ISSN 0075-6407

KOBE ECONOMIC & BUSINESS REVIEW

27th ANNUAL REPORT

RESEARCH INSTITUTE FOR ECONOMICS
AND BUSINESS ADMINISTRATION
KOBE UNIVERSITY

1981

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CONTENTS

ACCOUNTING SYSTEMS OF NON-MARKET ORIENTED ACTIVITIES

Nobuko NOSSE

1. Introduction

Surrounding socio-economic accounting, efforts for systematization and integration have tried on. As *Towards an SSDS*,[1] a progress report on the subjects shows, socio-economic accounting contains various topics on human activities which have been excluded from economic accounting. Some topics such as education, social mobility, time-budget and human environment are obviously important factors for socio-economic performances and social welfare. But human non-market activities, by their nature, have no measuring rods for their efforts and performance, neither basic rules for estimating them. Accounting for measuring these activities, therefore, has much obstacles at outset. Moreover, experiences in this field are far poorer than those of market-oriented activities in economic accounting, namely in SNA.[2] Based on growing requirements for raising socio-economic performance on welfare in a society, there is a pressing need for socio-economic accounting to be a firm tool for providing precise information on non-market activities in a systematically arranged way. But in what direction and how could we improve the problem? As *Towards an SSDS* describes, there are many approaches for various subjects from different angles. Could we manage the vast extending fields into a system where such fields are co-ordinated with each other?

Before getting a solution, it is at least necessary to look advanced fields on non-market oriented-activities and to scrutinize their "performances," i.e., their accounting frameworks, the relationships set among variables and the unit selected for measuring such activities, and then to ask their ability in consideration of integration. The aim of our work is to do this both in demographic accounting and time accounting, the representative systems of socio-economic accounting.

For the purpose, firstly we consider the specific characteristics of demographic accounting and its applied version and time accounting respectively. Secondly we reconsider the performances of these two systems from the view points: a view point of integration, which is a new wave for developing socio-economic accounting described in UN reports[3] and that of the implication for real economy. And finally by surveying MEW and social condition statements, the two representative constructs on social wel-

1) UNSO, *Towards a System of Social and Demographic Statistics*, 1975.
2) UNSO, *A System of National Accounts*, 1968.
3) UNSO, *Studies in the Integration of Social Statistics, Technical Report*, part Two, 1979.

fare and finding some link between these constructs and socio-economic accounting. By these we intend to make clear the meaning of integration and systematization in the socio-economic accounting.

2. Demographic Accounting, Its Sub-systems and Applicability of the Population Stock-flow Matrix

Since socio-economic activities concern to population's activities or people's aging phenomena in a society, it is natural that demographic accounting developed earlier than other fields and has some pride of height.

Demographic accounting or social matrices[4] geared by R. Stone, intends to record population stock and flow and its transition from one cohort to another cohort year by year in a society. The intension of demographic accounting is to attain following objects: i, to provide a definite accounting framework for aging population movements (or transitions) among cohorts and to arrange to show them in a population stock-flow matrix, and ii, to extend the idea to all human aging activities and to accomodate the data in pseudo population stock-flow matrices as applied versions of the original stock-flow matrix. Demographic accounting (and its application, for example, education accounting) is based on the idea of transition of whole population age structure where members of constituent groups become to be members of one year older groups except that disturbing factors (such as death and emigration) prevent surviving in a society. This regular relationship shown in the constant transition matrix in terms of C (where C is a matrix of coefficients of survivors to population at the beginning of the year), was developed as one application of Leontief's I-O matrix.[5]

In extending the demographic models to human socio-economic activities, Stone added some consideration for classifying the state of the population groups. For example, in education accounting, student population are classified not only by age but also by specific characteristics of institution to which they admit while in man-power accounting labour population are classified not only by age but by also job status and by industry. Furthermore, these systems for human activities could be linked to each other.[6]

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4) R. Stone, "A System of Social Matrices," in *the Review of Income and Wealth*, series 19, No. 2, June 1973, pp. 143–66. Stone, *Demographic Accounting and Model Building*, 1971. See, *Towards an SSDS* also.

5) R. Stone, "The Fundamental Matrix of Active Sequence" in A. Carter and D. Brody (eds.), *Input-Output Techniques*, 1972.

6) Stone explains relationship between demographic models and life sequence. Human life constitutes a life sequence which consists of active sequences (learning activity and earning activity) and inactive (home and housing activity and health activity). These activities are associated with human aging and relate to human life sequences. For example, learning activity in formal education starts five, earning activity starts fifteen, marriage or fertility starts about fifteen. And the theory of population flow-stock matrices, provided socio-economic data arranged in a systematic way, make these subsystems into one integrated social accounting system. Stone, "Social Matrices," *ibid.*

Now we look the education accounting, the first and successful application of the demographic accounting.[7] As for taxonomy of education accounting, it is based on demographic accounting but it developed a new classification principle in detail. This is the institutional classification which stratifies students by two dimensions: One is classification by steps of education such as elementary school, secondary school, etc. and another is classification by specific characteristics of educating activities, which are not only based on differences in financing sources (such as private and municipal) but have more roots. As Stone specifies, main objects (or main products) of activities of school is to educate students to be graduates who are able to enter into certain senior school year by year and the coefficient of transition is stable. It differs from another school whose main purpose is to educate another sort of graduates to be enter another type of senior school; for example, in junior secondary modern school, its main object is to teach pupils to be graduates who are admitted to senior secondary modern school,[8] neither to be admitted to comprehensive schools nor to public schools. There exist strong complementarities among schools which we called as academic streams in a society[9] and this existence of the relationship makes transient coefficients be applicable in the sphere of education activity.

We examine the idea of demographic accounting from its applied version. Education accounting intends to provide information on the formal education from the point of view of numbers of students stratified by age, steps of education and educational institution classified by socio-economic characteristics. And it gives the leavers of academic streams in present and future (and past, if we use an admission coefficient matrix) instead of the transition matrix). To the institutional classification, Stone added sub-classification by courses, test scores further. The information derived from students stock-flow matrix are, however, not plenty in kind by simplicity of the structure.

