Essays on Multinational Enterprises and Firm Heterogeneity

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Summary

Foreign direct investment (FDI) has been growing rapidly. In particular, the global flow of FDI has dramatically increased over the past quarter century. In the international trade literature, the relationship between firm heterogeneity and FDI has recently attracted considerable attention. However, most studies are based on monopolistically competitive models. In the framework of international oligopoly, few studies take into account cost asymmetries within a country. In our analysis, we introduce cost asymmetry among domestic firms, or among multinational enterprises (MNEs) based in the domestic country, into an international oligopoly model. This generates some interesting strategic environments that do not arise in monopolistically competitive models.

Over the last decade, a great number of firms in developed countries have made FDI in developing countries. It is widely observed that outputs of such FDI are exported back to the source country. They are called "reverse imports" from the viewpoint of the source country. It has been observed that the surge in reverse imports has upset firms operating at home. An interesting feature is that this trade friction exists among domestic firms rather than between domestic and foreign firms. In this situation, does the domestic government implement a policy like safeguards? The existing trade literature is not very useful in evaluating such a decision,

because, barring some exceptions, no theoretical study explicitly explores reverse imports.

The first purpose of the dissertation is to contribute toward a better understanding of reverse imports. We explore the effects of transport costs, tariffs, and foreign wage rates on the domestic economy in the presence of reverse imports, with special emphasis on inter-firm cost asymmetry in an international oligopoly model. To serve the domestic market, a foreign firm produces in the foreign country, while two domestic firms produce either at home or abroad. Surprisingly, an increase in the foreign wage rate may increase the profits of a firm producing in the foreign country. Even if all firms produce in the foreign country, an increase in the foreign wage rate may improve domestic welfare. Decomposition of the marginal cost (MC) into the wage rate and the labor coefficient, as well as the inter-firm cost asymmetry, gives us new insights into reverse imports.

As briefly mentioned above, it is often observed in many industries that while some firms produce abroad, others stay at home. To explain why this occurs in the context of reverse imports, we theoretically examine the relationship between location choices and trade costs in the presence of inter-firm cost asymmetry. To be more precise, we examine which firm has a greater incentive for FDI, a more efficient firm or a less efficient firm. Many studies theoretically analyze the location choices of MNEs, including the choice between exports and FDI (local production) and the choice between North and South countries. However, oligopolistic models typically assume a single firm in each country. The cost asymmetry among firms of the same nationality has received relatively little attention. Using a two-country model, we examine location choices by two domestic firms when they serve only the domestic market and their cost structures differ. The findings indicate that whether the firm that has a greater incentive for FDI is more or less efficient depends on the differences in domestic and foreign marginal costs, trade costs, and the presence of fixed costs. Plant locations may not be uniquely determined. In particular, a small change in trade costs may reverse plant location. Moreover, a decrease in transport costs in the presence of FDI may decrease domestic welfare.

When the headquarters of an MNE decentralizes some decision rights to its subsidiaries, it is called a "decentralized MNE." In the international trade and public finance literature, many researchers examine transfer prices and decentralized MNEs. It is typically assumed that a decentralized MNE has headquarters and an upstream firm in the domestic (home, source) country and a downstream firm in the foreign (host) country. The upstream firm produces the intermediate good and exclusively sells it to the downstream firm. Using the intermediate good, the downstream firm produces the final good and then competes with rivals. While the price of the intermediate good (i.e., the transfer price) is set by the headquarters, the output decision making is decentralized to the downstream firm. When the downstream firm is a distributor firm, the headquarters sets the wholesale price. It is well known that transfer prices play a role as a strategic device in addition to a role as a tax-saving device in an oligopoly. When the corporate tax rate in the host country is close to that in the home country, i.e., when the role of transfer prices as a tax-saving device is not important, the headquarters of the MNE has a strong incentive to set a low transfer price to help its downstream firm. In this case, it is also shown that an MNE actually has an incentive for decentralization. These findings are obtained in the case where an MNE competes with a local rival. Few studies, however, consider competition among decentralized MNEs.

