Financing or Marketing: A Netizen Fund Paradox

석승훈 · 현용진
KAIST

Financing or Marketing: A Netizen Fund Paradox

S. Hun Seog*
Graduate School of Management, KAIST
207-43 Cheongryangri-Dong, Dongdaemun-Gu, Seoul, 130-012, KOREA
seogsh@kgsm.kaist.ac.kr

Yong J. Hyun
Graduate School of Management, KAIST
207-43 Cheongryangri-Dong, Dongdaemun-Gu, Seoul, 130-012, KOREA
yhyun@kgsm.kaist.ac.kr

First Draft: June 2004
This Draft: September 2004

Abstracts: We investigate the roles of netizen funding, the funding of films through the Internet, that has become popular along with the recent boom of the Korean films. We try to explain: First, why the netizen fund proportion is low in general? Second, why some films are able to raise high proportion of netizen fund, while others not? Third, what is the role of netizen funding: Is it financing or marketing? We show that a "netizen fund paradox" exists, implying that netizen funding cannot exist when the netizen effect, the marketing effect of netizen fund, is constant. When the netizen effect is not constant, netizen funding can exist. However, the netizen fund proportion cannot be very high in general if information asymmetry exists between producers and investors, since large netizen funding signals that the film is not profitable. We suggest two possible ways to fully finance with netizen funding. When the producer has high bargaining power, he can finance fully through netizen funding, with monitoring by a third party. When netizen investors trust the producer, full financing with netizen funding is possible, without monitoring by a third party. Our results imply that when information asymmetry problems are present, netizen funding is more likely to be a marketing tool, rather than a financing tool. As those problems are resolved, netizen funding becomes more likely to be a financing tool.

Keywords: netizen fund, monitoring, netizen effect, financing, marketing
JEL Classification: G220, D820, L130

* We would like to thank Jaemyung Shim, Director of MKB Company (formerly, CEO of Myung Films) for her helpful comments and Ryunhee Kim for research assistance.

I. Introduction

The recent success (or, the "Renaissance") of Korean films has received much attention from the media. The market shares of domestic films in Korea were 50.1% (2001), 48.3% (2002), and 53.5% (2003) (Cine 21, 2004). More recent statistics indicate that the market share of Korean films from January to August 2004 was 58.0% (Korean Film Council, 2004).[1] These numbers are compared with around 20% of market share in 1990. These high market shares are also considered unique in the world, since U.S. films generally dominate the film market in most other countries.

The success of Korean films is attributed to several causes (Samjong KPMG Group, 2002). First, the Korea government has played important roles in improving the film production and distribution circumstances. The government enacted the Korean Film Promotion Law in 1996. This law partly deregulated film distribution and lowered the entry costs of film production. In addition, the government has continued policies to support film making and financing. Second, large amounts of capital have flowed into the film industry. Along with the traditional funding by distributors, venture capital and venture funds have been invested in films. With the large pool of capital available, producers were able to make better quality films. In addition, the monitoring and efficient management by venture capitalists of film production and distribution helps to increase the profitability of films. Third, the introduction and growth of multiplex theatres such as "CGV" and "Megabox" have increased the number of screens. In addition, the improved environment inside multiples theaters has contributed to attracting more people.

With the development of the Internet, we have been able to observe a new form of funding in the film industry, called "netizen funding," funding through the Internet. The first netizen fund was established by Intz.com for a wrestling comedy film called "The Foul King" in 1999. Netizen funding was considered a good investment opportunity after the success of "The Foul King." Netizen funding became popular from 1999 through 2001. Several companies entered into the market for netizen funding, including "Entersdaq", "Goosdaq", "Enterfund (formerly "Simmani")", "Daum" and "Hans Global." They funded the production of about 40 films by 2003. However, all but "Enterfund" went out of business following large failures in 2001. About 8.5 billion won (about $ 7 million) was invested in films through netizen funds as of 2003.

Even though netizen funding has diminished in size, it is often mentioned that netizen funds have contributed to the success of Korean films. One of the ways has been through the media attention given to netizen funds. Since the rate of returns of netizen funds for successful films were over 100% for a short investment period (for example, "Joint Security Area" (2000), "My Sassy Girl" (2001), "Friend" (2001)), the success of netizen investments as well as the success of Korean films received the media attention.

---

[1] These numbers are calculated based on the numbers of viewers in Seoul.

Secondly, there are marketing effects from the netizen funds. Netizens who are frequent users of the Internet, discuss and share their concerns and emotions with each other. In this way, netizens advertise the films that they like. As a result, rapid word-of-mouth effects seem to exist among netizens. Another marketing effect is through the media attention given to the quick closing of the funding process. In many cases, funding is on a first-come-first-serve basis. As a result, the process is closed as soon as the fund supply meets the fund demand. In some cases, the funding process is closed in less than one minute (for examples, it took only ten seconds or less for "Guns & Talks" (2001) and "Kick the Moon" (2001)). The quick closing received much attention from the media since it reflected the popularity of Korean films. In this paper, we will refer to the media and marketing effects following netizen funding as "netizen effect."

Another interesting fact of netizen funding is that the funding size is small relative to the total production costs (see Table 1). On average, the netizen fund proportion is less than 10% of total production costs. One exception is "A Good Lawyer's Wife (2003)". The netizen fund proportion of this film is greater than 70% (Myung films, 2003).[2]

Table 1 near here

This paper is concerned with the roles and effects of netizen funding. Based on the several observed cases of netizen funding, we attempt to find the answers to the following questions: First, why the netizen fund proportion is low in general? Second, why some films are able to raise a high proportion of netizen fund, while others not? Third, what is the role of netizen funding: Is it financing or marketing?

In this paper, we consider the case in which the producer finances film production from an institutional investor and then from netizen investors. We assume that information asymmetry problems exist between the producer and investors. However, the institutional investor can monitor the producer better than the netizen investors. In this setting, we show that a "netizen fund paradox" exists, implying that netizen funding cannot exist when the netizen effect, the marketing effect of netizen fund, is constant. When the netizen effect is not constant, netizen funding can exist. However, the netizen fund proportion cannot be very high in general if information asymmetry exists between producers and investors, since large netizen funding signals that the film is not profitable. There are two possible signaling effects of large netizen funding. First, large netizen funding may imply that the quality of the film is not so good since the institutional investor refuses to invest in. Second, the institutional investor will not monitor the producer well, since his investment share is small. In either case, large netizen funding has a bad signaling effect.