Despite this it is seemed to be useful for England to which Stone applied his students stock-flow matrix. In England, there was a prevailed requirement of "social demand for higher education" in the 1960's because there was scarcer opportunity than the number of people who want to attend higher education. The number of institutions for higher education was few and opportunity for entrancing was opened exclusively for junior students came up from limited schools, i.e. those entitled by their leavership. The limited and unequal distribution of opportunity for education has been one of social problems and this is background of raising education population study.[10] And this accounting has another merit. The institutional classification applied here suggests distribution of the quality of both teachers and institutions in a society while

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7) R. Stone, "An Example of Demographic Accounting: The School Age," reprinted in Stone, *Mathematical Models of the Economy and Other Essays*, 1970. See footnote 4 and *Towards an SSDS*.

8) Stone, *Demographic Accounting and Model Building*, pp. 48–50.

9) Stone recognizes the case of sixformers who must have GCE examination and are confronted with competitions. "The School Age," *ibid.*

10) P. Armitage and C. Smith, "Computable Models of the British Educational System," reprinted in M. Blaug (ed.), *Economics of Education*, vol. 2, pp. 202–37.

it shows effects of social status of parents (father's income, school, job) on their sons' courses of learning. The former informations are useful for education study and the latter are suggestive for research on social mobility. Further, the information on the students transition flows in academic streams is able to link with the information on another stages of life sequence of population. The parents' role on their sons' school course mentioned above suggests that certain relationship between family's activity (inactive sequence) and son's learning activity (active sequence) exists. On the other side, the relationship between the learning activity and man power's earning activity (another active sequence) could be observed if data on man power were classified by age and school and other socioeconomic characteristics of man power and be arranged in a man power stock-flow matrix. The fact that Stone's education matrix has a deep root in the society of England leads to the idea that demographic accounting system is to be conceived as a core system in the whole SSDS.

But a reflection and criticism on this idea have risen up mainly from U.S.[11] We look the issues first and then consider them from Japanese situation. The direct use of education accounting is to monitoring the number of new comers and of leavers in academic streams in present and future. Given stable transition coefficients, the policy variables there are numbers of educational institution. The education policies are therefore, to increase the number of universities which could be competitive to traditional one and to shift or relax the fixed transition coefficients (for instance, by opening the gates of Ox-Bridge wider to the graduates of the comprehensive schools). The by-products of this policy are decrease of inequality in job opportunity and in income and a raise of social mobility in a society. All comes from the idea of the rigid transition coefficients, however, and this is possibly seen only where a sort of Leotief-universe in educating activity exists.[12] But in the society where academic institutions are plenty enough and little complementarity among them exists by severe entrance examinations like Japan after the War, the situation is much different. Moreover, the difference between school costs of national schools and those of private is slight there and the relationship between parent's social status (father's income, school, job, etc.) and son's course of schooling is far more loose. Students are eargerly competitive for entrance examination. For such a society where competitive relationship is predominant even on non-market activities, the information provided by this type of education accounting is insufficient both for analysis and policy making for education. People are interested in comparison of costs of whole schooling (including foregone income by schooling) with benefits of whole schooling in terms of pecunial income and inpecunial rewards, while both government administrators and economists either are interested in estimating productivity of education as one source of economic growth, in making education budget, or, prefer to con-

11) Typically, this is given by R. and N. Ruggles. See R. and N. Ruggles, "The Measurement of Economic and Social Performance" in M. Moss (ed.), *The Measurement of Economic and Social Performance*, 1973, pp. 116–17.

12) M. Blaug, "Approaches to Educational Planning," *The Economic Journal*, June 1967, pp. 262–87.

sider education as a means of raising earning powers of people in lower income of discriminated social class from social welfare viewpoints. Further, nowadays economists' interests in education have not been limited in the formal education but have extended to "on the job training", "further education" and have concerned to analyse relationship between earning and education in large sense, while they inquire contributions of non-education factors which seem to be influencial on earning such as working experiences, students' IQ, and family's devoted time within home for children etc. and compare the results with the effect of the education on income.

If we wish to make an extended student stock-flow matrix to accommodate more specific items for recording some activities mentioned above, the cells of the matrix (where half of them are empty) must be enormousely increased. In spite of tremendous difficulties to treat this, $(I-C)^{-1}$, the matrix multiplier of transition, would not be so useful in the societies where complementarity in academic streams has hardly been established. On the other side, recent tendency in SSDS is that does not exclusively rely on a simple source of information such as data shown in the student stock-flow matrix but shifts to combine many informations derived from concerned various branches of socio-economic accounting according to analytical and government administrator's interests. For such a client group's approach,[13] information on education, i.e., precisely defined and measured in a strict standard way which is to be linked with other kind of information is much needed. But there is less need for getting estimates of students flow based on rigid transition coefficients.

3. The Structure of Time Accounting and Its Use

Time accounting, or time-budget study, has an earlier origin than almost all SSDS, but a progress in extended and regular scale was seen after the War. Both in capitalist countries and socialist countries the accounting started in the 1960's and in developing countries also it has begun to launch.[14] Besides, we have a great work of Szalai's *The Use of Time*,[15] a project on time-budget research in twelve countries in 1972. By these pioneer studies, know-how on constructing the framework for time accounting, such as definition of basic concepts, standard accounting conventions for measuring time use activities, procedures for recording etc. has been pooled on to a certain level. But time accounting still has been urged its rapid development.[16]

The object of time accounting is recording how population in a given society spent their time for activities in a whole day i.e. in 24 hours. Here population are classified by

13) *Studies in the Integration, ibid.*, pp. 41–42.

14) UNSO, Progress Report on the Development of Statistics: Statistics of Time Use. *Report of the Secretary General* (E/CN. 31519), Apr., 1978. UNSO, *Studies in Integration, ibid.*, Annex III, item IV.

15) A. Szalai, *The Use of Time: Daily Activities of Urban and Suburban Populations in Twelve Counties, Report on the Multinational Comparative Time-Budget Research Project*, 1972.

16) *Statistics of Time Use, ibid.*, UNSO, *The Feasibility of Welfare-Oriented Measures to Supplement the National Accounts and Balances; A Technical Report*, p. 67, p. 69.

its specific characteristics say, by area, sex, age, job group, income level, and race. Usually population use their time in a certain way and this pattern of time spending differs in ordinary days and holidays. The recording of time use is, therefore, observed in time-budget both in ordinary days and that in holidays. Accounting for time use in a society is required by the following reasons: **i.** time is useful and limited resources owned by human and time use is one of basic human behavior, **ii.** in observing people's spending time, especially duration, timing, frequency and sequencial order, social behavior is able to be analysed and **iii.** knowledge derived from time-budget statistics is served for non-monetary activities to which money cannot be used as a yard-stick.

