

Anti-competitiveness of the Instant Messenger Tying by Microsoft

June 2005

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Abstract

In this paper, we theoretically analyze Microsoft's tying practice in the instant messenger market. Using a model that highlights several special features of the instant messenger, which are different from the cases of the web browser and the media player, we show that Microsoft, the monopolist in the OS market, has a strong incentive for tying in order to monopolize the instant messenger market. Microsoft's messenger tying, even though it saves consumers' installing costs, decreases social welfare because it deprives consumers of the chance to use other messenger programs of better qualities than the MSN Messenger.

Keywords: Microsoft, instant messenger, tying, foreclosure

JEL Classification: L12, L41, L86

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1. Introduction

In recent years, Microsoft's bundling behavior has become an important issue in applications software markets. Particularly the lawsuits against Microsoft's tying practices in US for the web browser case and in EU for the media player case have generated significant attentions from lawyers, politicians, economists, and etc.¹

A similar case, meanwhile, has occurred in Korea, which has the highest diffusion rate of high-speed Internet network in the world; Daum Communications(Daum), an instant messenger service provider, accused Microsoft of its alleged bundling, contending that Microsoft was attempting to monopolize Korean instant messenger market by selling Windows XP tied with the Windows Messenger, virtually the same product as Microsoft's MSN Messenger.² Actually the market share of Microsoft's MSN Messenger in Korea was only 13% when Microsoft first launched Windows XP at the end of 2000, however, has increased even up to 70% for the past four years. The question is whether such a tipping toward MSN Messenger in Korea is due to the Microsoft's anti-competitive tying behavior or not, just as in the cases of web browser in US and media player in EU.³

The instant messenger market, even though it inevitably shares many common features with web browser and media player markets, has also several unique characters so that we can directly apply neither existing theories of tying nor the experiences of the web browser and the media player markets. Therefore,

¹ While the web browser case in US has not been finished yet, EU Commission has adjudicated Microsoft guilty for the case of media player.

² The instant messenger provides users with a "real-time" communications services, unlike e-mail.

³ The Korea Fair Trade Commission is now investigating the illegality of Microsoft's tying behavior in the Korean instant messenger market.

let us briefly illustrate the main characteristics of the instant messenger market, particularly focusing on some distinct features from the web browser and the media player markets.

First, since instant messenger's main function is to enable its users to communicate with one another, there exist not only indirect but strong direct network externalities in the instant messenger market, while only indirect network externalities exist in the web browser and in the media player markets. Second, what makes such direct network externalities have significant importance is the fact that there is now no compatibility among different messenger programs. Without compatibility, the network size becomes an important strategic variable, in addition to price and quality, in inducing customers.⁴ The special importance of the direct network externality in the instant messenger market is the main difference from the cases of web browser and the media player.

Third, the price of the instant messenger programs is zero in the sense that they can be downloaded from the Internet for free. Zero price can be an optimal pricing strategy since the instant messenger market is a type of "subscription markets", like newspapers, magazines, TV broadcasting, and credit card markets, where firms earn more profits indirectly, for example, from the advertising revenue on the basis of the number of its customers, that is, the network size, rather than directly from the subscription fees.⁵ The nature of the subscription market provides firms with strong incentive to capture instant messenger market even though they do not earn any direct revenue from the instant messenger subscribers.

Finally, as in the cases of web browser and media player, however,

⁴ In fact, Microsoft has demanded the compatibility among instant messengers in US where the instant messenger market was somewhat pre-empted by AOL's instant messenger, however in Korea, Microsoft is technically preventing other instant messengers from being compatible with MSN Messenger.

⁵ See Taylor(2003) for further discussion on subscription markets.

differently from the standard tying cases in literature, tying Windows Messenger with Windows XP cannot directly foreclose other competitors from the market since customers can easily and freely substitute any other instant messenger program for the pre-installed Windows Messenger without any technical problem.⁶ Direct foreclosure via tying is impossible in the instant messenger market.

In this paper, with a new model which incorporates such key features of the instant messenger market, we analyze Microsoft's tying incentive, its effect on the market structure, and the resulting impact on social welfare. Our conclusion is that Microsoft's tying practice is anti-competitive; it can indirectly foreclose other competing instant messengers, even those with superior qualities, and so deprive consumers of the chance to use better messenger programs. Even though tying saves installing costs of new messenger programs for some consumers, such benefit is only temporary, while the loss of consumer surplus due to the exit of high quality messenger programs from the market is permanent. As a result, Microsoft's tying practice lowers down the total social welfare.

