch disease has clear signs in the monopoly case because of resource movement effect and reduction of output in a non-resource sector. The rent will be formulated as the difference of profits between monopoly and social optimum cases which is different from previous rent-seeking models in energy sector.

Chapter 2. Rent Seeking Duopoly Collusion Analysis in Energy Sector

A new model is proposed in the second chapter by concentrating on Dutch disease phenomenon along with rent-seeking in order to demonstrate how a natural resource

abundance (or a resource boom) affects resource movement effect and national income under rent seeking duopoly collusion (Cournot competition) in energy sector. The resource movement effect occurrence or the movement of labor inputs from services to energy sector depends on the degree of the boom. Most importantly, rent formulation is unique in this model that refers to the complete dissipation theorem, and the rent is calculated as the difference between profits of collusion and no collusion cases under Cournot duopoly. The model adds theoretical contribution to rent-seeking duopoly collusion in extractive economies. In rent seeking duopoly collusion case, sufficiently small degree of the boom is necessary for the rent-seeking to be facilitated due to the profitability of this condition. Dutch disease occurs depending on the degree of the boom. The impact of the boom on national income also depends on parameter values.

Chapter 3. Vertical Mergers and Rent-seeking During Natural Resource Boom

A new model is proposed in the third chapter for showing how natural resource abundance affects resource movement effect and national income when rent-seeking upstream and downstream firms merge in energy sector. The adds theoretical contribution to rent-seeking M&A (merger and acquisition) analysis because of the previous studies which demonstrate that rent-seeking is a widespread phenomenon in extractive economies. By focusing on Dutch disease and rent-seeking literature it will be clarified that the resource movement effect occurrence or the movement of labor inputs to energy sector from services sector depends on parameter values during the resource abundance (or resource boom). The boom definitely facilitates rent-seeking, and the reduction of national income depends on parameter values. The results in the model are different from former rent-seeking models because of the formulation of a rent (difference of profits between merger and no merger cases) under the application of complete dissipation theorem. Furthermore, only rent-seeking upstream firm participates in production before and after merger cases and, thus, the reduction of national income or the existence of resource movement effect (Dutch disease as well) is not definite unlike the other chapters. However, resources will be definitely dissipated due to the facilitation of rent-seeking under the boom which in turn is detrimental for the welfare of a society.

Chapter 4. Natural Resource Abundance under Stackelberg Rent-seeking

Another theoretical model is developed in the fourth chapter for explaining how natural resource abundance affects national income and resource movement effect under Stackelberg rent-seeking. The study aims to clarify the differences from

previous chapters and theoretically contribute to rent seeking dominant firm analysis due to the existence of past studies describing that rent-seeking is rampant in energy sector. The two sector (energy and services) model demonstrates that under resource boom, the decline of national income depends on parameter values and the result is different from preceding models of rent-seeking due to distinct formulation of the rent. Another reason is that only a dominant firm engages in rent-seeking to gain a leader position for higher profits. A follower firm will not participate in rent-seeking because of advantages of staying in competition or collusion. Hence, the firms in energy sector under Stackelberg duopoly are less detrimental to society because fewer resources are dissipated for capturing rents. Dutch disease phenomenon is not strong in this case. Furthermore, during the boom the resource movement effect may occur which means that labor inputs may move to energy sector from services sector, and the boom may facilitate rent-seeking depending on parameter values.

Chapter 5. Spending Effect and Rent-seeking Analysis of Monopoly, Duopoly Collusion, Mergers and Stackelberg Cases

This chapter explains spending effect (increasing consumption), and it examines how spending effect increases national income and induces resource movement effect under various cases mentioned in previous four chapters. It will be shown that resource movement effect occurs where labor inputs move to energy sector from services sector, and the spending effect facilitates rent-seeking. National income also depends on parameter values. Dutch disease has a very strong presence in this chapter because both effects (resource movement and spending) occur simultaneously. Thus, spending effect is more powerful in terms of facilitation of resource movement effect, reduction of output (non-resource sector) as well as the occurrence of rent-seeking.