The main categories of time in time accounting are defined by activities for which time is spent. There are various activities for using time—personal necessary activity such as sleeping and eating, working for job, domestic working for family, listening radio for amusement etc. According to Bureau of Statistics in Japan,[17] for example, time is devided in main three groups, and they have subcategories as the first group consists of working time, trip time to job, housekeeping time, and shcooling time, and the second group consists of time for personal care, time for sleeping and for eating while the third consists of time for leisure, enjoying mass-media, etc. Broadly speaking, this way of classification of time use corresponds to that of other Japanese time use studies[18] and of Szalai. Here the problem is how classify simultaneous activities such as nursing and listening TV into separate categories of time accounting. For solving this, the convention established by time accountants is to separate this into main activities and subsidiary activities by duration of each time use and record them separately.

$$T \equiv T_n + T_r \quad \ldots.(1)$$

$$T_r \equiv T_w + T_h + T_l \quad \ldots.(2)$$

where T is total time in a day, namely, 24 hours, T_n is necessary time spent by people for maintaining his life, for example, sleeping, and T_r is $(T - T_n)$ which is divisible total amount of time for time use decision by the people. T_w is working time spend for job, T_h is time for housing and domestic service and T_l is time spent for leisure respectively. On the other side, research on behavior relationship on time use launched by Human Capital economists in the 1960's,[19] has been developing. There are researches on **i**, choice of spending time to be combined with consumption goods and services to get a new goods or services (on full income) by Becker- Lancaster,[20] **ii**, choice between labour time and leisure time or between schooling time and leisure time, **iii**, choice

17) Bureau of Statistics Office of the Prime Ministor, *Syakaiseikatsu-Kihonchōsahōkoku* (Survey of Social Life), 1978.

18) Ecomomic Planning Agency, *Seikatsujikan-no-Kōzōbunseki* (Survey of Time Use), Annex, 1975.

19) G. Becker, "A Theory of the Allocation of Time," *The Economic Journal*, vol. LXXV, No. 299, 1965, pp. 493–517.

20) Becker, *ibid.* G. R. Ghez and G. S. Becker, *The Allocation of Time and Goods over the Life Cycle*, 1975. K. J. Lancaster, "A New Approach to Consumer Theory," *Journal of political Economy*, Apr. 1966, vol. 74, pp. 132–57.

between time for housekeeping and labour time or between housing time and leisure time, and iv, household production function of which time constitutes as a factor and is combined with durable consumption goods.[21]

The time budget in a given format derived from time accounting reports populations' pattern of time use in a certain year. Provided such a data was given on regular and standard basis, inter-temporal comparison of time use pattern is feasible. If the country basis for measuring time use were internationally standardized, international comparison of time use pattern would also be expected. By time accounting together with research on time use behavior relationship, we could have insight on the structure of time-budget and on the socio-economic life to which time relates. This is, say, direct use of time accounting, or use as a *final product.*

Time accounting's role is, however, more important in its *intermediate use.* It provides information on time to the other fields in SSDS such as analysis of education, estimates of females activity in market and households, tec. The reason why the role as an *intermediate products* is so important is by the fact that time is a human input and is served as a surrogate for showing continuance of some human activities. Both of these originate in specific characteristics of time: time is naturally homogenous, divisible into many small unit (divisibility) and is easily summed up (additivity), while time is a common unit for measuring *general* human activities, which is sometimes superior to money which is servable only for market-oriented activities. Time has been used as a surrogate of leisure activity, householding and volunteer activities which are real non-monetary activities but no measuring rod for them.

Since the 1970's, time accounting has been oriented to standardization and has been proceeded on the road. And demand for information on time is increasing as measuring requirements for non-monetary activities have been rapidly increasing in all socio-economic accounting. The scope and use of time accounting are different from demographic accounting but by its nature it is much expected in recent direction of socio-economic accounting.

4. Constructs of SSDS and Socio-Economic Accounting

The new wave of "client groups approach" requires to socio-economic accounting (including demographic accounting, education accounting and time accounting) to provide their data i.e. their products to be combined for various clients' multi-dimensional use. From this point of view, and from integration point of view on socio-economic accounting, we have a look on constructs in SSDS which are serving as supplementing aggregates of economic accounting.

These constructs have emerged (or throughly been revised) in the 1970's for providing a portrait of social welfare and social wealth. One is a condition statement whose

21) R. Gronau, "Home Production—A Forgotten Industry," *The Review of Economics and Statistics*, Aug. 1980, pp. 408–16.

purpose is to estimate the main factors which constitute socio-economic conditions at a point of time. Another is a statement relating to social performance whose purpose is to estimate non-market activities performed during a year and show them in money term. Both are shown either in aggregates or a part of the aggregates.

The statement of the former type is a sort of nation's social condition statement or social balance-sheet, which is called as *below the line statement* by Saunders in a UN report.[22] Its coverage is wide—ranging from population to crime—, which includes demographic situation, education and its transition, employment and its structure and mobility, protective association for employee, social security, nutrition and health, leisure time, religion and crime. So the system seems to be a grossary of SSDS. By the nature as condition statements, the weight is mainly put on states of demographic factors such as population, students, and man power, but data derived from time accounting are few. The typical example of this type is "Social Conditions in England and Wales" by Carr-Saunders, Jones and Moser[23] which accommodates almost all factors of SSDS, while a conceptual framework for social wealth which consists of economic capital and non-economic capital including human capital is presented by Juster[24] and the social capital sheet in along the line of Juster but only concerned for human elements are estimated by Kendrick.[25]

The latter type of statements for social performances is welfare-oriented measures which estimate socio-economic performances produced or disproduced both by human non-market activities and ecology, which is treated by Saunders as *above the line statement*.[26] The coverage of this type of statements is also wide like *below the line statement* and many topics are overlapped in both though in the welfare-oriented measures the role of the demographic element is slight (used only as a denominator for calculating per head figures) but the role of time statistics for measuring non-market activities is more important than in the case of *below the line statement*.