We suggest two possible ways to fully finance with netizen funding. One way is to reduce the incentive distortion in monitoring of institutional investor. When the producer has high bargaining power, the effect of incentive distortion in monitoring is

[2] There is also another exception for the netizen funding of "A Good Lawyer's Wife." Funding was made after the film was produced. This is compared with other films, for which netizen funding was made before film production.

reduced. Thus, a producer with high bargaining power can finance fully through netizen funding. However, the producer still needs monitoring by a third party. The other, and better, way is to resolve the interest conflicts between the producer and netizen investors. We suggest that the reputation of the producer is important in this aspect. When netizen investors fully trust the producer, financing fully with netizen funding is possible, without monitoring by a third party. Our results imply that when information asymmetry problems are present, netizen funding is more likely to be a marketing tool, rather than a financing tool. As those problems are resolved, netizen funding becomes more likely to be a financing tool.

The remainder of the paper is composed as follows. In Section II, we describe a simple model. We investigate the institutional investor and the netizen investors' problems. In Section III, we consider the case in which the institutional investor has privilege when sharing in parts of the revenue of the film. In Section IV, we investigate how reputation and bargaining power of the producer can increase the netizen funding proportion. Section V explains empirical findings based on the results of the paper and Section VI concludes.

II. A Simple Model

We consider a model of film production in which a producer (P) needs to finance the production costs, C. The financial success of a film depends on the basic quality (q) of the film and the efforts (e) made by the producer. Quality may be interpreted as the quality of scenario, directors and staffs. We assume that both quality and efforts are not observable, ex ante.

The film may have good quality (type G) or bad quality (type B). The ex ante probability of good quality is assumed to be p_0. We also suppose that the effort level of the producer can be high (effort H) or low (effort L). The probability of high effort will be denoted by r. Accordingly, the realized revenue, V, generated by the film can have one of four values V_{GH}, V_{GL}, V_{BH}, or V_{BL}, depending on the combination of quality and effort.[3] We assume that $V_{GH} > V_{GL} > V_{BH} > V_{BL}$.

There are two types of investors, an institutional investor and netizen investors. We suppose that the producer obtains financing first from the institutional investor. The remaining financing is from netizen investors.[4] The institutional investor will determine the investment shares, a, in profit and the costs, m, in monitoring the quality and the effort of the producer.

For later use, let us note that monitoring cost, m, can be decomposed into $m_0 + m_1$, where m_0 is the monitoring cost for quality and m_1 is the monitoring cost for effort.[5]

---

[3] The revenue V can be interpreted as the revenue *net of* the producer's effort costs. In this interpretation, we can guarantee the participation of the producer by assuming that the producer is already paid for his effort, thereby making his profit zero without further profit sharing.

[4] This financing order reflects the actual financing process.

[5] This decomposition is not necessary for most of our results. The decomposition is useful when we discuss the role of a third party monitoring in section IV.

Monitoring for quality updates the probability of good quality as p or p_L, where $p_L < p_0 < p$. We assume that p_0 is too low for the institutional investor to invest in the film, so that the institutional investor considers investment only when the updated probability is p. We assume that both the institutional investor and the producer learn of the updated probability.[6] However, netizen investors do not share the information.

On the other hand, the effort level of the producer is private information, so that institutional and netizen investors cannot observe it. However, monitoring for effort can affect the probability of high effort. To reflect this idea, we suppose that the probability of high effort by the producer is a function of the monitoring cost: $r = r(m)$ is the probability of high effort under monitoring costs m.[7] We assume that $r(0) = 0$, $r'(m) > 0$, and $r''(m) < 0$. Since the monitoring activity occurs during production, the netizen investors cannot directly observe m (thus, r(m)) at the time of funding.

Netizen investors may collectively invest for the remaining shares of 1- a. The shares of each netizen investor are very small. Netizen investors are effectively small investors. Unlike the institutional investors, netizen investors have no incentive to monitor the producer, since their shares of the film are too small to benefit from the monitoring: There is a typical free-rider problem (see, for example, Grossman and Hart, 1984).

Even though small netizen investors do not monitor the producer, they may affect the revenue of the film through the "netizen effect," the media attention and marketing effect following netizen funding. To capture this idea, let us denote the netizen effect by $k(a) \geq 1$, where $k'(a) \leq 0$, $k''(a) \leq 0$; the netizen effect is concavely increasing.

Normalizing the discount rate to be zero, the realized distributable profit of the film is $\pi = k(a)V - C$, given a, q, and e. Therefore, the expected profit from the film is: $E\pi = k(a)EV - C$, where $EV = p[rV_{GH} + (1-r)V_{GL}] + (1-p)[rV_{BH} + (1-r)V_{BL}]$. Note that the probability of high quality is assumed to be p, since the institutional investor will consider investing only if it is the case.

Before investigating the investors' decisions, let us note the first best outcome for reference. By solving the total profit maximization problem, $kEV - C - m$, we obtain the first best solutions:

---

[6] This assumption of information symmetry is justified by the observation that the producer does not have to evaluate financial aspects better than the institutional investor, while the producer may have expertise in evaluating aesthetic aspects. Thus, the monitoring by the institutional investor can provide the producer with the information about the financial aspects.

[7] A typical result of the contract literature is that, in case of two effort levels, the optimal monitoring scheme is designed to force the producer to make high effort. Therefore, there is no uncertainty about the effort level in equilibrium, unlike in our assumption. We can compromise the results of the literature and our assumption by considering the case in which the revenue V is also affected by a random factor. Now, high effort does not necessarily result in high revenue. In this case, r(m) is reinterpreted as the probability of high revenue (*instead of* high effort) under monitoring cost m and V_{qH} (V_{qL}) is reinterpreted as the high (low) revenue when quality is q.

$a^f = 0$, and m^f satisfies $kr'W - 1 = 0$, where $W = p(V_{GH} - V_{GL}) + (1-p)(V_{BH} - V_{BL}) > 0$.

Note that $a = 0$ maximizes the netizen effect. The following analysis shows that this first best outcome is not obtained in general.

II.1. Institutional Investor's Decision

Now, let us consider the institutional investor's problem. The institutional investor will solve the following problem:

$$\text{Max}_{\{0 \le a \le 1, m\}} U(a, m) \equiv aE\pi - m = a\,[k\,E(V) - C] - m.$$

Let us define (a^*, m^*) as the solution to this problem. For an interior solution, we have the following FOCs.

