Trade Liberalization, Consumer-Friendly and Corporate Social Responsibility

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Abstract

Not competitive totally market in an international duopolistic market, we prove that in case of 1. When both foreign and domestic company care more the consumer-oriented CSR initiatives, it will decrease the tariff rate if the weight is high initially; 2. When foreign company cares more the consumer-oriented CSR initiatives, it will decrease the tariff rate if the weight is high initially; however, 3. When only domestic company cares the consumer-oriented CSR, it will increase the tariff rate against the foreign company. In an international duopolistic market, the consumer-oriented CSR initiative of both companies is the dominant strategy if the CSR cost is sufficiently low.

Keywords: Tariff protection, Corporate Social Responsibility, Rent-shifting Effect, Social Welfare

1. Introduction

In the December 2006 issue of Harvard Business Review, Porter and Kramer present a systematic analysis linking competitive advantage to corporate social responsibility (CSR), and explain how a company can use competitive strategy to plumb the opportunity of corporate social responsibility--and in the process enhance its own long-term competitiveness while producing much more social good than traditional CSR does. The authors also point out two key reasons why many companies which have launched CSR efforts find these efforts not as much productive as they could be. One reason is that these companies simply consider CSR as "a cost, a constraint, or a charitable deed". The other reason is that these companies do not incorporate CSR efforts as parts of their core business strategies. The competing companies are "altruistic" or consumer-friendly in that consumer preferences enter directly into the objective functions of their business operations. In view of these observations, we present an economic approach to analyze the potential efficacy of CSR as a management strategy when markets are characterized by imperfect competition in international trade framework. In the analysis, we argue that the success of competing companies in international markets and the maximization of consumer and social welfare are not a zero-sum game under imperfect competition. We analyze the behavior of companies pursuing not only their own profits, but also the benefits of their consumers. That is, we wish to know how the for-profit companies make their production decisions when they have the truly altruistic motivation of pro-consumer behavior.

Many studies have indicated that CSR is increasingly becoming a significant part of modern companies, but relatively little research has been done to analyze its economic effects within the framework of international trade and competition. This notion of the consumer-oriented CSR commitment is in parallel with that of consumer-friendly initiative. Wang et al., (2012) analyzes how tariffs and welfare of an importing country are affected by consumer-friendly foreign exporters. Among the interesting findings of their study are as follows. Foreign exporters that care about their profits and consumer surplus are willing to increase their exports and lower their prices, as compare to the case when they are purely profit-maximizing companies.

In response to the consumer-friendly initiatives of the foreign companies, the importing country's government lowers tariffs, causing a gain in profits for the companies. In equilibrium, the exporting companies' consumer-friendly initiative is able to generate a positive outcome since not only company profits are greater, both consumer surplus and social welfare of the importing country also increase. The authors stress that in equilibrium there is a Win-Win-Win solution in international trade. Chang et al., (2014) examine the welfare implications of corporate social responsibility (CSR) in international markets under imperfect competition. Based on a stylized model of an import-competing duopolistic market, they show the feasibility of moving toward tariff reduction when both domestic and foreign companies launch the CSR initiatives in that their payoffs include not only individual profits, but also the benefits of consumers. They find that if the foreign exporter unilaterally adopts the consumer-oriented CSR as a strategy, there is a rent-shifting effect because the foreign company's payoff increases whereas the domestic company's profit decreases. In response, the importing country government raises its tariff on the foreign product. If, instead, the domestic company adopts the CSR strategy unilaterally, the rent-shifting effect disappears and both the competing companies' payoffs increase. They identify the conditions under which the consumer-oriented CSR initiatives of the companies constitute the dominant strategy, leading to a win-win-win equilibrium at which the companies' payoffs, consumer surplus, and social welfare are at their maximum levels.