2. Related Works on Strategic Foreclosure via Tying

Tying arrangements have been thoroughly investigated by a number of economists, in aspects of monopolist's incentive and its welfare effect; i.e., whether firms can gain any additional profits by tying, and whether it is harmful or not for consumers. The conventional conjecture, known as the leverage theory, is that a

⁶ That is, customers can easily switch to other instant messengers at the expense of some extra installing costs, which involve a series of costs that the consumers need to pay to actually "use" the tied product. For instance, in order to use DAUM instant messenger instead of pre-installed MSN Messenger, one needs to connect to the Internet, to find the Web sites that freely offer DAUM instant messenger program, and to download and install it.

monopolist with market power can possibly obtain higher profit by forcing his consumers to purchase the tied product together. However, the simple leverage theory has faced strong criticism: particularly the Chicago school economists point out that there is only one monopoly profit obtainable regardless of tying or independent selling, in case that the tied product market is competitive. For example, Posner(1976) contends that the monopolist cannot benefit from tying if the tied product is a complementary good of the primary (or tying) product, as in the cases of instant messenger, web browser, and media player. The reason is that, if a monopolist charges higher price on his tied product than the competitive market price level, then consumers will regard the increase of the tied product price as the increase of the tying product price and so will buy less of the primary product. In this case, therefore, the monopolist will have no incentive to employ tying.⁷

However, Whinston(1990) indicates that the arguments above do not concern the effects of tying on market structure, and argues that, if the tied market is oligopolistic, it may be possible that the monopolist can use tying in order to exclude the rivals and earn higher profits in the tied good market. Whinston shows that, under the assumption that the tied good market is oligopolistic, a monopolist in the primary good market can find tying of two independent goods a profitable strategy. Nevertheless, in the case of complementary goods used in fixed proportions, which is of our interests, Whinston reconfirms Posner's contention; that is, in case of complementary products tying, the monopolist never finds it worthwhile to tie in order to monopolize the tied good market. The intuition is that

⁷ Some articles, in the same vein, explore tying arrangements on the positive side. See Bowman(1957), Burstein(1960), Blair and Kaserman(1978), Schmanensee(1982) for the details.

if a monopolist's tying product is essential for all uses of the tied products, monopolist can always extract profits from the complementary good market simply by putting consumers' surplus into the price of his primary product. Actually, the monopolist would prefer that the competitors with high quality product continue operations in the complementary market, since then he can possibly raise the price of primary product as much as consumer's surplus from using the competitors' high quality product.

In this article, contrary to Posner(1976) and Whinston(1990)'s arguments, we show that the monopolist in the primary market has a strong incentive to practice tying to enhance his profitability in the tied good market even in case that products bundled are complementary. The reason for this is as follows. Since firms in the instant messenger market earn profits indirectly from advertising not just directly from the customers' payments for the messenger program and/or for the subscription, Microsoft has to retain large consumers by herself in order to extract such profits from advertising. Even though, as discussed earlier, he cannot directly foreclose the rivals in the market, tying saves installing costs when using MSN Messenger, the tied (i.e., pre-installed) product. Tying arrangements, therefore, entice more newcomers, especially with high installing costs, into MSN Messenger, and the tipping effect caused by direct network externalities with incompatibility eventually enables Microsoft to monopolize the market. Consequently, Microsoft can earn whole profits from the instant messenger market by tying MSN Messenger with his primary product, Windows XP.

