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PUBLIC TRANSPORT SERVICE AND ITS AVAILABILITY*

by

Yatarō Fujii

Transport service is a theme in whose context public-interest has frequently been argued. It appears, however, that in the implication of the word "public-interest" there are mixed various concepts. This paper is intended to clarify those elements of public-interest that are inherent in public transport service. In the following sections, concepts of public-interest in public transport service (1~2), determination of supply level (3~5), and problems pertinent to transport coordination (6) will be discussed.

I

The fact that public-interest is spoken of in a liberalistic economy suggests the existence in public transport service of such elements that are unable to be satisfactorily arranged by market. Inclusively speaking, public-interest may be said to pertain to those elements that do not allow mere dependence on market and make some forms of external intervention necessary to attain socially desirable conditions.

Two major contents are involved in public-interest discussed with respect to public transport.¹⁾ The one is the role charged on it as a means of achieving some objectives of government's policy. Public-interest of this category is impossible to evaluate from the side of transport itself. The decision of

*This paper was originally compiled in the *Kenkyū Nempō* (Annual Report), 1966, of the *Nippon Kōtsū Gakukai* (Japanese Society of Transport Economics), to which some footnotes have been added.

1) Public transport is managed for unspecified, common people. Hence what is to be contrasted to it is transport for specified individuals, that is, transport for exclusive use. All private transport is always so, while commercial transport is necessarily not public transport since within it contract carriers are included. However, in volume most part of transport for exclusive use is private transport, hence usually private transport is contrasted to public transport.

The volume of Japan's inland transport by modes is shown below:

political objectives falls under the competence of government, and the selection of means to attain them depends on the criterion of public finance. What the transport side can perform for this category of public-interest is confined to presentation of materials for the sake of selection of means. The role that public transport comes to play as the result of such selection must be accepted as given, even when it stands far apart from the rationale within the transport sector.

The high-percentage discount to commutation ticket, for instance, is said to be grounded on the ability-to-pay of lower-income classes.²⁾ If so, as to this discount the usual approach of partial equilibrium is unadaptable for evaluation. A criticism to the discount is supposable that it makes only an inefficient means of income redistribution. However, it may be possible to use

Year	Passenger (in billion passenger-km)					Freight (in billion ton-km)				
	Railway		Road			Railway		Road		Coastal Navigation
	National Railways	Others	Bus	Car		National Railways	Others	Truck		
				Commercial	Private			Commercial	Private	
1955	91	45	23	2	2	43	1	4	6	
1960	124	60	44	5	6	54	1	10	11	64
1965	174	81	80	11	29	56	1	22	26	81
1967	184	86	90	15	59	59	1	37	44	104

Source: Ministry of Transport, Un'yu Keizai Tōkei Yōran (Statistical Handbook of Transport)

In the above figures the relative shares between transport for public and transport for exclusive use are not directly reflected. In freight transport of 1967, for example, freight from or to private sidings accounts for 52% of total freight (in tons) of the Japanese National Railways, and privately owned freight cars constitute 10% of the total freight cars of JNR. And both percentages are steadily rising year after year. Also as to road transport, by an estimation on a sample survey of 1964, 12% of commercial transport is carried by contract carriers (in ton-km). Furthermore, a considerable part of freight carried by common carriers can be regarded as transport for exclusive use in the reality. Of course such share of transport for exclusive use is still higher for certain goods or distance strata.

- 2) While commutation-ticket passengers accounted for 71% of total passengers carried by JNR in 1967, or 46% in terms of passenger-km, as to the fare revenue the percentage was as low as 15%. This phenomenon derives from the substantial discount to commutation-ticket fares as against ordinary fares. For example, in the case of 1-month commutation-ticket for 2nd-class over a distance of 15 km, per-trip fare — assuming one round-trip a day — is equivalent to only 50% of corresponding ordinary fare as to workman-commutation-ticket and 24% as to student-commutation-ticket. The basic rates of JNR's fare are subject to the Rates of Japanese National Railways Act — approval of the Diet is necessary for its amendment — in which it is stipulated that commutation-ticket fares are not allowed to be over 50% of corresponding ordinary fares (40% for 6-month ticket). Essentially this stipulation is contemplated for the aim of supporting lower-income classes, but no compensation for it is given to JNR by government.

such discount as a subsidiary means in case income transfer is impossible or inefficient for some reasons, or to expect effects greater than a mere change in the pie-cutting of national income could bring about. In any way, such a criticism is one directed to the selection of income-redistribution means, yet not to the point that the selection involves a nature that goes beyond the pursuit of rationale in transport.

