RATES AND ACCOUNTING IN PUBLIC ENTERPRISES

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1. *Rate-Making and Financial Accounting*

The issue for public enterprises to set the price of supplies has been for long taken up in the field of political economy or law as one area related to the price policy of public enterprises or, in other words, public utility rates. It has been focused from the point of view of commodity prices or public fiscal policy, or as a theory for setting specialized or regulated monopoly prices.[1]

It is only in recent years that the issue started to be discussed, though still partially, in the business accounting. Even so, the discussion has been made in connection with the asset revaluation or computation of depreciation and a few other expenses of estimation. It is normally in the field of financial accounting for the rate regulation for privately-owned public utilities that this issue makes a main issue of the discussion.[2]

The issue to determine the price of supplies of public enterprises is normally observed only within a limited time span and with its emphasis placed on the benefits for the general public. The going-concern concept which forms a basic assumption of the business accounting has been liable to be overlooked.

As regards the argument frequently made on the average or total cost principle versus the marginal cost principle, many an economist has, without much hesitation, stood on the side of the latter by virtue of the marginal cost theory. From this point of view, the position of the enterprises and its financial self-supporting is not given much consideration, much less the break-even principle.[3]

On the other hand, the objective of the financial accounting is the computation of the periodic income (revenue/expenses) and, in this connection, the computation of the assets and own capital. Subsequently, the issue to set the rates is regarded to belong to the special cost accounting and is apt to be taken as an issue beyond the financial accounting. As the business accounting must be consistent with the objective of the computation, the rate-making which is of different nature from the price policy of an enterprise must be taken outside the financial accounting.

In this way, efforts have been rarely made to merge the theory of rate-making and the financial accounting. Except where the profit/loss of a public enterprise results from the

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[1] Clark Lee Allen, James M. Buchanan and Marshall R. Colberg, *Prices, Income, and Public Policy*, 1959, pp. 68–79; J.M. Oliver and G.H. Webster, *Public Policy and Economic Theory*, 1970, pp. 234–244.

[2] J. Rhoads Foster and Bernard S. Rodey, *Public Utility Accounting*, 1950, pp. 26–38.

[3] Michael G. Webb, *Pricing Policies for Public Enterprises*, 1976, pp. 87–88.

rate-making, the financial accounting and the rate-making principle are hardly considered to be related each other. However, since public enterprises carry out business activities, the enterprises, even if they get subsidies from the governments, could not disregard the principle of financial self-supporting and its underlying concept of capital and profit because they are only for the sake of computation. Further, the rates are the price or the compensation for the activities done by public enterprises to provide the services. In the accounting sense, they result in the revenue to the enterprises and are recognized and measured to meet the expenses spent for the activities. Therefore, the question of extent to which the expenses should be charged to the rates for passing on to the users is simultaneously the question to determine the limit how far the users should pay through the rates. In this case, whichever the principle is adopted as the price policy, the enterprises take the revenue from the rates as the source to compensate the expenses.

Thus, it may be safely said that the rate-making is inseparable from the financial accounting. Of course, the principles of the price formation and those of the financial accounting stand on different grounds. However, there are also some basic concepts (such as the profit and a few expenses to be discussed later) which relate to both. Therefore, through studying this issue, we will consider the functions which the public enterprise accounting socially performs in setting the rates. However, we are not to develop the rate theory hereinafter, but to review those basic issues in which the rate-making relates to the business accounting.

2. *Nature of the Rates of Public Enterprises*

The bases and methods to set the rates widely vary among public enterprises due to their difference in services and operations. The rates cannot be changed from time to time in light of the conditions of the freely-competitive market. Furthermore, as in case of many public enterprises, even though they are given a monopolistic or oligopolistic status in the market, they are not allowed to freely determine the price of their products, i.e. the rates. For most public enterprises, rates, fares, tariffs or charges (hereinafter collectively called "the rates") are subject to the laws and regulations and any changes thereof generally require resolutions of the central or local governments or approvals of the governmental authorities. Therefore, there is room for the politics to exert influence on the rate-making.

Moreover, the rates of public enterprises are often subject to regulations resulted from social policies. This being so, the bases of rate-making and its structure cannot be discussed in general terms.

We will review, therefore, the issue of rate-making of some typical public enterprises. And the main theme of the review is its relationship with the business accounting.

As has been repeated, most public enterprises try their best to achieve the public ends and are expected to constantly improve their activities and quality of services. The rates as the price of the benefits are expected to be set in consideration of the social and economic functions the enterprises are performing and within the pre-determined framework. They are also expected to be maintained intact as long as possible. However, as the social and economic situations change, the rates have had to be frequently revised since public enterprises must be run as enterprises. Particularly under the recent inflation, the rates are in fact revised repeatedly. In that case, a new framework is worked out taking various considerations into account. And the first issue is the rate level, which determines the total revenue for the enterprises. Simultaneously the rate system or rate structure is discussed in order to determine individual rates. As the rates are to be fair to anybody, it is not allowed to make unreasonable discrimination among different groups of users.[4] However, users can be classified into general households, business, etc. or large and small in volume of consumption, or high and low in voltage, or seasonal, etc. and the different rates are normally set for different types of demand taking also into account the costs of supply, value of benefits, capacity to pay of the users, etc. Here, however, our attention is directed to the rate level and not to the issues related to the individual rates.

