

Gains from multinational competition for cross-border firm acquisition

Onur A. Koska

Abstract

This study shows that when there is multinational competition for foreign acquisition, the strategic use of a consumer welfare argument in regulating foreign market entry leads to a preemptive foreign acquisition. Even under fierce competition, foreign acquisition will emerge as part of a non-cooperative equilibrium (although multinationals would have gained more had they been able to credibly commit to a cooperative equilibrium of independent foreign sales, either via greenfield investment or trade under complete liberalization) which increases local welfare by more than both the case without foreign market entry and the case with foreign market entry via independent foreign sales.

(Published in Special Issue [FDI and Multinational Corporations](#))

JEL F23

Keywords Cross-border firm acquisitions; foreign market entry regulations; greenfield investment; trade; consumer welfare

Authors

Onur A. Koska, ✉ Department of Economics, Middle East Technical University (METU), Cankaya 06800, Ankara, Turkey, koska@metu.edu.tr

This research was conducted while the author was visiting the Microeconomics Unit of the Department of Economics at the University of Kiel, and the author would like to thank Prof. Horst Raff for helpful discussions and for his hospitality.

Citation Onur A. Koska (2018). Gains from multinational competition for cross-border firm acquisition. Economics Discussion Papers, No 2018-19, Kiel Institute for the World Economy. <http://www.economics-ejournal.org/economics/discussionpapers/2018-19>

1 Introduction

Multinational firms have been playing a crucial role for economic integration: acquisitions of existing foreign assets in host countries have surpassed investments in new assets (greenfield investment), and multinational sales through foreign affiliates have outnumbered exports since 1980s. According to the traditional models of foreign direct investment (FDI) (i.e., the knowledge capital model, the proximity-concentration trade off and the tariff-jumping hypothesis), as most countries liberalized trade and foreign investments around the same time, multinationals are expected to prefer exporting over horizontal FDI that duplicates the production process in a foreign country. This prediction, however, does not consider cross-border mergers and acquisitions, which are in most cases subject to certain enforcement practices.¹ While the optimal foreign market entry mode is determined mainly according to the trade-off between trade costs, fixed investment costs, and firm acquisition costs, Koska (2015) shows that trade liberalization can be aligned with the surge in greenfield investment and cross-border mergers and acquisitions so long as (i) investment and trade liberalizations are carried out together, and (ii) there is multinational competition for FDI. Without competition, a multinational firm may still prefer FDI through acquisition of a local firm under complete trade liberalization insofar as the foreign market entry regulation incorporates a consumer welfare argument and imposes a minimum output requirement for foreign acquisition as is shown by Koska (2016).² Alternatively, Koska *et al.* (2018) show that if there is ex ante incomplete cost information, and if FDI can serve as a signal of high productivity, then FDI can be optimal even when trade costs are zero.

In a simple oligopolistic market entry model, this study shows that cross-border firm acquisitions may emerge as the equilibrium foreign market entry mode even when they will have earned multinationals less profits compared to trade in the times of complete trade liberalization abolishing trade costs and/or compared to greenfield investment when fixed costs are small, and when there is no significant fixed cost saving among different entry modes. In particular, the model focuses on multinational competition for potential cross-border firm acquisition, for which there is a minimum output requirement imposed by the host country as part of its foreign market entry regulation, and shows that in a non-cooperative equilibrium, the strategic use of a consumer welfare argument in regulating foreign market entry, which warrants a minimum output requirement for foreign

¹The main prediction of the traditional FDI models is that horizontal FDI is more profitable than trade especially when economies of scale are large (small) at the firm (plant) level, and when trade (investment) costs are large (small); see Navaretti and Venables (2004).

²A consumer welfare argument that can be considered the common practice in most countries as documented by Breinlich *et al.* (2017) challenges mergers and acquisitions on the basis whether they lessen competition and adversely affect consumers.

acquisition, can lead a multinational to acquire the local firm for purely preemptive reasons even when there is complete liberalization. Following Koska's (2016) novel interpretation of the consumer-surplus standard for foreign acquisitions that can be used strategically especially in regulating foreign market entry, and the approach by Norbäck and Persson (2008) in modeling multinational competition for foreign acquisition, the paper shows that by strategically using a consumer welfare argument in regulating foreign market entry and by generating multinational competition through liberalization, a host country can substantially gain in terms of local welfare, and can even trap multinationals in a "prisoner's dilemma" situation, especially when there is fierce competition for foreign acquisition: although multinationals could have gained more had they been able to credibly commit to independent foreign sales (either via greenfield FDI or trade) following complete liberalization, they will have a strong incentive to deviate from such mutually beneficial "cooperative" equilibrium, and thus will end up bidding up the acquisition price to the extent that they will earn less in a non-cooperative equilibrium. It can be argued that even when the host country completely liberalizes foreign ownership and trade, and thus cannot use its trade policy, it can still strategically regulate its market further for foreign market entry so as to increase local welfare.

