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Country-of-Origin and Brand Image in Global Outsourcing Adjustment

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Abstract

A global firm may need to adjust its outsourced functions when it competes in the global market place. The outsourcing adjustment will product two effects, brands image effect and the country of origin effect. The paper considers a setting of two global firms, where each has a manufacturing facility in one of the two developing countries but sell their differentiated products in a developed country. The product differentiation is solely based on differences in brand image (BI), country of origin (COO) and their interaction. We demonstrate how firms make location choices in equilibrium as driven by these effects and their inner working relations. We then look at the optimal behaviors of the firms to consider moving, when they receive outside shocks to the demand structure. We show that a firm's moving decision is not only driven by the COO sensitivity to its own product by the COO sensitivity to its rival's product as well.

Our location choice model based on COO and BI considerations also has strong policy implications for host countries, particularly developing countries which are often times the receiving end of FDI. From the firm's perspective, the important factors driving the decision to move are the country's COO value and consumers' sensitivity towards COO. In that regard, it is in the host government's interest to maintain and strive for a higher COO value. This is because an adverse incident coming from one exporter or an entity catering to the outsourcing market that tarnishes the COO image tends to have a contagious effect that spreads to other industries.

JEL Classifications: F23, M31

Keywords: brand image; country of origin; global outsourcing; location adjustment

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1. Introduction

The trend of globalization in the last few years has provided multinational firms with an unprecedented number of choices with respect to manufacturing locations with cost advantages, such as cheap labor, low taxes and favorable investment environments. Developing countries, particularly China, India, Mexico, Philippines, Vietnam, and a few Caribbean countries are usually the top choices.

Many times, a global firm may need to adjust its outsourced functions when it competes in the global market place. The outsourcing adjustment will product two effects, brands image effect and the country of origin effect. A global brand may have a single nameplate identity. However, its value to consumers is not always uniform in the target market, when the same brand product is produced in different countries. Empirical evidences have shown clearly that not all countries are created equal even under the one brand roof. Generally, consumers maintain negative images and stereotypes for the products manufactured in developing countries (Bilkey & Nes, 1982; Wang & Lamb, 1983). Some time, the magnitude of the country-of-origin (COO thereafter) effect can be even greater than that of the brand image (BI thereafter) itself (Tse & Gorn, 1993).

Location choices by multinational companies have been extensively studied by trade economists (Helpman, 1984; Helpman & Krugman, 1985). Early studies have focused on the choice between exporting and FDI (Brainard, 1997; Head & Ries, 2003), substitution between foreign production and exports (Blonigen, 2001). Several researchers later investigated factors affecting location decisions. Markusen (1984) investigated multinational, multi-plant economies and gains from trade. Devereux and Griffith (1998) looked at the impact of taxation. Basile, Castellani, and Zanfei (2008) studied the issue of cohesion policy. Pantulu and Poon (2003) investigated the relationship between foreign direct investment and international trade by using the evidence from the US and Japan. Türkcan (2007) studied the outward foreign direct investment and intermediate goods exports by using the evidence from the USA. All above studies have not answered how the effect of country of origin (COO) and its interaction with brand image (BI) affect choices of manufacturing locations and it is our attempt in this paper to fill this gap. We develop a location choice model under Bertrand type of monopolistic competition with differentiated products to investigate policy implications for the host country.

COO in consumers' purchase decisions has been extensively studied in the marketing literature. Parameswaran and Pishandori (1994) defined COO as a multidimensional construct of the general or product-specific country image in the eyes of the general public. Martin and Eroglu (1993) further refined this concept as "the total of all descriptive, inferential, and informational belief about a particular country." Liefeld (1993) has used meta-analysis to find that the COO image influences consumer's perceptions of quality, evaluation of product risks, and likelihood to make a purchase. In general, consumer's image for one country depends on that particular country's level of economic development (Kaynak, Kucukemiroglu, & Hyder, 2000; Papadopoulos, Heslop, & Bamossy, 1990), and thus COO can serve as a product quality indicator (Anholt, 2000; Baughn & Yaprak, 1993).

