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Does Corporate Governance Matter for Social Efficiency of Entry?

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Abstract

We adopt the notion of cost reduction that comes from better and good governance within the firm's organization, and explore the strategic interaction between corporate governance and market competition. The question we are asking is that does corporate governance matter for social efficiency of entry in oligopolistic competition. We find that if entry costs are relatively large, the entry into the society is insufficient. The number of low-efficiency firms under free entry equilibrium is less than the number of low-efficiency firms under welfare maximization. The important implication of our finding is that competition-promoting policy in oligopolistic industry needs the support from internal governance of the firms.

Keywords

1. Introduction

Corporate governance (CG) is the notion focusing on the cost management associated with the level of firm ownership, which stresses the scientific authorization and supervision to managers. There are several papers in imperfect market competition that used different notion of corporate governance addressing the concerned issues. In a pioneer work, Kelsey and Milne (2008) argued that in an oligopoly, the choice of enterprise structure can affect the strategic interaction in the market. Different individuals will weigh their impacts on the firms in different ways according to their ownership and consumption patterns. In an oligopoly industry, whether CG improves corporate performance and social welfare is a controversial issue. Maiti and Mukherjee (2013) showed how FDI and domestic welfare are affected by good domestic economic governance. Sarbah and Xiao (2015) concerned shareholders pair with stakeholders interests and pointed out

that corporate governance refers to the structures and processes for the direction and control of businesses and the relationships among the management, board of directors, controlling shareholders, minority shareholders and other stakeholders.

Giroud and Mueller (2010) found that, consistent with the concept of competitive mitigation management slack, firms in non-competitive industries experienced a significant decline in operating performance, but firms in competitive industries had no significant effect. Oligopolistic competition refers to a competitive situation in which there are a few sellers. The practical issue concerned by the social planner is how much competition with firm entry is beneficial for society. Entry to improve welfare is a contentious issue in oligopolistic industries. Mankiw and Whinston (1986) showed in an influential work that in the presence of economies of scale, entry into oligopolistic markets is socially excessive. Ghosh and Saha (2007) argue that in the presence of marginal cost differences, excessive entry may occur without economies of scale. See more works, for example, Mukherjee (2010, 2012a, 2012b) questioned the "excess-entry theorem".

The question we are asking is that does corporate governance matter in oligopolistic competition? In particular, we showed that if entry costs are relatively large, the entry into the society is insufficient. The number of low-efficiency firms under free entry equilibrium is less than the number of low-efficiency firms under welfare maximization. The important implication of our finding is that competition-promoting policy in oligopolistic industry needs the support from internal governance of the firms.

2. The Model

The inverse demand is characterized by a linear function $P(Q) = a - Q$, where a denotes the market scale, P stands for the market price and $Q = \sum_{i=1}^{m} q_i + \sum_{j=1}^{n} q_j$ is the total market output, where q_i and q_j are the output of the efficient firms and the inefficient firms, respectively. It assumed that the marginal cost of production of the firms is zero. The marketing cost of the efficient firms and the inefficient firms are c_i and c_j, respectively. All firms in the market incur a fixed cost F.

The profit function of firm i and firm j are

$$\pi_i = \left(a - \left(\sum_{i=1}^{m} q_i + \sum_{j=1}^{n} q_j \right) - g_i c_i \right) q_i - F , \tag{1}$$

$$\pi_j = \left(a - \left(\sum_{i=1}^{m} q_i + \sum_{j=1}^{n} q_j \right) - g_j c_j \right) q_j - F , \tag{2}$$

where $g_k c_k$ represents the efficiency-cost due to the corporate governance, $k = i, j$.

In Maiti and Mukherjee (2013), a firm's costs consist of the wages paid to sellers and the time it takes them to promote sales. The notion η denotes the unit of sellers that firm i needs to sell one unit of the product, h denotes the number of hours a sales person needs to sell one unit of product, and w denotes the

per-hour wage for the sales representatives. Therefore, the cost function can be expressed as

$$C_K = c_K q_K = (\eta h_K w) q_K, \ K = i, j$$

It assumed that $h_i < h_j$ means more salespeople are needed due to less efficient firm *i*.

