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Case and Theory of NGO Volunteer Activities: International Grassroots Cooperative Programmes by GONGOVA for Uplander Villages in Northwestern Thailand

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Abstract

The role of the NGO has become increasingly important both for (1) the *educational value* of international grassroots cooperative volunteer activities and for (2) the *practice* of such international cooperative activities for social, economic and environmental improvement in underprivileged areas. In light of this, the Gakushuin Overseas NGO Volunteer Activity Programme (GONGOVA) was launched in 1997. This programme falls in the category of university-NGO activities, focusing upon uplander villages located in remote mountain areas in northwestern Thailand. Though the project scale of GONGOVA is not large at all, the programme seems to have been somewhat successful in fulfilling the above-mentioned roles of the NGO. With this understanding, the present paper will (1) outline the skeleton of GONGOVA including a short history of its project achievements since 1997, and (2) explore the possible development of one angle of voluntarism economics, by using demand-surface approach to investigate the basic characteristics of the demand for "volunteer activity programmes" by volunteers.

Keywords

Demand surface, Equilibrium-demand curve, GONGOVA, Mae Hong Son, NGO, Thailand, Uplander, Voluntarism economics, and Volunteer.

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1 Introduction

For the fulfillment of one of the university functions expected in our present society, the role of NGO programmes with the element of active international grassroots cooperation has become, no matter how modest its project size, increasingly important for providing university students with (1) *educational* chances through which they can enrich more fruitfully their personality of human capacity as well as their knowledge and experiences as to the importance of international voluntarism, and with (2) *practical* chances through which they can even slightly contribute to the improvement of their society in the international domain by their own volunteer activities. With this standpoint in mind, the Gakushuin Overseas NGO Volunteer Activity Programme (GONGOVA) was launched at Gakushuin University, Tokyo, as a university NGO in the beginning of 1997. Since then, GONGOVA has conducted its own international grassroots cooperation projects eight times in remote mountain villages in the northwestern part of Thailand, with the main participant students from universities in both Japan and Thailand. Those small mountain villages are all located in Mae Hong Son prefecture and inhabited by minority uplanders[1]. The present paper first outlines what GONGOVA is.

In parallel with the new role of NGO programmes to provide university students with the above-mentioned two types of chances[2], a new theoretical paradigm has been expected to be evolved out of the traditional approaches so that a more adequate investigation of the demand-supply characteristics concerning volunteer activities can be undertaken. Interestingly enough, the "volunteer activities" which are usually regarded as services would entail at least two particular properties. First, these services are not always transacted through the conventional market in which economic theory commonly sets.[3] Second, in light of the observations by both authors of this paper, who have been continuously involved in the direct operation of the GONGOVA projects, the level of utility which a volunteer perceives through

her/his consumption of a volunteer-activity programme (*i.e.*, through her/his participation in a volunteer-activity programme) tends to be affected by the number of volunteers participating in that programme.[4] Namely, the factor of agglomeration economies is subsumed into the scheme of demand for the consumption of a volunteer-activity programme. In the second part of this paper, among the above two properties[5] of the volunteer-activity services, the aspect of agglomeration economies is theoretically examined by use of an exploratory tool of the demand-surface approach towards the possible construction of a part of voluntarism economics.

2 GONGOVA: A University NGO for Grassroots Volunteer Activities

GONGOVA is an international grassroots cooperative volunteer activity programme which serves as extracurricular-activity entity to run volunteer-work projects for the students of Gakushuin University[6] in Tokyo. The GONGOVA project has been conducted eight times[7] in the underprivileged remote mountain villages of Thailand with its major aims (1) to enlighten the participating students about the important value of international voluntarism, and (2) to cooperatively work with village people and Thai students to improve the living infrastructure and natural environments surrounding them.

For a continuous three weeks in the February-March period, a group of Japanese students totaling 15 to 20 each time stay at a remote mountain village in Thailand to work on the GONGOVA project(s). On this occasion, the GONGOVA participant students carry out various types of labour works, for example, to construct a simple-frame water-supply system, flush-toilet facilities or school buildings, to cultivate cash-fruit trees, or to reforest the village surroundings.

2-1 Outline of GONGOVA

The following explains the somewhat more detailed features of GONGOVA including the description of its project achievements conducted in Mae Hong Son prefecture since 1997.

[1] Name of organization

Gakushuin Overseas NGO Volunteer Activity Programme (GONGOVA)

[2] Organization status

NGO at Gakushuin University (*i.e.*, an NGO entity which conducts grassroots volunteer activity programmes as extracurricular activities for the students of Gakushuin University)

[3] Executive office

GONGOVA Unit set up at Professor T. Kawashima's office, Faculty of Economics, Gakushuin University, Tokyo, Japan

[4] Primary activities

International grassroots cooperative NGO volunteer activities for the improvement of living infrastructure and natural environments surrounding the underprivileged remote mountain villages in developing countries

[5] Two major objectives

(1) Conduct of volunteer-activity education

(2) Conduct of volunteer-activity practices

[6] Detailed objectives

(1) For GONGOVA-participant students

(a) Developments of human capacity for:

① Internationalism,

② Voluntarism,

③ Unprejudicedness,

④ Creativity,

⑤ Benevolence, and

⑥ Perseverance.

(b) Promotion of understanding of:

① Private-public partnership (PPP) between NGO programmes and ODA programmes,

② Sustainability of natural environments surrounding remote mountain villages, and

③ Sustainability of socio-economic development of remote mountain villages.

(2) For local villages where the GONGOVA projects are carried out

① Construction of simple-frame water-supply systems and flush-toilet facilities,

② Preparation of agricultural fields for cultivating cash-fruits trees,

③ Improvement of circumstances for basic education, and

④ Alleviation of poverty, drug addiction, infectious disease, and natural-environment devastation.

(3) For the local NGO counterpart

① Support of the activities conducted by the local NGO counterpart, and

② Support of the development of the management system of the local NGO counterpart.

(4) For the world

① International peace and progress, and

② International cooperation and coexistence.

