

Law and Economics

— on Unfair Activity —

Miki MAEDA *

(Received November 30, 2022)

In this paper, the unfair competition will be analyzed in the original following manner such that not only the productive activity but also the unfair activity will be taken into consideration.

Key words: Law and Economics, Unfair Activity, Price Level, Consumer, Waste Rate of Cost

1. Introduction

From the standpoint of normative resource allocation, fair competition is important in economics. From the standpoint of realism, however, the analysis of the unfair competition which includes unfair activity for interfering rival's production will also be important in law and economics¹.

In this paper, the unfair activity² will be analyzed in the original following manner such that not only the productive activity but also the unfair activity will be taken into consideration. In the next section 2, a simple but originally developed model will be shown. In section 3, comparative static analysis will be made. In the last section 4, concluding remarks will be given.

2. A Simple Model

Notations :

Π : Profit

P : Price level

X : Output level

C : Cost for production. C is an increasing function of X

R : Unfair activity for interfering with rival's production

K : Cost for interfering with rival's production. K is an increasing function of R .

Y : Output level of the rival firm. Y is assumed to be a decreasing function of R . such $Y = M - N(R)$, where $M > 0$ is constant and $dN/dR > 0$.

*

Associate Professor, Field of Fundamental Education and Liberal Arts, Department of Engineering

Hence, Π is shown in the following manner.

$$\Pi = PX - C(X) - K(R) \quad (1)$$

To make the analysis simple, the functions will be specified in the following manner.

$P = a - b(X+Y)$, $a > 0$, $b > 0$, where $Y = M - N(R)$, $M > 0$, $N(R) = vR$, $v > 0$, $C(X) = sX^2$, $s > 0$ and $K(R) = tR^2$, $t > 0$.

Hence, (1) is shown in the following manner.

$$\Pi = \{ a - b(X + M - vR) \} X - sX^2 - tR^2 \quad (2)$$

Maximizing Π with respect to X and R yields the following first order conditions.

$$\begin{aligned} \partial \Pi / \partial X &= -2(b+s)X + a - bM + bvR \\ &= 0 \end{aligned} \quad (3)$$

and

$$\begin{aligned} \partial \Pi / \partial R &= bvX - 2tR \\ &= 0 \end{aligned} \quad (4)$$

Second order conditions are assumed to be satisfied.

$$\begin{aligned} -2(b+s) &< 0 \quad \text{and} \\ D &= 4(b+s)t - b^2v^2 > 0 \end{aligned} \quad (5)$$

, where D is the value of the determinant for second order condition.

From (3) and (4) optimal value of X and R are obtained in the following manner.

$$X^* = \{ 2t(a - bM) \} / \{ 4(b+s)t - b^2v^2 \} \quad (6)$$

$$R^* = \{ (a - bM)bv \} / \{ 4(b+s)t - b^2v^2 \} \quad (7)$$

X^* and R^* are assumed to be positive. The denominators of (6) and (7) are positive from (5), then, $a - bM > 0$, which corresponds to the price level realized in the market when X happens to be equal to $N(R)$.

3. The Effects on Price Level and Waste Rate of Cost

For the consumers it is important that they can buy the goods at low price. Therefore, in this section, the effects of the changes in parameters on the price level will be examined.

The following results can be obtained from (6) and (7) straightforwardly.

$$\partial X^* / \partial v > 0 \quad (8)$$

$$\partial R^* / \partial v > 0 \quad (9)$$

From (8) and (9) the following results can be obtained.

The larger the negative effect of the unfair interfering activity on the rival's output level, the larger the output level of the unfair firm. The larger the negative effect of the unfair interfering activity on the rival's output level, the larger the unfair interfering activity.

Therefore from (8), X^* is increased. However, Y^* is decreased as Y^* is the decreasing function of R^* . Hence, the effect on the total output (X^*+Y^*) in the market cannot be obtained from the results of (8) and (9). However, from (6), (7) and $Y^*=M-N(R^*)$, the following result can be obtained straightforwardly.

$$\partial (X^*+Y^*) / \partial v < 0 \quad (10)$$

The larger the negative effect of the unfair interfering activity on the rival's output level, the smaller the total output in the market.

Since the price level P is a decreasing function of the total output in the market, the following result can also be obtained straightforwardly.

$$\partial P^* / \partial v > 0 \quad (11)$$

Therefore the following result with respect to the price level has been derived. The larger the negative effect of the same unfair interfering activity on the rival's output level, the higher the price level. This result is serious since the consumers must face the high price in the market.

Similarly the following results can also be obtained straightforwardly.

$$\partial X^* / \partial t < 0 \quad (12)$$

$$\partial R^* / \partial t < 0 \quad (13)$$

The larger the cost of the same unfair interfering activity, the smaller the unfair interfering activity. The larger the cost of the same unfair interfering activity, the smaller the output level of the unfair firm. Therefore, when the cost of the same unfair interfering activity is raised, not only the unfair interfering activity but also the output level of the unfair firm will be decreased. Therefore from (12) and (13), the effect on the total output in the market can not be obtained straightforwardly, since the increase in t will decrease the output level of the unfair firm. On the other hand, the rival's output level will increase since the rival's output level is the decreasing function of the unfair

interfering activity.

However, from (6), (7) and $Y^* = M - N(R^*)$, the following result can be obtained straightforwardly.

$$\partial (X^* + Y^*) / \partial t > 0 \quad (14)$$

The larger the cost of the same unfair interfering activity, the larger the total output in the market.