Consumers also hold different values for the product with the same brand name but made in different countries. Consumers in developed countries tend to have less faith in the abilities of developing countries to produce high quality products. On the other hand, consumers in developing countries may also hold a doubtful attitude towards a well-known brand product (e.g. Gucci) but made in a developing country (Hamzaoui & Merunka, 2006). Another example studied in the marketing literature concerns automobiles, where it is found that consumers are less attracted to Honda and Mazda cars produced in South Korea, Mexico or the Philippines than those produced in Japan (Johansson & Nebenzahl, 1986). In fact, in the case of the automobile industry the effect of COO has an even stronger influence on consumers' evaluation of product quality compared to the BI effect (Tse & Gorn, 1993).

COO image appears to be an important issue, as it tends to have a contagious effect over the entire industry. When a scandal of one manufacturing facility in a country causes a brand crisis for one company, consumers are likely to boycott all the company's products originating from that country. Furthermore, consumers may also reconstruct the brand schemas for all the brands pertaining to other companies in the same category, and thus the impact will spread over to the competitors' brands as well. For example, when Mattel announced recalls of over two million pieces of toy originating from China in 2007 due to lead paint, not only most of its toys originating from China suffered sales loss, its largest competitor Hasbro also suffered sales loss, as both have substantial outsourcing presences in China.

The host country's government may also be concerned about the COO issue, as the contagious effect may spill over well beyond the affected industry, when it tarnishes the host country's overall image causing a permanent detrimental effect on its exporters at large. This is the reason why some developing countries have introduced strict quality regulations with respect to all of its exports. For example, India enacted a comprehensive law in 1963 to ensure an appropriate level of quality for exports. In 2009, the Chinese government launched a global advertisement campaign to promote "Made in China" as a brand to boost its international image, which stresses the way Chinese companies cooperate with foreign multinationals in producing high-quality goods.

The host country's government may be concerned about the COO issue for yet another reason as it relates to local economic development. If one country's COO image has a stigma and is overly damaged, it certainly ruins the country's appeal as an outsourcing destination, affecting adversely job growth and economic development opportunities. Multinational firms already operating in that country may also find it compelled to leave as we will show in this paper, further damaging the local economy. Therefore, the host country's government may have incentives to enforce a minimum level of product quality and safety standards, which may apply to domestic companies as well, and thus help lifting the overall quality and safety standards for the entire industry.

Our model provides an analytical framework that focuses on the competitive structure of BI, COO image, and their joint effects on the firms' strategic choice regarding manufacturing locations. The paper also contributes to another strand of trade economics literature that looks at monopolistic competition as a driving force of international trade (Bernhofen, 2001; Clarke & Collie, 2008). While these models focus on explaining gains from trade flows with product differentiation, we focus on explaining FDI flows as driven by COO considerations as an alternative form of product differentiation. Our technical treatment of the utility functions in the model is also similar in a stylized monopolistic competition setting, which of course can all be traced back to Vives (1985).

The paper considers a setting of two global firms, where each has a manufacturing facility in one of the two developing countries but sell their differentiated products in a developed country. The product differentiation is solely based on differences in BI, COO and their interaction. We demonstrate how firms make location choices in equilibrium as driven by these effects and their inner working relations. We then look at the optimal behaviors of the firms to consider moving, when they receive outside shocks to the demand structure. We show that a firm's moving decision is not only driven by the COO sensitivity to its own product by the COO sensitivity to its rival's product as well.

Our location choice model based on COO and BI considerations also has strong policy implications for host countries, particularly developing countries which are often times the receiving end of FDI. From the firm's perspective, the important factors driving the decision to move are the country's COO value and consumers' sensitivity towards COO. In that regard, it is in the host government's interest to maintain and strive for a higher COO value. This is because an adverse incident coming from one exporter or an entity catering to the outsourcing market that tarnishes the COO image tends to have a contagious effect that spreads to other industries.

The rest of the paper is organized as follows. Section 2 first establishes a base model where equilibrium location choices are analyzed. We then consider firms' moving decisions with a switch cost. Section 3 provides concluding remarks and discusses policy implications.