When the rates are assumed to cover all the costs of service, it is often observed in Japan that the costs form the rate level under "the cost plus return principle" and that the costs are distributed in accordance with the appropriate standards so that they form the factors of the rates. Here, we are going to review the factors which invite much controversy.

3. *Costs, Rates and Expenses*

The concepts of costs and expenses in connection with the rates must be made clear first.

Though the word "costs" is widely used and constitutes one of the important basic concepts of the business accounting, it is not necessarily used univocally. The same is true with the costs of the rates. It may mean the average cost of production per unit of benefit or may mean the marginal cost of production. On the other hand, the above-described cost plus return principle is used to include all the expenses required for business activities. The same terminology is also used to designate the individual costs for different groups of users, the specific direct expenses like the customer costs or a part of the indirect expenses such as the cost of capital to be taken up later.

Thus, the concept of costs and its implication vary substantially. Subsequently, though it is often maintained that the principle to set the rates should be based on "the cost principle", the coverage of the costs is expected to differ. And the costs understandably turn out to be different figures in view of the difference in recognition and measurement of the costs. It is, therefore, essential to clarify what constitute the costs when the cost principle is to be discussed.

The reason to set the rates of public enterprises equivalent to the costs is to guarantee the users the opportunity of rational choice. This is also true with the prices of private entities. In case of public enterprises, it is considered economically rational for the users to be always in a position to get the products at costs so long as there are no reasons otherwise. The costs here mean the production cost of the activities.

A question may be raised as to which of the two costs, the marginal costs or the average costs, should be adopted when the rates are to be determined on the basis of the production costs. The marginal costs are those required to produce an additional unit of products

[4] Eli Winston Clemens, *Economics and Public Utilities*, 1950, pp. 358–361.

and as such if the rates are determined on this basis and in case where the unit cost is liable to decline as is normally seen, the revenue cannot cover the expenses of the enterprises. Unless the deficit is offset by the governments, the marginal cost pricing method renders financial losses to the enterprises. In order to avoid the losses, it is considered appropriate to adopt the average costs when the rate level is to be set. However, the marginal costs may be justifiably used when a part of the rate structure is determined such as for determining the promotional rate or the branches of the rates. The average costs should be adopted for the rate level so that the revenues meet the expenses. The costs which relate to the financial accounting are, needless to say, those costs.

In considering the costs of the rates which make both (revenue and expenditure) ends meet for public enterprises, the costs do not necessarily mean those which enable the revenues to cover the total expenses and to result in the break-even position.

The costs of the rates of public enterprises are, in general, those required for them to provide goods or services through their proper activities and those compensated by users. Consequently, the expenses spent in the proper activities of public enterprises constitute the costs, but those spent or losses incurred in side-activities should not constitute the costs.

The expenses that political authorities pay out of their general accounts on the basis of "the principle of who to pay expenses" which supports the financial independence of local public enterprises do not constitute the costs as discussed here. For example, the expenses for the installation of water hydrants for the public purposes or those of water for fire fighting should not be passed on to the users of water supply but be paid by the local governments out of the tax revenues. Therefore, though those expenses are spent in the operations of water authorities, they do not constitute the costs of water supply.

Thus, not all the expenses of public enterprises constitute the costs of the rates nor all the costs of the rates are taken as expenses of the enterprises. In other words, the costs of the rates are not necessarily same as the expenses in the calculation of periodic revenue expenses of enterprises. The relative position of these two may be illustrated as follows in accordance with the recognition of costs (Kosten) and expenses (Aufwand) by the Köln School:[5]

Periodic Expenses

Neutral Expenses	Objective Expenses	
	Basic Costs	Added Costs

Costs of Rates

Not all the expenses for the profit calculation are necessarily recognized as the costs constituting the rates nor all the costs of the rates as expenses. The neutral expenses (neutraler Aufwand) which do not constitute the costs of the rates are losses due to natural calamities, expenses for recovery from natural calamities, accelerated special depreciation in excess of the supplementary depreciation, to name a few. The added costs (Zusatzkosten) which are not recognized as period expenses are, for instance, the return on the busi-

[6] M.R. Lehmann, *Die industrielle Kalkulation*, 1925, S. 68.

ness activities or interest on own capital. What are the costs of the rates and simultaneously the period expenses are recognized as the objective expenses (Zweckaufwand) for the profit calculation and as the basic costs (Grundkosten) in the calculation of the costs of the rates. They include labor expenses, raw material expenses, light and power expenses, interest and various other expenses.

It has been made clear that the expenses for the periodic profit calculation and the costs of the rates, in spite of their apparent difference, exist side by side. We can therefore say the following as regards the relationship of the costs of the rates and the expenses.