FOC: $U_a = 0$; $[k + a\,k']\,E(V) - C = 0$.
$U_m = 0$; $a\,k\,r'W - 1 = 0$.

We may obtain corner solutions ($a^* = 0$ or 1) if $U_a \le 0$ at $a = 0$, or $U_a \ge 0$ at $a = 1$. We assume that m^* satisfies the second FOC for $a^* > 0$. Under the usual assumption that $r'(0)$ is very high and $\lim_{m \to \infty} r'(m) = 0$, we can guarantee that there exists a unique m satisfying the second FOC, for $a > 0$. It is obvious that $m^* = 0$ for $a^* = 0$. Let us denote m(a) for m that satisfies the second FOC, given a.

Let $F(a) \equiv k + a\,k'$. Note that $F(0) = k(0) \ge 1$, $F(1) = k(1) + k'(1)$, and $F'(a) = 2k'(a) + a\,k''(a) \le 0$. F(a) is decreasing in a. Therefore, to satisfy the first FOC, the optimal *a* should be higher for higher EV. For the second FOC, note that r'(m) decreases in m. For a high value of a k, r' should be low, so that m is high for the second FOC to hold. Since $d(a\,k)/da = F(a)$, we know that the sign of $d(a\,k)/da$ is positive for low a, but is not clear for high a. However, the following lemma shows that we can restrict our attention to the area of positive $d(a\,k)/da$.

Lemma 1: Define a^0 by $d(a\,k)/da|_{a=a0} = 0$. For any m and $a^+ \ge a^0$, there exists $a^- < a^0$ s.t. $U(a^-, m) > U(a^+, m)$.
[proof] Since a k is increasing for $a < a^0$ and decreasing for $a < a^0$, there is $a^- < a^0$ s.t. $a^- k(a^-) \ge a^+ k(a^+)$ for $a^+ > a^0$. Thus, $U(a^+, m) = a^+ [k(a^+)\,E(V) - C] - m \le a^- [k(a^-)\,E(V) - C] - m$. Lastly, at $a = a^0$, a marginal decrease of *a* will not change *a k*, while decreasing investment costs by C, which increases utility. ///

Lemma 1 allows us to focus on the area where *a k* is increasing in a. In this area, an increase of a will increase m, which is an intuitive result. Note that a^0 can be smaller or larger than 1. Now, we can show that (a^*, m^*) become higher for higher-profitable films.

Lemma 2: [Comparative Statics] Let us define s, a positive constant, as a scale parameter.
(i) Consider the scaled V, sV. Then, a^* and m^* are higher for higher s, ceteris paribus.
(ii) Consider the scaled C, sC. Then, a^* and m^* are higher for lower s, ceteris paribus.

(iii) Suppose $V_{GH} - V_{GL} > V_{BH} - V_{BL}$. Consider the scaled p, sp. Then, a* and m* are higher for higher s, ceteris paribus.
(iv) Consider the scaled monitoring efficiency, r', sr'. Then, a* and m* are higher for higher s, ceteris paribus.

[proof] (i) From FOCs for s:
$U_a = 0$; $[k + ak']sE(V) - C = 0$;
$U_m = 0$; $a\ k\ r'sW - 1 = 0$.
For a higher s, sEV is higher. Thus, FOCs imply k + ak' and a k r' should be lower, which are followed by higher a and m.
(ii) FOCs for s become:
$U_a = 0$; $[k + ak']E(V) - sC = 0$.
$U_m = 0$; $a\ k\ r'W - 1 = 0$.
For lower s, (k + ak')EV should be lower and a k r' should be the same, which are followed by higher a and m.
(iii) Higher p implies higher EV and W. For FOCs, k + a k' and r' should decrease, which results from higher a* and m*.
(iv) For FOCs, higher r' requires higher m given a, which results in higher EV. Higher EV, in turn, requires lower k + a k', or higher a. Note that higher a will require even higher m.[8] ///

In sum, the institutional investor will increase investment and monitoring of the higher-profitable films. Thus, higher *a* signals higher monitoring and higher profits of the film.

II.2. Netizen Investor's Problem

Now suppose that the institutional investor determined (a*, m*) as discussed above. If (a*, m*) is to be obtained in equilibrium, netizen investors should provide the remaining shares 1-a* of the funds. Note that each individual netizen investor will invest in infinitesimal shares, while the total pie for netizen investors is $(1-a^*)E\pi$. An individual netizen investor will invest if $E\pi \geq 0$. Therefore, the relevant problem is:

The netizen investor invests if and only if $k^*EV^* - C \geq 0$, where $k^* \equiv k(a^*)$ and $V^* \equiv V$ under a* and m*.

On the other hand, the institutional investor will invest if $a^* [k^* E(V^*) - C] - m^* \geq 0$ or, $a^* [k^* E(V^*) - C] \geq m^* \geq 0$. Thus, netizen investors have incentives to invest as long as the institutional investor invests.

An interesting case can be observed when k' = 0: a constant netizen effect. When the netizen effect is constant, the increase of netizen funding may only decrease the profit of the film by distorting the monitoring incentives of the institutional investor.

---

[8] These arguments can be formally proved by the usual total differentiation technique.

As a result, as long as the film is profitable, the institutional investor will invest fully. Therefore, the opportunity for funding is given to the netizen investors only if the film is not profitable. Knowing this fact, the netizen investors will refuse to provide funds. More generally, we can show that if the netizen effects are described by jumps, then netizen funding is possible only at the jump points. Thus, we have the following proposition.