2. The Model

2.1. The Base Model

In this section, we present an analytical framework to investigate the impact of BI and COO on a market characterized by monopolistic competition between two global firms. Suppose each of the two firms, indexed as 1 and 2, chooses one product to market. Consumers have nonnegative valuations of the two products based solely on two characteristics, *x* and *y*, representing BI and COO respectively. Each firm's product is defined as a point (x_i, y_i), where $x_i \in [\underline{x}, \overline{x}]$ and $y_i \in [\underline{y}, \overline{y}]$. Consumers are assumed to prefer firm 1's brand more than firm 2's. That is, $x_1 > x_2$. Consumers also hold different values for the product made in different countries. If firm *i* chooses to produce the product in the country that commands the highest respect from consumers, then $y_i = \overline{y}$. On the other hand $y_i = \underline{y}$, if firm *i* chooses to produce the product in a country with the lowest value of COO image.

Consumer reservation price, *R*, for a product in this market may vary but are high enough to ensure that all consumers will buy. In addition, each consumer is restricted to purchasing only one unit ─ either from firm 1 or firm 2. A typical consumer's valuation equation can be described by a standard individual level vector model in which the net utility is expressed in dollar units as:

$$U = R + \alpha x_i + \beta_i y_i + \gamma_i x_i y_i - p_i, \quad \text{for } i = 1, 2, \tag{2.1.1}$$

Where $\alpha > 0$, $\beta_i > 0$. The parameter α represents consumers' preference with respect to the BI of firm *i*, and is assumed to be uniformly distributed over $[\underline{\alpha}, \overline{\alpha}]$. Coefficient β_i is consumers' sensitivity to firm *i*'s COO. Coefficient γ_i, which can be positive or negative, addresses the interaction effect of BI and COO. A positive γ_i implies that customers are willing to pay more for a better brand and higher value of COO; and vice versa. Finally, p_i is the price of firm *i*'s product.

A customer who is indifferent between firm 1 and firm 2's product, if, $R + \alpha x_1 + \beta_1 y_1 + \gamma_1 x_1 y_1 - p_1 = R + \alpha x_2 + \beta_2 y_2 + \gamma_2 x_2 y_2 - p_2$, Then the demand function of firm *i* is given by:

$$D_1(p_1, p_2) = 1 - \frac{p_1 - p_2 - [(\gamma_1 x_1 + \beta_1) y_1 - (\gamma_2 x_2 + \beta_2) y_2]}{x_1 - x_2}$$

$$D_2(p_1, p_2) = \frac{p_1 - p_2 - [(\gamma_1 x_1 + \beta_1) y_1 - (\gamma_2 x_2 + \beta_2) y_2]}{x_1 - x_2} \tag{2.1.2}$$

The unit product cost *C*(*y*) is assumed to depend on the COO factor. In general, the better image of the country where the product is manufactured, the more expensive the manufacturing cost. Thus we assume *C*(*y*) is increasing and convex in *y*. This is reasonable considering that the cost of manufacturing in Japan could be much higher than in Canada, whereas the costs in Vietnam and China do not differ much. Without loss of generality, we assume that the cost function takes the quadratic form: $C(y) = \frac{1}{2} k y^2$, where $k > 0$.

The structure of the game is as follows. First each firm will make a location choice simultaneously followed by a Bertrand competition where the price is the choice variable. In this type of setting, we solve the game backwards to derive equilibrium prices first. Firm *i*'s problem is then to maximize $\pi_i(p_1, p_2) = (p_i - C(y_i)) D_i(p_1, p_2)$. Solving for the equilibrium prices and letting $\Delta x = x_1 - x_2$, we obtain:

$$p_1^* = \frac{2\Delta x + [(\gamma_1 x_1 + \beta_1) y_1 - (\gamma_2 x_2 + \beta_2) y_2] + 2C(y_1) + C(y_2)}{3}$$
$$p_2^* = \frac{\Delta x - [(\gamma_1 x_1 + \beta_1) y_1 - (\gamma_2 x_2 + \beta_2) y_2] + C(y_1) + 2C(y_2)}{3} \tag{2.1.3}$$