[7] Main participants

(1) Students from Gakushuin University and other universities in Japan

(2) Students from Mae Fah Luang University and other universities in Thailand

[8] Places where the GONGOVA projects have been so far conducted

Uplander villages in the northwestern region of Thailand (*e.g.*, in Mae Hong Son prefecture)

[9] Length of stay in Thailand for the GONGOVA participants (For each of the yearly projects of GONGOVA)

Four weeks' stay in Thailand (including three weeks' stay in a remote mountain village)

[10] Project achievements

In reference for the following descriptions, Figure 1 shows the location of the GONGOVA-project sites where the GONGOVA-participant students stayed in the past. In this figure, the tribe-name of each uplanders is expressed by the English name ordinarily used. The names by which uplanders refer to themselves and the names by which the lowland Thai call them, are respectively presented in Table 1.[8)]

Figure 1
Location of Mountain Villages for the Past GONGOVA Projects (1997 ～ 2004)

〔Villages〕 ① BAN NAM CHANG (RED LAHU) ② BAN PHA DANG (RED LAHU)
③ BAN LUK KHO LUM (BLACK LAHU) ④ BAN PHA PUAK (BLACK LAHU)
⑤ BAN NONG PHA JAM MAI (LISU) ⑥ BAN MAE CHANG (PWO KAREN)
⑦ BAN MAE CHANG (PWO KAREN) ⑧ BAN HUAY CHANG LEK (RED KAREN)

〔Source〕 Constructed on the basis of Thailand Maps <UT Library Online>, Thailand (Political) 2002, http://www.lib.utexas.edu/maps/middle_east_and_asia/thailand_pol_2002.jpg

〔Notes〕 (1) ①, ②, … ,⑧ respectively correspond to the projects of GONGOVA1997, 1998, … , 2004. The parenthesized word following each village name represents the name of the uplander-tribe residing in that village.
(2) △: Site of the GONGOVA projects
(3) 1 , 108 , 1095 : National roads

Table 1 Names of Uplander Tribes

	A	B
	Name by which uplanders call themselves: Self-designation	Names by which lowland Thai call uplanders
C	Lahu Na	Muser Dang (Red Muser)
	Lahu Chalee [ʃæl:]	Muser Dom (Black Muser)
	Lisu	Leesaw (Leesaw)
	Plong	Kariang Pwo (Pwo Karen)
	Kayah Li [gaieli:]	Kariang Dang (Red Karen or Karen Dang)
D	Akha	Egoh (Egoh)
	Hmong	Meo (Meo)
	Mien	Yao (Yao)
	Pgakenyaw [pá:kænj:]	Kariang Skaw (White Karen or Skaw Karen)

[Source] Constructed based on the information provided by Professor Samart Srijumnong who is associated with the Faculty of Education at Chiang Mai University as well as with the Inter-Mountain People Education and Culture Association <IMPECT> which is a grass-roots NGO to assist for the community development of highland areas, on the information provided by Mr. Prinya Kunnika who serves as a chairperson of the International Cooperation for Thai-Hilltribe Development Foundation <NGO> (ICTDF) in Ban Sobsoi, Pangmoo Subdistrict, Mae Hong Son Prefecture, and on Delang (2003).

[Note] The names in the parentheses in column B are those in English. The names listed in the row C appear in Figure 1, while those in the row D do not.

① GONGOVA 1997 (February 17 ～ March 8, 1997)

Village name: Ban Nam Chang, Uplander-tribe name: Red Lahu

Number of households and population: 31 families and 149 villagers

Period of stay in the village: February 21 ～ March 1, 1997

Works: Construction of a simple-frame water-supply system, and construction of flush-toilet facilities for each household

② GONGOVA 1998 (February 17 ～ March 9, 1998)

Village name: Ban Pha Dang, Uplander-tribe name: Red Lahu

Number of households and population: 27 families and 150 villagers

Period of stay in the village: February 22 ～ March 3, 1998

Works: Construction of a simple-frame water-supply system, and construction of flush-toilet facilities for each household

③ GONGOVA 1999 (February 18 ～ March 16, 1999)

Village name: Ban Luk Kho Lum, Uplander-tribe name: Black Lahu

Number of households and population: 67 families and 354 villagers

Period of stay in the village: February 21 ～ March 9, 1999

Works: Construction of a simple-frame water-supply system, construction of flush-toilet facilities

for some households, construction of a toilet-house with flush toilets for a preschool, and repair of the floor of an elementary school

④ GONGOVA 2000 (February 19 ～ March 16, 2000)

Village name: Ban Pha Puak, Uplander-tribe name: Black Lahu

Number of households and population: 36 families and 150 villagers

Period of stay in the village: February 22 ～ March 9, 2000

Works: Preparation of agricultural fields to grow cash-fruit trees, and driving bamboo-sticks into the field to support mango seedlings

⑤ GONGOVA 2001 (February 19 ～ March 17, 2001)

Village name: Ban Nong Pha Jam Mai, Uplander-tribe name: Lisu

Number of households and population: 40 families and 180 villagers

Period of stay in the village: February 21 ～ March 11, 2001

Works: Preparation of agricultural fields to grow cash-fruit trees, driving bamboo-sticks into the field, replantation of mango seedlings, and construction of a concrete water tank

⑥ GONGOVA 2002 (February 19 ～ March 17, 2002)

Village name: Ban Mae Chang[9], Uplander-tribe name: Pwo Karen

Number of households and population: 70 families and 300 villagers

Period of stay in the village: February 21 ～ March 11, 2002

Works: Preparation of agricultural fields to grow cash-fruit trees, replantation of coffee-tree seedlings, construction of a new school building (reinforced concrete building), construction of flush-toilet facilities for some households, and survey of land to draw a whole-village map

⑦ GONGOVA 2003 (February 19 ～ March 17, 2003)

Village name: Ban Mae Chang, Uplander-tribe name: Pwo Karen

Number of households and population: 70 families and 300 villagers

Period of stay in the village: February 21 ～ March 11, 2003

Works: Construction of a simple-frame water-supply system, construction of flush-toilet facilities for some households, cultivation of coffee-tree seedlings, and civil-engineering type of works in the school campuses (*e.g.*, construction of concrete steps for pupils)

⑧ GONGOVA 2004 (February 19 ～ March 16, 2004)

Village name: Ban Huay Chang Lek, Uplander-tribe name: Red Karen

Number of households and population: 29 families and 110 villagers

Period of stay in the village: February 21 ～ March 10, 2004

Works: Construction of a simple-frame water-supply system, construction of six concrete water tanks, and survey of land to locate the specific point with the maximum water pressure along the water pipeline and to measure the level of maximum pressure.

⑨ (Plan for 2005) GONGOVA 2005 (February 19 ～ March 17, 2005)

Village name: Ban Huay Chang Lek, Uplander-tribe name: Red Karen

Number of households and population: 29 families and 110 villagers

Period of stay in the village: February 21 ～ March 11, 2005

Works: Extension of a simple-frame water-supply system, construction of four or six concrete water tanks, and construction of flush-toilet facilities for each household

[11] Local NGO counterpart in Thailand

The International Cooperation for Thai Hilltribe Development Foundation <NGO> (ICTDF). The head office of the ICDTF is located in Sopsui of the city of Mae Hong Son, Mae Hong Son prefecture, Thailand.

