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Social Entrepreneur and NPO in Collective
Action for the Global Commons

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**Social Entrepreneur and NPO
in Collective Action for the Global Commons**

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Abstract

The Olsonian "by-product theory" of collective action is re-examined by taking into consideration the indispensability of organizer's works to any collective action. It is derived (i) that business schemes must be undertaken by the leadership of an entrepreneur type of organizer in order to stop the global commons from being degraded, (ii) that under some conditions, social entrepreneur can contribute to financing collective action for the global commons on a more sufficient level than other types of entrepreneurs, and (iii) that the qualifications for the social entrepreneur are, skills on the organizing and managing work and missions to collective interests. A three-stage game in which an "eco-good" scheme is undertaken by an organizer is presented in order to illustrate the main logic.

Key Words: Global Commons, Organizing Work, Selective Incentive, Social Entrepreneur, Not-for-Profit Organization.

JEL Classification Codes: H41, L31, L21

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1. Introduction: the Motivation

Let me begin with introducing a historical example for collective action: It is the "Social Network on the Yahagi-River Basins," and the arena of its activities is located in the central area of Japan. An irrigation canal system for paddy plantation was set up in a mid basin area of the Yahagi River in the late 19th century. The cost of constructing and managing the canal system was financed by means of the beneficiaries' voluntarily joining in a cooperative, i.e., their paying membership fees, and thus shared by more than 14,000 paddy planters who were the beneficiaries of the canal system. The salaries to the managers running the canal cooperative have been also fully covered by those membership fees. The service provided by this irrigation canal was a private good in the sense that it is excludable. More strictly speaking, it is a club good. The club institution became possible, because the cost to monitor and enforce as well as to provide the canal service was not prohibitively high, relatively to the fee revenues.

After some time passed, the managers have been serving those members of the cooperative not only with the canal service, but also with their collective interests such as preserving the river-water's quality and reforesting the sparsely-populated mountain areas. Those collective interests were, if not fully, achieved by those members being organized so as to join in collective action on various levels. In particular, with the aim of preserving the river-water's quality, the managers succeeded, in the late 1960,th in organizing not only those members of the cooperative but also more than one million beneficiaries who are inhabitants on the up to down basins of the river, including Toyota City with more than 300 thousands of citizens in the mid-basin area. Now, a part of those inhabitants including even fishermen families living on the coast in the down-basin area are voluntarily joining in activities to reforest the headwaters area. This voluntarily-formed socio-economic network is called the Social Network on the Yahagi-River Basins. Now, similar socio-economic networks can be also observed on other river-basins in Japan.

The performance of the Social Network may look very successful in terms of any type of their collective interests. However, the collective action for reforestation has been quite poorly performed relatively to the required level. This poor performance may seem to be contradictory with the fact that the Social

Network could accomplish another collective interest, i.e., the preservation of the river-water's quality, on a satisfactory level. Those collective actions for both types of the collective interests could be organized based on a selective incentive, i.e., the canal service. However, one is achieved on a satisfactory level but another is on a poor level. Why?

Let me take another example in Japan, which is literally acting on a more local scale. It is a not-for-profit organization in Saijo Town, aiming at preserving those mountain forests which are considered to be the headspring of mineral-rich underwater for Japanese sake brewage which is the major industry of that town. There are about ten brewers of Japanese sake in Saijo Town with about seventy thousands citizens. Those brewers voluntarily formed a trade union, not only based on the logic of the "privileged group" of small size," but also reinforced by some selective-incentives such as collection of their market information. Recently, it funded the not-for-profit organization mentioned above, with a view to preserving those mountain forests. The managers of the organization are engaging in social activities such as enlightening other citizens to be conscious of the various benefits to them of those mountain forests, with the aim of organizing those citizens so as to voluntarily join in activities of preserving those forests.

However, those voluntary activities cannot yet expand beyond those persons directly interested in the brewery business. By contrast, the other group interests of the brewers such as protection of the industry have been achieved on a satisfactory level. Why?

According to the traditional Olsonian logic of collective action, any collective interest should be if not fully achieved, if an attractive "selective incentives" scheme can be carried out. According to our observation on the Social Network, or the not-for-profit organization, however, one collective interest can be achieved on a sufficient level, but another can not. Though they may be examples on geographically a local scale, such contradicting phenomena are also observed in a contrast between international agreements on the prohibition of CFCs emissions and those on a cut in greenhouse gasses emissions. This contradicting phenomenon arises on geographically a global scale, but the essential nature is the same as the former contradicting phenomena arising on geographically a local scale. Those contradicting phenomena motivate us to re-examine the traditional logic of collective action.

2. The Missing-Link: Organizer's Works

Why can not the traditional logic of collective action explain the above contradicting phenomena? It is because they have not comprehensibly examined the problem of collective action both from the beneficiaries' angle and from the organizer's angle. In particular, they have missed some crucial roles of the organizer in any collective action. According to the *generalized logic of collective action* (Ueda, 2003a), the organizing and managing work are indispensable to any collective action, but costly. The organizing work, in particular, must be done prior to the stage of realizing the collective interest and is subject to an incomplete-contract problem due to its unverifiable nature. So, selective incentives are required to motivate the organizer to take on his works of organizing even a small group, as well as to induce the members of a large group.

In this paper I take the organizer into due consideration, not only because without his works, any collective action can not be organized, but also because even in the absence of a sufficient direct demand for collective interest, it may be realized by his business leadership under which creative business schemes as an alternative to the conventional "selective-incentives" are undertaken.