The Industrial Organization (IO) literature has already scrutinized, to some extent, the implications of a consumer-surplus standard employed as a competition policy practice. That is, the IO literature focuses on mergers between firms that are already competing in the same market and on the application of a consumer-surplus standard in approvals of domestic mergers; see, for example, Dertwinkel-Kalt and Wey (2016); Nocke and Whinston (2010); and Goppelsroeder (2008). The important implications of incorporating a consumer welfare argument into foreign market entry regulations, however, have been overlooked, especially in the context of potential cross-border firm acquisitions by the trade and FDI literature. The exception is Koska (2016). Given the extent of multinational activities around the globe, this paper would like to fill this gap in the FDI literature, such that it extends discussions in Koska (2016) to multinational competition for potential cross-border firm acquisition. The main contribution of this study to the FDI literature, especially relative to Koska (2016) and Norbäck and Persson (2008) is that, (i) Koska (2016) confines the analysis to a single multinational's decision, and thus overlooks crucial implications of multinational competition for potential foreign acquisition, and that (ii) Norbäck and Persson (2008) do not consider any foreign market entry regulation, nor do they look into welfare implications.

The rest of the paper is organized as follows. Section 2 introduces the model. Section 3 details the minimum output requirement warranted by the strategic use of a consumer welfare argument in regulating foreign market entry, and solves the model for the equilibrium market entry modes, and shows that when there is multinational competition for

potential foreign acquisition, a consumer welfare argument can be used strategically by the host country in regulating foreign market entry so as to increase welfare by leading the multinationals to compete for potential foreign acquisition for purely preemptive reasons. Section 4 scrutinizes the welfare implications of the model and shows that when there is multinational competition for potential cross-border firm acquisition, any foreign acquisition that fulfills the minimum output requirement warranted by the strategic use of a consumer welfare argument (incorporated into the foreign market entry regulation) leads to higher local welfare as compared to the case multinationals enter the host country by independent foreign sales, or compared to the initial case without foreign market entry. Finally, Section 5 concludes the study.

2 The model

The model considers a host country market initially served by a monopoly local firm, denoted firm l . Following the stylized facts on multinationals such that their intangible assets enable them to penetrate oligopolistic markets, the model assumes that entry to this market is restricted: that is, similar to Koska (2016) and Koska *et al.* (2018), firms that are willing to produce for this market need Z units of a specific factor to develop intangible assets within firm boundaries so as to be able to produce at all. The aggregate supply of this factor is strictly less than $4Z$ and the outside option of this factor determines its wage, which is normalized to unity. Therefore, the model focuses on a single local firm (already invested in specific factor Z) and two potential entrants with their headquarters outside the host country (to avoid dissipation of their knowledge capital), namely multinational firms 1 and 2. Note that investment in specific factor Z only makes the firms productive for the host country market, and thus fixed cost Z plays no role in determining foreign market entry modes. All firms are risk neutral and produce a homogeneous good. Following the common observation in most countries documented by the empirical literature on firm heterogeneity following Helpman *et al.* (2004), the model assumes that the multinationals have a cost advantage over the local firm: the multinational firms are identical in their ex-ante (constant) marginal cost of production (especially when they both export, or undertake greenfield investment, under complete liberalization), denoted $c_1 = c_2 = c^*$, while the local monopoly firm's constant marginal cost of production is $c_l = c > c^*$, where $c \in (0, 1)$.