Public enterprises have expanded their operations and are often engaged in the operations which they are not initially expected to do. The area development and welfare undertakings may be typical cases. If those accessory activities can be clearly distinguished from the proper operations, they would raise little financial problem because the respective expenses could be easily recognized. However, in case the social welfare policies are to be carried out through proper operations of public enterprises such as free water service by water supply authorities or socio-political concessional services by public transportation authorities, the separation of accounts is not technically possible. As a more substantial issue, a view may be expressed that those unprofitable operations need not be distinguished from the proper operations of the enterprises on the ground that the public enterprises are established to carry out the socio-political policies. Public enterprises may appropriately carry out this type of social policies through their operations. However, the social welfare should be separately considered from the issue to determine the level of the rates for the enterprises. The public enterprises must recover the costs of the service so long as they are run as enterprises. Thus, as the rates are to be set on the basis of costs to be recovered, there should be the cost compensation calculation. Apart from the question whether or not this calculation be taken in the financial accounting as such, the profitability of public enterprises should be based on this calculation of costs. The separation of accounts for each group of operations may be considered as a technical matter to distribute the expenses.

In case the costs of the rates are not fully compensated due to the social welfare policies, the balance must be made up for with other public revenue if the activities are to be continuously done by public enterprises. If in this case the level of the rates is raised to make both ends meet, the principle of equity to the users is impaired. Even where public enterprises are functioning as a tool to achieve the income redistribution, the costs of public enterprises must be clearly worked out.

Thus, the rates of public enterprises based on the costs must be recognized *prima facie* as the expenses spent for the proper operations of the enterprises. These expenses are, in the financial accounting, classified as the objective expenses as shown earlier. They form the basic costs which constitute the rates.

As regards the structure of the costs of the rates, it is the added costs that invite much controversy. Therefore, the concept of the costs under the existing rate systems will be made clear and the basic cost factors will be discussed in view of this concept.

4. *Rate Systems on Cost Principle*

The following provisions of the Japanese National Railways (JNR) Fare Act and

Municipal Enterprises Act have been often referred to as a standard to determine the rates of public enterprises:

1. To be fair and reasonable
2. To compensate the costs
3. To help develop industries
4. To assist in stabilizing wages and commodity prices

(JNR Fare Act, Article 1, July 7, 1948)

"The rates should be fair and reasonable, be based on appropriate costs under efficient operations and guarantee the sound activities of municipal enterprises." (Municipal Enterprises Act, Paragraph 2, Article 21)

For the JNR Fare Act, the third and fourth items reflect the economic policy of the era when the Act was enacted. The item deemed to be most important is the second one, i.e. to compensate the costs. This principle is called "the cost compensation principle".

The Municipal Enterprises Act, too, provides that the rates must be based on the costs. This assumes the efficient operations of the enterprises. It is understood that the provision is intended to prevent possible loose management of the enterprises. This provision together with "the securing of sound activities" is also mentioned in a different fashion, namely, "By costs, they shall mean the expenses required for the operations such as operating expenses, interest, etc. It is not acceptable to include in the costs the deficit in cash. But it is appropriate to include in the rates a return on the operations at a reasonable rate so that municipal enterprises can keep necessary funds within them for the continuation of the sound operations." (Government Instructions regarding Enforcement of the Municipal Enterprises Act and the Execution Law thereof. October 15, 1970).

It is interpreted in the Instructions that the rates of municipal enterprises are allowed to add to the costs a reasonable return on the operations.

The costs in this case are the expenses required for the operations such as operating expenses, interest, etc. and the coverage thereof is not clearly defined. However, as the financial self-supporting is assumed in a manner that the expenses shall be met with the revenue from the operations, all the revenue expenditures are supposed to be compensated.

The point is to include "a reasonable return" on the operations into the rates of public enterprises. This terminology was coined for publicly-owned utilities whereas privately-owned utilities have taken "the fair return" in their costs of rates for a long time. However, the fair return concept is based on the protection of private property and is of the characteristics of profit granted to the assets or investment of privately-owned utilities, the prices of which are regulated and which have the duty to supply utility services. Therefore, it may not be permitted to include in the costs of the rates of public enterprises the fair return as such, the nature of which is the protection of private property or inducement of private capital into public utility operations.[6] However, whether or not an appropriate profit should be taken into account must be considered from different point of view.

As regards the municipal gas enterprises, an instruction was issued by the Director of Public Utility Undertaking Division of MITI to municipal gas enterprises with the title "Return on Operations in Determining Rates of Municipal Gas Enterprises" (July 25, 1957),

[6] James R. Nelson, "Reassessment of Economic Standards for the Rate of Return Under Regulation," inc. *Rate of Return Under Regulation: New Directions and Perspectives*, ed. by H.M. Trebing and R.H. Howard, 1969, pp. 4–6.

with which the return on operations was first recognized. The instruction goes on saying "It is not sufficient for municipal enterprises only to rely on their bonds, etc. for their financing the expansion under the present unfavorable circumstances for the issuance of public bonds, which would render the enterprises inability to expand or renovate facilities. Therefore, they should be allowed to raise a part of the funds for expansion through the rate revenue so that they could improve the quality of the services." Furthermore, Section (3) of Chapter 9 of a similar instruction issued by the Director of Public Utility Undertaking Division with the title "Principles to set Gas Rates" says as follows:

"Return on Operations;

The return for municipal utility undertakings is defined as the sum of interest on their bonds, borrowings and funds transferred from other accounts. However, in case the costs of the rates do not amount excessively for existing undertakings, the return may include the result of the average book value of fixed assets at the beginning and at the end of a cost accounting period times a rate of not more than 2%."

