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Foreign direct investment with host country market structures, with empirical application to Japan[☆]

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ABSTRACT

In this paper, we consider models that describe foreign firms' and host countries' decisions on foreign direct investment (FDI) when host country product markets are characterized by certain types of market structures. We show that, under certain conditions, the host country and foreign parent firm (FP) are both better off in equilibrium if FP chooses to form a joint venture (JV) with a domestic partner in the host country, with some form of technology transfer, rather than have FP's exclusive reliance on exporting to the host country. These results provide justification, for example, to China's and some other host countries' FDI policies in recent years. Our results also justify host countries with small open economies to resort to the introduction of new foreign competitors when they face their domestic markets suffering from monopolists' abuse of market power. Canada, for example, is known to use inward FDI with limited foreign ownership as government policy tools for dealing with abusive domestic monopolists. Our welfare implications may be useful for evaluating such FDI-driven competition and other public policy issues. We also present an empirical example using data from Japan to test some of our empirical implications.

1. Introduction

One of the main decisions facing a business firm considering foreign direct investment (FDI) is that of the ownership structure for its foreign subsidiary: should it be a fully-owned subsidiary, or should it be a joint venture (JV) with a partner firm in the host country?[1] In case of a joint venture, how much ownership should the foreign parent firm have in the joint venture?[2]

The ownership structure of a foreign subsidiary is particularly important for technology-based manufacturing firms whose competitive edge comes primarily from their intangible assets such as engineering and scientific knowledge, production skills and know-how, and brand names. These intangible assets may also reflect product quality, marketing, and other management techniques. The integrity of the ownership of technology-based firms' intellectual property rights is often difficult to secure even under legal contracts. It is difficult for a foreign parent firm (FP) to write a legal contract with a local JV partner firm (JP) which specifies precisely the way in which FP's particular intangible asset is to be used in the JV. For example, a licensing agreement which allows a JV to use its FP's technology may not protect the licensor's property rights very well since the licensee might use the licensed technology for products other than the ones specified in the agreement. JP may also obtain essential information related to the licensed technology from the JV. Furthermore, the essential information and skills may be obtained by other firms (other than JP) in the host country.[3]

Such a problem of skill spillover will likely be reduced if the provider of the intangible skills owns substantial equity in the operations utilizing such skills. As pointed out by Grossman and Hart (1986), the ownership of an asset includes not only the entitlement to the return

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[1] In this paper we use joint venture (JV) and international joint venture (IJV) interchangeably. In practice most prominent JVs are indeed IJVs.

[2] Our approach to this topic given below has not been extensively explored in the literature to the best of our knowledge. However, there is also a large management literature on related topics (see, for example, Chiao et al., 2010 and Puck et al., 2009 for further references).

[3] The importance of protecting intellectual property rights in FDI projects is discussed, for example, in Dai and Lahiri (2011), Lee (2014), Lee and Mansfield (1996), Mansfield (1994, 1995), Nakamura et al. (1996) and Smarzynka (2002).

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stream resulting from the use of the asset, but also the residual rights of control over all aspects of the use of the asset except those rights which are explicitly contracted away. In this sense, equity participation in a direct investment plays an essential role in technology-based firms' expansions into foreign markets where potential competitors also do business.

Two types of direct investment, fully-owned and jointly-owned subsidiaries, have different implications for the diffusion of a foreign parent firm's technology. While a fully-owned subsidiary can keep FP's loss due to unauthorized use of its intangible assets to a minimum, a FP might not be able to reap fully the return that its intangible assets could potentially earn. This may occur, for example, if a FP or its 100% subsidiary is not familiar with local production inputs and distribution and marketing practices. The geographical distance between a FP and its fully-owned subsidiary in a host country also increases FP's cost of agency (monitoring).[4] A JP in a host country may be able to provide management skills which, combined with FP's technology, could fully utilize the potential of the technology. On the other hand, JP may take advantage of the JV with FP as a learning experience for developing its own future technology.[5]

While its FDI ownership structure is of potential concern to a FP for the reasons discussed above, it is also of policy concern to the host country. For example, FPs' behavior in their FDI's product markets in the host country may significantly affect host country's welfare. As we show below, FP's ownership structures can have important implications for host country's welfare in different ways. It is also well known that powerful FPs can affect the nature of host country's product markets significantly using their FDI operations with or without local JV partners. (JV partners are often FP's potential competitors also.) There has been, however, relatively little research in the literature that relates firms' product market structures of the kinds discussed above to models of FDI, which explicitly take into account the ownership structures of FDI projects. This paper addresses this issue.