The *generalized logic* classifies groups and their collective interests into the "privileged group" and "latent group," depending on whether or not the total direct net benefits to all concerned members of a collective interest can become positive or not¹. For the privileged group, under the condition that the organizer is motivated to do so, the collective action to achieve their collective interests can be organized more or less, because the members of each group have incentives for sharing in the cost of collective interests. On the other hand, for the case of the latent group, those members are unable to be organized, unless there is an appropriate "selective incentives" scheme in addition to the benefits of their collective interest.

The privileged group is further divided into two cases: the case (i) in which the cost to the organizer of collective action is not so heavy that the organizer's

¹ Those terminologies were borrowed from Olson (1965). However, the "intermediate group" is subsumed under the privileged group defined in this paper, and the concept of the privileged group is refined in this paper.

works can be compensated with a part of the net benefits, and the case (ii) in which the organizer's works are too heavy to be compensated with the net direct benefits of the collective interest. In the case (i), the group members are organized, but for the case (ii), they are not in spite of them belonging to a privileged group.²

The latent group is also classified into two cases: the case (i) in which the net total proceeds of a selective-incentives scheme can compensate for the organizer's works, and the case (ii) in which it is impossible to compensate for his works with those net proceeds. It is to the case (i) that the by-product theory of collective action can fit well. For the case (ii), on the other hand, a more creative business scheme as an alternative to the conventional selective-incentives must be invented intentionally by the organizer. In order to solve or alleviate the problem of collective action for this case, accordingly, the organizer is required to meet more sophisticated and more talented kinds of qualifications such as *entrepreneurship* and *high missions* to collective interests than for the other cases. This paper shows these qualifications to be crucial to organizing the collective action of the latent group (ii).

Taking common-pool resources for example, the so-called *local commons* correspond to the collective interests of the privileged groups (i)³. On the other hand, the *global commons* are subsumed under the collective interests of the latent groups (ii). For the latent groups (i) and for the privileged groups (ii), their common-pool resources should be subsumed under the labeling of *club commons*. This labeling is aimed at emphasizing that each of those commons can be put to a sustainable use by collective action organized by the leadership of an existing club organization, which was beforehand organized as a result of some conventional selective-incentives.

It should be noted that such a classification of common-pool resources is based on neither natural characteristics nor geographical scales, but on their economic dimensions. Both the ozone layer and global temperature are our collective interests on a global scale in a geographical sense. However, the former belongs to the local or club commons, but the latter to the global commons. That is why

² The privileged groups defined by Olson (1965) can not examine this case. It is because his logic did not take into consideration the crucial roles of the organizer and his costly works.

³ The examples taken by Ostrom (1990) belong to this category.

the agreement on preserving the former, i.e., the *Montreal Treaty*, could be ratified more easily than that on the latter, i.e., the *Kyoto Treaty*, even if both agreements are concerned with common-pool resources on a global scale in a geographical sense.⁴ Returning to the Social Network on the Yahagi-River Basins, or the not-for-profit organization, it should be noted that those mountain forests belong to the global commons, even if their geographical scale looks local. On the other hand, the preservation of river-water's quality is considered as a club common.

The general logic of collective action, therefore, tells us to re-examine the commons' dilemma from new angles as well as from that of the traditional logic. This re-examination inspires us to seek a new solution in the entrepreneurship and missions of the organizer.

3. The Logic of Collective Action: Re-considered

As mentioned in the above, analyses in this paper are based on the generalized logic of collective action put forward by Ueda (2003a). The concepts and terms are not the same as the traditional ones. In this section, accordingly, the basic concepts and the theoretical framework are explained as a preliminary work. In what follows, each group is assumed to consist of the *beneficiaries-members* and an *organizer-member*.

3.1 An Outline of the General Logic of Collective Action

The collective action is defined as the coordinated actions of group members, through which a collective interest of those group members is realized. The collective action is divided into two types. The first type is one by which other persons outside of the group are not harmed. This type of collective action brings about Pareto-improving outcomes to the whole society. The second type is one by which those outsiders are harmed. This latter type of collective action has other terminology such as *coalition* and *rent-seeking activity*. This paper focuses mainly on the first type of the category in order to emphasize the creative or

⁴ Sandler (1998, 1995) acknowledged this difference, but both commons were subsumed under the same category.

productive nature of those coordinated actions, i.e., the productive nature of a political activity.

Any collective action is accomplished not only by beneficiaries' cost-sharing but also by organizer's leadership. Those beneficiaries have to share in the cost to achieve their collective interest. On the other hand, the organizer has to take on the leadership for collective action. The leadership functions are divided into (i) the *organizing work*, and (ii) the *managing work*. The organizing work is consisted of various kinds of ex ante works prior to achieving the final goal. It is comprised, for example, of works to create new ideas, to make plans and strategies, to persuade other members, and to set up organizations, etc. It represents the essential characteristics of the so-called *entrepreneurship*⁵. On the other hand, the managing work is comprised mainly of his works as a manager at provision stages. It includes a monitoring and enforcing work. It represents so-called *management or administration*.

The organizing work is sure and the managing work is more or less, exposed to non-verifiability or incomplete-contract problem, according to the terminology of the contract theory,⁶ in spite of its being indispensable to any collective action. The organizer, therefore, has to be able to carry out an appropriate incentives scheme which not only brings about the net benefits to the beneficiaries but also gives himself an incentive to take on his works. When both conditions for the beneficiaries and organizer to be motivated can be met, the collective action can be organized more or less.