The return on operations of municipal enterprise is, as seen in the above, calculated with a similar formula as that of the fair return to privately-owned utilities. The factors are, however, different since the former includes in the costs of the rates such a return as the interest on own capital. Privately-owned utilities are allowed a rate of return of 8.22% for bond-issuing utilities (8.62% for others) on the sum of the borrowed capital and own capital, i.e. the gross capital. In contrast thereto, for municipal gas enterprises, it is of their own capital that a 2% rate of return is allowed, which is added to interest on the borrowed capital. This portion is intended to raise the funds for expansion. This concept is more clearly given as the cost of capital in "The Recommendations" for JNR by the Research Committee on Accounting and Finance of JNR.

As shown earlier, interest on own capital should be taken as an added cost in constituting the rates. The following chapter is devoted to see how this view is related to the financial accounting.

5. *Cost Compensation Principle and Cost of Capital*

As the principle to determine the rates of public corporations, "The Recommendations" for JNR support the cost compensation principle by saying as follows:

"The cost compensation principle is the principle to determine the price which could raise revenue sufficient to cover the expenses required to produce the benefit on the assumption to maintain the economic self-sufficiency of public corporations."

This explains more concretely the cost compensation principle used in the JNR Fare Act. There has been an argument whether or not public corporations, in the light of their public functions, are allowed to adopt the cost plus return principle as the basis to determine the rates, which grants a fair return to privately-owned public utilities. "The Recommendations" take a negative position to this argument saying "this cannot be adopted without conditions" and indicate that public corporations should adopt the cost compensation principle.

Furthermore, "The Recommendations" state as follows as to the cost compensation principle in connection with the self-sufficiency of not only JNR but also of public enterprises in general:

"The economic self-sufficiency invites various interpretations but the following two must at least be clearly distinguished.

First, it means what is directed to secure the economic independence as an enterprise and to enhance the efficiency of operations, which is maintained as the basic principle to run public corporations. Secondly, it means what is given as the principle to meet total expenditures with total receipts. There are two assertions thereon; the first is in connection with the operating balance and the second refers as far as to the capital accounts.

The cost compensation principle stands on the self-sufficiency in the first sense as described above and assumes the balance of revenue and expenses in the operations from accounting point of view. It also agrees to include the publicly necessary surplus as a factor to determine the rates of public corporations. This is because the public corporations must at any time retain some surplus in order to maintain and develop sound operations and to improve the benefit of users."

Thus, "the cost compensation principle" is closely related to the self-sufficiency. We must be careful that the principle is interpreted here that the balance between revenue and expenses be achieved. In this case, the expenses are recognized as the costs. There may be little theoretical inconsistency so long as the costs are taken as the expenses. The problem emerges at the point where "The Recommendations," while accepting this accounting practice, connect the concept of the publicly necessary surplus with the cost of own capital of the corporations and recommend to include the surplus in the factors to constitute the rates. In this regard, "The Recommendations" give following account in connection with the cost compensation principle:

"Being fair, the rates of public corporations should not only guarantee the maintenance and development of the corporations but also be reasonable for the national economy. The fair rates must, therefore, cover the operating costs in a narrower sense as well as the costs in a wider sense including the publicly necessary surplus which is essential for the rational administration of the corporations. The publicly necessary surplus as used here means a source of capital formation retained within the corporations in order to answer the social need for the improvement of their services or the expansion of their facilities, and not the profit to be distributed among contributors of the capital."

Thus, "The Recommendations" classify the nature of the publicly necessary surplus as an element of the operating costs in a wider sense, which ought to be compensated with the rate revenue. They also emphasize the capital restriction side of the surplus and go on to state as follows in connection with the capital cost method, which is sometimes adopted in setting public utility rates in these days:

"JNR being a public corporation, its fares under the capital cost method must be determined from the following points of view;

(1) What should be covered with the fares are the cost of capital as the public surplus which enables JNR to raise capital sufficient to maintain the social capital invested in JNR and to answer the social needs of transportation; little attention is required as to the inducement of private capital into JNR.

(2) By charging an appropriate cost of capital, JNR should consider the interest of its users and simultaneously work out the rational fares for the national economy."

Thus, "The Recommendations" directly connect the publicly necessary surplus with the cost of capital by referring to the capital formation of JNR as socially requested. At the same time, as regards its relationship with the financial accounting of public corporations, the surplus as the difference of revenue and expenses is understood as the "earned capital" of the corporations.