Then the price dispersion is given by:

$$\Delta p^* = p_1^* - p_2^* = \frac{1}{3}\left[\Delta x + 2[(\gamma_1 x_1 + \beta_1) y_1 - (\gamma_2 x_2 + \beta_2) y_2] + C(y_1) - C(y_2)\right] \tag{2.1.4}$$

Note that $p_1^* - C(y_1) = \frac{1}{3}\left[2\Delta x - (\beta_1 y_1 - \beta_2 y_2) - C(y_1) + C(y_2)\right] > 0$, and we then have:

$$\pi_1 = \frac{1}{9\Delta x}\left[2\Delta x + [(\gamma_1 x_1 + \beta_1) y_1 - (\gamma_2 x_2 + \beta_2) y_2] - C(y_1) + C(y_2)\right]^2$$
$$\pi_2 = \frac{1}{9\Delta x}\left[\Delta x - [(\gamma_1 x_1 + \beta_1) y_1 - (\gamma_2 x_2 + \beta_2) y_2] + C(y_1) - C(y_2)\right]^2 \tag{2.1.5}$$

Taking derivative of π_1 with respect to y_1 yields

$$\frac{\partial \pi_1}{\partial y_1} = \frac{2\left[2\Delta x + [(\gamma_1 x_1 + \beta_1) y_1 - (\gamma_2 x_2 + \beta_2) y_2] - C(y_1) + C(y_2)\right]}{9\Delta x}\left[\gamma_1 x_1 + \beta_1 - k y_1\right],$$

which has the same sign as $\left[\gamma_1 x_1 + \beta_1 - k y_1\right]$. It is clear that $\left[\gamma_1 x_1 + \beta_1 - k y_1\right]$ is strictly decreasing in y_1. Then, as $y_1 < (\gamma_1 x_1 + \beta_1)/k$, π_1 is strictly increasing in y_1. As $y_1 > (\gamma_1 x_1 + \beta_1)/k$, π_1 is strictly decreasing in y_1. The optimal COO then must satisfy the condition that $y_1^* = (\gamma_1 x_1 + \beta_1)/k$. Similarly, we can show that $y_2^* = (\gamma_2 x_2 + \beta_2)/k$. This result leads to the following proposition:

Proposition 1: The equilibrium pricing decisions are:

$$p_1^* = \frac{2\Delta x + (\gamma_1 x_1 + \beta_1)^2/(2k) - (\gamma_2 x_2 + \beta_2)^2/(8k)}{3}$$
$$p_2^* = \frac{\Delta x + (\gamma_2 x_2 + \beta_2)^2/(2k) - (\gamma_1 x_1 + \beta_1)^2/(8k)}{3} \tag{2.1.6}$$

For firm *i, i=1,2*, the optimal COO is $y_i^* = (\gamma_i x_i + \beta_i)/k$, and it is increasing in β_i. Moreover, if $\gamma_i > 0$, y_i^* is increasing in x_i; and if $\gamma_i < 0$, y_i^* is decreasing in x_i; and if $\gamma_i = 0$, y_i^* is independent of x_i. The equilibrium profit functions are:

$$\pi_1 = \frac{1}{9\Delta x}\left[2\Delta x + (\gamma_1 x_1 + \beta_1)^2/(2k) - (\gamma_2 x_2 + \beta_2)^2/(2k)\right]^2,$$
$$\pi_2 = \frac{1}{9\Delta x}\left[\Delta x - (\gamma_1 x_1 + \beta_1)^2/(2k) + (\gamma_2 x_2 + \beta_2)^2/(2k)\right]^2.$$

From this proposition, it is clear that the equilibrium optimal outsourcing decision with respect to location is associated with consumer's sensitivity to COO and the product's BI. If $\gamma_i > 0$, the consumer's sensitivity to COO increases as the BI increases. This implies that the better the BI, the more consumers care about the COO. Thus the optimal COO image will increase as BI increases. The larger the γ_i, the more significant the impact of BI on COO decisions. These effects are described in Figure 1 below. On the contrary, if $\gamma_i < 0$, the consumer's sensitivity to COO decreases as the BI increases. This implies that BI plays a substitution role to COO. The larger the γ_i, the less significant of the impact of BI on the COO decision. These effects are described in Figure 2 below.