Alternatively, one of the multinationals can acquire existing assets of the local firm. Foreign acquisition enables the firms to combine their assets, and thus to decrease marginal production costs. Let $\theta_k \in [0, \bar{\theta}]$, $k \in \{1, 2\}$, denote the ex-post marginal cost of the multinational after having acquired existing assets of firm l . As in Koska (2016), $\bar{\theta}$ is

the upper bound that is implied by the strategic use of a consumer welfare argument in regulating foreign market entry, which warrants a minimum output requirement for foreign acquisition, that is, any foreign takeover that generates sufficient synergies such that $\theta_k \leq \bar{\theta}$, $k \in \{1, 2\}$ (so that it fulfills the minimum output requirement) will be allowed by the host country as part of its foreign market entry regulation; see Condition 1.³

Consumers' preferences in the host country can be represented by a quadratic utility function that leads to the linear inverse demand function given by $P(Q) = (1 - Q)$, where P is the market price of the homogeneous good and Q stands for aggregate output. Total production (or sales) if both multinationals opt for alternative market entry modes (other than foreign acquisition), referred to as independent foreign sales, $Q^f = q_l^f + \sum_k q_k^f$, comprises the two multinationals' total outputs $\sum_k q_k^f$, $k \in \{1, 2\}$, and the local firm's output q_l^f , where superscript f stands for independent foreign sales, and subscript l represents the local firm.⁴ If one of the two multinationals enters the host country by acquiring existing assets of the local firm, then there will be a duopoly market structure, in which case total sales, $Q^a = q_{kl}^a + q_{-k}^e$ - if multinational k acquires the local assets - will comprise the acquiring multinational's output q_{kl}^a and the non-acquiring multinational's output q_{-k}^e , $k \in \{1, 2\}$. Note that superscript a represents foreign acquisition of the local firm, and superscript e represents the non-acquiring multinational competing against foreign acquisition by independent foreign sales. Consistent with this notation, π_l^f and π_k^f , $k \in \{1, 2\}$, represent, respectively, the local firm's and the multinationals' profits when the multinationals penetrate the host country market by independent foreign sales, and π_l^a , π_k^a and π_{-k}^e represent those when multinational k , $k \in \{1, 2\}$, acquires local firm l . The interaction between firms takes place such that if foreign market entry is allowed by the host country in the first stage, then following the negotiations for foreign market entry with the host country, first the multinationals' foreign market entry modes are sorted (see Section 3 for details), then given the multinationals' foreign market entry modes, following their entry, all active firms in the market compete by quantities. The game is solved backwards.

In the last stage of the game (once the multinationals' entry modes are sorted), all active firms in the market engage in Cournot competition. Given the linear inverse demand function for a homogeneous good and the firms' constant marginal costs of production, in a linear Cournot oligopoly model, all firms make their output decisions simultane-

³It will be clear in Section 3 that $\bar{\theta}$ is determined through commitment to a minimum output level in the case of foreign acquisition as the outcome of negotiations between the host country and the multinationals. As the focus of the study is multinational competition for potential foreign acquisition, the cases that $\theta_k > \bar{\theta}$, $k \in \{1, 2\}$ (those that do not qualify for the minimum output requirement) are assumed away.

⁴Throughout the study, exporting to the host country or undertaking greenfield investment in the host country is referred to as independent foreign sales.

ously, where the objective is to maximize profits, given by $\pi_i(\cdot) = (p(Q) - c_i)q_i$, where $i \in \{l, 1, 2\}$, and the maximized firm profits can be expressed as a function of their optimal outputs: $\pi_i^* = -p'(Q)(q_i^*)^2$, where $p'(Q) = -1$, and thus, $\pi_i^* = (q_i^*)^2$, where $i \in \{l, 1, 2\}$. Consider first the case without any foreign market entry by either multinational in the host country (or the case the host country does not allow for foreign market entry), which is referred to as the local monopoly case. The local firm will be able to maintain its monopoly power, and will produce at the output level of $q_l^m = (1 - c)/2$ and will earn monopoly profit $\pi_l^m = (1 - c)^2/4$, where superscript m represents the monopoly case.

Suppose now the market is completely liberalized for trade and foreign ownership, and market entry by foreign firms is allowed (which should be determined by the host country in the first stage of the game; see Section 4): in this context, exporting requires no trade costs under complete trade liberalization, and the differences in fixed costs among alternative entry modes are normalized to zero such that the multinationals are indifferent between trade and greenfield investment.⁵ If both multinationals opt for independent foreign sales, and the three firms compete by quantities, then the local firm's output will be $q_l^f = (1 - 3c + 2c^*)/4$, and the two multinationals' outputs will be $q_1^f = q_2^f = (1 - 2c^* + c)/4$.