Proposition 1:
(1) There exist netizen funds as long as $0 < a^* < 1$.
(2) Netizen fund paradox:
If k(a) is constant, then netizen funding cannot exist.
(3) If k(a) is a step function, then the netizen funding is possible only at the jump points.
[proof] (1) See the text above.
(2) When k(a) is constant, the FOC for *a* becomes: $kE(V) - C = 0$. Since this FOC does not depend on a, the decision rule is that $a^* = 0$ if $kE(V) - C < 0$; $a^* = 1$ if $kE(V) - C > 0$, for m given. Therefore, the optimal decision rule is either ($a^* = 1$, $m^* = m(1)$) if $kE(V) - C - m^* > 0$, or ($a^* = 0$, $m^* = 0$), otherwise. Since $a^* = 0$ signals that $kEV - C < 0$, netizen investors will have no incentives to invest in the film. While $a^* = 1$ signals that $kEV - C > 0$, netizen investors cannot invest since there is no additional fund needed.
(3) Suppose that k(a) has a jump at a_J. For technical purposes, we assume that a (negative) jump occurs at a_J+; $k(a_J) > k(a_J+)$, so that k(a) is a step function with the left-continuity. In this case, it is easy to see that the optimal share will be 0, 1 or a_J, since the same logic as (2) applies for each interval of $[0, a_J]$ and $(a_J, 1]$. When there are multiple jumps, the repeated application of the same logic shows that the optimal share will be one of 0, 1 and jump points. ///

Proposition 1 (3) is a generalization of the netizen fund paradox, and has an implication related to the argument that word-of-mouth effects generally need a critical mass, or a tipping point (see Buchanan, 2002; Rogers, 1995). Simply put, when informed population is less (more) than the critical mass, word-of-mouth effects will disappear (be present). In our setting, the critical mass can be considered a jumping point. The critical mass will be generally determined by the randomness and the system of interaction. If we accept that the Internet provides the mechanism for speeding up the word-of-mouth effects, then we may suppose that the critical mass is not very high. In this case, the proposition implies that the netizen funding will be small, even if it exists.

III. Preemption by the Institutional Investor

It is often the case that institutional investors may have certain privileges when sharing in parts of the revenue. The size of the privileges may depend on the bargaining power and expertise of the institutional investor as well as the compensation for monitoring activities. In addition, unlike institutional investors, netizen investors may not participate in the sharing of the full profits generated by the film such as TV &

video rights and the sales from OST albums. To capture this observation, let us assume that the institutional investor receives portion t of the revenue, which may differ from a.

We consider two cases of preemption. First, we assume that t is a function of a, which is exogenously given. The institutional investor will determine a, considering the effect of a on t. This case will be considered in section III.1. In the second case, we assume that t as well as a are endogenously determined by the institutional investor. Ceteris paribus, the increase of t will decrease netizen investor's profit, while it will increase institutional investor's profit. The institutional investor should reflect this tradeoff in determining t, since netizen investors will invest only if their profits are nonnegative. This case will be considered in section III.2.

III.1. The Case of Exogenous Preemption

We assume that t is a function of a, which is exogenously given. Let $t = t(a)$, where $t(a) \geq a$, $t(0) = 0$, $t(1) = 1$; $t'(0) \geq 1$, $t'(1) \leq 1$; $t'' \leq 0$. In words, the revenue share of institutional investor, t(a), is higher than its cost share a and the revenue share increases faster (slower) than cost share for low (high) share. These assumptions of t(.) are justified by the following observation. The institutional investor has bargaining power over the netizen investors. The bargaining power enables him to expropriate netizen investors' revenue; $t(a) \geq a$. As the institutional investor's share increases from zero shares, the marginal expropriation becomes large, since the total investment by the netizen investors is large ($t'(0) \geq 1$). However, as the institutional investor's share becomes large, the total size of netizen fund becomes small, thus, the marginal expropriation becomes small ($t'(1) \leq 1$). We assume that t'(a) is decreasing ($t''(a) \leq 0$).

Now, let us focus on the institutional investor's decision. Ignoring netizen investors' decision, we will solve the following problem.

$$\text{Max}_{a, m}\ U(a, m) = tk\,E(V) - aC - m.$$

Let us define (a**, m**) as the solution to this problem. For an interior solution, we have the following FOCs.

FOC: $U_a = 0$; $[t'k + tk']E(V) - C = 0$.
$U_m = 0$; $t\,k\,r'W - 1 = 0$.

Note that $d(tk)/da = t'k + tk'$, and $d(t'k + tk')/da = t''k + 2t'k' + tk'' = (-) + (-) + (-) < 0$. Note also that, at $a = 0$, $t'k + tk' = t'(0)k(0) > 0$. On the other hand, at $t = 1$, $t'k + tk' = t'(1)k(1) + k'(1)$ can be positive or negative. Similar to the non-preemption case, we can show that the optimal a will be in the region of $d(tk)/da = t'k + tk' > 0$.

Lemma 3: Define a^0 by $d(t\,k)/da|_{a=a0} = 0$. For any m and $a^+ \geq a^0$, there exists $a^- < a^0$ s.t. $U(a^-, m) > U(a^+, m)$.
[proof] Apply the same logic as Lemma 1. ///

Thanks to Lemma 3, we will focus on the area in which t k is increasing in a. As in the non-preemption case, higher a induces higher m. The following corollary

shows comparative statics results are similar to the non-preemption case.

Lemma 4: [Comparative Statics] Let us define s, a positive constant, as a scale parameter.
(i) Consider the scaled V, sV. Then, a** and m** are higher for higher s, ceteris paribus.
(ii) Consider the scaled C, sC. Then, a** and m** are higher for lower s, ceteris paribus.
(iii) Suppose $V_{GH} - V_{GL} > V_{BH} - V_{BL}$. Consider the scaled p, sp. Then, a** and m** are higher for higher s, ceteris paribus.
(iv) Consider the scaled monitoring efficiency, r', sr'. Then, a** and m** are higher for higher s, ceteris paribus.
[proof] Apply the same logic as Lemma 2. ///

This lemma implies that a better film receives more investment and is subject to increased monitoring by the institutional investor. In addition, the institutional investor will invest more and monitor more if the screening technology and the monitoring technology are more efficient.

Now, let us focus on the netizen investors' decision. The total profit of netizen investors is $(1-t)k\,E(V) - (1-a)C$. Thus, individual netizen investors will invest iff

$$(1-t)k\,E(V) - (1-a)C \geq 0, \text{ or } (1-t)/(1-a) \geq C/[kEV]. \quad (*)$$

For comparison, note that the institutional investor invests iff

$$tk\,E(V) - aC \geq m, \text{ or } t/a \geq C/kEV + m/akEV. \quad (**)$$

Comparing between (*) and (**) shows that if, given a, t(a) - a is large, the interests of institutional investors and netizen investors are more likely to be incongruent, so that (*) may not hold, even if (**) holds. In this case, netizens may not be willing to invest even if the institutional investor invests. While the interest congruency also depends on variables such as C, k, and EV, we can note the following observations.