In the *above the line statements*, there are many variants, i.e. MEW,[27] social economic performance statement by Ruggles,[28] Kendrick's adjusted GNP,[29] NNW[30] in

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22) UNSO, *Welfare-Oriented Measures, ibid.* p. 6.

23) A. M. Carr-Saunders, D. C. Jones and C. A. Moser, *A Survey of Social Conditions in England and Wales* as illustrated by Statistics, 3rd ed., 1970.

24) F. T. Juster, "A Framework for the Measurement of Economic and Social Performance," in M. Moss (ed.), *The Measurement of Economic and Social Performance, ibid.*, pp. 25–109.

25) J. Kendrick, "The Treatment of Intangible Resources as Capital" and "The Accounting Treatment of Human Investment and Capital," *the Review of Income and Wealth*, Mar. 1972. pp. 109–25 and Dec. 1974, pp. 432–68, respectively.

26) UNSO, *Welfare Oriented Measures, ibid.* 3–7.

27) W.D. Nordhaus and J. Tobin, "Is Growth Obsolete?", *Economic Growth*, Fifties Anniversary Colloquium V, 1972.

28) R. and N. Ruggles, "The Measurement of Economic and Social Performance" in Moss (ed.), *The Measurement of Economic and Sacial Performance ibid.*, pp. 111–60.

29) Kendrick, *ibid.*

30) NNW Measurement Committee, *NNW Atarashii-Fukushisihyō* (Measuring Net National Welfare of Japan), 1974.

Japan etc. Taking MEW as a representative of this sort, the contents are the public expenditure for regrettable necessities, subsidies from enterprises to their employees, costs spent on commuting jobs, household production activities, leisure activities, and loss of amenity by environmental damage. The *below the line statements*, another type of constructs involve also the element of ecology which is not included in SSDS but is a theme of the System of Environment Statistics.

The differences between in two constructs are shown in their methods of estimation and their arrangement. They are: **i.** in MEW activities are estimated and shown in terms of money by means of imputation while in social conditions statement figures are not throughly shown in money term but recorded both in physical terms and the money term; and **ii** in MEW the items of variables are limited to current non-market activities to be added to a single national aggregates and to be compared with GNP while in social condition statements the items are not aggregated and the numbers of variables, way of presenting the estimates are not uniform but open-ended.[31] These differences are caused by their different purposes and approaches.

Estimation of MEW is taken by Nordhous and Tobin, the authors of MEW themselves. They adjusted the official social statistics which have been complied for administration purposes but not for economic research. The situation is the same in social condition statement. Both they, however, would be derivable from socio-enonomic accounting and should be if they were to keep a high standard of quality. Both they are conceived as special constructs of socio-economic accounting though their ways of estimating, accounting and arranging data are different. The ideas of these constructs based on socio-economic accounting have recently been accepted or at least accepting. They are used in any country in any stage of development provided that data could be supplied by socio-economic accounting in a standardized way.

On this line of thought, it is clear that the way we should do for proceeding socio-economic accounting. The products of the sub-systems of this accounting, whether they are as inputs for *the below the line statements* or for *the above the line statements* should be produced in a certain standardized way for reclassification and recombination to be processed to get estimates in a more comprehensive coherent system. The one effort for this end is seen in the recent topic of "harmonization of concepts, classifications and definitions," which intends to establish the way for multilevel hierarchical classifications of the products of the accounting from multidimensional viewpoints.[32] This enlights the direction for proceeding integration of the fields in the socio-economic accounting and for developing a function of socio-economic accounting as a provider of data base for all non-market activities, its performance and efforts and for social wealth, as now SNA is served for market oriented activities.

31) *Welfare-Oriented Measures, ibid.*, p. 6.

32) UNSO, *Studies in the Integration, ibid.*, Part Three.

5. Summary and Conclusion

By surveying the leading fields of socio-economic accounting and the main constructs of SSDS, we get understand the issues of the socio-economic accounting. They are summarized as follows:

(1) The idea of education accounting which intends to show transition of the student population in the education matrix, a version of the population stock-flow matrix has well developed and is excellent both for constructing an accounting framework concerned to learning activity which is one of human life sequences and model-building for education planning. Its full virtue has however been criticized because **i**, it would be lessened if rigidity of transition coefficients were lost and **ii**, the range of the systematization by the demographic accounting is too narrow for whole SSDS.

(2) Recently there has been rising "client groups approach" which requires the information from many fields of SSDS in a certain general and a standardized way to secure possible reclassification and recombination from clients' view points. From this view, time accounting is not only expected for providing time-budgets but also is expected for estimating various non-monetary activities. By its nature and the fact that the system is on developing stage, full standardization of accounting framework is expected.

(3) The two constructs of SSDS, i.e., social condition statement (*below the line*) and welfare-oriented measures (*above the line*) have been popular and is expected to be extended further. Though there are differences among their scopes, their methods of estimation and of arranging the figures, both they cover many fields of SSDS and in the coverage considerable parts are overlapped. Where the constructs could be derived directly from the figures of a standardized socio-economic accounting and their fields, present troublesome estimation work from official statistics would be lessened and exactness of the resulted figures must be secured. This must open the road both for intertemporal and intercountry comparison of the estimates of those two constructs.

We like to add here. This new wave is welcomed from the scope of the socio-economic accounting which provides objective measurement of non-market activities in well defined way to all users. The tendency encourages not only systematization of the whole SSDS but proceeding standardization of the framework and developing a new function for serving as data base concerned social welfare and social wealth. This last notion is expected for developing the socio-economic accounting to be one main sub-system of nation's information system where SNA has been established as another main subsystem for market-oriented activities.

CURRENT SITUATIONS OF WORLD ECONOMY AND GLOBAL ADJUSTMENT OF INDUSTRIES

Hikoji KATANO

I Introduction

Currently, the world economy has been severely suffered from two major problems:

(1) stagflation among the developed economies, and

(2) severe income gap between the developed and the developing economies.

This paper will attempt to investigate the causes of these phenomena, and to show framework of our thinking that the solution of these distortions in the world economy may need a global adjustment of industries within the world economies as a whole of the developed and the developing economies. Here we consider the long-term guideline for a satisfactory development of the world economy. As of the short-term problems, this paper does not examine them in detail, even if these are also very important problems of the world economy.