So, if public-interest of this category is on occasion required of public transport, it is only because its attribute, that is, use by common people, provides a convenient means of attaining a political object. Occasionally according to aims, governmental intervention will be made, not in all modes of public transport, but only in some particular modes, or contrastively will be extended over private transport. Subsidy to foreign navigation, for instance, can be applied to private transport if it aims contribution to the balance of international payments.

A second category of public-interest stems from the nature of transport service itself. On this category, evaluation as a problem of transport is possible. In considering it, distinction must be made between public-interest required only of public transport and that of all transport services regardless of whether public or private. For on private transport no public-interest on account of its inherent nature is required, as contrasted to public transport. Actually controls or supports are placed on private transport, too, but they are either based on the first category of public-interest (political objectives), or compensatory measures for public-interest required of public transport, or public-interest attached to all sorts of transport service — in short, not by reason of particular, inherent nature of private transport.

Such public-interest featured to all transport services is the external effect. In a typical form it may be taken as an external economy in the classical sense or a pecuniary external economy, that is to say, an effect of decreased transport cost on other sectors of economy. Contrastively, social cost of traffic accident and other nuisances could be regarded as external diseconomy. In any way, such external effect is common to all transport services, not peculiar to public transport.

And, such external effect is not particular to transport service. It can be found more or less in other sectors, notably so in the so-called trunk industries. Hence, in this respect there is no reason to require peculiar treatment only of public transport, distinctively from other trunk sectors. This does not mean, of course, that this category of public-interest is not important. On the contrary it may be said to constitute one of the most essential elements of public-interest with regard to transport service. In this paper, however, no more discussion will be made on it since our aim is the examination of public-interest inherent in public transport.

After cutting off public-interest of all transport services, we can find several elements of public-interest to be required only of public transport.

One of them is the requirement for the reason of "natural monopoly." Two explanations which are essentially the same have been given to the attributes of public transport that cause natural monopoly. The one is that large-scale facilities are necessary to supply the service. This is a traditional explanation pertaining to the peculiar controls placed on public utilities generally in contrast to other sectors. On this argument Professor Bonbright has pointed out that such necessity of large facilities is not confined to public utilities³⁾; heavy/chemical industries today are equipped in larger scale than public utilities yet not subject to controls as the latter; this point cannot be clarified by the traditional explanation. He has argued instead the technical attribute of public utility services that they need facilities for physical connection between the places of production and consumption, which localize the market.

On either explanation, however, this category of public-interest is not inherent in public transport or public utility services. What makes government's intervention on monopoly necessary is the restrictive effects which monopoly causes on the performance of market. In this sense the factor that makes intervention necessary is monopoly itself, irrelevant to natural monopoly or else. Either one of the above two arguments on the natural-monopoly character of public utility services cannot fully explain why on the natural monopoly particular controls must be imposed—particular as compared with monopoly in other sectors—and why public utilities must be placed under the treatments different from other monopolistic sectors. Such public-interest that derives from natural monopoly should be considered as a problem of regulation on monopoly in general. Some other factor would be required for the ground to interpret the particular treatment put on public transport as well as public utilities.

This reasoning applies also to the intervention by government required for resource allocation from the viewpoint that public transport and public utilities make typical ones of cost-decreasing industries. The price making by marginal costs requires subsidy in case of cost-decreasing. However, such character is obviously not peculiar to public transport or public utilities. The marginal cost pricing has been spoken notably with regard to these sectors because, for one thing, in the past they were conceived as typical cost-decreasing industries and because, for another, as Professor Hotelling himself has mentioned,⁴⁾ they have actually been subject to particular controls by government in which their prices have been given a character of quasi-tax determined with appreciable arbitrariness.

Probably this arbitrariness in price making may make a category of public-interest in public transport. However, it is the result of government's

3) Bonbright, J. C., *Principles of Public Utility Rates*, 1961, pp. 7~17.

4) Hotelling, H., "The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates," *Econometrica*, Vol. 6, No. 3, July 1938, p. 242.

intervention deriving from other elements of public-interest, not the cause.

2

One could find public-interest inherent in public transport within other attributes of its service, that is, the characters of instantaneous good in supply side and derived demand in demand side. The production and consumption of transport service must be coincided both in time and place, and neither its storage nor transfer is possible. On the other hand, in most cases transport service is not demanded for itself but jointly demanded with almost all of economic and social activities. The combination of these characters results in the demand for always-secured availability of transport service. In fact, as Mr. Bonavia has put,⁵⁾ the value of transport service to consumer is largely depended on his knowledge of availability of the service, readily serviceable whenever and wherever he wishes. That the historical concept of "common" of common carrier implies "duty-to-serve" also attests to the fact that the secured availability makes public-interest inherent in public transport.