[12] Local academic counterpart in Thailand

The Institute for Thai Woman of Tomorrow (TWT), which is a university NGO of Mae Fah Luang University in Chaing Rai. The TWT provides the GONGOVA participants with lectures and opportunities of field-work studies on (1) the uplanders in northwestern Thailand, and (2) the various factors which would drive children who come from the economically underprivileged rural and mountain villages into the work of the sex-service industries.

[13] Budget

(1) The funds of approximately US 60,000 dollars to be raised every year for the purchase of construction machinery and materials, labour and services, food, water, and medicines all of which are necessary for the conduct of the GONGOVA projects. The funds for these expenditures are mainly procured through external donation.

(2) The GONGOVA-participant students from Japan pay their own roundtrip air-fares and a part of staying expenditures.

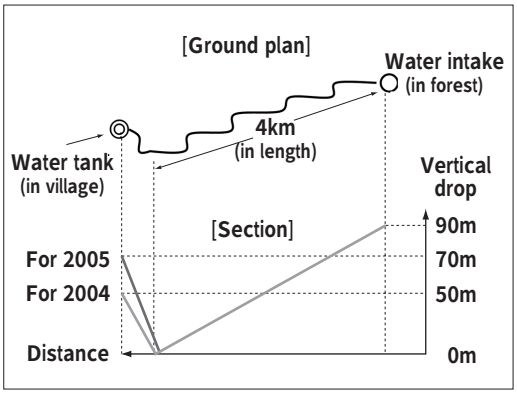
2-2 Works of GONGOVA 2005 in Ban Huay Chang Lek

For the works of the GONGOVA 2005 which will be conducted on February 19 ~ March 17, 2005, in Ban Huay Chang Lek, which is inhabited by the Red Karen people, it is planned that the simple-frame water-supply system which was constructed through the GONGOVA 2004 will be extended in length and altitude. In addition, it is also planned that flush-toilet facilities will be built for each of residential houses in the village.

2-2-1 Extension of Water-supply System for the Village

As can be seen in Figure 2, the GONGOVA 2004 project laid the PVC (polyvinyl chloride) water pipes in the distance of approximately 4 km from the location point of the water intake built in the valley stream running through the tropical rain forest to the location point of the six water tanks built in the residential section of the village. Altitude-wise, the water first comes down to the foot of the village with a vertical drop of 90 m from the water intake. Then it goes up to the water-tank site with a vertical rise of 50 m. The GONGOVA 2005 will construct additional four or six concrete water-tanks at the place 20 m higher in altitude than the present location of the six water tanks so that all the residential houses in the village can get water from the water tanks by use of natural gravity.

Figure 2
Simple-frame Water-supply System in Ban Huay Chang Lek

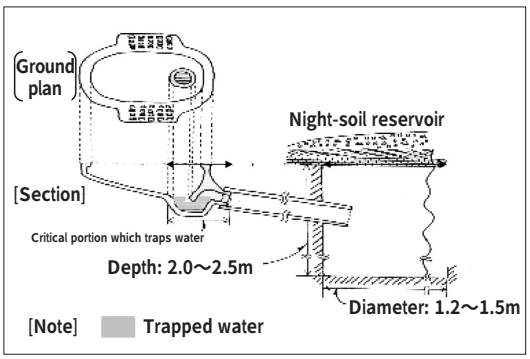


2-2-2 Tap and Flush-toilet for Each House

Furthermore, the GONGOVA 2005 will build one water tap and flush-toilet facilities for each residential house in the village of Ban Huay Chang Lek. Once the four or six additional concrete water tanks will be successfully constructed, then the feeder PVC pipes will be laid to distribute water from the water tanks to all houses. This mechanism will enable every residential house to obtain water through its own water-tap, and consequently to equip itself with flush-toilet facilities.

Meanwhile, Figure 3 shows the structure of the flush-toilet pan which the GONGOVA 2005 project will build in Ban Huay Chang Lek. It should be noted in this figure that the toilet pan possesses the mechanism that ample clean water can be trapped in its "critical portion" after the urine and excrement are washed away into the night-soil reservoir. This trapped water would hinder the insects and worms possibly carrying bacteria or germs of infectious disease from coming out of the night-soil reservoir to the outside.

Figure 3
Structure of Flush-toilet



3 Demand-surface Approach: Towards the Agglomeration Economic Theory of Voluntarism

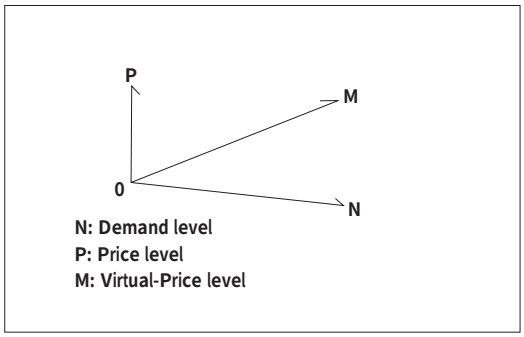
In the previous section, we have discussed the background and outline of GONGOVA as well as its projects which have been continuously conducted every year since 1997 at remote mountain villages in Thailand with the participation of students from universities in Japan and Thailand. With reference to their experiences of having been actively involved in the operation of the GONGOVA projects, both authors of the present paper have become increasing interested in exploring possible clue to the development of a paradigm for the field of voluntarism economics. The following are the outcomes preliminarily acquired in their analytical study on one aspect of the demand phenomena concerning volunteer activities, that is, the demand from volunteers for volunteer activity programmes.

3-1 Demand Surface

In case we discuss the demand for volunteer activity programmes, it is to be noted that there are two types of demand phenomena which are distinctly different. One is the demand from "volunte-ers" who act as donors of volunteer activity services in volunteer activity programmes, while another is the demand from "volunte-ees" who act as recipients of volunteer activity services through volunteer activity programmes. With this point in mind, we examine in the following the first type of demand phenomena; the demand from volunteers for consumption of volunteer activity programmes. For the sake of easy grasping of this type of demand phenomena, in the following, we occasionally use the expression of "demand for the ticket by which one can participate in a specific volunteer-activity programme" or in short "demand for the volunteer-ticket."[10)]

As pointed out in Section 1, the demand for the volunteer-ticket tends to be affected by agglomeration economies which would vary depending on the number of actual consumers of the volunteer-ticket. Therefore, it would perhaps be appropriate for us to investigate the basic characteristics of "the function or curve representing the level of such demand for volunteer activities from volunteers" (*i.e.*, "the volunteer-demand function or curve") by use of the framework of demand-surface approach. This framework is composed of three mutually orthogonal coordinate axes of N, P and M which can be set in the three dimensional space as shown by Figure 4, where the axis of N indicates the level of expected demand for the volunteer-ticket, P the level of price of the volunteer-ticket, and M the level of virtual demand for the volunteer-ticket. In this setting, let us draw a monotonically decreasing demand curve on each vertical plane of the N-P dimension arranged for all possible given levels of virtual demand M. Then, we can eventually obtain the demand surface in our three-dimensional space. In the above process of obtaining the demand surface, the level of the virtual demand M serves as variable to specify the condition[11)] for drawing a demand curve on each vertical plane of the N-P dimension in the context that we draw the demand curve by answering the following question: "What shape of demand curve can be envisaged on the vertical plane of the N-P dimension in case the demand level for the volunteer-ticket becomes equal to M?"