In this paper, we consider the import-competing market and explore the import tariff policy when competing companies are engaging in consumer-oriented CSR initiative. We show that in case of 1. When both foreign and domestic company care more the consumer-oriented CSR initiatives, it will decrease the tariff rate if the weight is high initially; 2. When foreign company cares more the consumer-oriented CSR initiatives, it will decrease the tariff rate if the weight is high initially; however, 3. When only domestic company cares the consumer-oriented CSR, it will increase the tariff rate against the foreign company. Our findings indicate that, other things being equal, a foreign exporter's CSR initiative has a negative effect on domestic profits. The economic intuition is based on the following two effects: a consumer-oriented CSR initiative creates the well-known "rent-shifting effect" and a new "consumer surplus effect". A foreign company's consumer-oriented CSR initiative makes it more aggressive in increasing the quantity of its export and creates a "rent-shifting effect" because foreign profit increases whereas domestic profit decreases. In addition, the "consumer surplus effect" due to trade creation will improve domestic social welfare. If the weight is low initially, the "rent-shifting effect" dominates the "consumer surplus effect". Under such circumstances, the domestic government will increase the tariff rate. However, if the weight is high initially, the "consumer surplus effect" dominates the "rent-shifting effect", the domestic government shall decrease the tariff rate. However, if only domestic company launches the CSR initiative and the weight is high initially, the rent-shifting effect coupled with the consumer surplus effect and the equilibrium outcome changes dramatically. Accordingly, the domestic government shall raise the import tariffs.

2. Models

Consider a domestic market for a homogeneous good produced by n domestic companies and m foreign companies. The linear demand function is specified as $p = a - Q$, The supply equation is given by

$$Q = \sum_{i=1}^{n} q_i + \sum_{j=1}^{m} q_j ,$$

where q_i and q_j denote, respectively, the output of domestic companies and foreign companies. All companies use an identical technology and have the increasing marginal cost function: $\frac{q_i^2}{2}$ and $\frac{q_j^2}{2}$, respectively.

The profits of domestic companies and foreign companies are given by:

$$\pi_i = (a - q_0 + \sum_{i=1}^{n} q_i - \sum_{j=1}^{m} q_j) q_i - \frac{q_i^2}{2} \qquad (1)$$

$$\pi_i = (a - q_0 + \sum_{i=1}^{n} q_i - \sum_{j=1}^{m} q_j - t) q_j - \frac{q_j^2}{2} \qquad (2)$$

Where t is the tariff rate? The social welfare is:

$$W = CS + \sum_{i=1}^{n} \pi_i + t\sum_{j=1}^{m} q_j \qquad (3)$$

Depending on whether the companies incorporate CSR into their production decisions, we have following payoffs (profit or utility):

$$O_i = (a - \sum_{i=1}^{n} q_i - \sum_{j=1}^{m} q_j)q_i - \frac{q_i^2}{2} + \alpha_i CS - K \qquad (4)$$

$$O_j = (a - \sum_{i=1}^{n} q_i - \sum_{j=1}^{m} q_j)q_j - \frac{q_j^2}{2} + \alpha_j CS - K \qquad (5)$$

Let α_i and α_j denote the weight of consumer-friendly initiative assigned to the profits in the decision-making process of company i and company j. The managers take CS into account if the owner spend K amount in CSR. We construct a two-stage game. In the first stage of the game, the domestic government decides the tariff. In the second stage, the companies engage in Cournot competition. The backward induction is used to derive the sub-game perfect Nash equilibrium (SPNE).

3. Tariff and Welfare Analysis

The outputs for the home companies and the foreign companies are obtained by partially differentiating Esq. (4) and (5) with respect to q_i and q_j, the first-order conditions are:

$$\frac{\partial \pi_i}{\partial q_i} = a - (n-1)q_i + mq_j(n\alpha_i - 1) + q_i(n^2\alpha_i - 3) = 0 \qquad (6)$$

$$\frac{\partial \pi_j}{\partial q_j} = a - t - (m-1)q_j + nq_i(m\alpha_j - 1) + q_j(m^2\alpha_j - 3) = 0 \qquad (7)$$

The equilibrium outputs are:

$$q_i^*(t) = \frac{2a + mt + mn(a-t)\alpha_i - am^2\alpha_j}{2(2+m+n) - 2n^2\alpha_i - 2m^2\alpha_j} \qquad (8)$$

$$q_j^*(t) = \frac{2a - (2+n)t - n^2(a-t)\alpha_i + amn\alpha_j}{2(2+m+n) - 2n^2\alpha_i - 2m^2\alpha_j} \qquad (9)$$

Next, we consider four cases of the companies with and without CSR initiative. For simplicity, we assume $m = n = 1$.