In fact a distinguishable feature of public transport as compared with private transport is that it supplies not only service to actual users but also availability of the service to potential users as a by-product. This by-product is lacking in its market at which consumers' preference for it is to be revealed. In this sense it may be conceived as an external effect given to non-users through actual consumption of service. Stillmore important, an enjoyment of availability by one person does not cause any decrease in the enjoyment of it by other people. The same volume of availability is enjoyed by all individuals. In this sense it has the character of collective-consumption goods.⁶⁾

In most cases, also as for public transport enterprises it may be advantageous to supply availability and make it popularly known. Or else, it might be said that, if the value put by people on the availability of particular transport service surpasses the cost incurred on the enterprise for it, such availability must continuously be supplied and secured irrespective of actual use of the service. The enterprises cannot, however, identify the demanders of availability and charge price on them due to the above-mentioned characters of availability. The entrepreneur's decision depends only on the revenue from actual users. For this reason intervention from outside becomes necessary.

Of course, the said characters of availability are not peculiar to public transport service. The necessity of intervention for these reasons can be

5) Banavia, M.R., *The Economics of Transport*, new ed., 1954, p.105.

6) In this paper public transport service itself (for example road service) is distinguished from its availability, and the discussion concerns the latter. To road service there is a related problem of congestion due to capacity limit, hence it is difficult to conceive it as a genuine collective-consumption good.

spoken of with every sector that supplies service taking the general public for its customer. This suggests, as Mr. Weisbrod has pointed out,⁷⁾ existence of many sorts of goods that, while being taken as genuine private-consumption goods, combinedly have the character of collective-consumption goods. Practically such businesses whose availability is especially essential will be dealt as socialized services, for example fire or police service. On the other hand, if the required availability is supplied to a satisfactory extent in accompany with actual use of the service, the problem will be relatively trivial. It seems that the particularity of public transport is grasped as a case where the factor of availability is so emphasized that it has a long history of governmental regulations about it, and on the other hand it can be dealt to an appreciably extent by market mechanism for actual use of the service in contrast to socialized services. As to public utilities in general, the essential factor that distinguishes them from other sectors seems to consist in their intermediate position between socialized services and general industries as regards the availability of their services.

What makes public transport and public utilities take such an in-between position is in the end the necessity of their services. However, the necessity of service may be a matter unable to evaluate inside the boundary of these sectors. It is especially so when the necessity of service is argued as a matter of so-called national minimum. This suggests that those businesses that are placed under particular controls as public utilities may not be identical among countries and development stages but be varied. Therefore the inherent factor that distinguishes public transport or public utilities from other sectors should be grasped in terms of to what an extent the secured availability of their services is actually being required at present.

In the case of public transport the emphasis on the availability of service is concretely express as the duty of supply, that is, the compulsory prohibition of consignment refusal.⁸⁾ This compulsion makes the core of all controls imposed on public transport. True if this were absent all the controls deriving from other elements of public-interest would lose actual effectiveness. Usually this compulsion is interpreted as a measure of regulation on monopoly, but such is a view affected by the fact that there is a long history of this compulsion since it put on railway at a period when it monopolized inland transport market. Over a long time the policy of limiting competition and protecting monopoly has been taken for railway. This policy has been resulted, at least partially, from an idea that protection of monopoly affords a

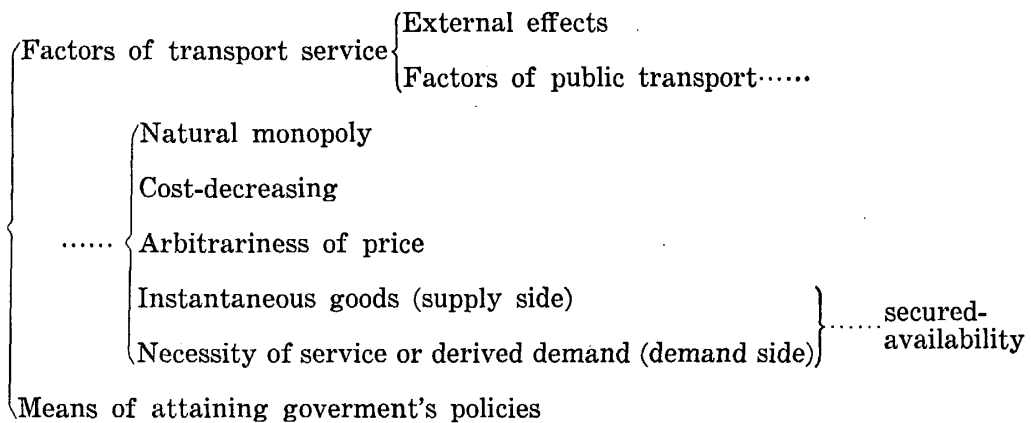
7) See Weisbrod, B.A., "Collective Consumption Services of Individual Consumption Goods," QJE., Vol. 78, No. 3, 1964. See the footnote (19) below.

