Cross-Border Mergers and Branding Strategies of the Multinational Firms

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Abstract

If a multinational firm considers an entry into a new foreign market, it either establishes a "greenfield" foreign subsidiary or merges with or acquires an existing local firm. More than two-thirds of such MNE's FDI flow is accounted for by the Cross-Border M&A. Therefore, Cross-Border Mergers are the primary source of Multinational firm's entry. When a multinational firm that engages in cross-border M&A tries to buy another firm in the host country, there is a choice for the multinational firm whether to keep using the local product-brand of the acquired firm or to change the brand name into its own global one. This paper tries to examine the general conditions under which the MNEs (multi-national enterprises) choose to use the local brand or otherwise. In so doing, we find that the degree of substitution between the local brand and the MNE's global brand matters together with the degree of moral hazard problem between the local manager (agent) and the MNE (principal) about the effort level of the manager. We find that the MNE tends to keep the local brand name when the products are well-differentiated (i.e. the substitution parameter is small) and that the MNE replaces the brand name with its own global one when the products exhibit higher elasticity of substitution. Holding the elasticity of substitution constant, the local brand-name is preserved when the problem of moral hazard is relatively small.

1 Introduction

Cross-Border Mergers are the primary source of Multinational firm's entry into a new market. In fact, according to the data provided in Navaretti and Venables (2004), more than two-thirds of such MNE's FDI flow is accounted for by the Cross-Border M&A.

When a multinational firm that engages in cross-border M&A tries to buy another firm in the host country, there is a choice for the multinational firm whether to keep using the local product-brand of the acquired firm or to change the brand name into its own global one (or to create a new one). This paper tries to examine the general conditions under which the MNEs (multi-national enterprises) choose to keep the local brand or otherwise. This is a choice of branding strategy. When does the multinational firm choose to integrate the brand lines into fewer lines (or one line) and when does it accommodate several brand lines?

The choice of the brand name after merger is a relevant question in the real world. There are several examples from business press. For example, in 2003 Air France and KLM Royal Dutch Airlines announced they are "to come as close to a cross-border merger as the industry's arcane rules currently allow."[1] The "partnership between the two promises to become more intimate than any other cross-border deal in the [airline] industry," but "the Air France and KLM brands are to remain separate." Look at another case in Japan. When All Nippon Airways (ANA, henceforth) sold its 13 hotels in the spring of 2007 to the intercontinental hotel group (IHG, henceforth), the IHG did not completely change the names of the hotels into one of their brand names. The IHG has changed its flagship *Tokyo ANA Hotel* into *ANA Inter-Continental Hotel*. However, *Sapporo ANA Hotel* did not change its name. Some regional ANA hotels have changed their names to *ANA Crowne Plaza Hotels* (Osaka, Fukuoka, etc.). The merger case of ANA-IHG hotels is probably a mixed case of the branding strategy. On the other hand, there are cases in which the brands are integrated into one after the cross-border mergers and acquisitions. A European banking creation like Nordea, formed from the combination of Merita of Finland, Nordbanken of Sweden, Christiania of Norway and Unidanmark of Denmark, is such an example. After the merger of the four banks, there remained only one brand name: Nordea.[2]

The novel feature of this article is the focus on the interaction between the market power in the product market (pursued by merger decisions) and the branding strategies of the firms. In order to pursue the analysis in brand competition, the present article adopts differentiated product Cournot model of oligopoly. Long and Vousden (1995) adopted homogeneous product Cournot

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[1]The Economist (October 4, 2003) SPECIAL REPORT (2) "Open skies and flights of fancy - Airlines" downloaded through LexisNexis database.