(1) NN, $\alpha_i = 0$ and $\alpha_j = 0$

$$t^{NN} = \frac{14a}{41}$$

$$\pi_i^{NN} = \frac{216a^2}{1681}$$

$$\pi_j^{NN} = \frac{75a^2}{3362}$$

$$CS^{NN} = \frac{289a^2}{3362}$$

$$W^{NN} = \frac{21a^2}{82}$$

(2) YY, $\alpha_i = \alpha$ and $\alpha_j = \alpha$

$$t^{YY} = \frac{2a(7 + \alpha(2\alpha - 7))}{41 + \alpha(9\alpha - 38)}$$

$$\pi_i^{YY} = \frac{a^2(4-\alpha)(3-\alpha)(36 + \alpha(-55 + 17\alpha))}{2(41 + \alpha(9\alpha - 38))^2} - K$$

$$\pi_j^{YY} = \frac{a^2(5-\alpha^2)(15 + \alpha(-34 + 11\alpha))}{2(41 + \alpha(9\alpha - 38))^2} - K$$

$$CS^{YY} = \frac{a^2(17 - 7\alpha)^2}{2(41 + \alpha(9\alpha - 38))^2}$$

$$W^{NN} = \frac{21a^2 + a^2(\alpha - 12)\alpha}{82 + 2\alpha(9\alpha - 38)}$$

Taking differentiation of t^{YY} with respect to α, we obtain:

$$\frac{\partial t^{YY}}{\partial \alpha} = -\frac{2a(21 + \alpha(13\alpha - 38))}{(41 + \alpha(9\alpha - 38))^2} < 0 \text{, if } \alpha > \frac{1}{13}(19 - 2\sqrt{22})$$

For symmetric CSR of the both company, we have following lemma.

Lemma1. The bilateral adoption of the CSR strategy by the both company makes them more aggressive on production decision. To protect the domestic company, the government decreases the tariff rate imposing on the foreign product if the weight of consumer-friendly initiative is relatively high. The economic intuition is based on the following two effects: a consumer-oriented CSR initiative creates the well-known "rent-shifting effect" and a new "consumer surplus effect". A foreign company's consumer-oriented CSR initiative makes it more aggressive in increasing the quantity of its export and creates a "rent-shifting effect" because foreign profit increases whereas domestic profit decreases. In addition, the "consumer surplus effect" due to trade creation will improve domestic social welfare. If the weight is low initially, the "rent-shifting effect" dominates the "consumer surplus effect". Under such circumstances, the domestic government will increase the tariff rate. However, if the weight is high initially, the "consumer surplus effect" dominates the "rent-shifting effect", the domestic government shall decrease the tariff rate.

(3) NY, $\alpha_i = 0$ and $\alpha_j = 0$

$$t^{NY} = \frac{a(-14 + \alpha(2\alpha - 1))}{-41 + 12\alpha}$$

$$\pi_i^{NY} = \frac{3a^2(12 - 5\alpha)^2}{2(41 - 12\alpha)^2}$$

$$\pi_j^{NY} = \frac{a^2(5 + 3\alpha)(15 + \alpha(-25 + 4\alpha))}{2(41 - 12\alpha)^2} - K$$

$$CS^{NY} = \frac{a^2(17 - 2\alpha)^2}{2(41 - 12\alpha)^2}$$

$$W^{NY} = \frac{a^2(21 + (-2 + \alpha))\alpha}{82 - 24\alpha}$$

Taking differentiation of t^{NY} with respect to α, we obtain:

$$\frac{\partial t^{NY}}{\partial \alpha} = \frac{1}{6}a(1 - \frac{427}{(41 - 12\alpha)^2}) < 0 \text{, if } \alpha > \frac{1}{12}(41 - \sqrt{427})$$

Lemma 2. The unilateral adoption of the CSR strategy by the foreign company makes it more aggressive on export decision. To protect the domestic company, the government decreases the tariff rate imposing on the foreign product if the weight of consumer-friendly initiative is relatively high. Highly weighting of CSR by the foreign company is benefit the consumer, the high tariff rate is not needed; the government will then lower the tariff to increase the output of the foreign company. A foreign company's consumer-oriented CSR initiative makes it more aggressive in increasing the quantity of its export, and create a new "consumer surplus effect".