Figure 4
Three Orthogonal Coordinate Axes: For Construction of Demand Surface



Now we assume (1) that "quality of the volunteer-ticket[12)]" would continuously increase as the virtual demand level for the volunteer-ticket (M) (*i.e.*, the expected number of persons who would buy the volunteer-tickets) rises from zero to a certain point of M=m, and (2) that the quality of the volunteer-ticket would start to decline as the level of M exceeds m. In other words, we assume the existence of agglomeration economies[13)] in conjunction with the number of participants in a given volunteer activity programme in the sense that those who demand the volunteer-ticket would recognize the difference, depending on how many persons would participate in that programme even though the basic skeleton of the programme remains the same, in the quality of a specific volunteer-activity programme to which they are interested in participating.

To get an idea of a demand-surface for the above setting by the aid of a simple numerical example, suppose that we have a demand-surface function:

$P = 2 - N^2 - 2\left(M - b\right)^2 \cdots\cdots$ (1),

where N, P and M respectively indicate the demand level for, price level of, and virtual demand level for the volunteer-ticket, while b serves as a parameter.

For the case of b = 1 in Equation (1), we get the demand-surface function which implies that the demand pressure for the volunteer-ticket is strongest when M = 1.0:

$P = 2 - N^2 - 2\left(M - 1\right)^2 \cdots\cdots$ (2).

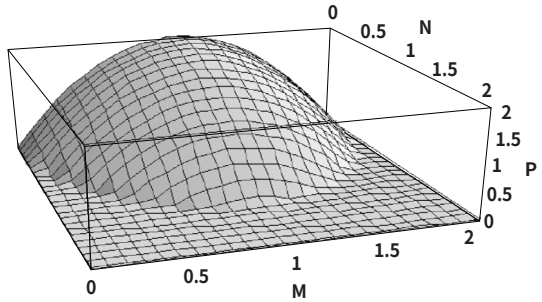
The image of the demand surface expressed by Equation (2) is given by Figure 5[14)]. This figure diagrammatically describes (1) that the volunteers tend to feel most satisfied when "the expected number of participants in the specific volunteer-activity programme under consideration"[15)] turns out to be 1.0[16)], and (2) that the magnitude of their satisfaction decreases as the level of the virtual demand parts from 1.0[17)] towards either upper or lower direction.

Figure 5

Example of Demand-surface Function and Demand Surface for b=1.0

Demand-surface Function: $P = 2 - N^2 - 2\left(M - b\right)^2$ (*b*: Parameter)

Demand-surface for: "$P = 2 - N^2 - 2\left(M - 1\right)^2$ (for *b*=1.0)"



In the meantime, Figure A1 in the Appendix shows the image of demand surfaces expressed by Equation (1) for the value of b changing from -1.0 to 1.4 with the interval of 0.2 (*i.e.*, b: -1.0, 1.4, 0.2). Based on this figure, we know that our demand surfaces connote (1) the existence of agglomeration diseconomies for -1.0 $\leqq$ b $\leqq$ 0.0, and (2) the existence of both agglomeration economies and diseconomies for 0.0 < b $\leqq$ 1.4

3-2 Equilibrium-demand Curve

We now know that only those points satisfying the condition of N = M on the demand surface can work as equilibrium points in the N-P dimension. We obtain the set of those points diagrammatically by drawing the locus of the points on the demand surface which are exactly above the 45°-line on the N-M plane for P = 0. Then, if we orthogonally project this locus upon the N-P plane for M = 0, we get a curve which provides us with the level of actual demand[18] for a given level of price (*i.e.*, the equilibrium-demand level for a given price level). We call the curve equilibrium-demand (ED) curve.

Algebraically, if we substitute N for M in Equation (1), we obtain the following ED function:

$P = 2 - N^2 - 2\left(N - b\right)^2$

$\therefore P = 2\left(1 - b^2\right) + 4bN - 3N^2 \cdots\cdots$ (3).

Putting b = 1.0 in Equation (3), we get such an ED function as:

$P = 4N - 3N^2 \cdots\cdots$ (4).

As shown by Figure 6, Equation (4) enables us to draw a bell-shaped (or convex-to-upward) ED curve ABC for each case of b = 0.0, 0.8 and 1.0. For further reference, the ED curves for the cases of (b: -1, 1.8, 0.2) in Equation (3) are provided in Figure A2 in the Appendix.

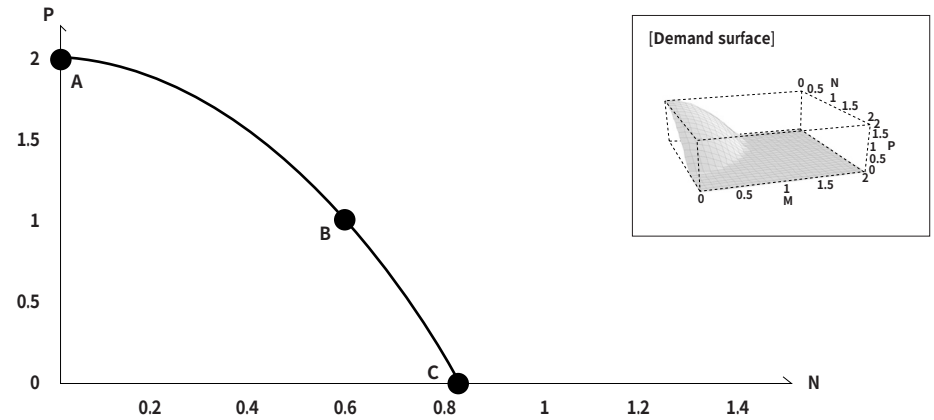
Because in our approach we have bell-shaped ED curves which are different from the conventional negative-slope ED curves, it would be worthwhile for us to briefly examine the relationships between the ED curve and various average-cost (AC) curves for the case of, for example, b =0.8 in Figure 7.[19]