We can write each firm's profit as

$$\pi_1^f = \pi_2^f = \left(\frac{1 - 2c^* + c}{4}\right)^2; \quad \pi_l^f = \left(\frac{1 - 3c + 2c^*}{4}\right)^2. \quad (1)$$

It is clear from eq.(1) that in the case of oligopolistic market structure, a firm produces and earns more the smaller is its marginal production cost, while it produces and earns less the smaller the rivals' costs. Also, comparing eq.(1) with the monopoly outcome, it is straightforward to show that (i) market entry decreases the average industry marginal cost and increases competition with which the local firm's sales and profits decrease; and (ii) an increase in competition decreases the market price and increases aggregate sales. Note that the model assumes $(1 - 3c + 2c^*) > 0$ such that there is no crowding-out effect of market entry by multinationals.

If multinational $k \in \{1, 2\}$ acquires the existing assets of local firm l , and the other multinational competes against foreign acquisition by independent foreign sales, then the acquiring firm's output will be $q_{kl}^a = (1 - 2\theta_k + c^*)/3$, and the non-acquiring multinational's

⁵In particular, as in Koska (2016), the model can easily accommodate some non-prohibitive fixed investment and per-unit trade costs without changing the results qualitatively, although the exposition of the model will be more tedious without any further insight.

output will be $q_{-k}^e = (1 - 2c^* + \theta_k)/3$, and their profits will be, respectively:

$$\pi_{kl}^a = \left(\frac{1 - 2\theta_k + c^*}{3} \right)^2; \quad \pi_{-k}^e = \left(\frac{1 - 2c^* + \theta_k}{3} \right)^2, \quad (2)$$

where π_{kl}^a is multinational k 's gross profits from foreign acquisition, and θ_k is its ex-post marginal cost of production. In case of foreign acquisition, acquiring multinational k will have to pay acquired firm l an acquisition price (π_l^a), which is determined endogenously; see the next section. Thus, the net return from foreign acquisition to multinational k is $\pi_k^a = \pi_{kl}^a(\theta_k) - \pi_l^a$, and to the acquired firm is π_l^a . Foreign acquisition decreases competition by decreasing the number of firms by one as compared to the case that both multinationals enter the market by independent foreign sales. To offset the negative impact of a decrease in the number of firms on aggregate output, sufficient synergies in foreign acquisition (a sufficiently low ex-post marginal cost of production) is warranted. The next section shows that a minimum output requirement for foreign acquisition as part of the foreign market entry regulation not only warrants sufficient synergies but also can be used strategically to transfer surplus from multinationals to the local firm.

3 Multinational competition for foreign acquisition

Following Koska (2016), the minimum output requirement for foreign acquisition, which is warranted by the strategic use of a consumer welfare argument in regulating foreign market entry, is determined as the outcome of negotiations between the host country and the multinationals such that upon investing in specific factor Z that makes them productive for the market, the multinationals express their interest in entering the host country market. The host country then asks the multinationals to open their books which will reveal the particulars of their performance should they enter the host country as a solo firm via independent foreign sales. The host country can easily solve their problem backwards, and can require any multinational to commit to not produce below a certain output level in the case of entry by foreign acquisition. Using a consumer welfare argument strategically, the host country can choose the minimum output requirement for foreign acquisition as one that secures the same aggregate output as in the case both multinationals enter the market via independent foreign sales.⁶

⁶Foreign acquisition generates efficiency gains by enabling the involving parties to combine their productive assets, and their ex-post performance depends on the complementarity of such assets. That is, the host country can make a case against foreign acquisition (as this would not contradict the multinationals' optimization problem so long as there is a local firm that qualifies for such a requirement). That said, this is not true for trade, or greenfield entry (as this would be not optimal given the multinational's already established production technology).

The model thus assumes that if foreign market entry is allowed (see Section 4 for discussions on this), then any foreign acquisition by a multinational will be allowed so long as it fulfills the minimum output requirement given by Condition 1:

Condition 1 (Consumer-surplus standard) *With foreign acquisition, a multinational should commit to produce at least $\bar{q}_{ki}^a(\bar{\theta}, c^*)$ such that $Q^a(\bar{\theta}, c^*) = Q^f(c, c^*, c^*)$, where $\bar{\theta} = (3c + 2c^* - 1)/4$.*

As in Koska (2016), given the Cournot setting with constant marginal costs, Condition 1 puts an upper bound to the ex-post marginal cost of the acquiring multinational such that $\theta_k \in [0, \bar{\theta}]$, $k \in \{1, 2\}$. To focus on multinational competition for foreign acquisition, suppose both multinationals can generate sufficient synergies by combining their assets with the local assets.