Since the price level P is a decreasing function of the total output in the market, the following result can also be obtained straightforwardly.

$$\partial P^* / \partial t < 0 \quad (15)$$

This result of (15) is different from that of (11).

Therefore the following result with respect to the price level can be derived. When the cost of the same unfair interfering activity is raised, the price level will be decreased. This result is interesting since the consumers can buy the product at the lower price in the market.

In the following, the waste rate of cost which is originally defined in this paper will be examined.

The waste rate ρ of cost is defined in the following manner.

$$\rho \equiv K(R) / \{C(X) + K(R)\}, \quad (16)$$

where C is the cost of production, on the other hand K is the cost of the unfair interfering activity.

The cost of the unfair interfering activity can be regarded as the waste of cost.

From (6) and (7),

$$\rho^* \equiv K(R^*) / \{C(X^*) + K(R^*)\}. \quad (17)$$

From (17) the following additional results can be obtained straightforwardly.

$$\partial \rho^* / \partial s < 0 \quad (18)$$

$$\partial \rho^* / \partial t < 0 \quad (19)$$

$$\partial \rho^* / \partial b > 0 \quad (20)$$

$$\partial \rho^* / \partial v > 0 \quad (21)$$

Therefore, the following results have been derived with respect to the waste rate of cost.

From (18) the larger the cost for producing the same amount of the output, the smaller the waste rate of cost. The larger the cost for the same unfair interfering activity, the smaller the waste rate of cost from (19). The larger the slope of the demand curve in the market, the larger the waste rate of cost from (20). From (21) the larger the negative effect of the same unfair interfering activity on the

rival's output level, the larger the waste rate of cost.

4. Concluding Remarks

In this paper the unfair competition is analyzed in the original following manner such that the unfair interfering activity is also taken into consideration in addition to the productive activity. Following results have been derived.

(i) The larger the negative effect of the unfair interfering activity on the rival's output level, the larger the output level of the unfair firm. The larger the negative effect of the unfair interfering activity on the rival's output level, the larger the unfair interfering activity. The larger the negative effect of the unfair interfering activity on the rival's output level, the smaller the total output in the market. The larger the negative effect of the same unfair interfering activity on the rival's output level, the higher the price level. This result is serious since the consumers must face the high price in the market.

(ii) The larger the cost of the same unfair interfering activity, the smaller the unfair interfering activity. The larger the cost of the same unfair interfering activity, the smaller the output level of the unfair firm. The larger the cost of the same unfair interfering activity, the larger the total output in the market. When the cost of the same unfair interfering activity is raised, the price level will be decreased. This result is interesting since the consumers can buy the product at the lower price in the market.

(iii) The larger the cost for producing the same amount of the output, the smaller the waste rate of cost. The larger the cost for the same unfair interfering activity, the smaller the waste rate of cost. The larger the slopes of the demand curve in the market, the larger the waste rate of cost. The larger the negative effect of the same unfair interfering activity on the rival's output level, the larger the waste rate of cost.

From the realistic standpoint of law and economics, the analysis of unfair competition which includes unfair activity interfering the rival's production will also be important. As is denoted above, increasing the cost of the same unfair interfering activity will lower the price level. Then, at the lower price the consumers can buy the product in the market. Hence, keeping the unfair interfering activity under the strict watch system will be important in order to make the unfair interfering activity expensive.

Notes

1 See Maeda (2020), (2021 a), (2021 b) and (2022), Watanabe and Maeda (2013 a), (2013 b), (2013 c) and (2014) for Law and Economics.

2 See Watanabe (1986), (1987), (1988) and (1989) with respect to another unfair activity; tax evasion.

References

- (1) M. Maeda, “ Law and Economics of Business Transactions — on FOB and Marine Accidents —” *Bulletin of Niigata Institute of Technology*, 2020.
- (2) —————, “Law and Economics in life” *color of wind* No.14, 2021 a.
- (3) —————, “Law and Economics — on Article 14 of the Constitution of Japan —” *Bulletin of Niigata Institute of Technology*, 2021 b.
- (4) —————, “Law and Economics — on Article 26 of the Constitution of Japan —” *Bulletin of Niigata Institute of Technology*, 2022.
- (5) S.Watanabe and Maeda M. “A Note on Law and Economics — Cost plus Fee Contract and Generalized Efficiency Wages” *Economic Studies* Vol.58 No.4 March 2013 a.
- (6) —————, “An Economic Approach to Law” *Economic Studies* Vol.59 No.1 June 2013 b.
- (7) —————, “On Law and Economics ” *Journal of Economics, Business and Law*, Dec. 2013 c.
- (8) —————, “A Note on Law and Economics — Wage Rate Leadership, Price Leadership, Quality Leadership and Unemployment in the Absence of Efficiency Wages —” *Economic Studies* Vol.59 No.2,3,4 March 2014.
- (9) S. Watanabe, “Income Tax Evasion : A theoretical Analysis “, *Public Choice Studies* No 8, 1986.
- (10) —————, “Tax Evasion and Asymmetric Laffer Curve“, *Public Choice Studies* No10., 1987.
- (11) —————, “On Tax Evasion and Monopoly ”, *Economic Science*, Nagoya University, Vol.35. No.4, 1988.
- (12) —————, “A Note on taxation & Understated Monopoly Profit” *Public Choice Studies* No 14. 1989.