From Figure 7, we know the following:

(1) When the price (P) of the volunteer ticket is at the level of zero, the demand (N) for the ticket is

Figure 6
Equilibrium-demand (ED) Function and Equilibrium-demand (ED) Curve:
For b=0.0, b=0.8 and b=1.0

(a) For b= 0.0
ED function: $P = 2 - 3N^2$



(b) For b= 0.8
ED function: $P = 0.72 + 3.2N - 3N^2$

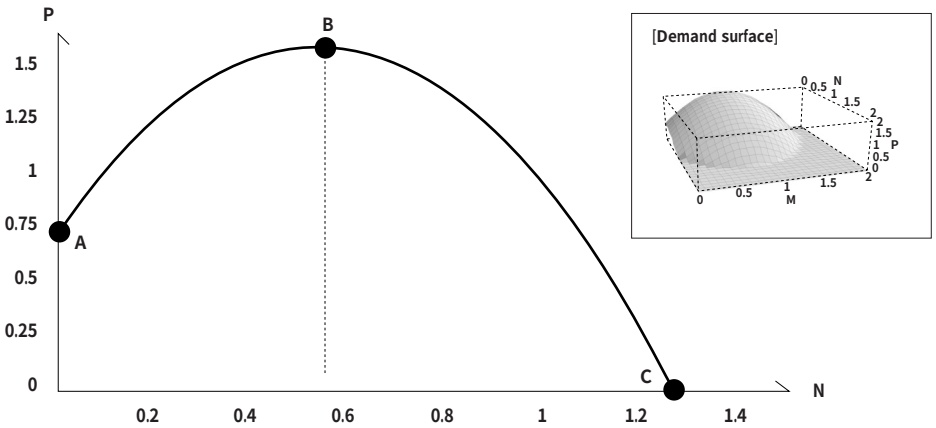


Figure 6 (Continued)

(c) For b=1.0

ED function: $P = 4N - 3N^2$

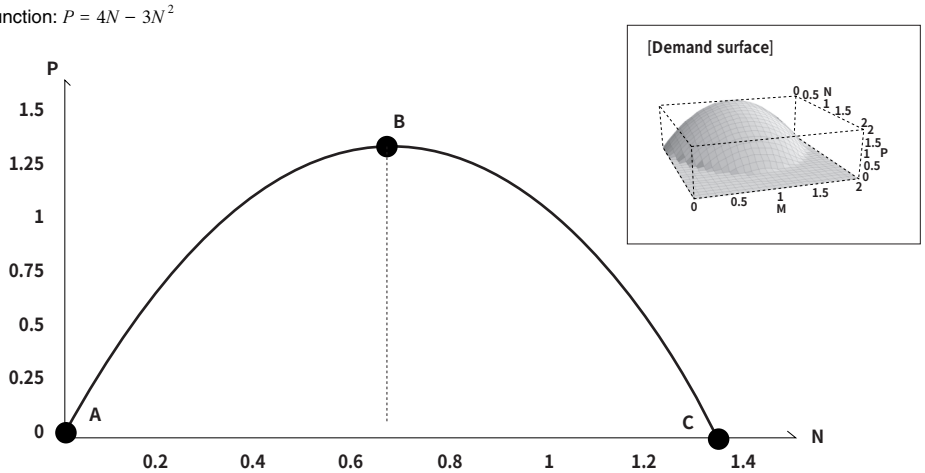
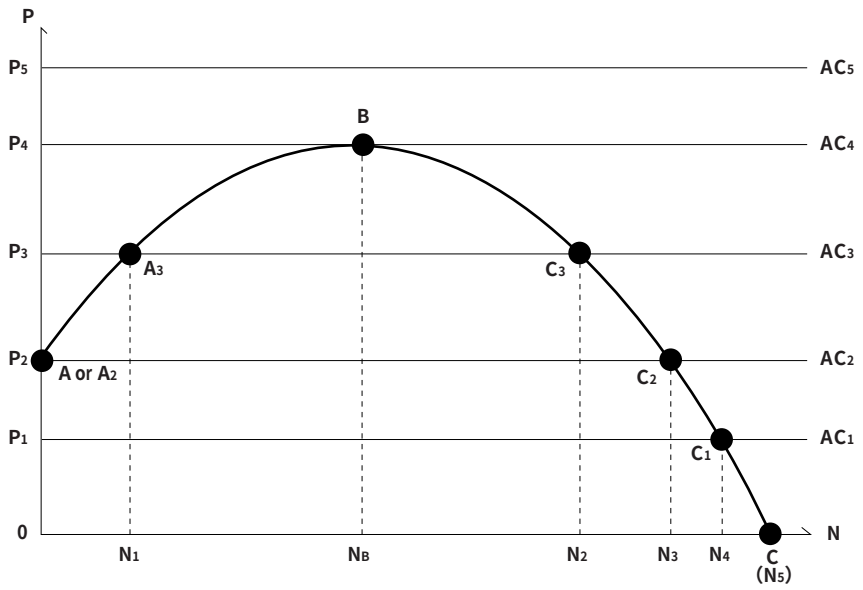


Figure 7

Analysis of Equilibrium-demand (ED) Curve together with Various Average-cost (AC) Curves: For b=0.8



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equal to $\overline{OC}$. That is, the equilibrium point is point C.

(2) For P=P_1, we have one equilibrium point C_1 for AC-line AC_1

(3) For P=P_2, we have two equilibrium points A (or A_2) and C_2 for AC-line AC_2

(4) For P=P_3, we have two equilibrium points A_3 and C_3 for AC-line AC_3

(5) For P=P_4, we have one equilibrium point B which is the point of tangency between the ED-curve ABC and the AC-line AC_4.

(6) For P>P_4, there exists no demand at all.

In light of the above, if we focus our attention to the right-hand side of the ED curve, it can be pointed out that the demand level for the volunteer ticket decreases from $\overline{OC}$ through to N_B as the price increases from zero through to P_4. On the other hand, if we look at the left-hand side of the ED curve, it can be pointed out that the demand level increases from zero through to N_B as the price increases from P_2 through to P_4. The demand level, in the meantime, jumps down to zero from N_B as soon as the price exceeds the level of P_4.