If neither multinational opts for foreign acquisition, then they both enter the market via independent foreign sales, which is referred to as the cooperative equilibrium. If only multinational k has decided to acquire the local firm (while the other multinational has decided to enter the market via independent foreign sales), then multinational k 's "takeover" valuation, denoted v_k^t , can be written as the difference between its acquisition profit given by eq.(2) and its profit when it competes against the other two firms by independent foreign sales given by eq.(1):

$$v_k^t = \left(\frac{1 - 2\theta_k + c^*}{3} \right)^2 - \left(\frac{1 - 2c^* + c}{4} \right)^2 > \left(\frac{1 - 3c + 2c^*}{4} \right)^2, \quad (3)$$

which is greater than the local firm's rejection profit π_l^f given by eq.(1) as the minimum output requirement for foreign acquisition warrants $\theta_k \leq (3c + 2c^* - 1)/4$. In particular, eq.(3) suggests that, given the rival multinational entering the host country market via independent foreign sales, multinational k can takeover the local firm (by offering ϵ more than its rejection profit) and can earn more than its profit when it competes against the other two firms by independent foreign sales. This implies that given the rival multinational committing to independent foreign sales, each firm has a strong incentive to deviate from the "cooperative" equilibrium. Acquisition of the local firm, however, decreases the non-acquiring multinational's profit from independent foreign sales ($\pi_1^f = \pi_2^f \geq \pi_{-k}^e$) insofar as $\theta_k \leq (3c + 2c^* - 1)/4$, and thus each firm has an incentive to preempt the rival's acquisition of the local firm.

Firm k 's "preemptive" valuation, denoted v_k^p , can be written as the difference between its acquisition profit given by eq.(2) and its profit from independent foreign sales when

the rival firm acquires the local firm such that

$$v_k^p = \left(\frac{1 - 2\theta_k + c^*}{3} \right)^2 - \left(\frac{1 - 2c^* + \theta_{-k}}{3} \right)^2 > v_k^t, \quad (4)$$

which is greater than its takeover valuation as $\theta_k \leq (3c + 2c^* - 1)/4$, where θ_{-k} represents the rival's post-acquisition marginal cost.

Notice that, given the assumptions $c \in (0, 1)$ and $1 - 3c + 2c^* > 0$ so that there is no crowding-out effect, the ex-post efficient multinational (e.g., firm 1) will have a higher preemptive valuation than the ex-post less efficient multinational (e.g., firm 2) such that $v_1^p > v_2^p$ given $\theta_1 < \theta_2$. Assuming an arbitrarily small probability that the ex-post less efficient multinational believes that it may still acquire the local firm against the ex-post efficient multinational, it is clear that

Proposition 1 *In equilibrium, both firms will compete for foreign takeover the outcome of which will be a preemptive foreign acquisition by the ex-post efficient multinational at a price that is (almost) equal to the ex-post less efficient multinational's preemptive valuation as expressed by eq.(4).*

Ex-post efficient multinational k 's net gain from acquisition of the local firm is

$$\left(\frac{1 - 2\theta_k + c^*}{3} \right)^2 - \left[\left(\frac{1 - 2\theta_{-k} + c^*}{3} \right)^2 - \left(\frac{1 - 2c^* + \theta_k}{3} \right)^2 \right], \quad (5)$$

where the first term is multinational k 's gross (operating) profit after having acquired the local firm, given by eq.(2), and the expression in square-brackets is simply the acquisition price equal to the ex-post less efficient multinational's preemptive valuation. The following remarks are in order. The more efficient is multinational k - the lower is θ_k - the higher is its gross profit from foreign acquisition. Lower θ_k , however, implies a higher cost of foreign acquisition as it leads to a higher preemptive valuation for the ex-post less efficient multinational. By the same token, a lower ex-post marginal cost of the rival multinational implies also a higher acquisition price for multinational k . By putting an upper bound on the ex-post marginal costs of the multinationals competing for foreign acquisition, the minimum output requirement for foreign acquisition given by Condition 1 thus limits the ex-post surplus that multinationals can transfer abroad. Using eq.(4), eq.(5) can be rearranged such that the net gain from foreign acquisition to multinational k is

$$v_k^p - v_{-k}^p + \left(\frac{1 - 2c^* + \theta_{-k}}{3} \right)^2 \quad (6)$$

Note that the last term in eq.(6) is multinational k 's outside profit such that it enters

the host country via independent foreign sales enabling the rival multinational to acquire the local firm at a price (almost) equal to the local firm's reservation (rejection) price (π_i^f) given by eq.(1). Therefore the gain from foreign acquisition of the local firm to the ex-post efficient multinational k (relative to the case the rival multinational acquires the local firm) is $v_k^p - v_{-k}^p > 0$. Also, notice that $\lim_{\theta_k \rightarrow \theta_{-k}} v_k^p - v_{-k}^p = 0$, $k = \{1, 2\}$, that is, the smaller is the difference between ex-post marginal costs, the smaller is the gain from foreign acquisition relative to the case the rival multinational acquires the local firm.