In Section 2 we present our basic bargaining models for firms' JV decisions and discuss their basic properties. Application of the basic models to markets with certain structures is presented in Section 3. Specifically, we consider a single product market in a host country, and assume that FP's bargaining parameter α is a given constant. FP (a foreign parent firm) and its host country JV partner determine their respective ownership shares in the JV, β and 1-β based on Nash bargaining game. As Table 1 shows, FP can be just an exporter (Model (1)), or owns a JV with a host country firm (Model (2)). We abstract from the complications that might arise if FP exports and also owns a JV, and we assume that FP is either an exporter or a JV owner, but not both. We also treat FP's fully owned subsidiary (100%), (also known as wholly owned subsidiary), as an extension of a joint venture (as β approached one) and hence do not treat it separately in the theoretical framework. (Empirically we will treat FPs with 100% subsidiaries using probit and tobit regression models.) We consider the following scenario for the host country (HC): HC has a market which has N competitor firms and one local firm outside the same industry (i.e. third-party HC firm). We assume that FP makes a JV only with third-party HC firm. So in Model (2) in Table 1, FP forms a JV with the third party HC firm, and the JV competes with N local firms. For the HC government, it determines policies by deciding if the JV should be permitted, as well as determining values of policy variables, t (trade barriers) and R (intellectual property protection). (Additional FDI models with market structures and related welfare analyses are presented in Nakamura and Zhang (2017).)

Our main results from Section 3 are summarized as follows. We first find that, under certain plausible conditions, the host country and FP are both better off if FP chooses to form a JV with a local partner (third-party local firm), with a technology transfer contract (the duopoly case of JV and the local competitor), rather than have FP's exclusive reliance on exporting to the host country (Lemma 1). Another implication of our analysis is that as the number of host country competitors (N) to FP increases, FP's optimal ownership share in a JV with a local third-party firm falls (Proposition 1).[6]

We present an empirical example in which we test the above analytical prediction regarding the relationship between FP's ownership in JV and the market structure in the HC product market, using Japanese data in Section 4. Our estimation results are consistent with our theoretical implications. Section 5 concludes.

2. Basic model with nonzero threat points

In our theoretical analysis, we use the Nash bargaining solution for joint venture (JV) and the Cournot-Nash equilibrium for quantity competition between JV and other firms in the host country. The product market rivalry will be considered in Section 3; this section presents the bargaining model. This is a basic prototype model for a case in which the transfer of intangible assets is verifiable, but it is difficult to write a contract that prohibits potential competitors (including JV partners) from taking advantage of the transferred assets.[7] This case happens, for example, when transferred assets are an observable brand name, a patent, or a complete set of technology which is not divisible. The control power that comes with ownership of foreign operations can reduce the potential spillover cost accrued to the owner.[8] By controlling the way their assets are to be used, the owner can reduce or eliminate any inappropriate use of the assets.

Consider that FP has an opportunity for a foreign operation with the expected income Y, where Y is assumed to be constant.[9] This operation requires intangible assets as inputs from both FP and JP, FP's potential JV partner in the host country. (Both FP and JP are assumed to be risk-

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[4] See Brickley and Dark (1989) for empirical evidence that franchising is associated with the distance, a source of agency (monitoring) cost, between the owner of an intangible asset (e.g. brand name, reputation) and the site of business operation using the intangible asset. Many previous studies have identified various forms of intangible assets as the driving force of firms' international expansion (e.g. Balakrishnan and Koza, 1993; Hymer, 1960; Teece, 1977; Von Hippel, 1994). A more recent study of the Commission of the European Communities (Zambon, 2003) stresses the shift of corporate decision-making emphasis from tangible to intangible assets and focuses on the measurement issues of intangible assets.

[5] Nakamura and Yeung (1994) present a principal-agent model for the determination of a FP's ownership share in a JV in which FP, the dominant provider of intangible skills to JV, chooses its ownership share in the JV by balancing the marginal benefit (intrinsic profit) it receives from the JV against the marginal cost of control (agency cost and technology spillover). In the model the JP plays no role in the determination of its ownership share in JV. While there is some anecdotal evidence that ownership shares in some joint ventures are indeed determined in the manner assumed in Nakamura and Yeung (1994), their model does not consider the potential bargaining processes that may take place between a FP and JP.

[6] As discussed in the text later, this could happen because, while additional competitor (from N increasing to N + 1) lowers both FP's expected exports and profit (and hence the threat point – the lowest acceptable level of ownership) and the profit of its JV with a local third-party partner firm, the reduction in the former is greater than that in the latter, which. in turn allows FP to accept lower ownership share than the case with N local competitors.

[7] We follow and extend the framework used by Nakamura and Xie (1998) to the present model. Further empirical evidence for this and related models are found, for example, in Dimelis and Louri (2002), Ishikawa, Sugita and Zhao (2009), Kasuga (2003, 2008), Louri et al. (2002), Mayer et al. (2003), Mok et al. (2002), Nakamura (2005) and Windsperger (2009). Related theoretical results are also found, for example, in Che and Facchini (2009), Lee (2004), Mugele and Schnitzer (2008), Raff, Ryan and Stahler (2009), and Stahler (2014). Other empirical results for various countries are also found in Barbosa and Louri (2002), Cai and Stiegertb (2012), Görgab et al. (2010), Merino (2013) and Li and Zhong (2003).

[8] In case contracts are enforceable as in developed countries, it is possible to write contracts that give JV partners more control rights than their shares of ownership warrant. This is not the case in developing countries. These contracts are typically driven by many firm-specific idiosyncratic factors. In this paper we assume that ownership generally determines the basic control rights of JV partners.

[9] Our income variable (with expected value Y) does not include the costs and benefits of spillover of intangible assets such as technology. Our model thus focuses on analysis of such costs and benefits. Further discussion on this is found below.

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