It is the most difficult to organize those groups whose beneficiaries belong to the latent group (ii) and at the same time whose organizer's works are very costly. The global commons are collective interests of this type of group. For such a group, it is hard to set up a club type of organizations the members of each of whom belong to a common economic class and so have natural tendency to have sympathy for each other through their daily works. The organizer is faced with such a severe hardship as to destroy his life, if he launches into organizing the case (ii) of the latent group by naive means such as persuasion or enlightenment.

In order to get over such an ordeal, the organizer has to be able to undertake

⁵ Regarding a survey on the Austrian concepts of entrepreneurship, refer to Kirzner (1973).

⁶ As to the concept of incomplete contract, see Salanie (2000).

more creative business schemes such as eco-goods and eco-lotteries, according to which a part of the net profits obtainable from undertaking those schemes are earmarked for financing the activities to preserve those global commons. Each beneficiary can gain some additional benefits through her purchasing those private goods, without paying any additional cost to preserving the global commons. On the other hand, the costly works of the organizer can be compensated not only with a salary payment but also with benefits obtainable from the collective interest itself.

Turning our eyes to the organizational forms under which those schemes are undertaken, we can observe they are usually of a not-for-profit type (NPO, hereafter). This must be because under this type of organizational form the organizer can gain a larger payoff of his own than under a for-profit organization (FPO, hereafter), as long as he is a selfish type of individualist.

This requires the organizer to become a *social entrepreneur* rather than *business or political entrepreneur*, let alone *volunteer*. Differences among those types of entrepreneurs reflect differences in how the organizer's works of a non-verifiable nature are compensated. The business entrepreneur compensates his organizing work with the residual right to business profits. The political entrepreneur is compensated with the residual right to privileges as well as salary when the collective interest is realized as a public good. On the other hand, the social entrepreneur is compensated with salary and the benefits obtainable from the collective interest. The volunteer is not required to be compensated with any monetary reward. So, it must be shown that the organizer who organizes collective action for the global commons, i.e., that of the latent group (ii), chooses becoming a social entrepreneur on a rational but not altruistic basis.

3.2 The Beneficiaries: Myopic or Foresighted Type

The beneficiaries of collective action are classified into a *myopic* and *foresighted* type of selfish individualists. The myopic type seeks to maximize her payoff realized only in the present period. Therefore, this type of member does not care about any repercussion of her present actions on her future payoff, let alone others. By contrast, the foresighted type seeks to maximize her payoff

As to the examination of the political entrepreneur, see Ueda (2003b).

realized in her whole life-period. This type of member, accordingly, takes into allowance the repercussion effects of her present actions on her future payoff, even if into no allowance on other members' payoffs.

This classification of selfish individualists is important, when the whole process of achieving collective interests is considered to be comprised of several stages. Usually the cost of collective action must be borne at some ex ante stages prior to the stage of realizing their collective interest. Under such a circumstance, the myopic type refuses to bear the ex ante cost, even if the benefits realized in the future can exceed the cost from the *objective viewpoint*. If, therefore, the myopic type accounts for the majority of a group, the first task of the organizer is to enlighten them to become conscious of the future effects of their present actions, with the aim of transforming them into a foresighted type. Such an enlightening activity is one of his costly organizing works.

A group consisting of the beneficiaries of a myopic type always belongs to the latent group, because they can not be conscious of the future benefits obtainable from the present cost-burden. On the other hand, a group consisting of the beneficiaries of a foresighted type belongs to the privileged groups or the latent group. In what follows, I take up a group consisting of the myopic beneficiaries.

4. A Business Scheme for the Global Commons: "Eco-Goods" Scheme

In this section, a business scheme to get over the global commons' problem is explained. It starts from a situation where there are n beneficiaries of a myopic type and an organizer. Those beneficiaries belong to the case (ii) of the latent group even after they are transformed into a foresighted type. That is, those beneficiaries have no common socio-economic backgrounds, such as economic classes which make it easier to carry out conventional selective-incentives schemes. For those beneficiaries belonging to a latent group (ii), the organizer has to carry out more creative business schemes.

In order to get over the problem of the latent group (ii), just after he has enlightened those myopic beneficiaries to be of a foresighted type, the organizer offers an "eco-goods" scheme,⁸ according to which he promises that a part of the

⁸ As to the examination of an eco-lotteries scheme, see Ueda and Svendsen (2002), and Nishizaki et al (2004). See also Morgan (2000), though his model does not take

net proceeds of the eco-goods are earmarked for financing achievement of their collective interest, i.e., preservation of the global commons. Those beneficiaries are assumed to have a sufficient demand for those eco-goods themselves. When they are offered such a business scheme, they are motivated to purchase more of the eco-goods, because they can obtain an additional benefit from achieving their collective goal more or less, even if they have no incentive to share in the cost of the collective interest.

However, an obstinate principal-agent problem intervenes between the beneficiaries' purchasing stage and the organizer's financing stage, because there is no guarantee for his earlier promise to be kept later. If the eco-goods scheme is undertaken under FPO run by business entrepreneur, he has a legal title to all of the net profits. Unless the beneficiaries can monitor the process of his earlier promise being kept under FPO, they lose trust in the scheme, resulting in a failure of the scheme.

With the aim of alleviating that principal-agent problem, the organizer must choose adopting NPO and at the same time becoming a social entrepreneur. In order for his choice to be rational, the payoff to a social entrepreneur must be larger than that to business entrepreneur. This rationality condition is met, if the total of both a salary to the social entrepreneur and the benefit to him of the collective interest are sufficiently large, compared to the business entrepreneur's revenue distributed from the net profit realized under FPO.