Furthermore, we also show that social welfare can be lowered, since such tying practice excludes high quality firms out of the instant messenger market. Despite the similarities to Carlton and Waldman(2002)'s welfare implications,

there are a few major differences between this article and Carlton and Waldman's. First, in this paper, the monopolist always has an incentive to practice tying regardless of network externalities, whereas in Carlton and Waldman, network externality is the main factor to motivate the monopolist to practice tying.⁸ Second, in Carlton and Waldman's analysis, the network effect itself does not play any exclusive role in that the monopolist's tying can directly foreclose rivals by tying. In this paper, however, tying itself cannot directly exclude the competitors since we consider the case that consumers can "undo" ties and reassemble bundles; the monopolist can monopolize the market, instead, due to the tipping effect caused by direct network externalities with incompatibilities. Third, the social welfare implications are somewhat different from those of Carlton and Waldman in the sense that we take account of the temporary benefits of tying by reducing consumers' installing costs. Our analysis, therefore, precisely captures the intuitive arguments that even though bundling might benefit consumers in the short term, it will be harmful for the social welfare because of the monopolization result in the long term.⁹

3. Model

Consider Operating System (OS) market and instant messenger market together. In the OS market, there is only one brand A which is monopolistically provided by firm 1. Meanwhile, the messenger market is a duopoly where firm 1 and firm 2 offer B_1 and B_2 respectively for free. B_1 and B_2 are vertically

⁸ In our messenger model, even if there exist no network externalities, the monopolist still has an incentive to employ tying, since his ultimate goal is to capture as many as consumers possible.

⁹ See Choi(1996) for another view of inefficiency of tying in the long term.

differentiated such that the quality of B_2 is better than B_1 by $\Delta > 0$. For simplicity, normalize B_1 's quality as 0 and then B_2 's quality is simply Δ . Marginal production costs of A and B are normalized to be zero, however, there are per period fixed costs F_A and $F_{B_1} = F_{B_2} = F_B$ for both markets.

We assume for simplicity that consumers choose one messenger out of two alternatives so that, since OS is required for the instant messenger program, either (A, B_1) or (A, B_2) is used as a bundle by each consumer. Even in case that B_1 is offered being tied with A, since messenger B_2 can be downloaded for free from the Internet and also can be used with product A substituting pre-installed B_1 without any technical problems, tying of B_1 to A cannot directly foreclose B_2 in the messenger market.

To highlight the dynamic aspect of network building and the foreclosure mechanism in our messenger tying case, we adopt a T-period model where t denotes $0, 1, \dots, T$, where T is sufficiently large, possibly goes to infinity. At $t = 0$, firm 1 decides whether to offer B_1 being tied with A or independently. Every period from $t = 1$, new consumers of total mass of S enter the OS-messenger markets. New consumers, on entering, buy A and choose either B_1 or B_2 . From $t = 2$ to $t = T$, there are $(t-1)S$ existing consumers who decide every period whether to stay with the current messenger or to switch to the other brand. In each period, after both of new and existing consumers' decision, there are advertisements on instant messenger. Advertising on messenger incurs no additional cost to the messenger provider, while total revenue from advertising is proportional to the network size of the messenger, that is, the number of consumers who are currently using the messenger at that period. Let α be the unit advertising fee.

We need some remarks on consumer's behavior in our model with network

externalities. Consumers obtain utility both from the OS and from the messenger. The utility from the OS, product A, is V , and the utility from the messenger is $N_i + \Delta_i - s$, where N_i denotes the number of consumers who are using B_i and thus captures the network effect of the messenger, Δ_i is brand i 's quality, and s is the installing cost of the messenger. We assume that the consumers entering each period are uniformly distributed according to their installing cost s on the interval $[0, S]$ with total mass of S . The installing cost is the same for B_1 and B_2 . As we assumed, $\Delta_1 = 0$ and $\Delta_2 = \Delta > 0$, and s occurs only when consumer chooses a messenger which is offered independently from the OS, so that $s = 0$ for B_1 if it is offered being tied with product A (and $s = 0$ for the existing consumers as long as they decide either to stay or to switch to the messenger installed before).

Finally we further assume that consumers are backward-looking, or myopic, rather than forward-looking, when they choose a messenger. In the network externalities literature, consumers are modeled to make consumption decisions given some expectations about future network size. It is because purchasing and consumption do not occur simultaneously; consumption occurs continuously after purchasing has made. Such forward-looking behavior is appropriate for the durable goods case where consumers cannot easily switch to other alternatives in the future.

However, in messenger case, consumers can readily switch to other alternatives whenever they wish because, as we already pointed out, messenger programs are freeware on the Internet and also any messenger program can be used with Windows XP without any technical problems. If consumers can freely switch to other products whenever they want in the future, then they do not have to take future network size into considerations when they choose a messenger program. Therefore we assume consumers are myopic or backward-looking in the

messenger case such that they only care about the current network sizes when they choose messengers.