Interestingly enough, each of the above equilibrium points is a stable equilibrium point for its corresponding price level partially because, in our demand-surface approach, we have a decreasing demand curve on each vertical plane of the N-P dimension which is arranged for all possible given levels of virtual demand M.[20)]

3-3 Marginal-social-benefit Curve and Optimization of Social Benefit

In our framework of demand surface, the gross social benefit (GSB) which in defined as gross consumers surplus can be obtained by integrating P in Equation (1) from zero to given M with respect to N and then by setting M=N:

$$GSB = \left[\int_0^M \left\{ 2 - N^2 - 2\left(M - b\right)^2 \right\} dN \right]_{M=N}$$

$$\therefore GSB = \left[2\left(1 - b^2\right) M + 4bM^2 - \left(7/3\right) M^3 \right]_{M=N}$$

$$\therefore GSB = \left[2\left(1 - b^2\right) N + 4bN^2 - \left(7/3\right) N^3 \right] \cdots\cdots (5).$$

Therefore, the marginal social benefit (MSB) can be obtained by taking the derivative of GSB with respect to N in Equation (5):

$$MSB = dGSB/dN$$

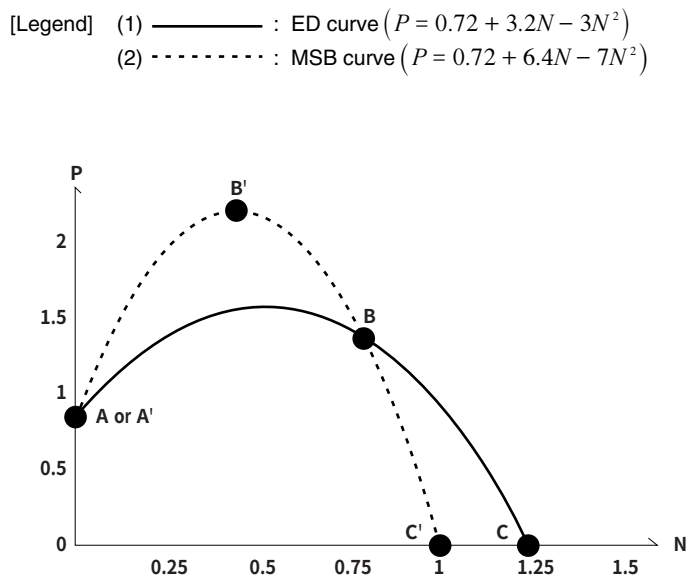
$$= d\left\{ 2\left(1 - b^2\right) N + 4bN^2 - \left(7/3\right) N^3 \right\} /dN$$

$$\therefore MSB = 2\left(1 - b^2\right) + 8bN - 7N^2 \cdots\cdots (6).$$[21)]

As shown by Figure 8 for the case of b = 0.8, Equation (6) enables us to draw a bell-shaped MSB curve A'B'C' which is different from its corresponding ED curve ABC.

In our demand-surface approach with agglomeration economies, it should be kept in mind that demand curve[22)] is not generally identical with the MSB curve as opposed to our conventional theory in which the demand curve usually coincides with the MSB curve. Therefore, the demand-surface approach suggested by the present paper can possibly provide us with a new insight into the optimization

Figure 8
Equilibrium-demand (ED) Curve and Marginal-social-benefit (MSB) Curve: For b=0.8



analysis of the social benefit which would require the investigation of the intersection between the marginal-social-benefit curve and marginal-social-cost curve.

4 Conclusion

In this paper, the authors have tried to reflect some of their elementary ideas obtained through their practical experiences in the GONGOVA projects upon the examination of the basic aspects of the demand curve for the volunteer-activity programmes, by incorporating the agglomeration component into the demand function[23)]. The demand-surface approach applied in Section 3 has come into their minds with their tentative recognition that those who are seriously interested in the participation in the GONGOVA type of volunteer-activity programmes tend to be rather sensitive in their decision of participation to the size of the participant group.

Be that as it may, let us now close this paper with a tiny hope that what has been discussed in the above may be of some assistance to build a small part of the agglomeration economic theory of voluntarism.

Notes

1) They are alternatively called hilltribes (or hilltribe people), hill-area people, or highlanders. In Thai language, they are often referred to as Chao-kao (meaning “hill people”).

2) They are: (1) educational chances and (2) practical chances.

3) Therefore, these services can sometimes be considered as rather similar to "self-sufficient goods and services" in conjunction with their production-consumption processes.
4) This tendency implies the existence of agglomeration economies in the sense that, from the viewpoint of participating volunteers, the quality of a volunteer-activity programme would vary depending on the number of its participants.
5) They are: (1) the weak marketability and (2) agglomeration economies.
6) Students from other universities than Gakushuin University can also participate, within a prescribed number, in the GONGOVA projects.
7) The GONGOVA project has been conducted once a year since 1997.
8) The lowland Thai sometimes call uplanders by the name which the uplanders would not like to hear such as Meo.
9) In association of the GONGOVA projects with the work in Ban Mae Chang, such academic outcomes have been produced as Samata (2003), and Samata and Kawashima (2003 and 2004).
10) For this case, it is to be noted that each consumer can buy no or only one ticket but no more than one ticket.
11) That is, the variable M serves as "virtual conditional variable" in our analysis.
12) That is, the quality of the volunteer-activity programme.
13) The terminology of agglomeration economies contains the concept of agglomeration diseconomies in this paper unless otherwise mentioned.
14) For drawing Figures 5～9 and A1～A2, the computer software *Mathematica* (Wolfram Research Inc.) is applied.
15) That is, "the virtual demand for the volunteer-ticket."
16) The actual number of the participants can be specified depending on what kind of unit is applied to M.
17) That is, as the expected number of participants parts from the of 1.0.
18) Instead of "virtual demand."
19) We do not assume here that the AC (average cost) changes as N (demand) changes. In other words, we assume that the AC remains constant even though N changes, implying that AC curve is flat.
20) In other words, P is a decreasing function of N for any given M in our Equation (1).
21) Or, we have $P = 2 + N^2 - 2\left(b - 2N\right)^2$ as a *Mathematica*-friendly expression.
22) Precisely speaking, the ED curve.
23) Agglomeration economies in the context of the economic theory of clubs by Buchanan (1968).