[2]Financial Times (London, England) (April 23, 2004 Friday) London Edition 1 "One brand, too many cultures: BANKING: Nordea's path to integration has not been the smooth transition first envisaged by its four participants, writes Christopher Brown-Humes" downloaded through LexisNexis database.

model to analyze the impact of trade liberalization on merger decisions. Horn and Persson (2001) adopted homogeneous product Cournot model in order to analyze equilibrium ownership structures in international oligopoly. Neary (2007) also used homogeneous product Cournot model, although he has extended the partial equilibrium models in the literature to the one of general equilibrium. The closest framework with differentiated product Cournot model is used in Lommerud, Straume, and Sorgard (2006 Rand), but their focus was to look for the relationship between the merger decisions and the labor union wage determination. Qiu and Zhou (2006) also used the differentiated product model, but their focus is to look at the role of asymmetric information in order to explain the incentives behind the international mergers.

The remaining parts of the paper are organized as follows: the next section develops the basic model. The model utilizes a Cournot oligopoly with differentiated products. The way the firms decide to merge is based on cooperative game theory's idea of coalition formation. The final section summarizes the results and suggests some possible extensions.

2   The Model

Three firms (owners) are located in two regions, N and S. N (north) is a developed economy with advanced technology and S (south) is a developing economy. Owner 0 is located in N, whereas owners 1 and 2 reside in country S. In the beginning, each firm owns one plant each, which produces a specific brand of a differentiated product. Firms compete in differentiated product Cournot fashion in the market of S. In this model, we do not consider the domestic market in N. We assume that entry into this industry is restricted due to some firm-specific ownership advantages of the incumbents.

A representative consumer has a utility function

$$U = a \sum_i q_i - \frac{1}{2} \left(\sum_i q_i^2 + b \sum_i \sum_j q_i q_j \right) + z, \quad i, j = 0, 1, 2; \ i \neq j$$

where z is a numeraire outside good. This utility formulation gives the demand structure which can be written as the following inverse demand function

$$p_i = a - q_i - b \sum_j q_j \quad i, j = 0, 1, 2; \ i \neq j$$

where q_i is supplied quantity of brand i, and $b \in [0, 1]$ is an inverse measure of the degree of product differentiation.

N firm (owner 0) has a production cost advantage, but must pay a transportation cost $t > 0$ if it exports to and sells in the S market. For simplicity, let us assume constant marginal cost for owner 0 is zero: $mc_0 = 0$. S firms (owners 1 and 2) share symmetric constant marginal cost $mc_i = c > 0 \quad (i = 1, 2)$ but no need to pay transportation cost for domestic sales.

What is the effect of merger in this setup? When two domestic firms merge, then the merger is only about scale merit. Because two domestic firms in S are identical and because both of them need not pay transport cost, there is no reduction in marginal cost for such a merger. They can either reduce the number of domestic brands from two to one or manage two brand lines jointly. If cross-border merger is to occur, there are two things that can happen. If firm 0 of N merges with one firm from S, then the merged firm can save transport cost. At the same time, because Northern firm has lower production cost than Southern firms, the merger will bring the new firm cost-saving effect due to technology transfer. Precise specification of what to happen will be discussed later in each section. Let us now look at what type of merger formations can occur.

Merger formation. Following Horn and Persson (2001), the ownership structure of the industry is formed by a cooperative game of coalition formation. we make the assumptions that the global monopoly is not allowed and that only two-firm mergers are allowed.

1. No merger: $M_0 = \{0, 1, 2\}$.

2. One cross-border merger: $M_{CB1} = \{01, 2\}$.

3. One cross-border merger: $M_{CB2} = \{02, 1\}$.

4. One national merger: $M_N = \{0, 12\}$.

The solution procedure is based on Horn and Persson (2001).

The sequence of moves. The game is characterized by the following sequence of moves:

Stage 1. The equilibrium ownership structure of the industry is determined through bargaining between owners. The owners decide whether to merge, who to merge with, etc.

Stage 2. If there is a merged firm, the merged firm decide whether to keep the two brand names separately or to integrate into one brand.

Stage 3. The firms simultaneously and independently set quantities.

Inclusion of the second step is novel in the literature.