Chapter 6. Monopoly Rent-seeking in the Case of Azerbaijan

In this chapter, energy sector's monopoly behavior is analyzed theoretically in the case of Azerbaijan. As a theoretical background, a new general equilibrium model is developed, and it explains unusual surge of gasoline prices in Azerbaijan. The reason is related to the political stability within the country. Monopolies in Azerbaijan use the price as a rent-seeking tool for gaining a rent available in the energy market. Through tentative and supplementary time series analysis, the relationship between crude oil price and local gasoline prices (rent-seeking in this paper) will be demonstrated. There is a cointegrating relation between two variables under Johansen Cointegration Test, and it supports the idea in the

theoretical general equilibrium model. Monopolies use higher local gasoline prices as rent-seeking for covering their losses.

博士学位申請論文審査の結果の要旨

Title

Natural Resources, and Rent-seeking Analysis in the Context of Dutch Disease
(オランダ病現象における天然資源のレントシーキング分析)

SUMMARY

Objectives

The objective of the thesis is to determine how rent seeking firms under various settings in a booming energy sector affects labor inputs in two sectors (energy and services) and overall total output. Previous studies do not mention models of rent seeking firms in different settings such as monopoly, mergers, collusion and Stackelberg cases (and also rent has different formulations in different chapters of the thesis) affecting the above-mentioned sectors. The models also intend to determine differences with existing studies and add theoretical contribution to rent-seeking analysis due to the previous empirical studies which demonstrate that rent-seeking is a widespread phenomenon in extractive economies.

Abstract

Chapter 1. Resource Movement Effect and Total Output under Rent Seeking Monopoly

In this chapter a new model is developed by referring to the literature of Dutch disease and rent-seeking for explaining how a natural resource boom in energy sector decreases total output and induces resource movement effect under a rent seeking monopoly. In the rent seeking monopoly model, it is shown that resource movement effect certainly occurs during the boom where labor inputs will move to energy sector from services sector. The reason is that the rent seeking monopoly uses some labor inputs for making profits through production, and some labor inputs will be used in order to engage in rent-seeking activities. Moreover, the boom definitely facilitates rent-seeking but decreases total output under certain parameter values. Dutch disease has clear signs in the monopoly case because of resource movement effect and reduction of output in a non-resource sector. The

rent will be formulated as the difference of profits between monopoly and social optimum cases which is different from previous rent-seeking models in energy sector.

Chapter 2. Rent Seeking Duopoly Collusion Analysis in Energy Sector

A new model is proposed in the second chapter by concentrating on Dutch disease phenomenon along with rent-seeking in order to demonstrate how a natural resource abundance (or a resource boom) affects resource movement effect and total output under rent seeking duopoly collusion (Cournot competition) in energy sector. The resource movement effect occurrence or the movement of labor inputs from services to energy sector depends on the degree of the boom. Most importantly, rent formulation is unique in this model that refers to the complete dissipation theorem, and the rent is calculated as the difference between profits of collusion and no collusion cases under Cournot duopoly. The model adds theoretical contribution to rent-seeking duopoly collusion in extractive economies. In rent seeking duopoly collusion case, the rent seeking activity is facilitated. Dutch disease occurs depending on the degree of the boom. The impact of the boom on total output also depends on parameter values.

Chapter 3. Vertical Mergers and Rent-seeking During Natural Resource Boom

A new model is proposed in the third chapter for showing how natural resource abundance affects resource movement effect and total output when rent-seeking upstream and downstream firms merge in energy sector. This adds theoretical contribution to rent-seeking M&A (merger and acquisition) analysis because of the previous studies which demonstrate that rent-seeking is a widespread phenomenon in extractive economies. By focusing on Dutch disease and rent-seeking literature it will be clarified that the resource movement effect occurrence or the movement of labor inputs to energy sector from services sector depends on parameter values during the resource abundance (or resource boom). The rent-seeking is facilitated and the output decreases regardless of parameter values. The results in the model are different from former rent-seeking models because of the formulation of a rent (difference of profits between merger and no merger cases) under the application of complete dissipation theorem. Furthermore, only rent-seeking upstream firm participates in production before and after merger cases and, thus, the reduction of total output or the existence of resource movement effect (Dutch disease as well) is not definite.