Proposition 2:
(1) Netizen investors do not necessarily invest when $0 < a^{**} < 1$.
(2) $a^{**} = 0$ implies $kEV - C < 0$. Thus, netizen investors will not invest.
(3) Suppose a** is close enough to 1. Then, netizen investors are willing to invest.
[proof] (1) Obvious since (**) does not imply (*).
(2) Obvious.
(3) For *a* near 1, $t(a) \approx a$ and $m > 0$. Note that institutional investor invests iff $tk\,E(V) - aC \geq m$. Since, for *a* near 1, $tk\,E(V) - aC - m \approx a[k\,E(V) - C] - m$, we have $a[k\,E(V) - C] \geq m - \varepsilon > 0$. Therefore, $(1-t)k\,E(V) - (1-a)C \approx (1-a)[kEV - C] > 0$, so that netizen investors are willing to invest. ///

If (*) does not hold for $0 < a^{**} < 1$, then the institutional investor's decision cannot be fulfilled in equilibrium. In this case, the institutional investor may have to change his decision. Since (a^{**}, m^{**}) does not necessarily hold in equilibrium, let us define (a^p, m^p) as (a, m) in equilibrium. Now, we have the following results.

Corollary 1: Suppose (**) holds but (*) does not hold with a**, where $0 < a^{**} < 1$. Then, in equilibrium, the institutional investor will choose one of the following:
(1) $0 < a^p < 1$, $a^p \neq a^{**}$; netizen investor's profit is zero.
(2) $a^p = 0$.
[proof] First, let us show that a = 1 is not optimal. For this, note that the interests are congruent at $a \approx 1$, and that the profit is higher at $a = 1 - \varepsilon$ than at a = 1, since profit is decreasing where $a > a^{**}$. Note also that, since a** is the unique optimal solution, the institutional investor's profit becomes lower as the distance between a and a** is larger. Thus, the institutional investor will select *a*, as close to a** as possible, while netizen investor's profit is zero. With *a* selected, the institutional investor's profit is tkEV - aC - m = kEV - C - [(1- t)k E(V) – (1-a)C] - m = kEV - C - m. If this profit is positive, then a is in equilibrium ($a^p = a$). If not, $a^p = 0$ is in equilibrium. On the other hand, if (1- t)k E(V) – (1-a)C < 0 for all a, then $a^p = 0$ is in equilibrium. ///

III.2. The Case of Endogenous Preemption

Let us change the assumption of the previous subsection that the preemption function *t(a)* is exogenously given. Now, the institutional investor can determine *t*, independently of *a*. This case is probably more appropriate than the case of exogenous preemption where netizen investors have no bargaining power, since the preemption level will also be determined by the bargaining power. Now, the problem of the institutional investor can be stated as follows:

Max tkEV – aC – m
s.t. (1- t)k E(V) – (1-a)C = 0
tk r'W – 1 = 0

The first constraint implies the profit of netizen investors is zero. Note that netizen investors will invest if and only if the profit is nonnegative; (1- t)k E(V) – (1-a)C ≥ 0. This profit, however, cannot be strictly positive in equilibrium, since the institutional investor can increase his profit by increasing *t*, still attracting netizen investors. Therefore, we have (1- t)k E(V) – (1-a)C = 0 as a constraint. This constraint also guarantees that the solution to this problem constitutes an equilibrium.[9] The second constraint is the FOC where the institutional investor will select m, given t and a, to maximize his profit. Let us define (a^{ep}, m^{ep}, t^{ep}) as the solution to the problem. By plugging the first constraint into the objective function, the problem can be simplified as follows:

Max kEV – C – m
s.t. tk r'W – 1 = 0

An interior solution should satisfy the following FOCs:

---

[9] Of course, for a bad film, it is possible that neither institutional investor nor netizen investors will invest in the film.

$L = kEV - C - m + \mu[\,[kEV - (1\text{-}a)C]\, r'W/EV - 1]$
$L_a = k'EV + \mu\,(k'EV + C)r'W/EV = 0.$
$L_m = k\, r'W - 1 + \mu\,[k(EV)^2\, r''W + (1\text{-}a)CW(r'^2W - r''EV)/(EV)^2 = 0.$

Note that the profit of the institutional investor is $tkEV - aC - m = kEV - C - [(1\text{-}t)kEV - (1\text{-}a)C] - m = kEV - C - m$. Even if his profit is $kEV - C - m$ in equilibrium, the result is not the first best one, since he will opportunistically select m after t and a are determined. Since the solution always satisfies the nonnegative profit condition for netizen investors, netizen funding exists as long as $0 < a^{ep} < 1$. In addition, netizen funding may also exist for $a^{ep} = 0$. For this, note that the institutional investor does not have to select $m^{ep} = 0$, given $a^{ep} = 0$, since he still has bargaining power.

What is interesting is that the netizen fund paradox still hold if k(a) is a constant. The intuition is as follows: the increase of a does not If both the institutional investor and netizen investors participate in profit sharing, then $kEV - C > 0$. On the other hand, the marginal increase of profit as *a* increases is $kEV - C$, where k(a) is a constant. Therefore, the institutional investor will maximize profit with $a = 1$. However, in this case, netizen funding does not exist.

Proposition 3: [Netizen Fund Paradox] If k(a) is a constant, then netizen funding cannot exist.
[proof] With $k' = 0$, the first order condition for the institutional investor becomes $L_a = \mu Cr'W/EV > 0$. Thus, $a^{ep} = 1$ is optimal once the institutional investor invests. Since the institutional investor invests in the film as long as it is profitable, $a^{ep} = 0$ signals a negative profit. ///

IV. Third Party Monitoring, Reputation, and the Bargaining Power of the Producer

So far, we have assumed that the institutional investor has full bargaining power and all profits are distributed to investors. The producer plays a passive role in profit sharing. This assumption is useful when we investigate the interest incongruence between the institutional investor and netizen investors. More importantly, it can also capture the fact that the producer generally recoups his payoff before distributing profit. Note that this assumption is plausible when the producer has little or no bargaining power in profit distribution. On the other hand, the case of endogenous preemption also assumes that the institutional investor may have full bargaining power even if he has zero shares invested. It may be awkward in reality to assume that an investor with zero shares has full bargaining power.

A simple way to resolve these problems is to give some bargaining power to the producer. When individual netizen investors and the institutional investor have little or zero shares, the producer may have high bargaining power.