At period t , there are two consumer groups: S newcomers and $(t-1)S$ existing customers. We assume that S newcomers first choose messengers given each brand's current network size up to period $(t-1)$, and then the $(t-1)S$ existing consumers decide whether to stay with current messenger or to switch to the other given the new network sizes updated by the newcomers.

4. Monopolization by Tying

4.1 Foreclosure mechanism

In this section, we will show that firm 1 can monopolize market B by tying B_1 with A. Let N_i^t be the network size of firm i in market B at period t . We assume $N_1^0 = N_2^0 = 0$ which means that the market shares were the same before firm 1's tying decision.

First consider independent selling case. Without tying, the utilities of the consumers with installing cost of s who first enter OS-messenger market at $t = 1$ are $U_1 = V - s$ for (A, B_1) and $U_2 = V + \Delta - s$ for (A, B_2) , and therefore all the consumers will buy (A, B_2) . For any $t \geq 2$, utilities of the new customers from (A, B_1) and (A, B_2) become $U_1 = V - s$ and $U_2 = V + (t-1)S + \Delta - s$ respectively, which means that all the new consumers for every period will buy only brand B_2 . Furthermore, the existing customers will never switch to B_1 simply because it does not have any positive network size. Therefore, firm 1 will exit from the messenger

market and firm 2 becomes the monopolist in market B.

Next consider tying case. Tying B₁ with A, that is, tying MSN Messenger (or Windows Messenger) with Windows XP, implies that the consumers save installing cost in case of choosing B₁. At $t=1$, consumers utilities are $U_1 = V$ for (A, B_1) and $U_2 = V + \Delta - s$ for (A, B_2) . Let $s^*(t)$ be the value of s which satisfies $U_1 = U_2$ at period t . Then consumers with $s > s^*(1)$ will chooses B₁ and those with $s \leq s^*(1)$ will choose B₂.

Assumption 1. $2\Delta < S < \frac{V}{2}$ ¹⁰

Note that $s^*(1) = \Delta$ at $t=1$. Therefore N_1^1 and N_2^1 become $(S - \Delta)$ and Δ , respectively. At $t \geq 2$, consumers' utilities are $U_1 = V + N_1^{t-1}$ for (A, B_1) and $U_2 = V + N_2^{t-1} + \Delta - s$ for (A, B_2) . Let $N^t = N_1^t - N_2^t$ denote the difference between network effects of B₁ and B₂. Then $s^*(t) = \Delta - N^{t-1}$, that is, new consumers with installing cost $s > \Delta - N^{t-1}$ choose B₁ and with $s \leq \Delta - N^{t-1}$ choose B₂.¹¹ Under Assumption 1, N^t monotonically increases as t goes on, thus more proportions of newcomers choose B₁. Consider switching decisions by the existing consumers. Since the network size of B₁ becomes larger than when they first have chosen messengers, existing customers who have chosen B₂ will switch to B₁ when the utilities from B₁ enhanced by enlarged difference of network size exceeds quality difference, while those who have chosen B₁ will never switch to B₂.

¹⁰ $2S < V$ means that the utilities from OS are sufficiently large compared to the installing cost.

¹¹ If $\Delta < N^{t-1}$ is satisfied, that is, network effects (or B₁'s network advantage) exceed quality differences (or B₂'s quality advantage), then all the newcomers (even ones with high installing costs) will prefer B₁ to B₂.

Let t^* denote the last period before all existing consumers switch to B_1 .¹² After the brand B_2 loses all existing customers, every consumer who newly enters the market chooses only B_1 . Since the B_2 's network size at the period $t=1, \dots, t^*$ is $N_2^t = \sum_{i=1}^t s^*(i)$, firm 2's total revenue from advertising for periods 1 through t^* is $\sum_{t=1}^{t^*} \alpha N_2^t$. If $\sum_{t=1}^{t^*} \alpha N_2^t > t^* F_B$, then firm 2 will continue operations in market B till the period t^* , however, exit the market afterwards because it cannot make profits any more. On the other hand, if $\sum_{t=1}^{t^*} \alpha N_2^t < t^* F_B$, then firm 2 will exit the market B as soon as firm 1 decides to employ tying strategy, and so the market B will be monopolized by B_1 from the beginning. Let $t^* = 0$ for such case. Hence, in the case of tying, market B is monopolized by B_1 after the period t^* even though B_2 has better qualities than B_1 .