Chapter 4. Natural Resource Abundance under Stackelberg Rent-seeking

Another theoretical model is developed in the fourth chapter for explaining how natural resource abundance affects total output and resource movement effect under Stackelberg rent-seeking. The study aims to clarify the differences from previous chapters and theoretically contribute to rent seeking dominant firm analysis due to the existence of past studies describing that rent-seeking is rampant in energy sector. The two sector (energy and services) model demonstrates that under resource boom, the decline of total output depends on parameter values and the result is different from preceding models of rent-seeking due to distinct formulation of the rent. Another reason is that only a dominant firm engages in rent-seeking to gain a leader position for higher profits. A follower firm will not participate in rent-seeking because of advantages of staying in competition or collusion. Hence, the firms in energy sector under Stackelberg duopoly are less detrimental to society because fewer resources are dissipated for capturing rents. Dutch disease phenomenon is not strong in this case. Furthermore, during the boom the resource movement effect may occur which means that labor inputs may move to energy sector from services sector, and the boom may facilitate rent-seeking regardless of parameter values.

Chapter 5. The Effect of Increasing Demand for Energy on Rent-seeking Analysis of Monopoly, Duopoly Collusion, Mergers and Stackelberg Cases

This chapter analyses increasing consumption in the energy sector, and it examines how increasing demand impacts total output and rent-seeking under various cases mentioned in previous four chapters. It will be shown that increasing demand for energy facilitates rent-seeking under certain parameter values. Total output also depends on parameter values. Increasing demand for energy is more powerful in terms of facilitation of resource movement effect and reduction of output in the non-resource sector.

Chapter 6. Monopoly Rent-seeking in the Case of Azerbaijan

In this chapter, energy sector's monopoly behavior is analyzed theoretically in the case of Azerbaijan. As a theoretical background, a new general equilibrium model is developed, and it explains unusual surge of gasoline prices in Azerbaijan. The reason is related to the political stability within the country. Monopolies in Azerbaijan use the price as a rent-seeking tool for gaining a rent available in the energy market. Through tentative and supplementary time series analysis, the relationship between crude oil price and local gasoline prices (rent-seeking in this paper) will be demonstrated. There is a cointegrating relation between two

variables under Johansen Cointegration Test, and it supports the idea in the theoretical general equilibrium model. Monopolies use higher local gasoline prices as rent-seeking for covering their losses.

Main conclusions and contributions

By focusing on Dutch disease and rent-seeking literature, it will be clarified that the resource discovery facilitates rent-seeking and reduces of total output depending on different firms' settings. Rent seeking monopoly and merger cases are more detrimental to the society compared to collusion and Stackelberg cases, because they waste more resources for rent seeking activities. The results in the models are different from former rent-seeking models because of the formulation of a rent under the application of complete dissipation theorem. Thus, the paper will contribute to the literature of Dutch disease and political economy by explaining the impact of rent seeking firms (under various settings) on two sectors in terms of labor inputs and outputs by using complete dissipation theorem. Furthermore, In the sixth chapter, the model explains how energy monopolies engage in rent-seeking activities in Azerbaijan. Supplementary time-series analysis is also used in order to describe these activities. The model and results of data analysis show that the monopolies in the country use increasing gasoline prices as a rent-seeking tool during the times of crises.

Main issues left for future research

The empirical analysis and the rent seeking monopoly model in chapter 6 will be used for future empirical research by applying to other country cases in Middle East, Central Asia and Latin America. This is because the resource-rich countries in those areas are also affected negatively due to rent seeking activities of firms, and it is necessary to conduct an empirical research for analyzing the rent seeking behavior of energy monopolies in those countries.

Evaluation

Based on the significant contributions from the theoretical and empirical results of this dissertation, it is worth conferring the doctoral degree on the applicant.