This leads to

Proposition 2 *While each multinational has a strong incentive to deviate from a "co-operative" equilibrium, the strategic use of a consumer welfare argument in regulating foreign market entry (that warrants a minimum output requirement for foreign acquisition) together with "multinational competition" may lead to a "prisoner's dilemma" situation for the multinationals, especially when there is fierce multinational competition for the local firm's foreign acquisition.*

Proof. The strong incentive to deviate from a "cooperative" equilibrium is already discussed, and is clear from eq.(3). In the case that there is fierce multinational competition for the local firm's foreign acquisition, it can happen that only if both multinationals can credibly commit to independent foreign sales, then both multinationals earn higher profits (π_i^f , $i = \{1, 2\}$ given by eq.(1)) than their profits with the "acquisition" outcome given by eq.(2), that is, the difference in profits between the "non-cooperative" (acquisition) equilibrium and the "cooperative" (independent foreign sales) equilibrium is

$$v_k^p - v_{-k}^p + \left[\left(\frac{1 - 2c^* + \theta_{-k}}{3} \right)^2 - \left(\frac{1 - 2c^* + c}{4} \right)^2 \right], \quad (7)$$

for the acquiring (ex-post efficient) multinational, and

$$\left[\left(\frac{1 - 2c^* + \theta_k}{3} \right)^2 - \left(\frac{1 - 2c^* + c}{4} \right)^2 \right] \quad (8)$$

for the non-acquiring (ex-post less efficient) multinational, where (i) fierce multinational competition for firm acquisition implies $\lim_{\theta_k \rightarrow \theta_{-k}} v_k^p - v_{-k}^p = 0$, $k = \{1, 2\}$; and (ii) the last term in brackets in eq.(7) and the expression in brackets in eq.(8) are negative given $\theta_{-k} \leq (3c + 2c^* - 1)/4$ implied by the minimum output requirement for foreign acquisition, given by Condition 1. ■

It is now clear that while independent foreign sales (via trade or greenfield entry) can earn both firms higher profits, especially when there is fierce multinational competition

for foreign acquisition, both multinationals have a strong incentive to deviate from independent foreign sales, and the minimum output requirement for foreign acquisition, given by Condition 1, leads to a preemptive acquisition of the local firm by the ex-post efficient multinational. That is, both multinationals' profits can be less than the case they could credibly commit to independent sales should there be fierce competition, and even in such a case, cross-border firm acquisition that fulfills Condition 1 will emerge as part of a non-cooperative equilibrium.

4 Welfare Implications

The analysis above has been conducted on the basis that foreign market entry is allowed, and that there is a minimum output requirement for foreign acquisition. Depending on the welfare implications of different foreign market entry modes, however, the host country certainly can introduce different restrictive measures, and can even ban foreign market entry, in the first stage. That is, Condition 1 cannot be applied without allowing for foreign market entry, and thus it should be considered subordinate to the host country's foreign market entry regulation. The model assumes that the host country allows for foreign market entry so long as total welfare, defined as the sum of consumer welfare and the profit of the local firm, as given by eq.(9), does not decrease.

Local welfare (W) is given by

$$W^s = \left[\frac{1}{2} (Q^s)^2 + \pi_l^s \right]; \quad i \in \{m, f, a\}, \quad (9)$$

where Q^s is aggregate output, π_l^s is the local firm's profit, and s represents the market structure such that m is the monopoly case, f is the oligopoly case with independent foreign sales, and a represents duopoly between the two multinationals, one of which acquires the local firm.