Proposition 1 also implies that the optimal COO decision by firm i depends on $\gamma_i x_i + \beta_i$. We use $\omega_i = \gamma_i x_i + \beta_i$ to index consumer's sensitivity to the product of firm i. Then the possible change of COO location for firm i depends on the change of ω_i. Notice that the equilibrium price and profit functions for firm i are also increasing in this index and decreasing in its rival's index.

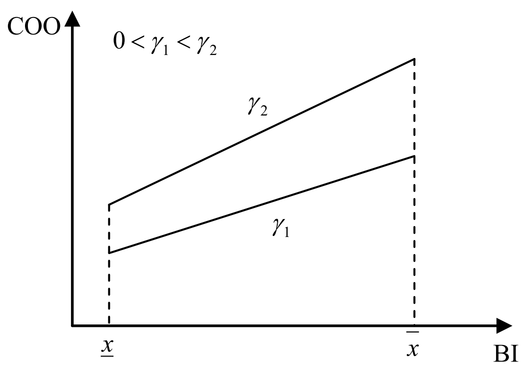

Figure 1: COO versus BI

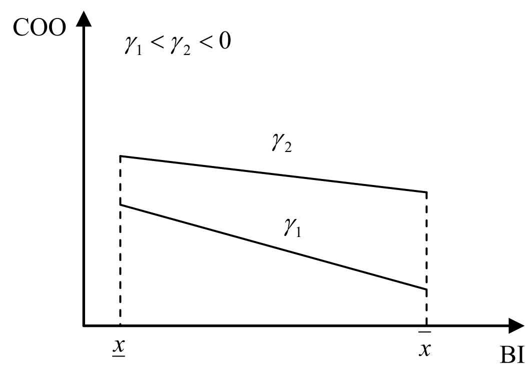

Figure 2: COO versus BI

2.2. The Model with Switching Cost

In practice, ω_i for a firm may change from time to time, but due to the large switching cost, once a firm has selected a production location, it is difficult to change frequently. To address the strategic behavior of the firm, we need to introduce a fixed switching cost into the model. For simplicity, we assume that the switching cost is fixed from any location to another location (e.g., moving the plant from China to Mexico and to US have the same switching cost). Specifically, let F be the switching cost of firm i. Then, given the rival's location (COO) choice and the current location profile (y_1^0, y_2^0), firm 1's optimal location decision is

$$\max_{y_1}\left\{\frac{1}{9\Delta x}\left[2\Delta x + [(\gamma_1 x_1 + \beta_1)y_1 - (\gamma_2 x_2 + \beta_2)y_2] - C(y_1) + C(y_2)\right]^2 - 1_{y \neq y_1^0} F\right\}$$
$$= \max\left\{\pi_1(y_1^0, y_2), \pi_1(y_1^*(y_2), y_2) - F\right\}$$

Similarly, firm 2's problem is:

$$\max\left\{\pi_2(y_2^0, y_1), \pi_2(y_2^*(y_1), y_1) - F_1\right\}$$

The equilibrium can be any one of the following four possibilities with the associated profit functions shown:

Possibility I: Both firms move

$$\pi_1^* = \frac{1}{9\Delta x}\left[2\Delta x + (\gamma_1 x_1 + \beta_1)^2/(2k) - (\gamma_2 x_2 + \beta_2)^2/(2k)\right]^2,$$

$$\pi_2^* = \frac{1}{9\Delta x}\left[\Delta x - (\gamma_1 x_1 + \beta_1)^2/(2k) + (\gamma_2 x_2 + \beta_2)^2/(2k)\right]^2. \quad (2.2.1)$$