8) In this paper the "compulsion of prohibition of consignment refusal" covers "compulsion of continued operation." In Japan railway business is regulated by the Railway Business Act, which includes provisions on the compulsion of both senses. Also as to road transport and toll-road businesses there are similar provisions in the Road Transport Act.

feasible means of compensation for the duty of supply imposed on railway. Such a means of compensation to railway has proved inefficient today; yet it would be a reversal of cause and result to conclude immediately from this that the significance of such compulsion has been extinguished. The compulsory prohibition of consignment refusal conforms to the historical concept of common carrier; the intention of this regulation lies in the secured supply of availability of service, stepping out from mere control on monopoly. Whether as explicit regulation or as implicit expectation, such a sort of compulsion is generally seen with public utilities, but with other monopolistic industries it is not enforced except as a temporary measure in emergency.

The above-stated points may be summarized as follows:

Public-interest of transport service



3

Regarding the availability of public transport service, how is it about the determination of desirable level to be supplied? Letting alone the necessity of service for a while, we will confine our consideration to the character of collective-consumption goods attached to the availability of service.

According to Professor Samuelson's definition,⁹⁾ with a collective-consumption good each individual of a society consumes the same volume of it and the total volume of consumption by the whole society is equivalent to each individual's volume of consumption. In such goods individual's payment and benefit are irrelevant each other; the exclusion principle does not apply. The availability of service supplied by public transport agency has this character of collective-consumption goods as mentioned in the previous section. It is supplied to every person of society, irrespective of actual user or not. For all individuals the volume each enjoys is the same and equal

9) Samuelson, P.A., "The Pure Theory of Public Expenditure," RE & Stat., Vol. 36, No. 4, Nov. 1954: "Diagrammatic Exposition of a Theory of Public Expenditure," RE & Stat., Vol. 37, No. 4, Nov. 1955.

with the volume of supply on the side of transport agency.

A problem pertinent to collective-consumption goods as defined is that market mechanism is incompetent to attain the optimum level of supply.¹⁰⁾ The concept of club may be useful for considering arrangement in the case where the interdependence exists about consumption as is with collective-consumption goods, that is to say, to contemplate arrangement supposing a club whose members are rightful on the consumption of the goods. There are two types of idea about the use of this concept of club. The one is Professor Buchanan's "economic theory of club" originating from the public expenditure theory.¹¹⁾ In the club theory, to the utility function of a person are added variables concerning the size of group joining consumption of the goods. The other stems from the examination of the theory of marginal cost pricing for public utility rate as is seen in Mr. Wiseman.¹²⁾ The major difficulty of marginal cost pricing is the problem of loss incurred under the condition of cost-decreasing. One way of evading this difficulty is the proposal of two-part tariff system, in which the making of fixed part is explained by the "club principle." By Mr. Wiseman the essence of the club principle "appears to be the proposition that the consumers of the utility product can be treated as a 'club', created by the consumers to arrange both the amount of the good each individual shall consume and the amount that he shall pay for it."

Formation of club to coordinate the supply and demand of service is not limited to public utilities. In particular as to the availability of service not a few examples are found of pricing by club system. One of them is a golf club. Its membership fee can be regarded as price paid for the secured availability

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- 10) On this assertion of the need of intervention from outside, Mr. Tiebout has pointed out that possibly it is unadaptable to public services supplied by local government. While in the case of central government people are not given room for selection of residence, in the case of local government they can move selecting residence. So as for services of local government free movement among areas can take the place of market mechanism, since people select areas with desirable level of public service and burden (tax). See Tiebout, C.M., "A Pure Theory of Local Expenditures," *JPE.*, Vol. 64, No. 5, Oct. 1950. In order to make Mr. Tiebout's suggestion effective, however, there must exist as many as local communities that could correspond to various levels of public service required by individuals. And an assumption is necessary that factors other than local government services that relate to the movement are equal everywhere. Such assumption is not admissible as regards, among others, income and job opportunity. In fact such movement is unlikely only on account of the level of public service and burden. Yamamoto, S., "Kōkyō Service to Jūmin no Senkō (Public Service and Habitants' Preference)," in Kinoshita, K., ed. *Chihō Jichi no Zaisei Riron* (Fiscal Theory of Local Government), Ch. 3, 1966, pp. 47-50.
- 11) Buchanan, J.M., "An Economic Theory of Clubs," *Economica*, Vol. 32 No. 125, Feb. 1965.
- 12) Wiseman, J., "The Theory of Public Utility Price: An Empty Box," *Oxford Economic Papers*, Vol. 9, No. 1, 1957, p.64.