The second purpose of the dissertation is therefore to contribute toward a better understanding of competition among MNEs that may choose decentralization. In the context of joint ventures, we extend the decentralization problem to the case where two MNEs compete in the final market. Prices of intermediate goods also play a dual role in this case. If a domestic firm (headquarters and an upstream firm) is the major shareholder in its downstream firm, it can control the actions of its downstream firm. The domestic firm may, however, have an incentive for decentralization. We also investigate effects of firm heterogeneity on the decentralization problem. In the same host country, we can find differences in ownership structure among subsidiaries of the same industry. Thus, it is important to investigate the relationship between ownership structure and decentral-

ization. To be more precise, we examine which MNE has a greater incentive for decentralization, one with a high ownership ratio in its downstream firm or one with a low ownership ratio. Moreover, we examine effects of the timing of price setting on the decentralization problem. Since we consider the competition between two MNEs, both may decentralize their decision rights. In that case, does headquarters have an incentive to set the price of the intermediate good prior to its rival's action? By endogenizing the timing of price setting, we also address this question. Only when a domestic firm can obtain a sufficiently large proportion of the profit of its downstream firm (or has a high ownership ratio) does the headquarters of the MNE decentralize the output decision to its downstream firm. If both MNEs choose different organization structures, the one with the high ownership ratio in its downstream firm decentralizes the output decision to its downstream firm, and the one with a low ownership ratio does not. It is also found that if both MNEs choose decentralization, the two headquarters simultaneously set their prices of the intermediate goods.

When MNEs choose decentralization, they face tougher competition than when they are centralized, so domestic welfare (the sum of the profits of the MNEs) could decline. Thus, the domestic government may have a greater incentive to reduce the total supply. In the case where two identical MNEs compete, we investigate the optimal level of an export tax and explore the effects of equity ownership on the optimal export tax. When the headquarters of the MNEs choose their output levels, the optimal level of an export tax is similar to that in the normal Cournot duopoly. However, when the downstream firms of the MNEs choose their output levels, the government has an incentive to impose a higher export tax. The optimal tax level discontinuously changes when the majority shareholders in the downstream firms change. Additionally, the level also discontinuously changes, to be more precise, jumps up when the headquarters decentralize output decision making to the downstream firms. When a government makes policy decisions, it is important for the government to take account of not only who controls downstream firms but also who makes output decisions.

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In a world of internationalization of corporate activities, transfer pricing taxation is very important for governments to prevent MNEs from manipulating transfer prices on intragroup cross-border transactions to reduce taxable profits in their jurisdiction. In the case of the competition among MNEs only, there is no arm's length price, and the governments cannot use the arm's length principle. In a situation with firm heterogeneity, MNEs have several different unit costs, prices of intermediate goods, profits, etc. Thus, when the governments formulate and implement a policy of transfer pricing taxation, it is important for them to understand the relationship between the transfer prices of MNEs and the relationship between firm heterogeneity and transfer pricing. We investigate the relationship between transfer prices set by the headquarters of two MNEs and also analyze how firm heterogeneity or cost asymmetry affects transfer pricing. The cost differences among MNEs may arise from upstream production, downstream production, or both. Taking into account the origin of firm heterogeneity (i.e., where it is), we address the question of whether the MNE that has a greater incentive to set a higher transfer price is more or less efficient. When firms have different unit costs in upstream, we could not make out which MNE manipulates its transfer price more than rivals by comparing transfer prices of MNEs. Focusing on the difference between the transfer prices and unit costs of the MNEs in the upstream, which is denoted by "margin," we examine which MNE has a wider margin. When the difference in the corporate tax rates between the domestic country and the foreign country is sufficiently large, transfer prices of two MNEs are strategic complements. An MNE increases its transfer price if the rival's transfer price increases. When the difference is sufficiently small, transfer prices are strategic substitutes. An MNE decreases its transfer price if the rival's transfer price increases. It is also found that the MNE that has a greater incentive to manipulate its transfer price is the more efficient MNE, independent of the corporate tax rates. This suggests when governments supervise the use of transfer prices by MNEs, they should look out for efficient firms. Our findings about the relationship between transfer prices of MNEs and the effects of firm heterogeneity on transfer prices indicate possibilities for future research on transfer pricing taxation.