2.1 No merger: $M_0 = \{0, 1, 2\}$.

For the case of no merger, the owner 0 will supply its output via exporting. Profit for the owner 0 from market S is given by

$$\pi_0^{M0} = [p_0 - t]\, q_0$$

and profits for the owners 1 and 2 are given by

$$\pi_j^{M0} = [p_j - c] \, q_j \quad j = 1, 2.$$

The solutions to the profit maximizing problem will be given by

$$q_0^{M0} = \frac{(2 + b) \cdot (a - t) - 2b(a - c)}{2(2 + b - b^2)}$$

for the owner 0 and

$$q_1^{M0} = q_2^{M0} = \frac{2(a - c) - b(a - t)}{2(2 + b - b^2)}$$

for the owners in S.

Whether the owner 0 engages in the export to the S market or not depends on the relationship among parameter values. By looking at the condition of $q_0^{M0} \geq 0$, we can summarize it as

$$t \leq a - \frac{2b(a - c)}{2 + b} \equiv t(b)$$

and this $t(b)$ is a hyperbolic function for the range $b \in [0, 1]$. If we plot $t = t(b)$ on the $b - t$ space, it is the segment of hyperbola between $(1, \frac{a + 2c}{3})$ and $(0, a)$ above which the market structure in S is a duopoly by two domestic firms 1 and 2 and below which the market structure is a competition among three firms.

[Figure 1 is here.]

We can also summarize the result as Proposition 1.

Proposition 1 *For the case of no merger, there is a negative relationship between trade cost and the parameter of substitution. When trade cost is high, only the well-differentiated products can be exported from N to S. As trade cost decreases, the less differentiated (more homogeneous or more substitutable) products get exported. For a given level of substitutability $b \in [0, 1]$, when the trade cost is larger than the threshold value $t(b)$, then no import is observed, hence domestic duopoly in S. When the trade cost is smaller than $t(b)$, then import is observed.*

If there is no trade between N and S, $q_0^{M0} = 0$ and two firms in S will compete in a differentiated-product Cournot duopoly with symmetric cost. The equilibrium outputs for such a case:

$$q_1^{M0} = q_2^{M0} = \frac{a - c}{2 + b}$$

should hold.

Part of transport cost can be controlled by the government. We can denote transportation cost as

$$t = t_N + \tau$$

where t_N represents natural transportation cost which may come from the distance between the regions or the nature of the product (how many of the products can fit into 20 feet container, etc.) and where τ represents artificial trade cost created by the policy, i.e., tariffs and other non-tariff barriers to trade. Therefore, to the extent that the government can change the portion τ of total trade cost t, the government of region S may be able to foreclose its market from foreign firm 0 by setting the tariff level if it is beneficial.

2.2 One national merger: $M_N = \{0, 12\}$.

In the case of one national merger, the owner 0 is still an exporter. The merged firm $\{12\}$ can choose to combine its two brand lines and sell only an integrated one or to sell two separate brands. For the latter case, the merged firm can control its two brand outputs together. We will look at the case of brand separation case first.

2.2.1 (1) Brand Separation.

Let us first look at the case where the merged firm can keep its original two brand names. We may be able to say that the merged firm can have lower production cost due to some production synergy, however, we rule out such a case since it will complicate our analysis.[3] Therefore, we assume the merged firm has a constant marginal cost $mc_{\{12\}} = c > 0$ for both brands. Firm 0 still exports into S market and its profit is given as

$$\pi_0^{MNs} = [p_0 - t] \, q_0$$

and joint profit for the merged firm is given as

$$\pi_{\{12\}}^{MNs} = \pi_1^{MNs} + \pi_2^{MNs} = [p_1 - c] \, q_1 + [p_2 - c] \, q_2$$

which will be maximized with respect to both q_1 and q_2.