The capital account has been reviewed mainly from the financial accounting point of view in relation to the calculation of the periodic revenue/expenses. The financial accounting principle does not allow to transfer the surplus directly to the capital account without reviewing the nature of the profit (surplus) as the difference of revenue and expenses. Even in case the costs of capital for facility betterment or expansion are permitted to add to the rates or fares, the financial accounting takes the capital restriction for reinvestment out of the balance of revenue and expenses as the distribution of profit and deems it more appropriate to call it "the contribution from users" rather than "the earned capital" so that the source of the funds is easily identified. Here the nature of the capital of public corporations and that of the periodic calculation of revenue/expenses are spotlighted. Though those issues are related to the issues of setting the rates, it has been pointed out that they must be recognized separately in the light of their respective purposes of calculation.

The cost compensation principle and the publicly necessary surplus as discussed heretoforth are related to the standards to set the rates of public enterprises. In that sense, this must be observed separately from the profit calculation of public enterprises. "The Recommendations" divide the operating costs to be compensated into wider ones and narrower ones and conclude that the operating costs in a wider sense including the publicly necessary surplus are the fair rates of public corporations. Thus, we may say that "The Recommendations" present the principle of setting the JNR fares on the basis of the costs plus return principle. Among the various cost factors, the nature of the publicly necessary surplus which tends to invite questions is explained in detail.

For JNR, the following items are listed as the main causes for the formation of capital which is socially needed:

(1) Improvement of services in quantity and quality
  a. urban transportation policy
  b. expansion of railroads
  c. improvement of terminals
  d. betterment of tracks
  e. maintenance
  f. increase in number of coaches
  g. others
(2) Preparation for the contingency
(3) Adjustments of increased costs in future to be caused by inflation, etc.

It is clear that the items listed above are for improvement of the standard of services and that the publicly necessary surplus is considered as a source of funds for this prupose. At the same time, it is maintained that there should be a ceiling of the surplus, which shall be not more than the cost of capital.

The factors of costs and JNR fares are given in the following formulae:

Total revenue (rates)=Operating expenses+Capital expenses

Operating expenses=Personnel expenses (including appropriation for retirement allowance)+Light and power expenses+Repair expenses (including appropriation for future repairs)+Business expenses+Taxes+Depreciation +Loss on property retired

Capital expenses=Interest+Cost of capital (publicly necessary surplus)

Cost of capital={(Debts with interest+Own capital)×Ratio of costs to gross capital}—Interest plus Expenses in connection with debts

Under the cost compensation principle, there is no room for doubt that the operating expenses constitute a cost of the rates. There is little doubt, either, that each operating expense item makes the cost factor of the rates, as they incur recurrently every year. As far as the operating expenses are concerned, the expense items for the calculation of period profit are taken as the cost factors of the rates. The inclusion in the costs of the annual appropriation for retirement allowances and that for future repairs is justified in the same sense that the financial accounting does this in order to make the calculation of expenses as rigorous as possible. These items belong to the objective expenses as shown earlier. Subsequently, the basis of calculation of these expenses is seen from the same angle as the costs of the rates.

A controversy exists as to whether or not the cost of capital in the form of the publicly necessary surplus should be included in the costs of the rates, adding to the accrued interest.

As capital expenses, interest and other expenses in connection with debts are calculated on the actual facts and are taken as expenses in the business accounting. Of the cost elements given above, only the cost of capital is of the different characteristics. What is called the cost of capital is intended to help JNR raise funds (within the limit of the publicly necessary surplus) necessary to answer the social needs for the improvement of its services and expansion of facilities, to redempt its bonds and to recover the damages caused by unexpected natural calamities. Therefore, when the surplus, if within the limit, is brought into the rates, this makes a cost for the setting of the rates. However, this factor for the calculation of the costs is not taken as an expense in the financial accounting for enterprises. Consequently, it appears that "The Recommendations" eventually adopt the expression "the cost of capital as the publicly necessary surplus." This cost is nothing more than the "added costs" in setting the rates and cannot be regarded as an objective expense.

The cost of capital of JNR has the following structure as seen in the earlier formulae; the cost of own capital is arrived at by deducting the cost of the borrowed capital from the cost of the gross capital.

In working out the cost of capital, the first issue is how to find a reasonable cost ratio on the gross capital. "The Recommendations" propose to use the ratio of private railroad enterprises as they are engaged in similar operations as JNR's. In this case, care should be taken to use the weighted average for 5 to 10 years of the cost ratios on the gross capital of the enterprises but putting off the ratios under irregular performances and also to use a normal ratio after taking into account the future prospects of growth and by setting a reasonable floor and ceiling thereon.

Furthermore, the following conditions are attached to the calculation of the cost ratio of private enterprises for reference:

(1) The cost ratio on the gross capital is the weighted average of the cost ratios on debts with interest and that on the own capital.

(2) The cost ratio on debts with interest is the ratio of interest expenses to the book value of the debt outstanding with interest.

(3) The cost ratio on the own capital is the ratio of net profit before tax to the book value of the own capital.