In general, the producer and institutional investor will share the profit based on relative bargaining powers, while the netizen investors will make zero expected profit. For this, let us consider the case of endogenous preemption, except that the

institutional investor and the producer will share the profit other than that distributed to netizen investors. Let us denote $s = (s_1, s_2)$ as the sharing rule between the producer and the institutional investor, which is exogenously given based on the relative bargaining powers.[10] Base on the sharing rule, $s_1(tkEV - aC) - s_2m$ is the share for the institutional investor, the remaining $(1 - s_1)(tkEV - aC) - (1-s_2)m$ is the share for the producer.[11]

Now, we need to consider the incentive effect of sharing rules on the effort of the producer. Recall that the effort choice was denoted by the probability of high effort, *r(m),* in previous sections. The probability of high effort, however, needs to be changed, since it may be affected by the sharing rule. Since the marginal effect of efforts on the profit share is through $(1 - s_1)(tkEV - aC)$, we may presume that s_2 does not directly affect the effort of the producer. Thus, the probability of high effort can be denoted by $r(m, s_1)$. With this notation, note that $r(m) = r(m, 1)$. On the other hand, we may assume that $r_m = \partial r(m, s_1)/\partial m \geq 0$, $r_{s1} = \partial r(m, s_1)/\partial s_1 \leq 0$. In words, the probability of high effort will increase as the institutional investor monitors more and the profit sharing of the producer becomes higher.

We assume that the maximum of $r(m, s_1)$ is obtained at $s_1 = 0$, regardless of *m*. The reason is that $s_1 = 0$ implies that the producer takes all the profit increase following the effort increase. Therefore, the producer will maximize the probability of high effort when $s_1 = 0$, even without monitoring of his effort.

As a reference, let us find the constrained first best solution (a^{fs}, m^{fs}) given sharing rule (s_1, s_2), where $s_1, s_2 > 0$.

$\text{Max}_{\{a, m\}}\ kEV - C - m$
Then, $a^{fs} = 0$, and m^{fs} solves $kr_mW - 1 = 0$.

Let us go back to the decentralized decision case. Given the sharing rule, the producer will find a solution (a^s, m^s) to the following problem:

$\text{Max}_{\{a, m\}}\ (1 - s_1)(tkEV - aC) - (1-s_2)m$
s.t. $(1 - t)k\ E(V) - (1-a)C = 0$
$\quad s_1\ tk\ r_m\ W - s_2 = 0$

Note that, for equilibrium, the solution should further pass the non-negative profit conditions for both producer and the institutional investor.

---

[10] We avoid the explicit modeling of determination of the sharing rule. In principle, the precise sharing rule will be also endogenously determined by each party's bargaining power and states of nature among others, which is beyond our concern. We simply presume that the relative bargaining power exogenously determines the sharing rules.

[11] Even though the contract theory says that the optimal contract should be more complicated than this linear rule, the linear sharing rule is commonly used in practice. This discrepancy between theory and practice is well recognized in the contract literature (see Holmström and Milgrom, 1987). However, we do not deal with this issue, since it is beyond our concern.

From the constraints, we have: $t = [kEV - (1-a)C]/(kEV)$ and $s_2 = s_1 tk r_m W$. By plugging the expressions for t and s_2 into the objective function, the problem can be simplified as

Max $_{\{a, m\}}$ $(1- s_1)(kEV - C) - (1- s_1 r_m W[kEV - (1-a)C]/EV)m$

FOC: $L_a = (1- s_1)k'EV + s_1 r_m W[k'EV + C]m/EV = 0$.

$L_m = (1- s_1)kr_m W - (1- s_1 r_m W[kEV - (1-a)C]/EV) + s_1 r_m Wm[kr_m W EV - r_m W(kEV - (1-a)C)/EV^2$

From the FOCs, we can find several interesting facts. First, in general, the constrained first best outcome will not be obtained: $a^s \neq 0$, and m^s does not satisfy $kr_m W - 1 = 0$, in general. Second, the netizen fund paradox still holds. With $k' = 0$, FOC becomes $L_a = s_1 r_m WCm/EV \geq 0$. Thus, $a^s = 1$, implying no funding from netizen investors. Therefore, an opportunity for funding will be given to the netizen investors, only if the film is not profitable. Third, if s_1 is low enough, then $a^s = 0$ implying that 100% of netizen funding is optimal. In other words, when the bargaining power of the producer is sufficiently high, the producer is willing to finance fully from netizen investors. The reason is that the lower s_1 is, the lower the effect is on the profit of the incentives distortion of monitoring following the increase of netizen fund. If, in addition, we can select s_1 and s_2 such that $ts_1 = s_2$, then, the second constraint becomes $k r_m W - 1 = 0$, satisfying the constrained first best FOC given the sharing rule. In addition, when $ts_1 = s_2$, the profit share to the institutional investor becomes $s_1(kEV - C - tm) \geq 0$, guaranteeing the participation of the institutional investor. With such (s_1, s_2), the decentralized outcome coincides with the constrained first best outcome. However, when s_1 is not so small or $ts_1 \neq s_2$, then the decentralized outcome will be different from the constrained first best outcome.

An interesting and better case can be found if the producer has full bargaining power, $s_1 = 0$. Note that s_2 needs also to be zero for the participation of the institutional investor. In this case, the second constraint is not needed. The producer solves the following problem:

Max $_{\{a, m\}}$ $tkEV - aC - m$

s.t. $(1- t)k E(V) - (1-a)C = 0$

Equivalently Max $_{\{a, m\}}$ $kEV - C - m$.

The result is that $a^s = 0$, m^s = minimum m since $L_m = kr_m W - 1 = -1 < 0$, for $r_m (m, 0) = 0$. The producer can raise 100% of fund through netizen investors. In addition, the profit of the film is also maximized among sharing rules. The revenue is maximized since $r(m, s_1)$ is maximized with $s_1 = 0$. The monitoring cost is minimized, since the full profit sharing makes the producer maximize the probability of high effort, regardless of monitoring of the effort. However, there is still need for monitoring the quality to attract the netizen investors. Thus, *at most*, only the monitoring of the quality is needed: $m = m_0$.[12] In this sense, the outcome is the best outcome among all

[12] It is possible that the producer can finance without being monitored for quality if the ex ante probability of good quality (p_0) is high enough. However, if p_0 is not so high, or monitoring is efficient, then the producer is willing to be subject to monitoring.

constrained first best outcomes given sharing rules.