On the other hand, if $2\Delta > S$ contrary to Assumption 1, then by the same logic, we can confirm that B_2 will capture the whole messenger market. Since the goal of the this paper is to show that firm 1 can leverage its monopoly power in market A into market B through tying and become a monopolist in market B even with low quality brand B_1 , we will focus on the case of $2\Delta < S$.

Proposition 1. *Under Assumption 1, the low quality messenger B_1 can foreclose the high quality messenger B_2 through tying strategy.*

Even though the quality of B_1 is lower than that of B_2 , firm 1 can strategically foreclose firm 2 and monopolize the messenger market by tying B_1

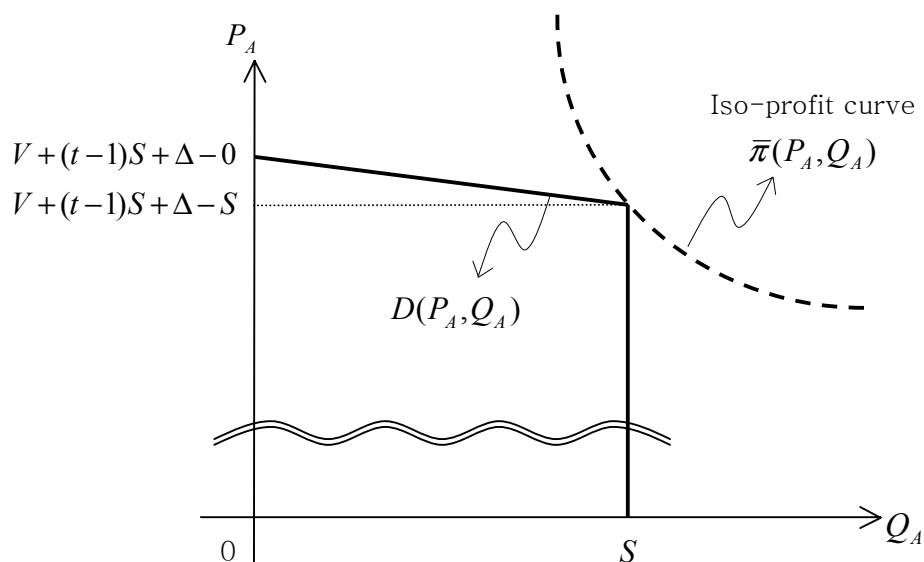
¹² Since B_1 is pre-installed in product A, existing consumers who switch to B_2 need not pay additional installing cost, thereby moving to B_2 simultaneously regardless of their own installing costs s .

with the main product A, the Windows OS, which is monopolized by firm 1.

4.2 Tying incentive

The next question to answer is whether firm 1 actually has an incentive to monopolize the messenger market through tying strategy. Consider independent selling case first. As we showed in the previous section, if there is no tying, the high quality brand B_2 captures the whole messenger market and so the consumers will buy system (A, B_2) . At any period t , since the messenger price is zero, the new customers' willingness to pay for the system (A, B_2) are uniformly distributed from $[V + (t-1)S + \Delta - S]$ to $[V + (t-1)S + \Delta - 0]$.

<Figure 1> Firm 1's pricing strategy: independent selling case



Since the utility from the OS is substantially higher than both that from the messenger and installing costs, that is, V is substantially larger than s , firm

1's optimal strategy is to sell product A to all the new customers including the consumer with the highest installing cost S . Thus, firm 1's profit maximizing price of product A at period t is $P_A^t = V + (t-1)S + \Delta - S$. Since the messenger market is wholly captured by B₂, only firm 2 earns advertising revenue during all the T periods. To sum, when the OS and the messenger sell independently without tying, messenger market is monopolized by the high quality brand B₂, and firms' profits are given by

$$\begin{aligned}\Pi_1^I &= \sum_{t=1}^T [V + (t-1)S + \Delta - S]S - TF_A \\ \Pi_2^I &= \sum_{t=1}^T \alpha t S - TF_B.\end{aligned}$$