The book value is used for the calculation of the cost ratio of the capital because the valuation of JNR assets at the market prices is impracticable as the capital of JNR does not take the shape of stocks. The net profit before (not after) tax is adopted since the nature of JNR as a public corporation is taken into account.

When a reasonable cost ratio of capital for enterprises is sought with the purpose to make fair rates for public utilities, the use of a normal cost ratio of capital of similar enterprises is the method which has been for long practically used in the arbitration for the fair rate of return to public utilities in the United States.[7]

Furthermore, it may also be acceptable, in consideration of the nature of this type of enterprises, to regard as the cost ratio of gross capital of public corporations the normal cost ratio of ordinary public funds which is worked out after reviewing the interest rates of state bonds and the average interest rate of long-term borrowings in the money market. In this case, a stable cost ratio for a reasonably long period must be used when this ratio is to be put into practice. The future prospects must also be taken into account. The question lies in the basis of the cost ratio of capital. It may be inappropriate to lay the basis only on private enterprises. This is because, even if a privately-owned utility is publicly regulated, much consideration is given to maintain the capital as a private enterprise. Subsequently, few people may consent to the idea that the identical cost ratio of capital be adopted both to public enterprises and privately-owned utilities.

It was shown earlier a clue to arrive at the rate of the cost of funds with more public characteristics. The adoption of this rate as the cost ratio of capital may encounter objection on the ground that the cost of funds is only the expenses for borrowing and is immune from the return on the risk to which the capital of the enterprises is exposed. To this, it may be said that public enterprises do not have the same kind of risk as private enterprises have as the former are normally free from bankruptcy. Public enterprises are exposed to some risk but the risk may be too small to be compensated. What should not be disregarded is the return on the use of capital by public enterprises. If the cost of capital is not taken into consideration, this will lead to the waste of services of public enterprises, i.e. inefficient use of resources. Thus, the issue of risk of public enterprises must be seen from the national economic point of view. And in this sense, there is no denying that difficult factors are involved in the determination of a reasonable cost ratio of capital of public enterprises.

A ratio led from the average rate of return on capital of all industries and the interest rate on long-term public funds may be used as a compromise to overcome the difficulties. However, I would only point out here that I do not agree to determine the capital cost of public enterprises on the basis of the profit level of private enterprises even if they are engaged in similar operations.

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[7] Nelson Lee Smith, *The Fair Rate of Return in Public Utility Regulation*, 1932, pp. 141–163.
John H. Bickley, "A Fair Return for Public Utilities," *The Journal of Land Economics and Public Utilities*, Vol. 3, 1927, pp. 61 ff.
Milford Springer, "A Fair Return for a Natural Gas Utility," *Public Utilities Fortnightly*, Oct. 14, 1954, pp. 501–506.

6. *Reliance on Internal Funds for Expansion*

Of the cost factors constituting the rates of public enterprises on the basis of costs, the most controversial issue has been the return on operations or the cost of capital. Most probably, this issue will continue to raise *pros* and *cons* as to approving the publicly necessary surplus or the fair return for public enterprises, the justification to approve it, or if it is approved, to what extent. Here is given only the prologue of the argument.

In practice, most of the cost factors of the rates belong to the operating expenses as the objective expenses. The wage level in case of labor cost and the commodity price index in case of raw material expenses are taken into account together with the actual expenses. It is maintained that these and other expenses including depreciation are covered with revenue taking one year with another. This is because, as discussed earlier, the rates of public enterprises must be fixed as long as possible and should not be revised on the basis of 1- or 2- year operating performances. Consequently, it is desirable to take a fairly long period in calculating the costs of the rates, say, at least 3 or 5 years under the normal economic conditions. The expenses in the financial accounting on a one-year basis are not directly reflected in the costs of the rates but they are eventually reflected through a cumulative calculation. Thus, in connection with the rates, the depreciation as cost of equipment may be observed on a long-run basis.

The accounting treatments of depreciation continue to be the subject of considerable controversy in the field of financial accounting. It, however, appears that there may be little difference in opinion as to including in the costs of the rates the depreciation based on the historical costs. If there should be some difference, it relates to the possible shortage of depreciation, if based on the historical costs, for the maintenance of the real capital.[8]

In this regard, an opinion is expressed in the White Paper on 'A Review of Economic and Financial Objectives' of the Nationalised Industries in 1967 referring to the depreciation under the nationalization policy of British industries:

"Industries should aim to balance their accounts taking one year with another over a period of five years, after providing for interest, and depreciation at historic cost. Provision should also be made for the difference between depreciation at historic cost and replacement cost and allocations to reserve sufficient to make some contribution towards the industry's future capital development programme (which would otherwise fall on the Exchequer) and as a safeguard against premature obsolescence and similar contingencies."

In order to answer this requirement, it is the supplementary depreciation that is allowed in the financial accounting of the British Post Office.