Possibility II: Only firm 1 moves

$$\pi_1 = \frac{1}{9\Delta x}\left[2\Delta x + (\gamma_1 x_1 + \beta_1)^2/(2k) - (\gamma_2 x_2 + \beta_2)y_2^0 + C(y_2^0)\right]^2$$
$$\pi_2 = \frac{1}{9\Delta x}\left[\Delta x - (\gamma_1 x_1 + \beta_1)^2/(2k) - (\gamma_2 x_2 + \beta_2)y_2^0 - C(y_2^0)\right]^2. \quad (2.2.2)$$

Possibility III: Only firm 2 moves

$$\pi_1 = \frac{1}{9\Delta x}\left[2\Delta x + (\gamma_1 x_1 + \beta_1)^2/(2k) - (\gamma_2 x_2 + \beta_2)y_2^0 + C(y_2^0)\right]^2$$
$$\pi_2 = \frac{1}{9\Delta x}\left[\Delta x - (\gamma_1 x_1 + \beta_1)^2/(2k) + (\gamma_2 x_2 + \beta_2)y_2^0 - C(y_2^0)\right]^2. \quad (2.2.3)$$

Possibility IV: No firm moves

$$\pi_1 = \frac{1}{9\Delta x}\left[2\Delta x + [(\gamma_1 x_1 + \beta_1)y_1^0 - (\gamma_2 x_2 + \beta_2)y_2^{\,0}] - C(y_1^{\,0}) + C(y_2^{\,0})\right]^2$$
$$\pi_2 = \frac{1}{9\Delta x}\left[\Delta x - [(\gamma_1 x_1 + \beta_1)y_1^{\,0} - (\gamma_2 x_2 + \beta_2)y_2^{\,0}] + C(y_1^{\,0}) - C(y_2^{\,0})\right]^2. \quad (2.2.4)$$

Suppose we are in a stable equilibrium where both firms stay in their respective country. For any COO profile (y_1, y_2), the equilibrium profit functions would correspond to (2.2.4) under Possibility IV, where we merely replace (y_1^0, y_2^0) with the appropriate notation, (y_1, y_2). We then seek conditions under which this equilibrium might or might not change.

$$\pi_1 = \frac{1}{9\Delta x}\left[2\Delta x + [(\gamma_1 x_1 + \beta_1)y_1 - (\gamma_2 x_2 + \beta_2)y_2] - C(y_1) + C(y_2)\right]^2$$
$$\pi_2 = \frac{1}{9\Delta x}\left[\Delta x - [(\gamma_1 x_1 + \beta_1)y_1 - (\gamma_2 x_2 + \beta_2)y_2] + C(y_1) - C(y_2)\right]^2. \quad (2.2.4)'$$

Taking derivative of π_1 with respect to y_2 yields:

$$\frac{\partial \pi_1}{\partial y_2} = \frac{2\left[2\Delta x + [(\gamma_1 x_1 + \beta_1)y_1 - (\gamma_2 x_2 + \beta_2)y_2] - C(y_1) + C(y_2)\right]}{9\Delta x}\left[-\gamma_2 x_2 - \beta_2 + k y_2\right],$$

which implies that π_1 is decreasing in y_2 if $y_2 < \gamma_2 x_2 + \beta_2$; otherwise π_1 is increasing in y_2. Similarly, π_2 is decreasing in y_1 if $y_1 < \gamma_1 x_1 + \beta_1$; otherwise π_2 is increasing in y_1. Then we have four cases to consider:

(1) $y_i < [\gamma_i x_i + \beta_i]/k, i = 1,2.$

(2) $y_i > [\gamma_i x_i + \beta_i]/k, i = 1,2.$

(3) $y_1 < [\gamma_1 x_1 + \beta_1]/k, y_2 > [\gamma_2 x_2 + \beta_2]/k$

(4) $y_1 > [\gamma_1 x_1 + \beta_1]/k, y_2 < [\gamma_2 x_2 + \beta_2]/k$.