Now consider the tying case where the messenger market is monopolized by firm 1's brand B₁ after the period t^* as denoted earlier. For any period $t \leq t^*$, the willingness to pay for the system (A, B_1) and (A, B_2) of new consumers with installing cost of s are $V + N_1^{t-1}$ and $V + N_2^{t-1} + \Delta - s$, respectively. Under Assumption 1 ($V > 2S$), firm 1 will charge $P_A^t = V + N_2^{t-1} + \Delta - s^*(t) = V + N_1^{t-1}$ for the system (A, B_1) . On the other hand, for any period $t > t^*$, firm 1 can maximize profits by charging $P_A^t = V + (t-1)S$ which equals the willingness to pay for (A, B_1) , since all the consumers use B₁. In case of tying, therefore, firms' profits are given by

$$\begin{aligned}\Pi_1^T &= \sum_{t=1}^{t^*} [V + N_2^{t-1} + \Delta - s^*(t)]S + \sum_{t=t^*+1}^T [V + (t-1)S]S + \sum_{t=1}^{t^*} \alpha N_1^t + \sum_{t=t^*+1}^T \alpha t S - TF_A - TF_B \\ \Pi_2^T &= \sum_{t=1}^{t^*} \alpha N_2^t - t^* F_B.\end{aligned}$$

Comparing firm 1's profits with tying and without tying, one can obtain

$$\Pi_1^T - \Pi_1^I = T(S - \Delta)S - \sum_{t=1}^{t^*} [(t-1)S - N_1^{t-1}]S + \sum_{t=1}^{t^*} \alpha[tS - N_2^t] + \sum_{t=t^*+1}^T \alpha tS - TF_B.$$

The first term is the additional benefit from a higher price charged to the newcomers. Since consumers need not pay installing cost due to tying, firm 1 can charge a higher price for product A to the newcomers whose willingness to pay for the system (A, B_1) is raised up by the installing cost saved. The second term shows the loss from the retarded growth of network. In case of tying, consumers' utilities (or willingness to pay) from using messenger somewhat decrease, since consumers are separated into two different messengers as long as firm 2 continues operations, and therefore the benefit from the network effects is reduced. The rest of terms represent the additional profits from advertizing net of fixed costs.

From the equation above, it is easy to check that tying brings additional profits to firm 1. If $t^* = 0$, then the equation reduces to $\Pi_1^T - \Pi_1^I = T(S - \Delta)S + \Pi_2^I$ which is strictly positive. In the case of $t^* > 0$, $\Pi_1^T - \Pi_1^I > 0$ still holds if T is sufficiently large.

Proposition 2. *Firm 1 has an incentive to tie its messenger B_1 to the main product A so that it can also monopolize the messenger market.*

5. Inefficiency of Tying

In the previous section, we confirm that firm 1, who has the monopoly power in the OS market, has both incentive and power to monopolize the messenger market by using tying strategy. Is it socially desirable or harmful? In this section, we will show that such tying strategy lowers social welfare since it

deprives consumers of the chance to use better quality messengers. Let W^I and W^T be the social welfare in case of independent selling and tying, respectively.

Social welfare in each case is given by

$$W^I = \sum_{t=1}^T \left[\int_0^S [V + (t-1)S + \Delta - s] ds + [V + tS + \Delta](t-1)S - F_A - F_B \right]$$

$$W^T = \sum_{t=1}^{t^*} \left[\int_{s(t)}^S [V + N_1^{t-1}] ds + \int_0^{s(t)} [V + N_2^{t-1} + \Delta - s] ds + [V + N_1^t] N_1^{t-1} + [V + N_2^t + \Delta] N_2^{t-1} - F_A - 2F_B \right]$$

$$+ \sum_{t=t^*+1}^T \left[[V + (t-1)S]S + [V + tS](t-1)S - F_A - F_B \right]$$

Then, the effect of tying on social welfare immediately follows as

$$W^T - W^I = - \sum_{t=1}^{t^*} \Delta \cdot N_1^t - \sum_{t=t^*+1}^T \Delta \cdot tS \quad (1)$$

$$+ \sum_{t=1}^{t^*} \left[\frac{1}{2} S \cdot S - \frac{1}{2} s^*(t) \cdot s^*(t) \right] + \sum_{t=t^*+1}^T \left[\frac{1}{2} S \cdot S \right] \quad (2)$$