Let $W^m(c)$ and $W^f(c, c^*, c^*)$ denote local welfare, respectively, when there is no foreign sale in the host country (local monopoly) and when the multinationals enter the host country by independent foreign sales. Also denote by W_m^f the welfare change relative to the monopoly case when the multinationals opt for independent sales. Following eq. (9),

it is straightforward to show that

$$\begin{aligned}
W^m &= \frac{1}{2} \left(\frac{1-c}{2} \right)^2 + \left(\frac{1-c}{2} \right)^2 & (10) \\
W^f &= \frac{1}{2} \left(\frac{1-2c^*+c}{4} + \frac{1-3c+2c^*}{4} + \frac{1-2c^*+c}{4} \right)^2 + \left(\frac{1-3c+2c^*}{4} \right)^2 \\
W_m^f &= \frac{1}{32} (-1+7c-6c^*)(1-2c^*+c),
\end{aligned}$$

which immediately leads to

Lemma 1 *Compared to the monopoly case, local welfare improves with independent foreign sales ($W_m^f > 0$) insofar as the multinationals opting for such independent foreign market entry in the host country are sufficiently productive such that $c^* < (7c-1)/6$.*

Local competition increases with independent foreign sales increasing (decreasing) aggregate sales (the market price), and thus consumer welfare increases. The more productive the multinationals - the smaller is c^* - the more the increase in consumer welfare. Although the multinationals' independent sales in the host country decrease the local firm's profit, consumer welfare increases by more than the decrease in the local firm's profit, especially when the multinationals' marginal costs are sufficiently low.

Let $W^a(\theta_k, c^*)$ denote local welfare when multinational firm k , having a smaller ex-post marginal cost θ_k (and thus a higher preemptive valuation v_k^p given by eq.(4)), has acquired the local firm and the other multinational has entered the host country via independent foreign sales. Equation (11) gives $W^a(\theta_k, c^*)$, $k = \{1, 2\}$, such that

$$\begin{aligned}
W^a(\theta_k, c^*) &= \left[\frac{1}{2} \left(\frac{1-2\theta_k+c^*}{3} + \frac{1-2c^*+\theta_k}{3} \right)^2 \right] + & (11) \\
&\quad \left[\left(\frac{1-2\theta_{-k}+c^*}{3} \right)^2 - \left(\frac{1-2c^*+\theta_k}{3} \right)^2 \right],
\end{aligned}$$

where the second expression in square-brackets (in the second line) is simply the local firm's gain from foreign acquisition of its assets, that is, the acquisition price equal to the preemptive valuation of the non-acquiring multinational. Section 3 has already shown that both multinationals' preemptive valuation is greater than their takeover valuation which is greater than the local firm's rejection profit (i.e., $v_k^p > v_k^t > \pi_l^f$ for any $k = \{1, 2\}$; see equations (1), (3), and (4)). Also Condition 1 warrants that aggregate output with foreign acquisition is greater than that with independent foreign sales by multinationals, and thus consumer welfare given by the first expression in square-brackets in eq.(11) is also greater than that given by W^f in eq.(10). This leads to

Proposition 3 *When there is multinational competition for foreign acquisition, for which there is a minimum output requirement (given by Condition 1) warranted by the strategic use of a consumer welfare argument in regulating foreign market entry, local welfare with preemptive foreign acquisition is greater than that with both multinationals entering the host country via independent foreign sales.*

Local competition increases in both cases relative to the monopoly case. In the case both multinationals enter the host country via independent sales, two multinationals that are more productive than the local firm enter the market and increase (decrease) the number of firms (average industry marginal cost), whereas in the case of foreign acquisition, less productive local firm is replaced by an ex-post more productive foreign firm, while the other foreign entrant is ex ante also more productive than the local firm. Although in both cases aggregate output increases (and so does consumer welfare), the strategic use of a consumer welfare argument in regulating foreign market entry that warrants a minimum output requirement for foreign acquisition (given by Condition 1) guarantees that preemptive foreign acquisition (led by Condition 1) increases consumer welfare by more than independent foreign sales. By the same token, in both cases, some producer surplus is transferred from the local firm to the multinationals as foreign market entry by the multinationals decreases the local firm's profit relative to the monopoly case.

As is already shown, relative to independent foreign sales, with preemptive foreign acquisition, the local firm can retain more profits so long as there is multinational competition for foreign acquisition of its assets. Lemma 1 compares local welfare with independent foreign sales relative to the monopoly case, and shows that when the multinationals have sufficiently low marginal costs, the increase in consumer welfare surpasses the decrease in the local firm's profit, with which local welfare increases. As for the change in local welfare with foreign acquisition relative to the monopoly case, however, comparing W^a given by eq.(11) with W^m given by eq.(10) shows that

Proposition 4 *Multinational competition for preemptive foreign acquisition that fulfills the minimum output requirement, given by Condition 1, bids up the local firm's gain to the extent that together with the increase in consumer welfare guaranteed by Condition 1, local welfare with foreign acquisition is always greater than that with local monopoly.*