In addition to normal depreciation provided on the historical cost of fixed assets, the supplementary depreciation is debited as an expense in the profit and loss account and the cumulative appropriation thereof is shown in the general reserve account, which is the retained income. This is a unique accounting treatment for this to be charged to the operating revenue. The supplementary depreciation under the two-tier depreciation practice is,

[8] "First Report from the Select Committee on Nationalised Industries, the Post Office," Volume 1, *Report and Proceedings of the Committee*, 1967, p. 172.

therefore, of the nature of the added costs in establishing the rates. What we must be careful in recognizing the costs in this way is that the supplementary depreciation is interpreted to compensate the replacement cost of the fixed assets.[9]

In the accounting procedures of some British nationalized industries, the enterprises have the duty to make capital redemption in parallel with the depreciation or provision for replacement. For the electricity, gas and transportation industries, the enterprises are institutionally required to establish, by charging to profit and loss accounts, appropriate provisions for the capital redemption.

Professor Robson gives the following account how this has come to be put into practice:

"Thus, the public corporations have in effect to repay their capital indebtedness over a period of years. This follows the practice which has for long existed in local government, where local authorities have to repay municipal loans over periods which vary according to the estimated life of the assets they represent."[10]

This practice is only allowed in the accounting for public corporations. Here the capital redemption, repayment of debts and depreciation must be clearly distinguished. However, under the former accounting of the local governments in the United Kingdom, as these three items were understood to have the same effect in that they are charged to the rate revenue for the collection of the invested capital including the initial one, they were treated in the same way without distinguishing the "redemption" and the "depreciation". For instance, a sinking fund was established, out of which not only the redemption of debts but also the replacement of assets were made; consequently, the annual appropriation for the sinking fund was considered as a substitute of the depreciation. This might have resulted from the fact that the repayment terms of debts were often shorter than the life of assets. In later years, it became the practice of publicly-owned industries that both the depreciation and annual appropriation for the sinking fund were charged to the revenue. Subsequently, the nationalized industries were theoretically considered to have a double burden.[11]

Thus, the old conventional accounting for the British public utility undertakings was of the principle that the funds for capital expenditures and for debt amortization were charged to the rate revenue. This practice was carried out in order for municipal utility undertakings to make both ends meet as in the general fiscal accounts. The reason why the capital redemption and/or debt amortization were treated as expenses was that they were considered to be equivalent to the depreciation. This practice was kept even after nationalized enterprises became public corporations in the modern times bacause the financial policy was promoted for the corporations to raise necessary funds by themselves (without relying on the national treasury) for the maintenance of assets and the development of nationalized industries.

Generally speaking, even if public enterprises are allowed to develop by themselves as private entities, a controversy emerges as to whether or not the enterprises can collect as far as the funds for debt and capital redemption out of the rates: so long as the cost compensa-

[9] According to the notes on the annual *Report and Accounts* of the British Post Office, supplementary depreciation charge is arrived at by applying current price indices to the historical cost of certain asset groups and computing depreciation at appropriate rates on the added values; it is designed to bring the total charge for depreciation for the accounting period into line with depreciation on the replacement costs of fixed assets computed on this basis.

[10] William A. Robson, *Nationalized Industry and Public Ownership*, 1961, p. 311.

[11] W.A. Robson, *op. cit.*, p. 312.

tion principle is assumed, users at different times are not exposed to fair share of the burden. This issue ultimately comes to the point if public enterprises should be allowed to raise funds for expansion out of the profit.

Whatever reason it may be, in case public enterprises gain revenue larger than the expenses, the surplus in the financial accounting sense is the profit. If the enterprises are granted the monopolistic status, it may be said that this profit is collected forcibly by virtue of the power as public authority. Though the method of collection is different, this is almost equal that public authority charges a disguised tax through the rates to users. As a result, a criticism is raised in that the present users are sacrificed for the future users.[12]

As to this fundamental issue, a reference to the views of Professor Robson is given below:

"Lastly there is the point that it is inequitable to charge the present body of consumers higher prices in order to expand or improve the industry for the benefit of future consumers. The answer to this is that the nation is in fact being taxed to a considerable extent in order to provide many different kinds of improvements of a capital nature which will be enjoyed by future citizens. These include roads, bridges, schools, hospitals, sewage systems, universities, etc. No one appears to regard this as inequitable; and even if we concede for the sake of argument the highly disputable proposition that electricity charges are a form of taxation, it is difficult to see why it is any more inequitable to raise money by this means to expand the electricity industry than it is to raise money from taxes on drink or tobacco in order to build new secondary schools.

The nationalized industries are now as much part of the estate of the realm as any of its other more traditional assets. It is the proper task of each generation to do what it can to improve and develop that estate. Inevitably the burden of doing so must fall on the present generation and some—but not all—of the benefit will be enjoyed by future generations of citizens. Where, as in the case of the nationalized industries, the services and commodities provided are of almost universal consumption, the body of consumers corresponds fairly closely to the mass of the nation; and the only remaining grounds of objection are that some form of general taxation would be preferable as a means of raising money for capital purposes, or that only voluntary subscriptions should be used for this purpose. Both these grounds seem to me quite untenable, and I see no reason why nationalized industries should not be as free as profit-making companies to find as much money for capital development from internal resources as they think fit."[13]

The views of Professor Robson try to justify the idea for public enterprises to raise the funds for expansion out of their rate revenue and may invite questions in his logics of justification. The question is connected with his view that the capital expenditure for public administrative facilities (which are used free of charge) and that for the betterment and expansion of facilities of nationalized industries (which are used on fees) are considered to be of the same nature. Althoguh Professor Robson maintains that the facilities in both cases are the state properties and the users thereof are the general public, the public administrative properties of the state and the assets of public enterprises with corporate organization have, beside the legal difference, different economic functions.