In the following, we only discuss case (1). The other cases can be analyzed similarly. In case (1) we have $y_i < [\gamma_i x_i + \beta_i]/k, i = 1,2.$ For any y_2, define the threshold:

$$\bar{y}_1(y_2) = \max\{y_1 : \pi_1(y_1, y_2) \le \pi_1^* - F, y_1 \in [\underline{y}_1, \gamma_1 x_1 + \beta_1]\}.$$

Since $\pi_1(y_1, y_2)$ is increasing in y_1 and decreasing in y_2, the threshold must be well-defined. That is, for all $y_1 \in [\underline{y}_1, \bar{y}_1(y_2)]$, $\pi_1(y_1, y_2) \le \pi_1^* - F$, which implies that firm 1 will switch to the optimal COO if firm 2's COO is y_2; for all $y_1 \in [\bar{y}_1(y_2), \gamma_1 x_1 + \beta_1]$, firm 1 will retain the original COO. Similarly we can define the threshold $\bar{y}_2(y_1)$ for firm 2. If the curves $\bar{y}_1(y_2)$ and $\bar{y}_2(y_1)$ intersect with each other, then the region $[\underline{y}_1, \gamma_1 x_1 + \beta_1] \times [\underline{y}_2, \gamma_2 x_2 + \beta_2]$ can be divided into four regions as in the following figure:

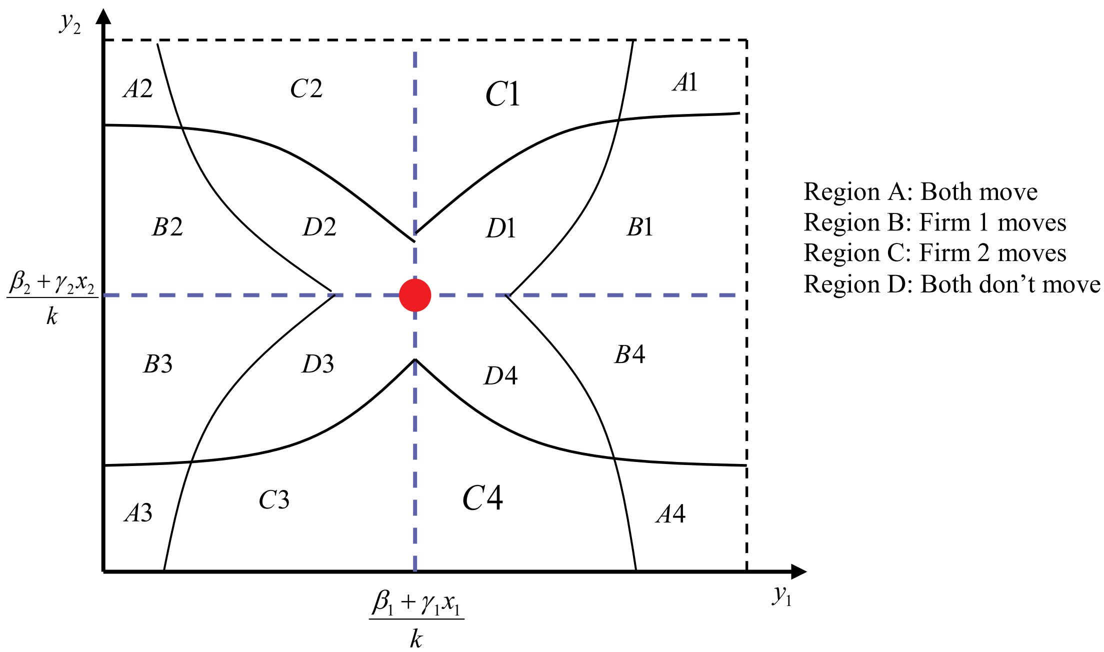

Figure 3. Equilibrium locations

In region A3, both firms will switch to (y_1^*, y_2^*). In region B3, only firm 1 will switch. In region C3, only firm 2 switches, and in region D3, both firms don't switch. The result implies that: (1) in region A3, both firms' COO sensitivities increase significantly, thus both of them will move. (2) in region B3 or C3, only one firm's COO sensitivity has significantly changed, and thus only one firm will move; (3) in regime D3, the changes of both firms' COO sensitivities are so small that they do not have incentives to move. The increasing property of the thresholds implies that the larger the rival's COO sensitivity, the more the firm is willing to change its location.