Now, we need to interpret the monitoring cost m. Since the institutional investor does not participate in profit sharing, he has no strong incentives to monitor the producer. Since the producer possesses the full bargaining power, the institutional investor should expect zero profit even if he monitors.[13] In this situation, the institutional investor is actually a third party monitor, not an investor. Since the producer voluntarily receives a third party monitoring in order to attract netizen investors, monitoring cost would be better understood as bonding cost by the producer (see Jensen and Meckling, 1976). By voluntarily obtaining monitoring, the producer can finance fully through netizen funding.

Even if the producer maximizes the probability of high efforts, monitoring is still needed since it provides information about the quality of the film. Cost of monitoring the quality can be further saved if the probability of high quality is known to be high. In our notations, this situation corresponds to the case in which p_0 is high enough, or the probability of high quality is already revealed as p. This case can be observed when the producer has reputation or trustworthiness on the quality of film that he produces.[14] A producer with such reputation can raise 100% of netizen funding without monitoring. Even though this situation is not a general case, it has some implications on the netizen funding behavior in practice as we discuss in the following section.

Proposition 4: Suppose the profit sharing rule (s_1, s_2) is linear.
(1) A netizen fund paradox exists for positive s_1 and s_2.
(2) If the producer has high bargaining power, then 100% of netizen funding is possible. The institutional investor will play the role of a third party monitor. (2i) When the producer does not have full bargaining power, there exists a distortion in monitoring incentives of the institutional investor. (2ii) When the producer has full bargaining power, then the producer can also minimize the monitoring cost, even if he may not avoid monitoring.
(3) If the producer has reputation or trustworthiness regarding the quality of his films, then 100% of netizen funding is possible and no monitoring cost is incurred.

Proposition 4 implies that reputation and third party monitoring are important for financing fully through netizen fund when the sharing rule is linear. While we have focused on a linear profit sharing rule, there exist diverse alternative sharing rules. For example, the sharing rule may depend on the realized states of nature. This contingent scheme will provide high incentives for the producer to make high effort. Even though this contingent scheme can be a better incentive tool than monitoring in theory, it is easy to see that reputation and monitoring by a third party are still important for any such schemes.

Let us consider the case in which the producer provides netizen investors with

---

[13] Zero expected profit from monitoring implies a competitive monitoring market.
[14] We do not formally investigate how the producer builds his reputation, which is beyond our main concern. The producer may build his reputation based on his artistic or aesthetic philosophy or the concern for long-term profitability.

insurance against losses. Note that insurance is the most empowered incentive tool, since all losses should be borne by the producer. In addition, insurance is one type of contingent scheme that is used more often than others. As an empowered incentive tool, insurance can be used as a mechanism that replaces the monitoring function (see Seog, 2004, for the signaling effect of insurance). Under an insurance scheme, netizen investors may not require the monitoring of quality and effort.

However, reputation and third party monitoring are still important when the insurance scheme is used. Even if the producer promises insurance, it does not mean that he has enough cash or assets to fulfill the promise. Therefore, netizen investors will trust the promise only if the producer is trustworthy or a third party, like insurance firms, guarantees the promise. Since the third party guarantor also needs to monitor the producer, we again reach the conclusion that reputation and monitoring by a third party are important.

V. Applications

The results of the analysis have several implications. First, the netizen fund paradox highlights the main tradeoff in netizen funding. As the proportion of the netizen fund increases, the monitoring incentive of the institutional investor decreases while the netizen effect is increasing. If the netizen effect does not exist, then funding from netizen investors only decreases the monitoring incentive of the institutional investor, without contributing to the success of the film. In this case, the institutional investor will make full investment if the film is profitable. As a result, funding opportunity is given to netizens only if the film is not profitable. Knowing this fact, netizens will not invest at all.

When the netizen effect is not constant, netizen funding can exist. If the netizen effect needs a critical mass that is not high, we expect that the proportion of netizen fund will be low. More generally, the netizen fund proportion cannot be very high in general if information asymmetry exists between producers and investors, since large netizen funding signals that the film is not profitable. This result explains why the netizen funding is small in size relative to production costs, in general. It also shows that netizen funding is used as a marketing tool rather than financing. In practice, the producer generally also limits the maximum amount of investment per netizen. In this way, the producer tries to maximize the netizen effect given the size of the netizen fund.

Second, our results propose the conditions under which the netizen funding can be large. If possible, 100% netizen funding is desirable to the producer since it can maximize the netizen effect. We suggest two possible ways to fully financing with netizen funding. One way is to reduce the incentive distortion in monitoring of institutional investor. When the producer has high bargaining power, the effect of the incentive distortion on monitoring is reduced. Thus, a producer with high bargaining power can finance fully through netizen funding. However, the producer still needs to be monitored by a third party. The other, and better, way is to resolve the interest conflicts between the producer and netizen investors. We suggest that the reputation of the producer is important in this aspect. When netizen investors fully trust the

producer, full financing with netizen funding is possible, without monitoring by others.

These results can explain why some films can raise a high proportion of netizen fund. One recent example can be found in the funding for "A Good Lawyer's Wife." Its producer, "Myung films" was successful in financing over-70% of the production costs through netizen funding. Among others, we attribute the success of netizen funding to the reputation of the producer for producing quality and successful films. Another interesting feature of netizen funding for "A Good Lawyer's Wife" was that the producer offered insurance to guarantee 70% of the investment amount. As discussed in the above section, the insurance offer along with the reputation of the producer together contributed to the high proportion of netizen funding.

Our results can also explain why netizen funding is relatively large for pop song albums, concerts, and musicals, compared with the film cases.[15] In these cases, the characteristics of the singers, the producer and the repertories of the musicals are relatively well known (at least to their fans). In other words, there exist the reputation effects of singers and musicals. Therefore, the reputation effect can explain the large netizen funding in those areas.

Finally, let us note that the netizen funding has both characteristics of marketing and financing. When information asymmetry and monitoring incentive problems are present, netizen funding is more likely to be a marketing tool, rather than a financing tool. As those problems are resolved, netizen funding becomes more likely to be a financing tool.

VI. Conclusion

We investigate the roles of netizen funding that became popular along with the recent boom of Korean films. We try to explain: First, why the netizen fund proportion is low in general? Second, why some films are able to raise a high proportion of netizen fund, while others not? Third, what is the role of netizen funding: Is it financing or marketing?