[12] "Hence, any yield from prices available for capital purposes can be regarded as a tax imposed on consumers in proportion to their electricity consumption, in order to develop the industry for the benefit of future consumers. And this is said to be both inequitable conductive to inefficiency." W.A. Robson, *op. cit.*, p. 308.
[13] W.A. Robson, *op. cit.*, pp. 310–311.

As a matter of fact, when considering the safeguard for state properties, the public administrative properties are physically repaired and maintained whereas the assets of enterprises, in addition to the repair and maintenance, must be depreciated in preparation for the possible loss in their economic value. This fact makes it improper to regard these two kinds of assets as identical in nature simply because they are owned by the state.

Furthermore, although the users are the general public, the difference in interest of the past, present and future users and that of other tax payers cannot be disregarded in their respective relations with the rates. There is no denying that most public enterprises are directed to enhance the benefits of the general public. This fact, however, must be separated from the issue concerning the conditions of the services.

The duty of every generation for the maintenance and development of enterprises as spelled out by Professor Robson may be applicable to the state assets but may not be necessarily so to corporate assets with a few exceptions, say, the group of users of specific enterprises (such as the group of telephone subscribers). For the telephone operations, the expansion of facilities will increase the number of subscribers and expand the telecommunication network and coverage whereby the benefits of existing and new subscribers are enhanced.

The view of Professor Robson in the last paragraph is also liable to misunderstanding. From the point of view of the public policy, it may not be allowed for public corporations to gain profit without any restriction as in case of profit-making companies. The freedom of public enterprises to invest internally-generated funds in the plant may be granted: but public attention ought to be given to the extent to which public enterprises gain profit.

Though I am rather hesitant to accept the views of Professor Robson as they are, his basic thinking is acceptable to get public enterprises to make independent decisions on the maintenance and development of the enterprises so long as the public policy permits. Therefore, I don't object to the profit of public enterprises. However, I don't take the view in which the profit of public enterprises is regarded as the general taxation and that public enterprises are allowed to levy it at their discretion. Public enterprises could gain profit in the form of the publicly necessary surplus. Therefore, I don't raise any objection as regards the inclusion of the surplus within certain limit.

A question emerges as regards the justification. This is, in a negative sense (in case the cost of capital is not taken into account), an arrangement to prevent activities of public enterprises from wasting the resources. This is also, in a positive sense, understood to get users as beneficiaries to pay to some extent the funds required to improve the benefits of users. Public enterprises may justifiably collect the funds for expansion by making profit as it is recognized as the capital contribution of users. Needless to say, this may not be the best expansion policy of public enterprises. It may be more reasonable for public enterprises to raise the funds for expansion through borrowing when public funds are abundant or demand of funds in the private sector is low.

When it is deemed reasonable for public enterprises to raise the funds for expansion internally, what would be the relationship between this fact and the costs of the rates to be compensated? In case the regulations set that the funds raised internally must be included in the rates or the public policy permits the similar practice, the funds for expansion are added to the costs in establishing the rates. But all of them are not regarded as the added costs. Strictly speaking, the net profit of public enterprises up to the conceptual interest on their own capital is considered to belong to the added costs because the capital consumption is recognized in the form of the opportunity cost. However, in case the appropriation for redemption of capital or debts is made out of the profit in excess of the ceiling, the portion in excess cannot be taken as the added costs as there is no capital consumption which need to be compensated. The cost of capital in excess does not make a cost of the rates even if it constitutes a factor thereof. This is, therefore, nothing other than a price under the public policy. This is, in the financial accounting, interpreted to be the capital contribution from users through intermediary of the profit reserve. When users contribute capital in excess of the publicly necessary surplus, a special justification is needed from the point of view of the public policy.

I have reviewed various issues regarding the rates of public enterprises with the basic proposition of the cost compensation principle as a standard to determine the rates and their connection with the financial accounting. The review has made clear the characteristics of what have been called the costs in determining the rates, the identity of the items on the boundary of the costs and the profit of public enterprises, and their relative standings.

As to the issues regarding the rates of public enterprises, aside from the above-described expense principle against the value principle on the rates, the argument as to the individual rates has been developed as the rate theory, so the rate level in view of the latter must be further studied. This issue is to be reviewed as the price policy of public enterprises, regarding the structure of public enterprise rates, which is beyond the accounting theories. Here I have reviewed the basic issues relating to finances of public enterprises, which must be considered in the light of the price policy.