The solution to the above Cournot-Nash analysis is given by

$$q_0^{MNs} = \frac{(a - t) + b(c - t)}{2 + 2b - b^2} = \frac{(1 + b) \cdot (a - t) - b(a - c)}{2 + 2b - b^2}$$

and

$$q_1^{MNs} = q_2^{MNs} = \frac{(a - c) \cdot (2 + 2b - 2b^2) - b(a - t) \cdot (1 + b)}{2(1 + b)(2 + 2b - b^2)}.$$

If we look at the condition for $q_0^{MNs} \geq 0$, we can summarize it as

$$t \leq \frac{a + bc}{1 + b} \equiv t^*(b)$$

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[3] It is possible to introduce fixed costs in the analysis and we can analyze the case in which the merged firm can sell separate brands but can save fixed cost. However, in order to simplify the analysis, we look at the case without fixed cost.

and this $t^*(b)$ is a hyperbolic function for the range $b \in [0, 1]$. It is the hyperbolic curve between $(1, \frac{a+c}{2})$ and $(0, a)$ above which the market structure in S is a monopoly by the merged firm $\{12\}$ and below which the market structure is a competition between the domestic monopoly and the import from the firm 0 in N. This result is almost the same as the no-merger case.

[Figure 2 is here.]

The difference between the no-merger and the one national merger with brand separation cases is that the hyperbolic line for one national merger (with brand separation) is always located above the no-merger line. This is because the nationally merged firm can coordinate the output per brand even though the total number of brands is the same between the two cases.

2.2.2 (2) Brand Integration.

Now we move on to look at the integrated case. For the case of one national merger, profit for the owner 0 from market S is given by

$$\pi_0^{MN} = [p_0 - t] \, q_0$$

and profits for the merged firm $\{12\}$ given by

$$\pi_{\{12\}}^{MN} = \left[p_{\{12\}} - c\right] q_{\{12\}}.$$

The solutions to the profit maximizing problem will be given by

$$q_0^{MN} = \frac{2(a - t) - b(a - c)}{4 - b^2}$$

for the owner 0 and

$$q_{\{12\}}^{MN} = \frac{2(a - c) - b(a - t)}{4 - b^2}$$

for the merged firm $\{12\}$ in S.

If we look at the condition for $q_0^{MN} \geq 0$, we can summarize it as

$$t \leq a - \frac{b(a - c)}{2} \equiv t^{**}(b)$$

and this $t^{**}(b)$ is a linear function for the range $b \in [0, 1]$. It is the line segment between $(1, \frac{a+c}{2})$ and $(0, a)$ above which the market structure in S is a monopoly by the merged firm $\{12\}$ and below which the market structure is a competition between the domestic monopolist's production and the importation from the firm 0 in N.

[Figure 3 is here.]

We can also summarize the result as

Proposition 2 *For the case of one national merger, there is a negative relationship between trade cost and the parameter of substitution. When trade cost is high, only the well-differentiated products can be exported from N to S. As trade*

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cost decreases, the less differentiated (more homogeneous or more substitutable) products get exported. For a given level of substitutability $b \in [0,1]$, when the trade cost is larger than the threshold value $t^*(b)$ for the brand separation case and $t^{**}(b)$ for the brand integration case then no import is observed. When the trade cost is smaller than the threshold value, then import is observed.

This is the almost the same statement as Proposition 1. The only difference is the shapes of the value function of threshold. In no-merger case and brand separation case, the shape was hyperbolic and here it is a linear form.

The similar reasoning about the policy determined by the government of region S can apply here as well as the no-merger case.

2.3 One cross-border merger: $M_{CB1} = \{01, 2\}$.

Without loss of generality, we only look at the case of $M_{CB1} = \{01, 2\}$ for one cross-border merger because the other case: $M_{CB2} = \{02, 1\}$ provides a completely symmetric analysis. In $M_{CB1} = \{01, 2\}$ the firm 0 conducted cross-border M&A with the firm 1 in region S. After the merger, the merged firm $\{01\}$ will compete against the firm 2 in S. There are two ways to compete between them after the merger: (1) brand separation and (2) brand integration. When the merged firm $\{01\}$ decides to keep the two original brand names, then the brand competition is among three brand names: brand 0, 1, and 2. We call this case as (1) brand separation. If the merged firm $\{01\}$ integrates the initially two separate brands into one, then the brand competition is between the two brands: the integrated $\{01\}$ brand and the firm 2 brand. This is the case of (2) brand integration.