We consider the model in which there exist information asymmetry problems between the producer and investors. We show that a "netizen fund paradox" exists, implying that netizen funding cannot exist when the netizen effect is constant. The main cause of the netizen fund paradox is the tradeoff between monitoring incentives of the institutional investor and the size of netizen fund. When the netizen effect is not constant, netizen funding can exist. If the netizen effect needs a critical mass that is not high, we expect that the proportion of the netizen fund will be low. More generally, the netizen fund proportion cannot be very high in general if information asymmetry exists between producers and investors, since large netizen funding signals that the film is not profitable.

We also propose the conditions under which the netizen funding can be large. One

---

[15] We have not mentioned about netizen funding for pop song albums, concert and musicals, since there are not many cases and data are insufficient. However, from the data available to authors, the average of netizen funding ratio is calculated as over 33%, which is much higher than 7.62% for film cases.

way is to reduce the effect of incentive distortion in monitoring of institutional investor. When the producer has high bargaining power, the effect of incentive distortion in monitoring is reduced. Thus, a producer with high bargaining power can finance fully through netizen funding. However, the producer still needs monitoring by a third party. The other, and better, way is to resolve the interest conflicts between the producer and netizen investors. We suggest that the reputation of the producer is important in this aspect. When netizen investors fully trust the producer, full financing with netizen funding is possible, without monitoring by others.

Our results imply that when the information asymmetry and monitoring incentive problems are present, netizen funding is more likely to be a marketing tool, rather than a financing tool. As those problems are resolved, netizen funding can work as a financing tool.

It is important to note that our results depend on the sharing rules that are clearly defined. The recent alleged frauds and wrongdoings in sharing profits are hindering the growth of the market for netizen funding. Unless the sharing rules are clearly defined in advance, there are, for example, higher incentives for the producer to report a lower than actual profit. If this occurs, the netizen investors will not invest in the film, since netizen investors have no bargaining power. Only after the transparent sharing rules and accounting practices are established, netizen funding will become an important financing source.

Table 1: Selected Netizen Funding

Title	Year of Release	Funding Agent Company	Production Costs	Netizen Funding	Netizen Funding Ratio
The Foud King	2000	Intz Fund	120,000	10,000	8.33%
Die Bad	2000	Intz Fund	13,000	560	4.31%
Joint Security Area	2000	Intz Fund	300,000	10,000	3.33%
The Legend of Ginko	2000	Intz Fund	450,000	10,000	2.22%
Tears	2000	Enterfund	35,000	4,000	11.43%
Libera Me	2000	Enterfund	450,000	10,400	2.31%
Jakarta	2000	Enterfund	170,000	10,000	5.88%
Dream of Warrior	2000	Hans Global	270,000	33,000	12.22%
My Sassy Girl	2001	Goosdaq	220,000	10,000	4.55%
Indian Summer	2001	Goosdaq	300,000	10,000	3.33%
My Wife Is Gangster	2001	Unitel	270,000	20,000	7.41%
My Boss, My Hero	2001	Enterfund	300,000	70,000	23.33%
Guns & Talks	2001	Enterfund	300,000	15,000	5.00%
Failan	2001	Enterfund	270,000	25,000	9.26%
Friend	2001	Enterfund	350,000	10,000	2.86%
Kick the Moon	2001	Daum	320,000	15,000	4.69%
Sorum	2001	Daum	210,000	25,000	11.90%
One Fine Spring Day	2001	Daum	320,000	15,000	4.69%
My Beautiful Girl, Mari	2001	Enterfund	400,000	10,612	2.65%
2009-Lost Memories	2001	Enterfund	900,000	10,000	1.11%
Resurrection of the Little Match Girl	2002	Enterfund	1,100,000	10,000	0.91%
Over the Rainbow	2002	Enterfund	350,000	11,045	3.16%
Oasis	2002	Enterfund	320,000	15,859	4.96%
Conduct Zero	2002	Enterfund	430,000	9,033	2.10%
Sex Is Zero	2002	Enterfund	400,000	13,000	3.25%
Last Scene	2002	Entersdaq	100,000	5,000	5.00%
A Good Lawyer's Wife	2003	Myung Films	285,000	200,000	70.18%
A Tale of Two Sisters	2003	Enterfund	410,000	25,000	6.10%
Reversal of Fortune	2003	Enterfund	398,000	13,362	3.36%
Wonderful Days	2003	Enterfund	1,000,000	30,000	3.00%
Lost in the South Mission: Going Home	2003	Enterfund	450,000	30,000	6.67%
Old Boy	2003	Enterfund	460,000	20,000	4.35%
Average					**7.62%**

* Unit: 10,000 Won for production cost and netizen fund
* Sources: various netizen funding agent companies
** Some films are not listed due to insufficient data. We list only the netizen funding for production of Korean films. There are also cases of netizen funds for marketing and distribution of films and for musicals and music albums.

References

Buchanan, Mark, 2002, *Nexus: Small Worlds and the Groundbreaking Science of Networks*, Norton & Company (New York).

Cine 21, 2004, http://www.cine21.co.kr/kisa/sec-001100100/2004/09/040906105255010.html

Grossman, Sanford J. and Hart, Oliver D., 1980, "Takeover Bids, the Free-Rider Problem, and the Theory of the Corporation,' *Bell Journal of Economics* 11 (1): 42-64.

Holmström, Bengt and Paul Milgrom, 1987, "Aggregation and Linearity in the Provision of Intertemporal Incentives," *Econometrica* 55 (2): 303-328.

Jensen, Michael, C. and William H. Meckling, 1976, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics* 3 (4): 305-360. Korean Film Council, 2004, " Hankook Younghwa Sanup 1~8 Wol Tonggye [Koren Film Industry Statistics: January through August]," http://www.kofic.or.kr/data/kofic_data_detail.asp?page=1&p_part=&p_item=&pds_seq=127

Myung Films, 2003, http://www.myungfilm.com/baramnanfund/

Rogers, Everett M. 1995. *Diffusion of Innovations*, 5th ed., Free Press (New York).

Samjong KPMG Group, 2002, *Younghwa, Munhwaeseo Sanupeuro* [Film, from Culture to Industry], Samjong KPMG Group (Seoul, Korea)

Seog, S. Hun, 2004, "The Strategic Role of Insurance: The Warranty Case," *Working Paper.*