The high salary to the social entrepreneur can be realized, if the beneficiaries are apt to spend much more on the eco-goods under NPO than under FPO, i.e., if the beneficiaries have more trust in the scheme under NPO. On the other hand, the benefit to him of the collective interest becomes larger, as the organizer has higher evaluation on his missions to it.

The above conditions for NPO to be chosen are the same as the qualifications for the social entrepreneur, which are reduced to; (i) skills and know-how required for entrepreneurship, and/ or (ii) high missions to collective goals. Accordingly, as long as our society is provided with a sufficient number of those qualified social entrepreneurs, collective action for the global commons can be financed by the business leadership of the social entrepreneur, and thus we can seek a new solution to the tragedy of the global commons.

into consideration the organizer and his works.

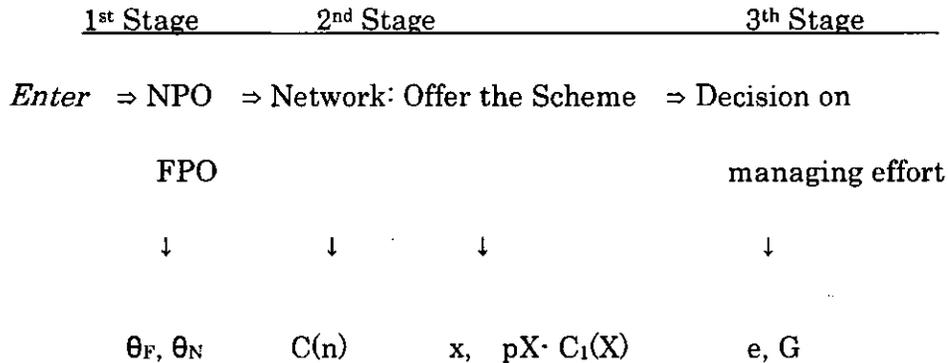
5. The Basic Model'

In this section, I come up with a three-stage game model to examine the efficacy of the eco-goods scheme. Let us begin with outlining the game structure.

5.1. A Three-Stage Game

The whole process of achieving a collective goal is divided into three stages consisting of "enter," "network," and "provide" stage, in turn. Perfect information is assumed. An organizer and n beneficiaries play the game. Those beneficiaries are of a myopic type. The outline of the game is described in the *Figure 1* below.

Figure 1: The Time Line of the Game



At the beginning of the first stage, the organizer decides on whether to undertake a business enterprise of the eco-goods. If his net payoff is expected to be positive, he launches into the enterprise. Then, he has to choose an organizational form between NPO and FPO. When he chooses NPO and thus becomes a social entrepreneur, he must be subjected to the non-distribution constraint. In accordance with the hypothesis of the rational NPO, this paper assumes that the non-distribution constraint is represented by the assumption

' The game model in this section is a special case of a general approach by Ueda and Wagener (2004). As to the case of a eco-lottery scheme, see Ueda and Svendsen (2002).

that the social entrepreneur has to be satisfied with a lower share in the net proceeds, θ_N , than the share of the business entrepreneur, θ_F , distributed under FPO.

At the beginning of the second stage, the organizer has to organize those n beneficiaries of a myopic type so as to go along with the eco-goods scheme. This organizing work is mainly comprised both of the work to enlighten those myopic beneficiaries to become conscious of the global commons, and of the work to form a socio-economic network consisting of those n foresighted beneficiaries who are consciously ready to purchase the private eco-goods in expectation of a part of the net proceeds being earmarked for financing the preservation of the global commons. The effort of the organizing work is denoted by $C(n)$. If $C(n)$ is too high to satisfy the participation constraint, the organizer refuses to play the game. So, it should be noted that one of the qualifications for any type of entrepreneur is sufficient level of skills on the organizing work.

The eco-goods scheme offered at this stage is specified as follows: First of all the organizer selects a private good from among existing private goods. As the candidate for the eco-good, private good with over production-capacity is best suited to this scheme, because in this case the organizer need not spend any additional expenditure on fixed equipments to adjust to an increase in the demand. Starting from the existing selling price, p , of the chosen private good, a portion, $1-\theta$, of the net proceeds is promised to be earmarked for preserving the global commons. The size of this promised portion is dependent on his organizational choice at the first stage. After each beneficiary accepts the offer, she makes a decision on how many of the private goods to purchase, denoted by x , so as to maximize her payoff comprised not only of the net benefit of the private goods but also of the benefit obtainable from preserving the global commons.

At the end of the second stage, the total net profits of the eco-goods business turn out to be; $pX - C_i(X)$, $X = nx$ for a symmetric case, where $C_i(X)$ is the cost function of the private eco-good. It is assumed, as usual, that $C_i(0) = 0$, $C_i' > 0$, $C_i'' > 0$. Due to the condition of the overcapacity, it can be assumed that $p - C_i'(X) > 0$ at the increased production level under the scheme.

At the third stage, the organizer makes a decision on how much managing

effort, e , he should make in order to transform the net proceeds earmarked for the preservation of the global commons into an actually realized preserved level. In what follows, the preservation of the global commons is called a *collective good*. The quantity of the collective good is represented by the preservation level of the global commons. The game ends with provision of the collective good, the quantity of which is denoted by G .

In the next subsection, the basic assumptions of the base model are detailed.

5.2. The Basic Assumptions and Definitions

The Players and Payoff Functions: There are assumed to be n symmetric beneficiaries (consumers), and an organizer. The payoff of the representative beneficiary is a function of three variables; numeraire goods represented by leisure time, private and collective goods. The payoff of the organizer is a function of numeraire goods, collective goods, and income revenues distributed from the net proceeds of the eco-goods business.