The competition among three brands look similar to the case of no merger, however, this former case (1) is actually different from the no-merger case. In the no-merger case, the firm 0 was a foreign firm and had to pay transportation cost (or trade cost, i.e., tariffs or other trade barriers may be included). However, the merged firm is now a domestic firm and there is no need to pay the transport cost. This applies also to the case (2) as well.

For both cases of (1) and (2), we need to consider the production cost structure for the merged firm $\{01\}$. Two things can be mentioned. First, since the merged firm is now a domestic entity in S, it does not have to pay the transport cost. Second, the merged firm should have lower cost than the domestic firms. This is because the firm 0 had a lower production cost $mc_0 = 0$ than the firm 1 ($mc_1 = c > 0$) before the merger and part of the reasons for merger should include the reduction of production cost. So let us assume that the constant marginal cost for the merged firm $\{01\}$ is $mc_{\{01\}} = \underline{c} \in [0, c)$. For the other domestic firm 2, there is no change in their cost so that the condition $mc_2 = c$ stays.

2.3.1 (1) Brand Separation.

Let us first look at the case of (1) brand separation. Here two firms are competing against each other, however, the number of competing brands is three.

Especially, the merged firm actually controls the outputs for two brands while the domestic firm 2 can control only its own brand's output. Now profit for the merged firm is a joint profit:

$$\pi_{\{01\}}^{BS} = \pi_0^{BS} + \pi_1^{BS}$$

which can be maximized with respect to both q_0^{BS} and q_1^{BS} given the quantity q_2^{BS} supplied by firm 2. The profit maximization is written as

$$\max_{q_0, q_1} \pi_{\{01\}}^{BS} = [p_0 - \underline{c}] \, q_0 + [p_1 - \underline{c}] \, q_1$$

where $p_0 = a - q_0 - b(q_1 + q_2)$ and $p_1 = a - q_1 - b(q_0 + q_2)$. The profit maximization for firm 2 is regular:

$$\max_{q_2} \pi_2^{BS} = [p_2 - c] \, q_2$$

where $p_2 = a - q_2 - b(q_0 + q_1)$.

Reaction functions are

$$q_0^{BS}(q_2) = q_1^{BS}(q_2) = \frac{(a - \underline{c}) - bq_2}{2 + b}$$

for the merged firm and

$$q_2^{BS}(q_1, q_2) = \frac{(a - c) - b(q_0 + q_1)}{2}$$

for firm 2. By solving this for Cournot-Nash solutions, we get

$$q_0^{BS}(q_2) = q_1^{BS}(q_2) = \frac{4(a - \underline{c}) - b^2(a - c) + 2b(c - \underline{c})}{(2 + b)(4 + 2b - b^2)}$$

and

$$q_2^{BS}(q_1, q_2) = \frac{(2 + b) \cdot (a - c) - b(a - \underline{c})}{(4 + 2b - b^2)}.$$

2.3.2 (2) Brand Integration.

Now let us turn to the case of (2) brand integration. Here two firms (each having one brand line) are competing. Profit for the merged firm $\{01\}$ is given by

$$\pi_{\{01\}}^{BI} = [p_{\{01\}} - \underline{c}] \, q_{\{01\}}$$

while the profit for the domestic firm 2 is given by

$$\pi_2^{BI} = [p_2 - c] \, q_2.$$

The solutions to the profit maximizing problem will be given by

$$q_{\{01\}}^{BI} = \frac{2(a - \underline{c}) - b(a - c)}{4 - b^2}$$

for the the merged firm $\{01\}$ and

$$q_2^{BI} = \frac{2(a - c) - b(a - \underline{c})}{4 - b^2}$$

for firm 2. Because of the assumption $c > \underline{c} \geq 0$, it is easy to show that $q_{\{01\}}^{BI} > q_2^{BI}$.