The proportion of the reduced cost is defined as

$$g_K \equiv \frac{h_K - e}{h_K}, \ K = i, j$$

This g_K shows that if the quality of governance is improved, firms can benefit from greater efficiency, a better work environment, or a shorter time to complete a deal. When governance is strengthened, the efficiency-cost decreases, and then the cost function can be rewritten as $g_K c_K = \left(\frac{h_K - e}{h_K}\right) \eta h_K w q_K$. Due to that $c_K = \eta(h_K - e) w q_K$, the parameter *e* is therefore defined as cost-reduction effect, by better governance on the grounds that $c_K = \eta h_K w$ and $g_K \equiv \frac{h_K - e}{h_K}$ making $c_K = \eta(h_K - e) w q_K$. The following equations summarize the relation among c_K, g_K, and *e*,

$$g_K C_K = g_K c_K q_K = \left[\left(\frac{h_K - e}{h_K}\right) \eta h_K w\right] q_K = [\eta(h_K - e) w] q_K, \ K = i, j$$

The consumer surplus (*CS*) and the social welfare (*SW*) are defined as

$$CS = \frac{\left(\sum_{i=1}^{m} q_i + \sum_{j=1}^{n} q_j\right)^2}{2} \quad (3)$$

$$SW = \int_0^Q P(q) \mathrm{d}q - PQ + \sum_{i=1}^{m} \pi_i + \sum_{j=1}^{n} \pi_j \ . \quad (4)$$

3. Entry and Welfare Analysis

In this section, we will derive the equilibrium outcomes under restricted entry and free entry in turn, and then explore the issue of social efficiency when the inefficient firms are freely entering the market.

3.1. Restricted Entry

In this subsection, each firm chooses its output to simultaneously maximize its own profit. By solving the first-order condition, we obtain

$$q_i^R = \frac{a - (1+n)c_i g_i + n c_j g_j}{1 + m + n},$$

$$q_j^R = \frac{a + m c_i g_i - (1+m)c_j g_j}{1 + m + n},$$

$$P^R = \frac{a + m c_i g_i + n c_j g_j}{1 + m + n},$$

$$Q^R = \frac{a(m+n) - mc_i g_i - nc_j g_j}{1+m+n}$$

where superscript R denotes equilibrium outcome under restricted entry.

We assume that q_i^B, q_j^B, P^R and Q^B are all positive. Then, $P > 0$ implies that $g < \dfrac{a + mc_i + nc_j}{m+n}$.

The equilibrium profits, consumers' surplus and social welfare under symmetric governance within the group are as follows:

$$\pi_j^R = \frac{\left(a - (1+n)c_i g_i + nc_j g_j\right)^2}{(1+m+n)^2} - F,$$

$$\pi_j^R = \frac{\left(a + mc_i g_i - (1+m)c_j g_j\right)^2}{(1+m+n)^2} - F,$$

$$CS^R = \frac{\left(a(m+n) - mc_i g_i - nc_j g_j\right)^2}{2(1+m+n)^2},$$

$$SW^R = CS^R + m\pi_i^R + n\pi_j^R.$$

We have the following Proposition 1.