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APPENDIX

Figure A1

Demand Surfaces: For b = -1.0 ～ 1.4 with Interval of 0.2 (*i.e.*, b: -1.0, 1.4, 0.2)
in Our Demand-surface Function " $P = 2 - N^2 - 2\left(M - b\right)^2$ "

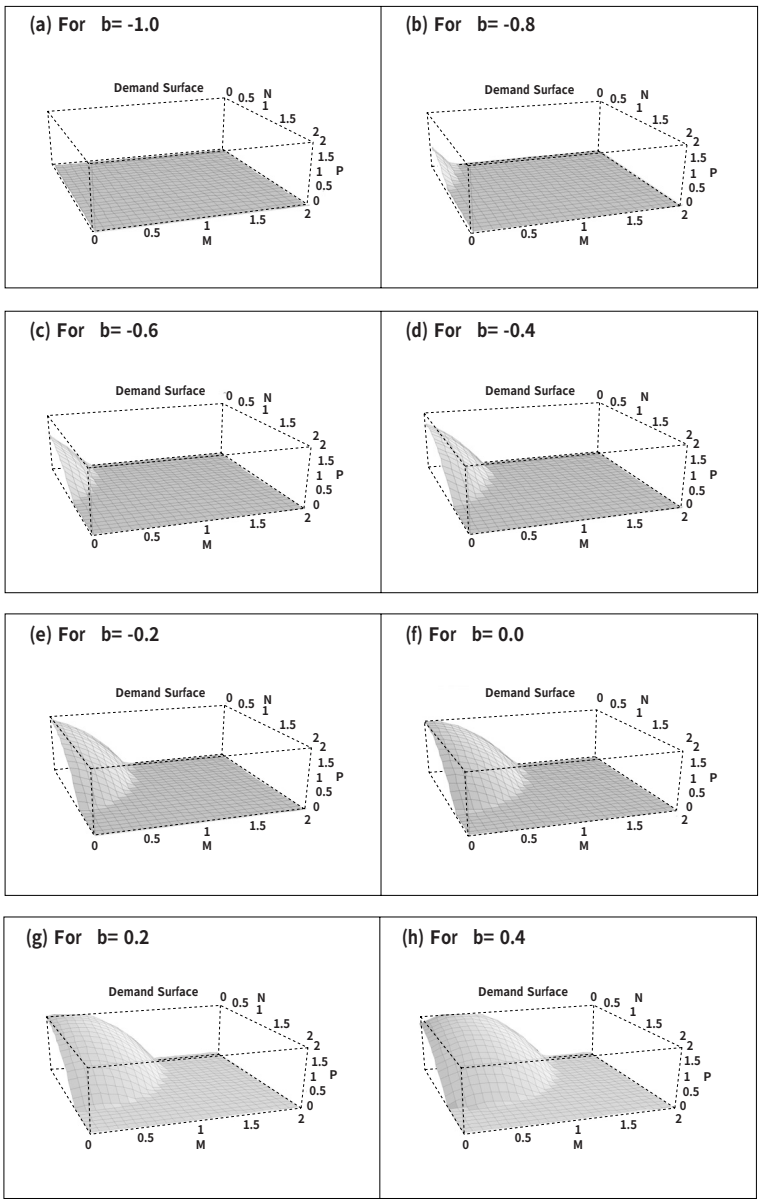


Figure A1 (Continued)

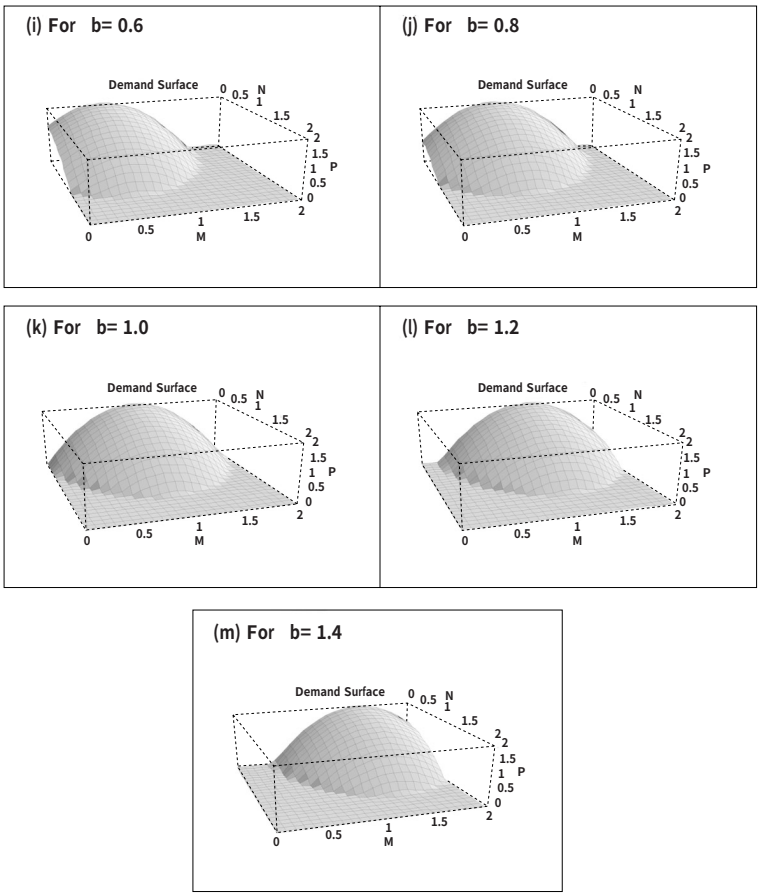


Figure A2

Equilibrium-demand (ED) Curve: For (b: -1.0, 1.8, 0.2)

in the ED Function "$P = 2\left(1 - b^2\right) + 4bN - 3N^2$"