II Stagflation among the Developed Economies

A. Background of Stagflation

a. Stagflation is considered as an economic situation that a high unemployment ratio coexists with a severe inflation. As shown by Table 1 and Chart 1, the stagflation has been appeared, more or less, among the developed economies after the oil crisis.

b. Through the 1960's, the developed economies could maintain their satisfactory growths, based on an abundant and cheap supply of industrial raw materials and energies, a moderate level of wage rate, a warranted inflation to promote the growth, etc.

On the ecomnoic growth process of the developed economies over the decade, the monetary relaxation policies have been gradually adopted for promoting growth. The rate of inflation has been gradually increased. Correspondingly, the unemployment ratio could be gradually decreased through a trade-off relation of the ratio to the rate of inflation. In average among the major seven countries (Japan, the U.S.A., F.R.G., U.K., France, Italy, and Canada), the unemployment ratio was decreased from 2.9% at 1962 to 2.3% at 1969, while the rate of inflation was increased from 2.3% to 4.9% for the same period.

c. At 1969, the rate of inflation approached to the level of 5% per annum. So the governments of the developed countries adopted a monetary restraint policies. Sudden decrease of effective demand happened in the developed economies. And a small scale recession was generated in these economies at the middle of 1970. Immediately, certain

Table 1: Real GNP Growth Rate, Unemployment Ratio and Rate of Inflation in the Developed Economy

(%)

		Real GNP Growth Rate	Unemployment Ratio	Rate of Inflation
1962	I	5.4	2.9	2.3
1963		4.6	2.9	2.4
1964		5.9	2.7	2.1
1965		5.4	2.6	2.7
1966		5.7	2.4	3.2
1967		3.7	2.6	2.8
1968		5.6	2.5	4.1
1969		4.5	2.3	4.9
1970		2.7	2.9	5.6
1971	II	3.8	3.5	5.0
1972		5.6	3.5	4.4
1973		6.3	3.1	7.6
1974		−0.1	3.5	13.3
1975	III	−0.5	5.5	10.9
1976		5.4	5.4	7.9
1977		4.0	5.4	7.8
1978		4.2	5.3	6.5
1979		3.3	5.3	8.0

Source: UN, Statistical Yearbook.
OECD, Economic Outlook.

Notes: 1) Averages of Major Seven Countries (Japan, U.S., Fed. Rep. of Germany, U.K., France, Italy and Canada).
2) Rate of inflation is represented by a rate of increase of consumer price index.

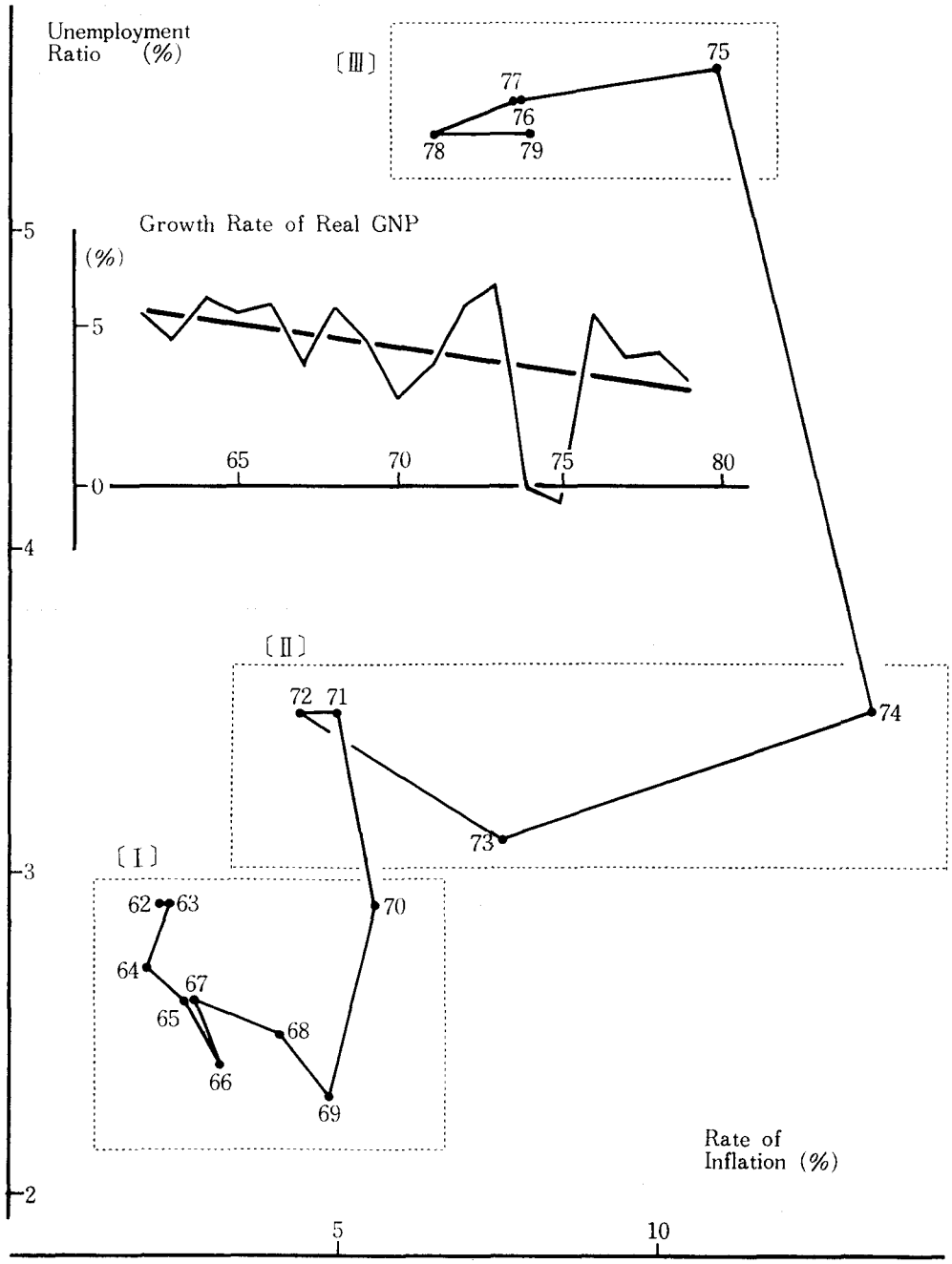
policies were enforced again for a relaxation of the monetary restrictions. Thus the inflationary tendency could still continue thereafter.