(4) YN, $\alpha_i = \alpha$ and $\alpha_j = \alpha$

$$t^{YN} = \frac{a(14 + 5\alpha(\alpha - 3))}{41 + \alpha(5\alpha - 26)}$$

$$\pi_i^{YN} = \frac{2a^2(6-\alpha)(18 + 5(\alpha - 4)\alpha)}{(41 + \alpha(-26 + 5\alpha))^2} - K$$

$$\pi_j^{YN} = \frac{3a^2(5-3\alpha)^2}{2(41 + \alpha(-26 + 5\alpha))^2}$$

$$CS^{YN} = \frac{a^2(17 - 5\alpha)^2}{2(41 + \alpha(-26 + 5\alpha))^2}$$

$$W^{NY} = \frac{a^2(21 - 10\alpha)}{82 + 2\alpha(-26 + 5\alpha)}$$

Taking differentiation of t^{YN} with respect to α, we obtain:

$$\frac{\partial t^{YN}}{\partial \alpha} = \frac{\alpha(-251 + 5(54 - 11\alpha)\alpha)}{(41 + \alpha(-26 + 5\alpha))^2}) > 0 \text{ ,if } \alpha > \frac{1}{55}(135 - 2\sqrt{1105})$$

Lemma 3. The unilateral adoption of the CSR strategy by the domestic company makes it more aggressive on production decision, the government increases the tariff rate imposing on the foreign product if the weight of consumer-friendly initiative is relatively high. If only domestic company launches the CSR initiative and the weight is high initially, the rent-shifting effect coupled with the consumer surplus effect and the equilibrium outcome changes dramatically.

Accordingly, the domestic government shall raise the import tariffs.
From the above lemmas, we have the following proposition.

Proposition 1. In an international duopolistic market, the consumer-oriented CSR initiatives will decrease the tariff rate if the weight is relatively high in the case of bilateral CSR and unilateral CSR by the foreign company. But the consumer-oriented CSR initiatives will increase the tariff rate if the weights relatively high in the case of unilateral CSR by the domestic company. In table 1, we further present the payoff matrix in an international duopolistic game, where the equilibrium values of payoffs for the companies are summarized in Case (1)-(4).

We have the following proposition.

Proposition 2: In an international duopolistic market, the consumer-oriented CSR initiative of both corporations is the dominant strategy if the CSR cost is sufficiently low.

Proof: We show that:

$$\pi_i^{YY} - \pi_i^{NY} \geq 0$$

If $K \leq \overline{K}_i \equiv \frac{1}{2}a^2(\frac{(4-\alpha)(3-\alpha)(36+\alpha(17\alpha - 55))}{(41 + \alpha(9\alpha - 38))^2}) - \frac{3(12 - 5\alpha)^2}{(41 - 12\alpha)^2}$

$$\pi_j^{YY} - \pi_j^{YN} \geq 0$$

If $K \leq \overline{K}_j \equiv \frac{1}{2}a^2(\frac{(5-\alpha^2)(15 + \alpha(11\alpha - 34))}{(41 + \alpha(9\alpha - 38))^2} - \frac{3(5-3\alpha)^2}{(41 + \alpha(-26 + 5\alpha))^2})$

Hence, when $K \leq \min\left[\bar{K}_i, \bar{K}_j\right]$, (π_i^{YY}, π_j^{YY}) will be the dominant strategy.

If the weight of consumer-friendly initiative is sufficient high, the weight assigned on CSR will decrease the optimal tariff rate of the home country, and the profit of both corporations will increase if the cost of CSR is sufficiently small.

4. Conclusions

In an international duopolistic market, we prove that in case of 1. When both foreign and domestic corporation care more the consumer-oriented CSR initiatives, it will decrease the tariff rate if the weight is high initially; 2. When foreign corporation cares more the consumer-oriented CSR initiatives, it will decrease the tariff rate if the weight is high initially; however, 3. When only Domestic Corporation cares the consumer-oriented CSR, it will increase the tariff rate against the foreign corporation. Furthermore, the consumer-oriented CSR initiative of both corporations is the dominant strategy if the CSR cost is sufficiently low. If the weight of consumer-friendly initiative is sufficient high, the weight assigned on CSR will decrease the optimal tariff rate of the home country, and the profit of both corporations will increase if the cost of CSR is sufficiently small.

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Table 1: Payoffs to the Companies

		Foreign company	
		Without CSR	With CSR
Domestic Company	Without CSR	π_i^{NN}, π_j^{NN}	π_i^{NN}, π_j^{NN}
	With CSR	π_i^{YN}, π_j^{YN}	π_i^{YY}, π_j^{YY}