The payoff function of the representative beneficiary, U , is defined as follows:

$$(1) U(L, x, G) = L + \varphi(x) + v(G),$$

where $\varphi(0) = 0$, $\varphi' > 0$, $\varphi'' < 0$, $v(0) = 0$, $v' > 0$, and $v'' \leq 0$. L , x , and G denote, in turn, her leisure time, private goods, and collective goods she consumes, respectively. Each beneficiary is subject to the following resource constraint:

$$(2) I = L + px,$$

where I and p stand for her initial resource endowment and the price of the private good, respectively.

The payoff function of the organizer, Π , is defined as follows:

$$(3) \Pi(L_E, y, G) = L_E + y + v_E(G),$$

where L_E , y and v_E are, in turn, his leisure time, his salary obtainable from undertaking the eco-goods business, and the benefit to him of the collective goods themselves. It is assumed, as usual, that $v_E(0) = 0$, $v_E' > 0$, and $v_E'' \leq 0$. The organizer is subject to the following resource constraint:

$$(4) I_E = L_E + C + e,$$

where I_E , C , and e are, in turn, the organizer's initial endowment, the organizing work, and the managing work.

The Strategies: The beneficiary decides on her purchase of the private goods, i.e., eco-goods, subject to her resource constraint, in the expectation that she can gain some benefit of the collective good at the third stage as well as the benefits of the private goods themselves at the second stage. The organizer decides on how much work of management to do for providing the collective good at the third stage, on which organizational form, NPO or FPO, should be chosen to run the business enterprise of the eco-goods at the first stage, and whether or not to take on the work to organize those n beneficiaries of a myopic type at the second stage.

The Production Function of the Collective Good: The collective good is provided by the organizer's effort to transform a portion of the net proceeds of the eco-goods into the collective good. How much quantity and/or how high quality of the collective goods is provided depend on how much managing work he does at the last stage. The transformation function is denoted by $\psi(e)$. It is assumed that $\psi(0) = 0$, $\psi' > 0$, and $\psi'' < 0$, as usual. Thus, the actual output level of the collective goods, G , is defined as follows:

$$(5) G = \psi(e) (1 - \theta_i) (pX - C_i(X)), \quad i = F \text{ or } N,$$

where $(1-\theta_i)$ denotes a portion of the net proceeds of the eco-goods under i organizational form, which are allocated to financing the collective good.

Here, it should be noted that the cost of organizing work, $C(n)$ can not be subtracted from the net proceeds, because the organizing work is of an unverifiable nature.

A Threshold Condition: In order to provide the collective good, n beneficiaries are required to join in the eco-goods scheme, and furthermore the portion of the net proceeds which are allocated to financing the collective goods must exceed a threshold level, denoted by G_0 . This threshold condition must meet both (6) and (7) below.

$$(6) \quad (1-\theta_i)[n(px_0) - C_1(nx_0)] \geq G_0$$

$$(7) \quad x_0 = \arg \text{Max}_x \{ \cdot px + \varphi(x) \}$$

The inequality (6) and the equation (7) should be interpreted as follows: Suppose each beneficiary is purchasing the private good without any additional benefit, and then her optimal consumption level, x_0 , is derived from (7). Here, the organizer has to be able to expect that a threshold volume of funds, G_0 , is collected as a precondition for financing the collective good. This relation is described by (6). Only when a portion of the net proceeds which can be allocated to financing the collective good are expected to exceed G_0 , his managing work can produce something meaningful. The quantity of the private good purchased by each beneficiary under the eco-goods scheme must be expected to be larger than x_0 . Therefore, the threshold condition can be met, if these n beneficiaries are organized so as to go along with the scheme.

In what follows, we assume for simplicity that the threshold condition is always met.

The Organizing Work: The effort cost of organizing work is denoted by $C = C(n)$, when the organizer has to organize n beneficiaries. Without loss of generality, it can be assumed that $C' > 0$. In what follows, however, $C(n)$ is

constant because n is fixed.¹⁰ It should be noted that because of its *unverifiable* nature, $C(n)$ is not counted in when calculating the net proceeds.

The inequalities (8) below reflect the assumption that no organizer has an incentive for the organizing work without some selective incentive, y , in addition to the benefit of the collective good itself.

$$(8) \quad I_E - C(n) - e + v_E(G) < I_E$$

$$I_E - C(n) - e + y + v_E(G) \geq I_E$$

If, on the contrary, the organizer is a *volunteer*, the conditions (8) are changed to (8)' below:

$$(8)' \quad I_E - C(n) - e + v_E(G) \geq I_E$$

This is because the volunteer is compensated enough with the benefit obtainable from his mission itself, i.e., the preservation of the global commons. If we can assume such a type of organizers to always lead our community, there is no obstinate collective failure, leading to too optimism.

NPO or FPO-NPO is subjected to the "non-distribution constraint" by law (Hansmann, 1980, 1996). However, the manager of NPO can actually appropriate more or less a part of the net profits under various disguises such as perquisites. On the other hand, it is obvious that cash revenues are preferable to those perquisites. In accordance with the hypothesis of Glaeser and Shleifer (2001) and Bilodeau and Slivinski (1998), these circumstances are approximated by the assumption that the share of NPO manager in the net profits is lower than that of FPO manager. Letting θ_N and θ_F denote the share of the NPO manager and of the FPO manager, respectively, then, it follows that $0 < \theta_N < \theta_F \leq 1$.

Thus, salary distributed from the net profits to the organizer, symbolized by y , can be defined as (9).