The apparent inflationary tendency, since the latter half of the 1960's, has fixed an expectation of inflation among the people in the developed countries. Due to the expectation, a pressure of demand for higher wage has been gradually intensified, more or less, in each country.

Since 1971, when the Teheran Agreement was concluded, the oil price has been sliding in relation to the world inflationary tendency. And the prices of agricultural and mineral products (excluding oil) have been sharply increased by bad harvest in the main agricultural countries and the related circumstances. In these situations, the prices of industrial raw materials and energies have been sharply increased. The rate of inflation might be accelerated accordingly.

On the recovery phase (1971–73) from the recession at the middle of 1970, reflecting the unfavourable situations mentioned above, and suffering from the newly industrialized countries' catch-up to the developed countries mainly in the labour intensive industries, some industries in the developed countries have been forced, even defensively, to adjust themselves or to select more labour saving technologies than ever before. Consequently, the unemployment ratio has been increased upto 3.5% at

Chart 1.


Unemployment Ratio (%)
〔Ⅲ〕
75
77
76
78
79
Growth Rate of Real GNP
(%)
5
0
65
70
75
80
5
4
〔Ⅱ〕
72 71
74
73
〔Ⅰ〕
62 63
70
64
67
65
68
66
69
3
2
Rate of Inflation (%)
5
10

1971 and 1972. And it was 3.1% at 1973, when the last boom was recorded before the oil crisis.

d. At 1974, the OPEC have monopolitically raised their oil prices about four times in relation to the previous level. The sharp increase of the oil price has shot up the prices of the industrial raw materials and energies. Accompanied together with the increase of wage level, this has inevitably generated a sharp increase of input prices for industrial production. Thus a hyper-inflation has been generated among the developed countries after the oil crisis.

Policies for restriction of aggregate demand was adopted against the hyper-inflation. These policies could be effective for repressing the hyper-inflation, while a big depression has been generated and the unemployment ratio has been increased. Currently, after 1974–75 of the most severely depressed year, the developed economy as a whole has been still suffered from both about 8% of the rate of inflation and the unemployment ratio over 5% in the average of the major seven countries.

B. Causes of Stagflation

a. The developed economies recorded their satisfactory growths over the 1960's and until the oil crisis. However, on the growth process, a gap between production

Table 2: Increase Rate of Investment, Rate of Profit and Rate of Capacity Utilization

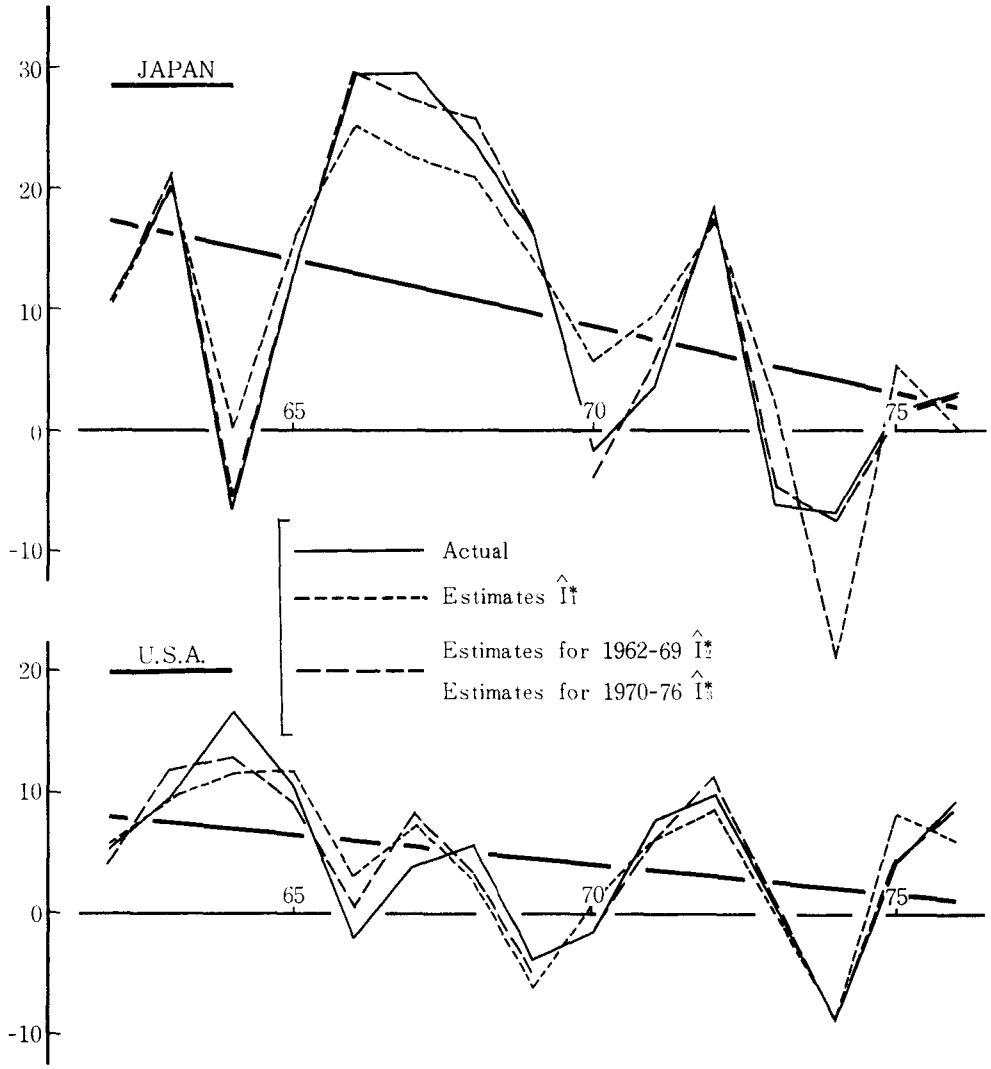
(%)