of club's service. Here distribution of burden is maintained by artificial setting of membership as regards the availability. Such an attempt of evading the difficulty emerging from the unapplicability of the exclusion principle by way of limiting by some measures the bounds of consumers may be adaptable even to the polar cases of collective-consumption goods. However, such measures may imply unjustifiable limitation of consumption. For the marginal cost incurred on the economy by extra member's consumption is zero by definition, excepting the cost of congestion by capacity limit; artificial measures cannot change this nature of collective-consumption goods. As has been pointed out by Professor Bator,¹³⁾ the real problem arising from the unapplicability of the exclusion principle lies, not in the disability of producers in physically excluding individual consumption, or in controlling distribution of products to consumers, but in the fact that these would lead to inefficient allocation of resources. Hence as for collective-consumption goods artificial measures to limit club members are unjustifiable. In opposite to a relatively trivial problem of a golf club, in the problem of availability of public transport service people requiring the service cover a wide range; the whole community is relevant to it. And, in such a large-scale club any change in the burden of individuals may work only a small effect on the supply, and hence selfishness may disguise real preference to a larger extent. These situations may require intervention of local government or similar organization as the agent, on behalf of members, to determine the supply level of availability and the distribution of burden and to enforce members to pay the burden (tax).

Such intervention by local government must be conducted on the base of real preference of members. So it is desirable that the club, for which local government stands, is as small as possible. For, the smaller the club, the more homogeneous the members' preference becomes, and the narrower is the room for intentional disguise of preference by members — thus grasping of real preference is easier and more exact. In case a spillover effect beyond the jurisdiction of a local government is seen with collective-consumption goods in question, another government of higher level would come to exert an intervention.¹⁴⁾

Insofar as government's intervention ought to be based on consumers' preference, some steps must be taken to confirm their real preference. It is thinkable to find out through vote or interview the supply level required by consumers and the amount of burden they are willing to pay for it. But for clarifying consumers' preference by these methods, on the side of consumers they must be provided informations about all alternative plans of supply according to which the supply level and cost, hence burden, are varied. And even if data were completely available to consumers, their selfishness would

13) Bator, F.M., *The Question of Government Spending*, 1960, p. 95; Samuelson, P.A., "Aspects of Public Expenditure Theories," *RE & Stat.*, Vol. 40, No. 4, Nov. 1958, p. 335.

work on vote or interview. In other words, if vote should be effective, preference of individual consumers must be independent, which is a condition difficult to fulfil in the case of collective-consumption goods. The larger the number of people requiring supply, the greater will become the room for selfishness, and the smaller will be the effectiveness.

If for some reason signals of preference were found, they would afford clues. Under the Professor Samuelson's definition private- and collective-consumption goods are assumed to be alternative each other. However, as Mr. Colm has criticized,¹⁵⁾ this is not always typical case. As will be observed later, between the availability of road service, which has a character of collective-consumption goods and the ownership of vehicle there lies a complementary relationship.

Another approach to raise efficiency in resource allocation for collective-consumption goods is the cost-benefit analysis. In this analysis measuring is attempted on the group receiving benefit by the supply of a certain level of collective-consumption goods. The results will give suggestions about the level to be supplied. In particular they may be useful for deciding the burden distribution when one takes the principle of he-who-benefits-ought-to-pay. Of course they may be far distant from exact grasp of benefit given to every individual. And, since the cost-benefit analysis is a static and partial approach, usually it presupposes *ceteris paribus* situation. Furthermore, it is unadaptable to the comparison between goods with different characters since unmeasurable factors might always exist. However, even if it is unable to expect to attain the optimum resource allocation, that the beneficiary groups and the broad level of their benefits are identified may serve for more efficient determination of supply level of collective-consumption goods and burden distribution compared with a case lacking in such informations.

4

Although the availability of public transport has the character of collective-consumption goods and the beneficiaries extend over community's strata widely, this does not immediately mean that the determination of supply level of availability always requires some intervention of government.

As has been observed already, the availability of public transport service is conceivable as an external effect given to non-users as the result of users' consumption of the service. It is generally accepted that where technical

14) Yonehara, J., "Chihō Zaisei no Keizaiteki Kōritsu Bunseki (Analysis of Economic Effectiveness of Local Public Finance)" in Kinoshita ed. op. cit., Ch. 1 pp. 13-15; Yamamoto, S., "Jōkentsuki Hojokin to Ippanteki Hojokin (Conditional Subsidy and General Subsidy)" in *ibid.*, Chap. 6, pp. 97-102.