¹⁰ If the organizer chooses n so as to maximize his payoff, it is determined by the first necessary condition as follows: $C'(n) = \{\theta + v_E' \psi(e)(1-\theta)\} \{p - C_1\} x$.

$$(9) \quad y_i = \theta_i \{pX - C_1(X)\}, \quad i = N, F$$

6. The Main Analytical Results

In this section, I summarize the analytical results of the third-stage game constructed in the previous section, and derive several lemmas. The participation constraints and incentive compatibilities are used as its optimization concept. In what follows, we assume for simplicity that both v and v_E are positive constants.¹¹

6.1. Decision at the Third Stage: The Managing Work to Provide Collective Goods

After substitution (2) and (5) into (1), the payoff function of the representative beneficiary is rewritten as (10).

$$(10) \quad U(x; \theta_i, e) = I \cdot px + \varphi(x) + v[\psi(e) (1 - \theta_i) (pX - C_1(X))], \quad i = N, F.$$

On the other hand, the payoff function of the organizer is rewritten as (11), after substitution of (4), (5) and (9) for (3).

$$(11) \quad \begin{aligned} \Pi_i(\theta_i, e; x) = & I_E - C(n) - e + \theta_i \{pX - C_1(X)\} \\ & + v_E[\psi(e) (1 - \theta_i) \{pX - C_1(X)\}], \quad i = N \text{ or } F \end{aligned}$$

Maximizing Π_i with respect to e , given θ_i and X , and rearranging it, we obtain

¹¹ As to the general case, see Ueda and Wagener (2004).

the maximizing condition shown by (12). (It should be noted that Π_i is concave with respect to e , and thus (12) is also the sufficient condition.)

$$(12) \quad \psi'(e) [pX - C_1(X)] = 1 / (1 - \theta_i) v_e, \quad i = N \text{ or } F,$$

from which we can derive the optimal value of e given X , and θ_i , as follows:

$$(12)^* \quad e = e(X, \theta_i), \quad i = N \text{ or } F.$$

From the comparative statics of (12), we can derive the relation between e and x given θ_i and that between e and θ_i given x , as follows:

$$(12)^{**} \quad \partial e / \partial X \Big|_{\theta_i} = \psi'(e) [p - C_1'(X)] / [-\psi''(e)] [pX - C_1(X)], \quad \text{and}$$

$$e(\theta_N; X) > e(\theta_F; X) \quad \text{for } \theta_F > \theta_N.$$

From the second result of (12),** $\partial e / \partial \theta_i < 0$, we can derive the result that *the larger portion of the net proceeds he can appropriate in various disguises, the less effort he makes to transform the net proceeds into collective goods, given the net proceeds.*

This inference is not general yet, because (12)** neglects the indirect effects of θ_i on X still. As proved later, however, this conclusion on the effect of θ on e remains unaffected, even if we take into consideration those indirect effects. As a special case, suppose the case of θ_F being unity. Then, $\partial \Pi / \partial e < 0$, and therefore, $e^F = 0$. That is, if all of the net proceeds are distributed to the entrepreneur as his cash revenues, then he has no incentive for making effort of providing the collective good.

Next, from the first condition of (12)** we can derive an identical relation (**)

as follows:

$$(**) \partial e^i / \partial X \Big|_{\theta_i > 0} \Leftrightarrow p - C_1'(X) > 0$$

which is because $\varphi'' < 0$, and $pX - C_1(X) > 0$.

In what follows, we assume the case of $p - C_1'(X)$ being positive. This is justified by the assumption that a candidate for the eco-good was selected from the private goods the existing production level of which is below the efficient production level¹².

6.2. Decisions at the Second Stage

As a precondition for the scheme, the beneficiary's participation constraint, $I - px + \varphi(x) \geq l$, for $x \geq 0$, must be met. This condition is already subsumed in (6) and (7). When each beneficiary accepts the eco-goods scheme after being enlightened at the beginning of the second stage, she makes a decision on how many eco-goods to purchase, under the condition that $e = e(X; \theta_i)$.

Then, maximizing (10) with respect to x , subject to (12), we obtain the first order necessary condition (13).

$$(13) \quad p = \varphi'(x) + v(1-\theta_i) n [\psi'(e) \{pX - C_1(X)\} \partial e / \partial X$$

$$+ \psi(e) \{p - C_1'(X)\}], \quad \text{s.t. } e = e(X; \theta_i), \text{ and } \theta_i = \text{given},$$

from which the optimal values for x and $X (=nx)$ are derived, denoted below as follows:

¹² Regarding the case of $p - C_1'(X)$ taking negative values, see Ueda and Wagner (2004).

$$(13)^* \quad x = x(\theta_i), \quad X = X(\theta_i),$$

which is rewritten as (13)' after substituting (12)** into (13) and arranging.

$$(13)' \quad p = \varphi'(x) + v(1-\theta_i) n \{ p - C_1'(X) [\psi(e) + \{\psi'(e)\}^2 / \{-\psi''(e)\}],$$

subject to: $e = e(X; \theta_i)$, and $\theta_i = \text{given}$.

From comparison of (13)' with (7), we can derive that $x(\theta_i) > x_0$. This relation is proved as follows: First, it is recalled that x_0 satisfies the equation: $p = \varphi'(x_0)$ derived from (7). On the other hand, the second term of the right hand of (13)' is positive, because $p - C_1'(X) > 0$, and $\psi(e) + \{\psi'(e)\}^2 / \{-\psi''(e)\} > 0$. *Q.E.D.*

This relation, $x(\theta_i) > x_0$, means that, to the extent that an increase in her purchase of the eco-good is sure to induce the organizer to make harder effort of producing the collective good at a later stage, she is willing to consume more of the eco-good under this eco-goods scheme, than under no such scheme, and vice versa. Here, the organizer is stimulated to make that harder effort by an increase in his salary, made possible by an increase in sales of the eco-good.