	Japan			U.S.A.		
	A	B	C	A	B	C
1962	5.3	3.17	85.2	5.5	4.56	117.0
1963	20.0	3.71	84.2	9.6	4.72	113.2
1964	−6.4	3.31	89.4	16.7	5.24	111.2
1965	13.5	2.71	84.2	10.6	5.59	110.6
1966	29.3	3.58	89.8	−2.0	5.57	110.8
1967	29.5	4.19	97.2	4.0	5.04	107.9
1968	23.8	3.94	100.2	5.6	5.08	107.0
1969	16.1	4.27	102.6	−3.7	4.78	104.8
1970	−1.6	3.64	100.0	−1.5	4.03	100.0
1971	3.6	2.39	94.3	7.8	4.12	98.8
1972	18.6	2.92	94.9	10.0	4.30	100.4
1973	−6.1	3.93	98.5	1.0	4.72	101.9
1974	−6.9	1.83	90.2	−9.0	5.44	97.0
1975	1.4	0.00	76.9	4.1	4.51	92.4
1976	3.1	1.42	83.3	9.3	5.28	94.6

Sources: UN, Yearbook of National Income Statistics.
OECD, Main Economic Indicators.
Bank of Japan, International Comparative Statistics.

Notes: 1) A: Increase rate of investment
B: Rate of profit
C: Rate of capacity utilization
2) Investment is a private investment in plants and equipment.
3) Profit does not include tax.
4) Rate of capacity utilization is a index; 1970 = 100.

Chart 2.



capacity and effective demand might be generated in the developed economy as a whole. This might, in turn, cause a severe competition among the developed economies, especially since the latter half of the 1960's. As the results of the growing severity of competition, either a rate of profit or a rate of capacity utilization has been decreased. The decreases of these elements might reduce an investment inducement. This has formed one of the main causes of the current stagflation.

a-i As shown by Table 1 and Chart 1, the growth rate of real GNP of the developed economy as a whole had a tendency to decrease since the latter half of the 1960's and until the oil crisis.

a-ii The growth rate of GNP depends mainly on an increase rate of investment. Of the investment, the most influential part is played by a private investment in plants and equipments (PIPE). As shown by Table 2 and Chart 2, the increase rate of real PIPE had been tended to decrease, at least, since the latter half of the 1960's. The decreasing tendency of the growth rate of real GNP may be mainly related to the decreasing tendency of the increase rate of real PIPE.

a-iii An econometric analysis of the investment behavior shows that the increase rate of real PIPE (I) is closely related to the rate of profit (r), its future expectation (Δr), the rate of capacity utilization (u) and its future expectation (Δu). As the actual data of Δr and Δu are not available, so these are substituted by an increment (or a decrement) of the current rate to the succedeing year's rate, where we assume that an investor may correctly expect the change as it may.

The analysis is concerned only with the cases of Japan and the U.S. This is mainly due to the data availability. But these two countries have large influences to determine the movements of the developed economy as a whole, because they are the leading countries in the developed economy and their shares of GNP are very large. As a matter of fact, the analysis is desirable to include the case of F.R. G., but could not do it due to the lack of some important data of the country.

Results of the analyses, on the cases of Japan and the U.S., are shown by Table 3 and Chart 2. The results and the related considerations induse a general conclusion that I becomes small as either (1) r and Δr or (2) u and Δu become small.

a-iv The decreasing tendency of I had begun at the latter half of the 1960's, even though there were some differences in the beginning years by countries. Anyhow,

Table 3: Estimates of $I = a_0+a_1r+a_2u+a_3\Delta r+a_4\Delta u$

	a_0	a_1	a_2	a_3	a_4	R^2
Japan						
1962–76	−39.162	2.966	0.437	−1.711	2.076	0.897
		(1.074)	(1.104)	(−0.414)	(2.903)	
1962-69	−60.271	15.298	0.190	4.911	2.033	0.995
		(3.774)	(0.809)	(1.911)	(7.063)	
1970–76	203.363	23.232	−2.802	24.267	−3.319	0.988
		(4.207)	(−3.461)	(5.144)	(−3.775)	
U.S.A.						
1962–76	−53.962	2.354	0.472	5.245	1.846	0.897
		(1.054)	(3.176)	(2.138)	(3.924)	
1962–69	17.935	4.246	−0.290	14.562	0.369	0.906
		(0.337)	(−0.314)	(0.955)	(0.099)	
1970–76	−190.251	8.730	1.569	5.250	2.876	0.991
		(4.434)	(5.108)	(3.806)	(8.521)	

Notes: I: increase rate of real private investment in plants and equipments,
r: rate of profit,
Δr: future expectation of rate of profit,
u: rate of capacity utilization,
Δu: future expectation of rate of capacity utilization.

the important point to be recognized is that this sort of tendency was begun before the oil crisis happened. As explained above, the decreasing tendency of I has been caused mainly by the increasing gap between production capacity and effective demand. Then, even if the oil crisis had never happened at 1974, a big depression (not a stagflation) might attack, sooner or later, to the developed economies through the decrease either of the rate of profit or of the rate of capacity utilization, when a certain effective measure was not adopted for controlling the increasing gap.

b. The rate of profit decreases as the price of product can not increase more than increase of the input price, because the price of product is composed of the input price and the corresponding marked-up profit.

Table 4 shows the price ajdustment ratio of the manufactured products, that is defined a ratio of percentage increase of the price of product to percentage increase of the input price, in the cases of Japan and the U.S. Thus the ratio less than unity means a decrease of the rate of profit.

b-i Japan: The price adjustment ratio was rather increasing from the beginning of the 1960's to the latter half of this decade. Accordingly, for the period, the rate of profit had a tendency to increase. Growing competitiveness of Japanese manufactured products could realize to increase the rate of profit, even in the situations that the world market competition had been raising its severity. However, the price adjustment ratio has begun to decrease since the latter half of the 1960's.