Although the local firm's gain from foreign acquisition of its assets by the ex-post more efficient multinational relative to the monopoly case is smaller, multinational competition for foreign acquisition earns the local firm a significantly high acquisition price, and thus in contrast to Koska (2016), the strategic use of a consumer welfare argument in regulating foreign market entry, which warrants a minimum output requirement for foreign acquisition as given by Condition 1, guarantees a level of consumer welfare that is

always sufficient to surpass the decrease in the local firm's profit. Given these results, the following policy implication would be immediate:

Corollary 1 *Complete trade and investment liberalization together with the strategic use of a consumer welfare argument in regulating foreign market entry and the corresponding minimum output requirement as defined by Condition 1 will not hurt the host country insofar as there is also multinational competition for foreign acquisition.*

Similar to Koska (2016), it can be argued that it would not be optimal for the host country to ban foreign acquisition and permit trade or greenfield entry. Additionally, the results suggest that the host country might opt for complete liberalization and strategically use a consumer welfare argument in regulating foreign market entry, by imposing a minimum output requirement for foreign acquisition given by Condition 1, not only for any permissible trade or greenfield entry, but also for some cases where independent foreign sales decrease local welfare relative to local monopoly. That is, the host country might still consider liberalizing the market and using the consumer-surplus standard strategically so as to lead multinationals to compete for preemptive foreign acquisition.

5 Concluding remarks

In a simple oligopolistic market entry model, this study has scrutinized the implications of multinational competition for cross-border firm acquisition, for which there is a minimum output requirement warranted by the strategic use of a consumer welfare argument in regulating foreign market entry, on multinationals' foreign market entry behavior and on local welfare. The results have shown that when strategically using a consumer welfare argument in regulating foreign market entry, the host country is not hurt, but can gain substantially in terms of welfare, especially when there is also multinational competition for foreign acquisition. In particular, this study has shown that cross-border firm acquisition may emerge as an equilibrium foreign market entry mode even when it is less profitable than trade or greenfield entry in the times of complete liberalization (which is expected to be the case especially when there is fierce multinational competition for foreign acquisition). By strategically using a consumer welfare argument in regulating foreign market entry, and thus by allowing for foreign market entry and imposing a minimum output requirement for foreign acquisition, the host country can lead multinationals to compete for foreign acquisition for purely preemptive reasons, the outcome of which is not only higher consumer welfare, but also a significantly high acquisition price improving welfare relative to the monopoly case, to trade, and to greenfield entry.

References

- [1] Breinlich, H., Nocke, V., Schutz, N. 2017. International aspects of merger policy: a survey. *International Journal of Industrial Organization*, 50(1): 415-429.
- [2] Dertwinkel-Kalt, M., Wey, C. 2016. Merger remedies in oligopoly under a consumer welfare standard. *Journal of Law, Economics, and Organization*, 32(1): 150-179.
- [3] Goppelsroeder, M., Schinkel, M.P., Tuinstra, J. 2008. Quantifying the scope for efficiency defense in merger control: the Werden-Froeb index. *Journal of Industrial Economics*, 56(4): 778-808.
- [4] Helpman, E., Melitz, M.J., Yeaple, S.R. 2004. Export versus FDI with heterogeneous firms. *American Economic Review* 94(1), 300-316.
- [5] Koska, O.A. 2015. A model of competition between multinationals. *METU Studies in Development*, 42(2) (2015), 271-298.
- [6] Koska, O.A. 2016. A consumer-surplus standard in merger approvals, foreign Direct Investment, and welfare. ERC Working Papers 1612, ERC - Economic Research Center, Middle East Technical University.
- [7] Koska, O.A., Long, N.V., Stähler, F. 2018. Foreign direct investment as a signal. *Review of International Economics*, 26(1): 60-83.
- [8] Navaretti, B.G., Venables, A.J. 2004. *Multinational firms in the world economy*. Princeton: Princeton University Press.
- [9] Nocke, V., Whinston, M.D. 2010. Dynamic merger review. *Journal of Political Economy*, 118(6): 1200-1251.
- [10] Norbäck, P-J. and Persson, L. 2008. Globalization and profitability of cross-border mergers and acquisitions. *Economic Theory*, 35(2): 241.

Please note:

You are most sincerely encouraged to participate in the open assessment of this discussion paper. You can do so by either recommending the paper or by posting your comments.

Please go to:

<http://www.economics-ejournal.org/economics/discussionpapers/2018-19>

The Editor