Proposition 1: *In restricted entry equilibrium, corporate governance is always beneficial to the profit of the firms, and improves consumer surplus and social welfare.*

Proof:

Differentiating π_i^R, π_j^R, CS^R and SW^R with respect to g_k, we have

$$\frac{\mathrm{d}\pi_i^R}{\mathrm{d}g_i} = -\frac{2(1+n)c_i\left(a - (1+n)c_i g_i + nc_j g_j\right)}{(1+m+n)^2} < 0,$$

$$\frac{\mathrm{d}\pi_j^R}{\mathrm{d}g_j} = -\frac{2(1+m)c_j\left(a + mc_i g_i - (1+m)c_j g_j\right)}{(1+m+n)^2} < 0,$$

$$\frac{\mathrm{d}CS^R}{\mathrm{d}g_i} = -\frac{mc_i\left(a(m+n) - mc_i g_i - nc_j g_j\right)}{(1+m+n)^2} < 0,$$

$$\frac{\mathrm{d}CS^R}{\mathrm{d}g_j} = -\frac{nc_j\left(a(m+n) - mc_i g_i - nc_j g_j\right)}{(1+m+n)^2 h_j} < 0,$$

$$\frac{\mathrm{d}W^R}{\mathrm{d}g_i} = -\frac{mc_i\left(a(2+m+n) - \left(m + 2mn + 2(1+n)^2\right)c_i g_i + n(3+2m+2n)c_j g_j\right)}{(1+m+n)^2 h_i} < 0,$$

$$\frac{\mathrm{d}W^R}{\mathrm{d}g_j} = -\frac{nc_j\left(a(2+m+n) + m(3+2m+2n)c_i g_i - \left(2+n+2m(2+m+n)\right)c_j g_j\right)}{(1+m+n)^2 h_j} < 0. \blacksquare$$

The reasoning is that corporate governance reduces the managerial cost of the firms, increases the total output and makes the price going down. Therefore, the

consumer surplus and social welfare are increasing with better corporate governance.

3.2. Free Entry

Considering the free entry situation, assuming that each entrant's entry will incur a fixed entry cost F, the net profit of the jth company is

$$\pi_j = \frac{\left(a + mc_i g_i - (1+m)c_j g_j\right)^2}{(1+m+n)^2} - F .$$ (5)

To derive the free-entry equilibrium, setting Equation (5) to be zero, the free-entry number of low-efficiency firms can be deduced as

$$n^E = \frac{A\sqrt{F} - F(1+m)}{F} .$$ (6)

where the superscript "E" denotes the "entry" of inefficient firms and $A = a + mc_i g_i - (1+m)c_j g_j$. We then have

$$q_i^E = \sqrt{F} - c_i g_i + c_j g_j ,$$

$$q_j^E = \sqrt{F} ,$$

$$P^E = a - \sqrt{F} - c_j g_j ,$$

$$Q^E = \frac{1}{2}\left(a - \sqrt{F} - c_j g_j\right)^2 .$$

Note that the output of efficient firms, market price and consumer surplus are affected by the degree of corporate governance.

The equilibrium profits, consumers' surplus and welfare under free entry are as follows:

$$\pi_i^E = \left(c_j g_j - c_i g_i\right)\left(2\sqrt{F} - c_i g_i + c_j g_j\right),$$

$$\pi_j^E = 0 ,$$

$$CS^E = \frac{\left(a - \sqrt{F} - c_j g_j\right)^2}{2} ,$$

$$SW^E = CS^E + m\pi_i^E + n\pi_j^E = CS^E + m\pi_i^E .$$

We then have the following Proposition 2.

Proposition 2: *In free entry equilibrium, the better governance of the efficient firms is always beneficial to their profits and social welfare but has no effect on consumer surplus. The better governance of the inefficient firms will decrease the efficient firm's profit but increase consumer surplus, and decreases the social welfare if the entry cost is relatively large.*

Proof:

Differentiating π_i^E, CS^E and SW^E with respect to g_k, we have

$$\frac{\mathrm{d}\pi_i^E}{\mathrm{d}g_i} < 0 , \quad \frac{\mathrm{d}\pi_i^E}{\mathrm{d}g_j} > 0 ,$$

$$\frac{\mathrm{d}CS^E}{\mathrm{d}g_i} = 0, \ \frac{\mathrm{d}CS^E}{\mathrm{d}g_j} < 0,$$

$$\frac{\mathrm{d}SW^E}{\mathrm{d}g_i} = mc_i \left(2\left(c_i g_i - c_j g_j\right) - \sqrt{F}\right) < 0.$$

$$\frac{\mathrm{d}SW^E}{\mathrm{d}g_j} = -c_j \left(a - c_j g_j - \sqrt{F}m + 2m\left(c_i g_i - c_j g_j\right)\right) > 0, \text{ if}$$

$$\sqrt{F} > \frac{a - c_j g_j + 2m\left(c_i g_i - c_j g_j\right)}{m}. \ \blacksquare$$

The reasoning for lower profit of the efficient firms is that the strong profit-shifting effect in favor of the inefficient firms is due to better corporate governance and consumer surplus is then increased, while the social welfare is decreased if the entry cost is high and wastes the social resources.

3.3. Number of the Firm and Social Efficiency

We now examine how the corporate governance affects the free entry number of the inefficient firm in the long-run equilibrium.

$$\frac{\mathrm{d}n^E}{\mathrm{d}g_i} > 0.$$

$$\frac{\mathrm{d}n^E}{\mathrm{d}g_j} < 0.$$

Better corporate governance of efficient firm decreases the free entry number of the firm, due to the reduction of residual market. By contrast, better corporate governance of inefficient firm increases the free entry number of the firm, due to the cost reduction effect.

Depending on the magnitude of fixed cost, we have the following Proposition 3.

Proposition 3: *If the entry cost is large, the entry into the industry is insufficient. The number of low-efficiency firms under free entry equilibrium is less than the number of low-efficiency firms under welfare maximization.*

Proof:

Evaluating $\left.\dfrac{\mathrm{d}SW^E}{\mathrm{d}n}\right|_{n=n^E}$, we have

$$\left.\frac{\mathrm{d}SW^E}{\mathrm{d}n}\right|_{n=n^E} = \frac{F\left(a + mc_i g_i - (1+m)c_j g_j\right)\left(a\sqrt{F} + \left(A + \sqrt{F}\right)mc_i g_i - \left(Am + \sqrt{F}(1+m)\right)c_j g_j\right)}{A^3}$$

$$= \frac{F\left(\sqrt{F} + mc_i g_i - mc_j g_j\right)}{a + mc_i g_i - (1+m)c_j g_j} > 0, \text{ if } \sqrt{F} > m\left(c_j g_j - c_i g_i\right) \qquad \blacksquare$$

As explained above in Proposition 2, the market entering of the inefficient firms with better governance will improve social welfare that means intensive competition in product market is needed from the viewpoint of social welfare

improvement[1]. The important implication of our finding is that competition-promoting policy in oligopolistic industry needs the support from internal governance of the firms. It echoes the concern of managerial slack in non-competitive industries by Smith (1776).

4. Concluding Remarks

In this paper, we adopted the notion of cost reduction that comes from better and good governance within the firm's organization and explore the strategic interaction between corporate[2] governance and market competition. In particular, we showed that if entry costs are relatively large, the entry into the society is insufficient. The number of low-efficiency firms under free entry equilibrium is less than the number of low-efficiency firms under welfare maximization. The competition-promoting policy in oligopolistic industry needs the support from internal governance of the firms.

A crucial concern of the analysis is limited to partial equilibrium analysis. In future research, we may incorporate demand-side network externalities into our model to pair with the good governance of supply-side corporate governance to delineate the mechanism on the social efficiency of entry. We may further consider the general equilibrium analysis which might enrich the analysis on wage differentials of the economy and the above two-sided factors in the general equilibrium of oligopolistic competition to delineate the compound effect of the distributional and welfare effects of corporate governance.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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[1]See the comment made by Yu (2008) on an earlier working paper version of Giroud and Mueller (2010), in that "we think about all these complex corporate governance mechanisms, but competition may be the more effective mechanism" (p. 10).

[2]See, for example, Chao and Wang (2022).

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