A similar type of analysis can be performed for the other three cases, and the equilibrium results are shown in Figure 3. For example in case (2) where we have $y_i > [\gamma_i x_i + \beta_i]/k, i = 1,2.$, both firms will move so as to increase COO sensitivity in region A1. Regions B1 and C1 represent cases where only one firm will move. Region D1 means none of the two firms are willing to move.

Figure 3 reveals several interesting observations. First, a firm's willingness to remain in its status quo location depends not only on the market's COO sensitivity to its product, but also depends on the COO sensitivity to its rival's. Second, the equilibrium's stability and robustness appears to be in favor of the scenario where both firms' COO sensitivity are comparable and in the middle range. A large disparity of COO values between the firms makes it easily subject to intensions of moving. Extreme values of COO sensitivity also make both firms more likely to move.

As can be seen, the important factors driving the decision to move are the country's COO value and consumers' sensitivity towards COO. In that regard, it is in the host government's interest to maintain or strive for a higher COO value. This is because an adverse incident coming from one exporter or an entity catering to the outsourcing market that tarnishes the COO image tends to have a contagious effect that spreads to other industries. In that case it would be in the host government's interest to maintain a certain level of product quality and safety standards.

3. Discussion and Concluding Remarks

This paper looks at the effect of country-of-origin on multinational firms' decision of manufacturing location, and its implications to policy makers. We provide an analytical framework to analyze the competitive structure of brand image, country image, and their joint effects for firms having multiple strategic choices in manufacturing locations. Our starting point is that a global brand may have a single name, but its value may be different to consumers if the manufacturing of the products under that brand are actually produced in different countries. We build a model to show the equilibrium of location decisions and how the equilibrium can be perturbed by changes in consumers' COO sensitivity. We postulate that an external shock to this sensitivity, such as a product quality scandal or a recall event, can drastically change the parameters driving this sensitivity and compels the firm to consider other locations. This decision may be driven not only by the COO sensitivity to its own product by to the rival's product as well.

The inclination to changing manufacturing location driven by COO concerns is particularly vulnerable to outsourcing situations where there is a clear organizational dichotomy between separate operations in a host country and a home country. When a firm has a divided responsibility with the host country which manufactures the product, the failed product may cause a crisis for both parties. In this type of situation, the media tends to be more aggressive to report such cases and usually the host country may be in a series of negative coverage, severely damaging the host country's COO. Under such circumstances, consumers are very sensitive towards a firm's negative publicity because they believe that the information in publicity in general is more credible than that of advertising. Furthermore, the negative publicity associated with a particular COO can easily spill over to other industries that jointly cause a significant decline in the COO value which ultimately hurts the country's overall competitiveness in attractive foreign investment.

So the policy implication is clearly pointing towards elevating the COO value, maintaining an acceptable level of product quality and safety standards for the exports sector, and mitigating negative publicities of product quality scandals as early as possible, should such events happen. A prolonged and frequent negative publicity not only hurts the COO value, but also raised consumers' sensitivity towards the COO value, further underscoring and aggravating the adverse impact of COO in the BI perception. Ultimately the accumulated impact will drive the firm to locate elsewhere sooner or later.

Our analytical framework may also serve as a foundation for a studying contingency plans when a global firm experiences a brand crisis. Our model allows executives to look beyond the consumer's reaction in a narrow-minded manner, and understand the competitive structure of the brand, the natures of different markets, and the consumers' demand for quality in these various markets.

Future research on this topic points to several directions. First, it might be useful to have an empirical model that systematically measures consumers' COO, BI and their joint interactions for different products. In other words, estimates of parameter values of our model might be important to see what industries and sectors are more susceptible to relocation. Second, our treatment of a firm in this model is quite simplistic, as we treat the firm as a single entity operating in two locations, the host country and the home market in a coherent manner. However, real outsourcing tends to entail a more complicated relation between the two sides, and there might be strategic actions on both sides that affect the relocation decision. Finally, we only discuss the welfare implications to the host country in an informal manner, and theoretically one can incorporate the government into the model as a third-party player as a regulator that enforces certain quality standards.

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