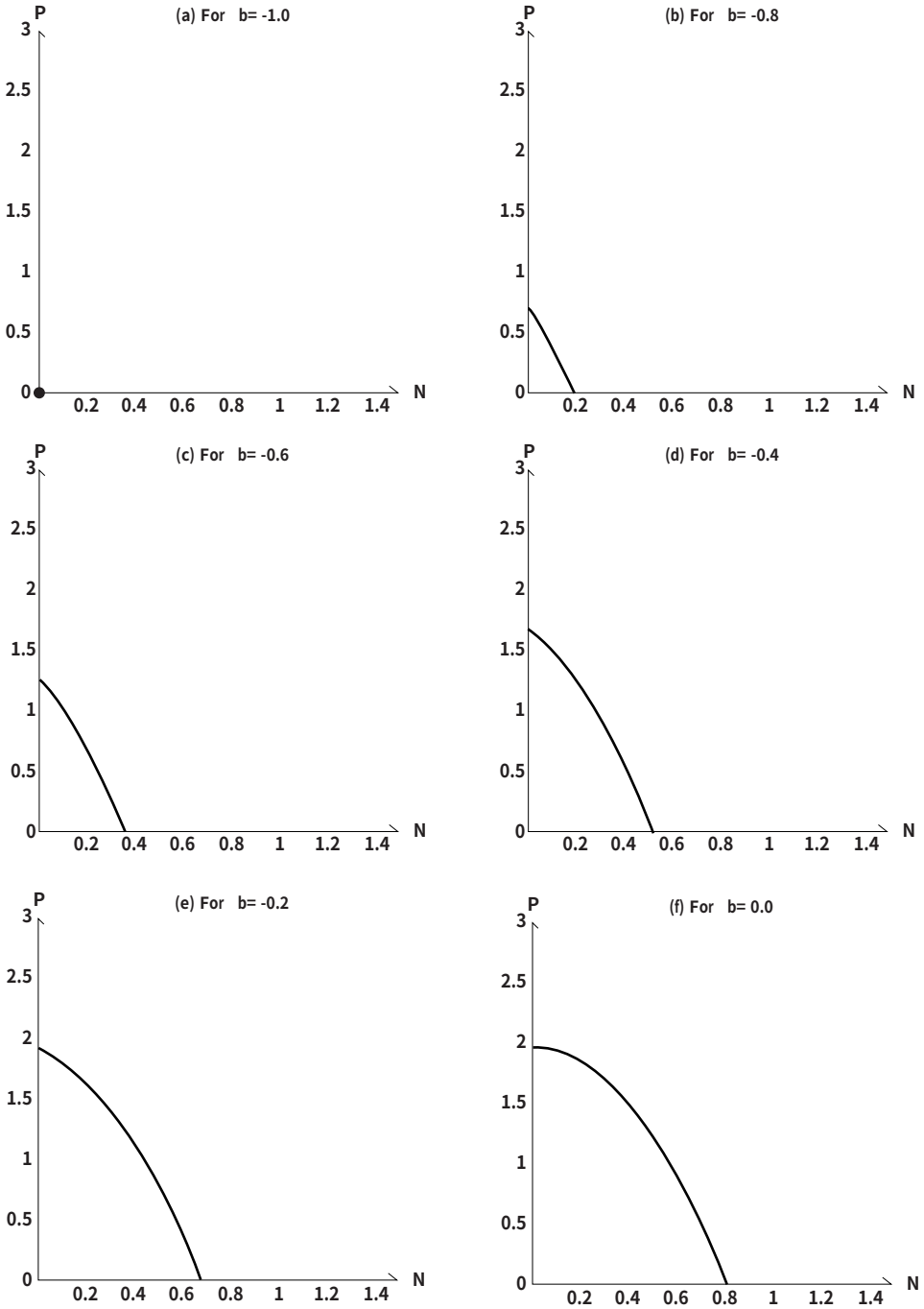
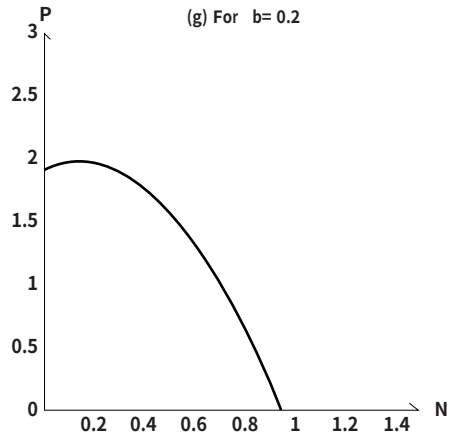
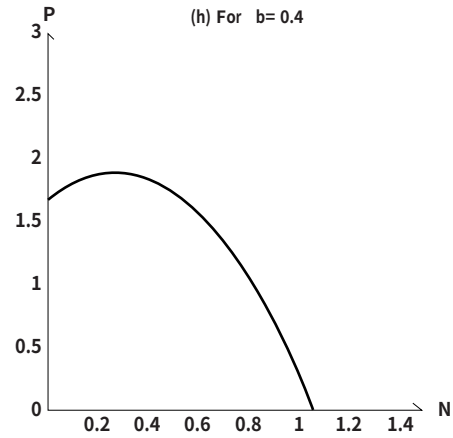
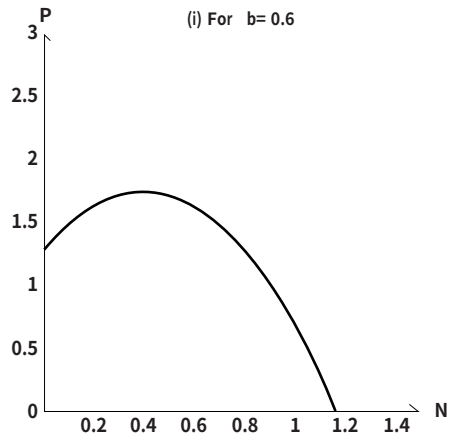
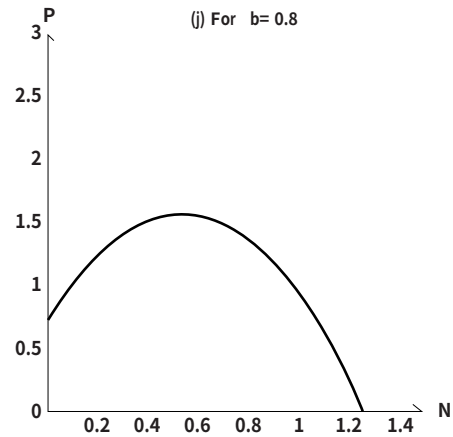


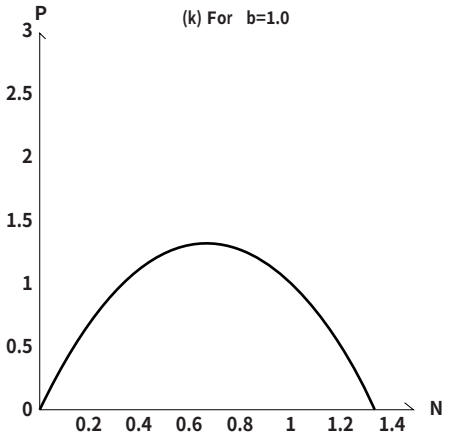
Figure A2 (Continued)











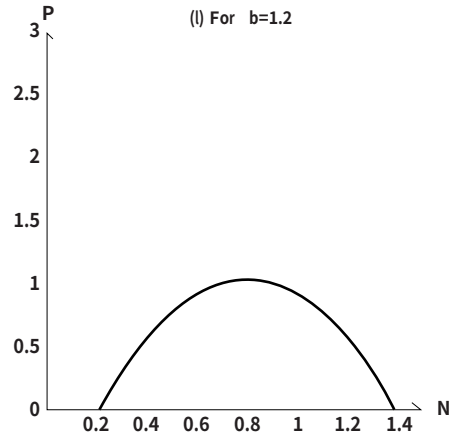


Figure A2 (Continued)