15) Colm, G., "Comments on Samuelson's Theory of Public Finance," *RE & Stat.* Vol. 38, No. 4, Nov. 1956, p. 410.

external effects exist the attainment of optimum level of production and consumption cannot depend on market; some systems of taxation or subsidy are required. Yet some comments have been made on this point.

Here Mr. Kafoglis' model is helpful by which he has inquired into the adjustments to accompany external effects of consumption of road service.¹⁶⁾ His model suggests that, where an external effect exists, the criterion of decision whether subsidy should be adopted in order to attain the optimum level of production and consumption lies in the marginal external effect in the equilibrium. If it is zero, although external total effect exists it can be neglected, letting the fulfilment of marginal necessary conditions depend on market.

In the availability of public transport service, too, in most cases its required volume will fully be supplied as the result of actual use. Hence in that case non-users will not be required any contribution in spite of their benefit deriving from the supply of availability as the external effect of actual users' consumption.

5

In the above sections we have observed the availability of public transport service with its aspect of collective-consumption goods. Government's intervention, required in this aspect, is conducted as a substitute to market mechanism. At this point government merely acts as an agent for members of club in order to decide supply level, to allocate burden and to collect it. Its role is hardly different from that of a private club. The decision is based essentially on the individual preference of members, and the distribution of burden would be made on the principle of he-who-benefits-ought-to-pay. This is permitted for the reason of voluntary selection or agreement.

Here, we return to the necessity of availability. The availability of public transport service is factually secured to every consumer of community indiscriminately in the form of the duty of supply. This is not only for the sake of effective allocation of resources on the base of consumers' preference. In some cases such a peculiar regulation is enforced on public transport because the supply of its availability proves a minimum need indispensable to the living of people. As mentioned previously, in few cases transport service is demanded as an original demand in itself. Instead in most cases it is demanded jointly with or derivedly from almost all of economic and social activities. As for such a service its availability may also be said to have indispensability to social life.

16) Kafoglis, M.Z., *Welfare Economics and Subsidy Program*, 1961, pp. 60-66: "Highway Policy and External Economics," *National Tax Journal*, Vol. 16, No. 1, Mar. 1963: Buchanan, J.M. & W.C. Stubblebine, "Externality," *Economica*. Vol. 29, No. 116, Nov. 1962.

It is obvious that as for fundamental necessities of life the minimum level of their supply must be secured. Resources are allocated to such goods through market which, however, does necessarily not secure the minimum need. Of course the decision of concrete contents of the minimum need would be accompanied by the problem of value judgement, which makes the part charged on government as the representative of the community. This government's role is not one as a mere agent of club members but as the collective-mind standing aloof from individuals' preference.

Whether such security of the minimum level of collective-consumption goods should be afforded through transfer of income or as goods-in-kind falls under matters to be determined in line with principles and criteria of public finance. For the security of the national minimum it would be more efficient to conduct redistribution of income by transfer and then to rely on the club principle to deal problems arising from the character of collective-consumption goods rather than making provision in kind. However, as to the aspect of burden (tax), in the case of intervention by local government it is unlikely that income transfer should increase ability to bear tax of the club members, that is, habitants of the local community. Therefore, if income transfer can fulfil the minimum level for private-consumption goods, the same would not be secured as for collective-consumption goods.¹⁷⁾ Here the problem turns itself to whether assistance should be given from central to local government as grant-in-aid, for fulfilling the national minimum. This is already a problem of public finance.

Once it has been settled from fiscal consideration that on the availability of public transport service the direct intervention should be made by government, not depending on income transfer and club principle, this decision must be accepted as given on the side of transport sector.

One related problem lies with the club principle. On occasion a distribution of burden may be unacceptable to government, even if it is based on members' voluntary agreement. For instance, if poorer members may receive more benefit from the secured availability of railway service than richer members — for, the latter has automobile while the former not — and they propose more amount of contribution, it is not conceivable that such can be accepted to government for the reason of voluntary selection. The distribution of burden on the base of benefit principle of club has a character of

17) Yamamoto, "Conditional Subsidy and General Subsidy," *op. cit.*, pp. 103-7.

18) Mr. Wiseman, in explaining the club principle, has divided clubs into direct-production club, competitive-producer club and discriminatory-monopoly club. The last one is most typical in public utilities. In this case the voluntary selection by consumers consists only in deciding their own consumption volume under the condition of discriminatory prices charged by public utilities, the manager of club. Then, he concluded, it is impossible to ensure economic welfare of consumers for the reason of voluntary selection. Wiseman, *op. cit.*, pp. 66-8.

price discrimination, which bears an effect of income redistribution. In the club principle this effect is explained on the ground of voluntary selection—members prefer this redistribution—which would improve their economic welfare. This explanation, however, does not testify that such a redistribution is to be admitted by government. As Mr. Wiseman has pointed out,¹⁸⁾ what can be of significance as to income distribution is the decision of government, not club. Government's intervention regarding the availability of public transport service may also involve its role as collective-mind on a criterion different from the club principle.