$$- \sum_{t=1}^{t^*} \left[N_2^{t-1} \cdot (S - s^*(t)) + N_1^{t-1} \cdot s^*(t) + N_2^t \cdot N_1^{t-1} + N_1^t \cdot N_2^{t-1} \right] \quad (3)$$

$$- \sum_{t=1}^{t^*} F_B \quad (4)$$

The first part (1) is the welfare loss arises from the use of low quality product. Such loss is due to the fact that all the existing customers have to use a lower quality messenger B_1 under tying than under no-tying. The second part (2) shows the reduced installing costs of consumers who are newly entering the market.¹³ Note that the effect of (2) is temporary in the sense that only newcomers pay such installing costs on initially entering the market, while the effect of (1) continues permanently as far as the market B exists. The third part (3) implies that the positive externalities from the network effect somewhat decrease, and the last part (4) indicates the over-investments.

¹³ This part, however, does not mean that consumer surplus is enhanced, because the monopolist of product A extracts all the additional surplus from consumers whose installing costs are saved by using B_1 , and even those who are still using B_2 . Consequently, consumer surplus rather decreases by “installing cost-reduction effect.”

It is straightforward to show that the equation above is negative. If $t^* = 0$, that is, firm 2 does not enter the market B from the beginning, the equation above reduces to $W^T - W^I = -\frac{1}{2}TS[(T+1)\Delta - S]$ and is negative for sufficiently large T . Even in the case of $t^* > 0$, since T is sufficiently large, that is, since T goes to infinity, the sign of $W^T - W^I$ is also determined by $-\frac{1}{2}(T-t^*)S[(T+t^*+1)\Delta - S]$, which is clearly negative for large T .

Proposition 3. *Tying the low quality messenger B_1 with OS lowers social welfare by depriving consumers of the chance to use other messenger of better quality.*

6. Concluding Remarks

Instant messenger market has special features such as subscription market, strong direct network externalities, incompatibility, zero price, and impossibility of direct foreclosure through tying. We need a new model to analyze the tying practice in the instant messenger market because not only the two related lawsuit cases, the web browser case in US and the media player case in EU, but current literature about tying do not incorporate such special features of instant messenger market. This paper is an attempt to develop a relevant theoretic model for the tying practice in the instant messenger market.

Microsoft has an incentive to capture the instant messenger market because then it can earn large revenue from advertising. Even though tying itself cannot directly foreclose other competitors, it can induce some of the customers who newly enter the messenger market by saving messenger installing costs. Due

to the strong network externalities without compatibility, then more customers, newcomers and the existing customers, will choose MSN Messenger to enjoy its large network size. The instant messenger market will be tipped toward MSN Messenger and finally other competing messenger providers will exit from the market since they obtain insufficient advertising revenue to cover fixed costs. Tying MSN Messenger with Windows XP can indirectly monopolize the instant messenger market in this manner even though MSN Messenger is inferior to other competing brands in quality. Such tying practice by Microsoft is socially undesirable because it deprives consumers of the chance to use high quality messenger programs in the long run, even though it saves some installing costs for consumers in the short run.

It is needless to say that our conjecture about the Microsoft's anti-competitive tying behavior needs both further theoretic and empirical tests. One interesting event which is related to our subject is that Nateon, another instant messenger, maintains substantial market share (however still less than 20%) in Korean messenger market which is dominated by the Microsoft's MSN Messenger. Some people argue that the success of the Nateon is good evidence that Microsoft's messenger tying is not an effective monopolization strategy. However, we think that Nateon is a good example of B_2 , a better quality messenger in our model. The major reason that people use Nateon is because Nateon offers free "Short Message Service (SMS)" to the Nateon users. Considering that SMS is not free on mobile phone market, free SMS by Nateon can be interpreted as better quality and/or lower price than MSN Messenger. The correct interpretation of Nateon's performance then should be that tying of MSN Messenger is sufficiently effective in capturing messenger market, not that tying has nothing to do with tipping toward

MSN Messenger in Korea.

Whether Microsoft's tying practice is legal or illegal is not an easy question to answer. This paper is only an attempt to develop a model that is relevant to analyze messenger case, which has many different features from the web browser and from the media player cases. We hope this paper provokes further theoretic and empirical studies on the Microsoft's tying practice in the instant messenger market.

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