At the beginning of this second stage, the organizer has to make contacts with n beneficiaries, more or less, in a face-to-face manner in order to enlighten them to be conscious of the benefit of the collective good, and then persuade them into going along the eco-goods scheme. This is because those consumers are a myopic type of selfish individualists so that they do not have no preference for the collective good at the begging of the game. When such a network is formed, it takes the form of a star type of network, and once formed, it is stable in the sense that it is a strong Nash equilibrium (For the mathematical proof, see Ueda and Svendsen (2002)). So, only one network is formed and each member of the network has no incentive to leave it, once formed.

In this paper, it was assumed that it costs $C(n)$ to organize those n

beneficiaries of a myopic type so as to accept the eco-goods scheme. Therefore, the participation constraint of the organizer must be met, as follows;

$$(14) \quad \Pi[\theta_i; X = X(\theta_i), e = e\{X(\theta_i), \theta_i\}] = I_E - C(n) - e + \theta_i \{pX - C_1(X)\}$$

$$+ v_E[\psi(e) (1 - \theta_i) \{pX - C_1(X)\}] \geq I_E, \quad \text{for } i = N, \text{ or } F.$$

In order to satisfy this participation constraint, the organizer must have a sufficient level of skills and know-how on the organizing work, which are not a gift from heaven.

One of the incentive compatibilities conditions for the social organizer meets the condition that he rejects becoming a volunteer. This is described by (15).

$$(15) \quad \Pi[0; X = X(0), e = e\{X(0), 0\}] = I_E - C(n) - e + v_E[\psi(e) \{pX - C_1(X)\}] < I_E$$

When both (14) and (14)' are met, the organizer, as an entrepreneur, is willing to take the leadership for collective action, but rejects to do it as a volunteer.

6.3. Decision at the First Stage: Social Entrepreneur and NPO

At the first stage, subject to the conditions of both (14) and (15), the organizer makes a choice from between two types of entrepreneurs, i.e., social and business entrepreneur, and at the same time chooses an organizational form from between NPO and FPO. Before deriving the conditions for the social entrepreneur and NPO to be chosen, two lemmas must be proved. In what follows the suffix of θ_i is omitted except when required.

Lemma 1. The smaller is an organizer's share in the net profit, the more of the eco-goods are purchased by those beneficiaries. That is, $dx/d\theta < 0$.

Proof: By deriving the total differentiation of both sides of (13)' and arranging

the result, we obtain (16) as follows.

$$(16) \quad [-\varphi''(x) + v(1-\theta) n^2 [\psi(e) + \{\psi'(e)\}^2 / \{-\psi''(e)\}] C_1''(X)] \partial x / \partial \theta$$

$$= -vn [\psi(e) + \{\psi'(e)\}^2 / \{-\psi''(e)\}] \{p - C_1'(X)\}$$

It is obvious that the right side of (16) is negative, and that the coefficient of $\partial x / \partial \theta$ on the left side is positive because $\varphi''(x) < 0$, $\psi''(e) < 0$, and $C_1''(X) > 0$. Thus, $dx / d\theta < 0$, as claimed. *Q.E.D.*

This lemma supports our intuition that the organized beneficiaries, if they expect a higher share in the net profits to be earmarked for the collective goods, would like to purchase more of the eco-goods, due to not only the direct effect of higher $(1-\theta)$ but also the indirect effect that an increase in their purchases promotes the organizer to make more managing work, i.e., harder effort of transforming it into the collective goods. These two effects are summarized by (12)*.*

Next, we derive Lemma 2 as follows:

Lemma 2: The less is an organizer's share in the net profits, the harder effort he makes, i.e., the more organizing work he does. That is, $de / d\theta < 0$.

Proof: By deriving the total differentiation of both sides of (12) subject to (16), and arranging the result, we obtain (17) as follows:

$$(17) \quad (1-\theta) \psi''(e) \{pX - C_1(X)\} \cdot de / d\theta = \psi'(e) \{pX - C_1(X)\}$$

$$\cdot n (1-\theta) \psi'(e) \{p - C_1'(X)\} \cdot dx / d\theta$$

By *Lemma 1*, $dx / d\theta < 0$, and therefore the right side of (17) is positive. On the other hand, the coefficient of $de / d\theta$ on the right side is negative. Thus, $de / d\theta$

< 0 . *Q.E.D.*

We know already from the second of (12)** that the direct effect of a decrease in θ on e is negative. *Lemma 2* assures that that effect is strengthened by the indirect positive effect of x on e . This is because a decrease in θ brings about an increase in x .

Lemma 2 also assures that the social entrepreneur is motivated to make harder effort of providing the collective goods than the business entrepreneur. This result together with that of *Lemma 1* leads to the conclusion that more of the collective goods are provided by the social entrepreneur than by the business entrepreneur. See the equation (5) to confirm this final result.