6

Let's summarize the above examination from the viewpoint of transport coordination. The essential value of public transport service consists in that the availability of service is not limited to specified individuals, and that all consumers are aware of it. This is actually causing two important problems on transport coordination.

1) The one is coordination between public transport—of which particular public-interest of availability is required—and private transport—which is exempt from such claim. The availability poses problems inherent in public transport because firstly the market is lacking where consumers' preference for it is to be expressed; and secondly, if the market exists, in public transport service the attainment of optimum supply level of availability is unable to expect due to its imposed character of collective-consumption goods.

The first problem is typically exhibited in the case of unremunerative railway lines. If the criterion is taken on the rate revenue from actual use, the unremunerative lines, which are unremunerative on any one of rate making principles, may be destined to closure. But if people of local communities along such a line desire its maintenance and are willing to compensate the deficit for it, it should be kept on regardless of actual volume of use and rate revenue. The difficulty is that generally there is no such system of voluntary transaction. It is conceivable to set up price mechanism for availability.¹⁹⁾ However, in the case of railway line that has an extensive range of potential users, this plan will become inefficient due to the cost for practice. So some intervention from outside will become necessary. For this aim the club principle may be useful.

19) Mr. Weisbrod, in examining the aspect of park service as collective-consumption goods, has stated that it is possible to conceive park to have two kinds of products—that is, private-consumption service to actual users and collective-consumption service to potential users. Demand for the latter service is called option demand, on which he has considered pricing. Weisbrod, *op. cit.*, pp. 470–4.

Whether this intervention is factually necessary or not depends on the marginal external effect by actual use of the service. If at the volume of actual use there exists a marginal external economy, in other words if the availability is not supplied to a required extent with rate revenue, contribution by consumers requiring maintenance of the line will be made. And if the marginal external effect is zero, that is, if availability is supplied satisfactorily with actual use, there is no need of intervention for the optimum level of supply and no contribution by potential users despite their indirect benefit being given as total effect.

The second problem: even if price mechanism is allowed to set up for the availability of public transport service, it cannot be relied upon for the attainment of optimum supply level and burden distribution due to the imposed character of availability as collective-consumption goods. Intervention on the base of the club principle may be useful also for this case, but artificial limitation of club members is unjustifiable. And in case a club is large, the room of selfishness of members grows large, which makes it hard to ascertain members' real preference. Where membership extends widely over a community, the decision will become the role of local government.

If in this case government makes contribution of the cost to railway while requiring the availability of its service, it makes a transaction between the club and the railway. Such a contribution is a due payment for the claim, not a subsidy. Government intervenes in the supply of service by public transport enterprises in return for its payment, and to that extent.

The nature of government's role in the above sense is nothing more than that of the agent of club. The criterion of its decisions lie in the individual preference of club members in essence. The role of government as the collective-mind might be added in respect to the availability of public transport service as well. In the nature, this sort of intervention is due to the first category of public-interest as mentioned in the first section (political objectives).

2) Furthermore, there is another problem of coordination between different modes of public transport with regard to availability. Among such modes, at least as regards road service the pricing for availability is being made, which is not seen with other modes.

As stated above, collective- and private-consumption goods are not alternative. In some cases the relation may be complementary. In road service there exists a relation of complement between the availability of road service (its part for vehicular traffic), which is of character of collective-consumption goods, and the ownership of vehicle, which is a private-consumption good. So it may be taken that the ownership of vehicle makes a signal of preference to the availability of road service. On the contrary, if other demanders of the availability, for example landowners along the road, were admitted to be neglected for the reason that they are disregarded alike in other public

transport modes, the demanders of the availability of road service would be confined to vehicle owners. In this sense a club of vehicle owners is supposable. This technical need renders possible to identify the demanders of availability of service and the level of their demands, if broadly, and correspondingly to charge burden. Of course the ownership of vehicle is not independent of the supply level of availability or the burden distribution. So, to judge desirable supply level or burden distribution on the base of vehicle ownership involves some sort of circular reasoning. And, compulsory holding of licence for vehicle, to be given on the condition of register tax, is an artificial setting of membership of club, which is unable to justify on the resource allocation in short run.²⁰⁾ However, the volume of vehicle ownership may serve for government as a signal to enable more efficient decision on the supply level of road service and the burden distribution.