2.3.3 The Optimal Brand Strategy after Cross-Border Merger

Suppose the owner 0 have decided to merge with one firm in S. After the cross-border merger has occurred, which brand strategy is optimal for the merged firm? In order to see this, we look at the following condition.

$$\pi_{\{01\}}^{BI} \geq \pi_{\{01\}}^{BS} = \pi_0^{BS} + \pi_1^{BS}$$

This condition can be rewritten as

$$\left(\frac{2(a - \underline{c}) - b(a - c)}{4 - b^2} \right)^2 - 2 \left(\frac{4(a - \underline{c}) - b^2(a - c) + 2b(c - \underline{c})}{(2 + b)(4 + 2b - b^2)} \right)^2 \geq 0$$

which can be reduced to

$$\frac{(2a - 2\underline{c} - ab + bc)^2 \left(4b^3 - 12b^2 - 16b + b^4 + 16 \right)}{(b^2 - 2b - 4)^2 (b - 2)^2 (b + 2)^2} \leq 0$$

and it is easy to show that this condition is equivalent to the following inequality

$$4b^3 - 12b^2 - 16b + b^4 + 16 \leq 0$$

since square of polynomials are non-negative. Because the range of the parameter b (an inverse measure of the degree of product differentiation) is limited to $b \in [0, 1]$, we can find the critical value $b^* = 0.72082...$ as one of the solutions to the equation: $4b^3 - 12b^2 - 16b + b^4 + 16 = 0$. Thus, we can summarize the result.

Proposition 3 *When $b \geq b^* = 0.72082...$, then $\pi_{\{01\}}^{BI} \geq \pi_{\{01\}}^{BS}$. When $b < b^*$, then $\pi_{\{01\}}^{BI} < \pi_{\{01\}}^{BS}$.*

This means that when the parameter value is close to unity, brand integration is preferred since product substitutability is high. When the parameter value is closer to zero, the degree of product differentiation is strong, hence, owning two separate brand can be beneficial because the demand for one brand does not eat away the demand for the other brand.

3 Conclusion

The paper presented a model of cross-border mergers with reference to branding strategies of the merged firm. The model utilized the differentiated product Cournot model of oligopoly together with the framework provided by Horn and Persson (2001). Depending on the parameter values, especially the size of degree of differentiation, the optimal branding strategy of the merged firm changes.

I find that, for certain parameter values, brand integration is preferred to brand separation. In particular, when the parameter value for b is close to unity, brand integration is preferred since product substitutability is high. When the parameter value is closer to zero, the degree of product differentiation is strong,

hence, owning two separate brand can be beneficial because the demand for one brand does not eat away the demand for the other brand.

Future research can include the specification of moral hazard issues between the firm owner and the brand manager.

Acknowledgments

References

Farrell, Joseph and Carl Shapiro, "Horizontal Mergers: An Equilibrium Analysis," *American Economic Review*, March 1990, *80* (1), 107–126.

Horn, Henrik and Lars Persson, "The equilibrium ownership of an international oligopoly," *Journal of International Economics*, April 2001, *53* (2), 307–333.

Lommerud, Kjell Erik, Odd Rune Straume, and Lars Sorgard, "National versus International Mergers in Unionized Oligopoly," *Rand Journal of Economics*, spring 2006, *37* (1), 212–233.

Long, Ngo Van and Neil Vousden, "The Effects of Trade Liberalization on Cost-Reducing Horizontal Mergers," *Review of International Economics*, June 1995, *3* (2), 141–155.

Navaretti, Giorgio Barba and Anthony J. Venables, *Multinational Firms in the World Economy*, Princeton and Oxford: Princeton University Press, 2004.

Neary, J. Peter, "Cross-Border Mergers as Instruments of Comparative Advantage," *Review of Economic Studies*, October 2007, *74* (4), 1229–1257.

Qiu, Larry D. and Wen Zhou, "International Mergers: Incentives and Welfare," *Journal of International Economics*, January 2006, *68* (1), 38–58.

Salant, Stephen W, Sheldon Switzer, and Robert J Reynolds, "Losses from Horizontal Merger: The Effects of an Exogenous Change in Industry Structure on Cournot-Nash Equilibrium," *Quarterly Journal of Economics*, May 1983, *98* (2), 185–99.