At last we can derive $d\pi[\theta; X=X(\theta), e=e(X(\theta), \theta)]/d\theta$ by taking the total differentiation of (14) with respect to θ . It is derived as follows:

$$\begin{aligned}
 (18) \quad & d\pi[\theta; X=X(\theta), e=e(X(\theta), \theta)]/d\theta \\
 &= [\cdot 1 + v_E \psi'(e) (1-\theta) \{pX - C_1(X)\}] de/d\theta \\
 &+ [\theta + v_E \psi(e) (1-\theta)] \{p - C_1'(X)\} dX/d\theta + \{pX - C_1(X)\} \{1 - v_E \psi(e)\}
 \end{aligned}$$

The coefficient of the first term of the above right side is zero because of (12), and the second term is negative due to *Lemma 1*. Therefore, in order for the business entrepreneur and FPO to be chosen, it is necessary that $1 - v_E \psi(e) > 0$ because $d\pi[\theta; X=X(\theta), e=e(X(\theta), \theta)]/d\theta$ must be positive. This inference is summarized as *Lemma 3*.

Lemma 3: The organizer prefers becoming a business entrepreneur to social entrepreneur **only when** his evaluation on the collective goods, v_E , is sufficiently

low, and /or his know-how on management, represented by ψ , is lowly-developed.

On the contrary, *if* V_E is high enough, and / or ψ is sufficiently highly-advanced, he prefers becoming a social entrepreneur.

The above lemma can be interpreted as the rational foundations of both NPO and the social entrepreneur. Firstly, it claims not only that an organizer intending to achieve a collective goal need not be a self-sacrificing type of altruists, but also that a selfish type of individualist can take on the leadership for collective action aimed at achieving the collective goal of a global nature. Secondly, it claims that this selfish organizer need not necessarily be motivated by the so-called "full-profit" imperative.

7. The Main Conclusions and Implications

According to the examination in the previous section, firstly, an organizer of a selfish type can take on the leadership for collective action for the global commons. Secondly, under some conditions the social entrepreneur can contribute more to preserving the global commons than the business entrepreneur. However, the social entrepreneur has to meet three requirements for qualifications as follows: (j) that he is such a type of individualist as to evaluate the collective interest high enough, i.e., he has missions to collective goals, (ii) that he has skills and know-how on how to transform collected funds into the collective good, i.e., he has sufficient skills and know-how for the managing work, and (iii) that he is also required to have a sufficient level of skills and know-how on the organizing work in order to clear his participation constraints. The first and the second condition are the incentive compatibility conditions for the social entrepreneur, but the third condition is the participation condition for not only the social but also business entrepreneur.

However, those conditions for social entrepreneur to come into being are not necessarily taken for granted, though. It always takes much effort and cost to acquire those qualifications. Therefore, the social entrepreneur must not be recognized as a natural endowment. Due to the luck of correctly understanding

those qualifications, candidates for the qualified social entrepreneur remain scanty in our society.

Such a reality suggests us that we have to set up appropriate academic institutions where candidates for the social entrepreneur can be trained. There, they have to be trained for an entrepreneur type of social organizers, who can (i) create and set up appropriate "selective-incentives" schemes to collect funds on a business basis, (ii) who can be equipped with technological skills on how to carry out and manage the whole process of those schemes, and (iii) who can be so sufficiently enlightened to be conscious of the benefit of collective interests as to be able to enlighten other community members.

If so many of our common interests can be provided by the social entrepreneurs on a voluntary basis, they can take over many of our government services. How much more efficient those voluntary schemes are remains to be proved. But it is sure that they can save at least intolerable or insurmountable political transaction costs.

References

- Bilodeau, Marc and Slivinski, Al (1998). "Rational Nonprofit Entrepreneurship," *Journal of Economics and Management Strategy*, 74(4), pp.551-571.
- Glaeser, Edward L. and Shleifer, Andrei(2001). "Not-for Profit Entrepreneurs," *Journal of Public Economics*, 81(1). Pp.99-115.
- Hansman, Henry B. (1996). *The Ownership of Enterprise*, Cambridge, M.A: Harvard University Press.
- _____ (1980). "The Role of Nonprofit Enterprise," *The Yale Law Journal* 89(5), pp.835-901.
- Kirzner, Israel M.(1973). *Competition and Entrepreneurship*, Chicago: The University of Chicago Press.
- Morgan, John (2000)."Financing Public Goods By Means of Lotteries," *Review of Economic Studies*, 67 (4), pp.761-84.
- Nishizaki, Ichiro, Ueda, Yoshifumi, and Sasaki, Tomoaki (2004). "Financing for preservation of the global commons and simulation analysis on an artificial society model," *Journal of System Control and Information*, 17 (8),

forthcoming.

Ostrom, Elinor (1990). *Governing the Commons*, New York: Cambridge Univ. Press.

Olson, Mancur (1965). *The Logic of Collective Action*, Cambridge, M. A: Harvard Univ. Press.

Salanie, Bernard(2000). *The Economics of Contracts*, Cambridge: M. A, The MIT Press.

Sandler, Todd (1998)."Global and Regional Public Goods: A Prognosis for Collective Action," *Fiscal Studies* 19 (3), pp.221-247.

_____ (1995). "Management of Transnational Commons; Coordination, Publicness and Treaty Formation," *Land Economics* 71(2), pp. 145-62.

_____ (1992)."After the Cold War, Secure the Global Commons," *Challenge* 35, pp. 123.

Ueda, Yoshifumi (2003a). "Who Takes on Entrepreneurship for Collective Action," Mimeo.

_____ (2003b). "The Hold-up Problem with Political Entrepreneurship for Collective Action," *Hiroshima Economic Review*, 27(1), pp.71-88.

Ueda, Yoshifumi and Svendsen, Gert Tinggaard (2002). "How to Solve the Commons," *The Aarhus School of Business Working Paper* No.02-13.

Ueda, Yoshifumi and Wagener, Andreas (2004). "How to Finance Collective Action for the Global Commons," mimeo.