The two-part tariff system such as the present road taxation (register tax+fuel tax) is possible to assert either as a means of pursuing maximum profit by monopoly or as a method of averting the difficulty in marginal cost pricing. As regards road, however, it may be more conceivable that the register tax was intended as a charge for the secured availability of road service.²¹⁾ We have stated in the above an idea that the inherent public-interest of public utilities, not public transport alone, lies in the availability of their services. The fact that the two-part tariff system is commonly adopted in public utilities is suggestive.

Whatever the intention may be, actually for road service the two-part tariff system is being enforced. This raises an important problem concerning transport coordination by way of price mechanism of market between road transport and other substitutable modes of public transport, notably railway.

20) The rate system of telephone might give a suggestion of a device to set equitable burdening. A higher rate is charged on the user of public telephone as a price of temporary demand for availability than on the subscriber who contributes to the always-secured availability. An application of similar system of burdening to the city transportation has been studied by Mr. Weisbrod: *op. cit.*, pp. 470-4.

21) For instance, Winch, D.M., *The Economics of Highway Planning*, 1963, p. 127. Professor Matsui interprets the two-part tariff system of telephone as "Conceptually the fixed rate is to compensate readiness-to-serve cost and the call rate is for cost of each message." See Matsui, K., "Tsūshin (Communication)" in Konno, G. ed., *Kōtsū Keizaigaku (Economics of Transport)*, 2nd ed., 1953, p. 475. Previously in Japan road user tax was composed of fuel tax and (annual) vehicle tax. While the revenue from the former constitutes special funds for road improvement of central and local governments, the latter is a tax coloured with the nature of luxury tax pertaining to the ability-to-pay, whose revenue is entered into general funds of local governments. To this tax system, in 1968 vehicle-purchase tax has been added. Revenue from it is earmarked for special funds for road improvement of local governments. It is not an annual charge but charged only once at the occasion of purchase. Hence this tax may be said to have an intensive character of price for the supply of availability of road service.

The fact that contribution is made on road by those who are demanders of availability but not always actual users, may make competition among public transport modes more wasteful. Mr. Winch justifies this particular pricing for availability of road alone with a reason that railway is given subsidies from government.²²⁾ Obviously such is not the case with Japan.²³⁾

In short, a particular problem of resource allocation arises in the transport sector for the reasons that, public-interest in the sense of availability is inherently required of public transport but not of private transport, and second, among public transport modes themselves, the pricing for availability is made on road while not on railway. The distortion in resource allocation is supposed to be aggravated by the fact that most of private transport is conducted by road, while most of railway transport is public transport. Railway has been given compensation for the duty of supply in the form of protection of monopoly, not direct compensation. This method of compensation has become ineffective today due to the development of road transport, to which the pricing for availability is applied, and especially private road transport, of which no public-interest is required.²⁴⁾ In the present stage with remarkable growth of private road transport, it seems that the most

22) Winch, *op. cit.* pp. 153-4.

23) The system of the "users' bond" adopted by JNR may be taken as an application of the club principle. While JNR's other bonds are purchased by government or floated publicly, the users' bond is issued to the beneficiary groups of particular construction work or service (majorly local government or similar organization) in order to finance for such work or service. The issue of it is limited to those cases that are emergently necessary and profitable viewed from the side of JNR. However, as it is issued on lower interest rate and longer redemption term compared with other sorts of JNR's bonds — 6.7% (issuer's yield 6.849%) and 10 years (5 years unredeemed) for the users' bond as compared with 7.0~7.5% (7.113~7.835%) and 5~7 years (0~2 years) for other bonds —, to this extent it can be conceived as contribution by club. Of total amount of bonds issued by JNR from fiscal 1953 (the first issue of any kind of JNR's bonds) to fiscal 1967, the users' bond makes up 8%. The objects of its issue are work for track increase, electrification, station building and purchase of cars for extra trains.

24) In Britain the Transport Act of 1962 stipulated that the British Railways shall not be regarded as common carrier. As mentioned already, what makes the core concept of common carrier is the duty-to-serve. It must be remembered, however, that even at the time of de-nationalization under the Conservatives, that of railways was utterly left out of view in contrast to road haulage, stating "The railways are a national asset. They must remain an essential element in transport, and can not be allowed to fall into decay." (Transport Policy, 1952, Cmnd. 8538, para 11). And to meet its accumulated deficits BR has been given grants, loans and other financial assistances from government. On the other hand, when the de-nationalization of the Road Haulage Executive by the Transport Act of 1953 was discontinued by the Transport (Disposal of Road Haulage Property) Act of 1956, at least a part of the reason seemed to be that the nation-wide trunk network of freight transport on road is difficult to maintain by private enterprise yet its maintenance is necessary for the nation.

substantial aspect of transport coordination lies between public transport and private one, and in the problem of dealing with the public-interest inherent in the former, the availability of service.