Table 4: Price Adjustment Ratio (Manufacturing Products)

	Japan			U.S.A.		
	Price of Products (a)	Input Price (b)	Adjustment Ratio (a)/(b)	Price of Products (a)	Input Price (b)	Adjustment Ratio (a)/(b)
1962	94.7	94.9	0.998	85.8	84.5	1.015
1963	95.8	103.8	0.923	85.6	84.0	1.019
1964	95.6	95.8	0.998	85.8	83.7	1.025
1965	95.6	96.8	0.998	87.5	85.0	1.029
1966	96.6	96.7	0.999	90.4	87.9	1.028
1967	96.6	95.9	1.007	90.6	89.0	1.018
1968	96.1	95.6	1.005	92.8	90.8	1.022
1969	97.2	96.4	1.008	96.4	94.8	1.017
1970	100.0	100.0	100.0	100.0	100.0	1.000
1971	98.2	100.0	0.982	103.1	102.8	1.003
1972	98.1	99.1	0.990	107.8	107.0	1.007
1973	109.5	108.8	1.006	122.0	120.4	1.013
1974	142.5	145.7	0.978	145.0	142.3	1.019
1975	146.2	152.9	0.956	158.4	157.4	1.006
1976	152.2	156.3	0.974	165.7	162.5	1.020
1977	153.8	158.0	0.973	175.9	172.5	1.020

Source: Bank of Japan, International Comparative Statistics.
Note: Base is the price adjustment situation at 1970.

Raising the price of products over increase of the input price could no longer maintain the strong competitiveness of Japanese products in the world market. Maintenance of the established market share and its expansion could be realized only by a sacrifice of the decreasing rate of profit, that is generated by the decrease of the price adjustment ratio.

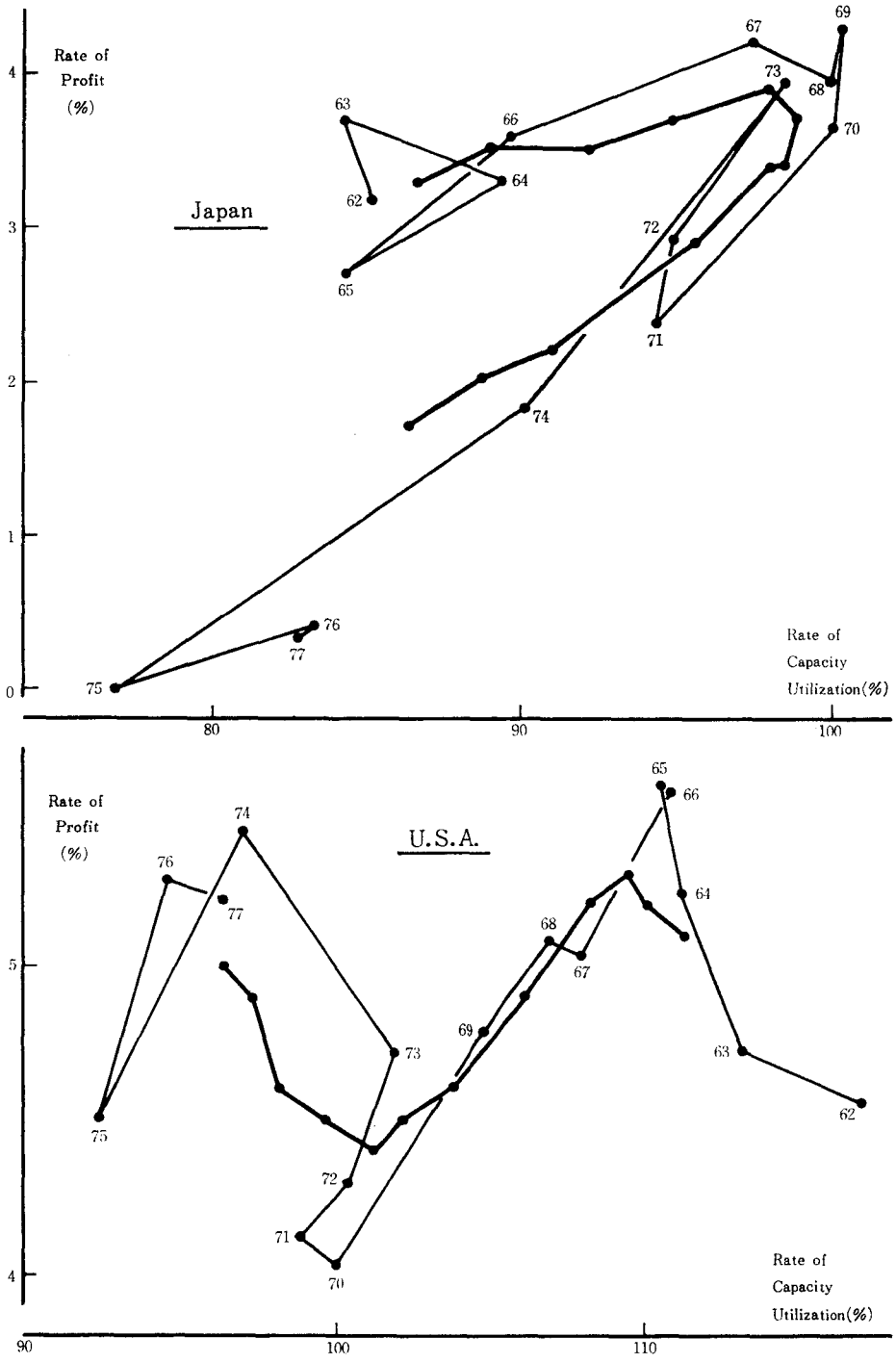
b-ii The U.S.: Since the early 1960's to the latest years, the price adjustment ratio has shown a cyclical movement; even though the amplitude of fluctuation was not so wide that the corresponding remarkable fluctuation of the rate of profit was generated. The rate of profit has been maintained at rather stationary level. This means that the price of product has been satisfactorily adjusted to the corresponding increase of the input price. However, the competitive situation in the world market have been becoming more and more severe for the manufactured products of the U.S. The U.S.'s manufacturers have selected their strategy to decrease the rate of capacity utilization (the strategy of capital strike) in order to satisfactorily adjust the price to the corresponding change in the input price and to maintain the rate of profit rather constant. As the results, the competitiveness of the U.S.'s products might be decreased in relation to that of the Japanese products that the price has a tendency to relatively decrease in the world market.

c. Chart 3 shows the relative movements of the rate of profit and the rate of capacity utilization in the cases of Japan and the U.S. Here is a typical difference between these two cases.

c-i Japan: The increasing (or decreasing) tendency of the rate of profit is corresponding to the increasing (or decreasing) tendency of the rate of capacity utilization, except for the period of 1967–70 when the decreasing rate of profit was corresponding to the increasing rate of capacity utilization. Roughly, the rate of profit was increasing with the increase of the rate of capacity utilization from the beginning of the 1960's to the latter half of the decade. For the period, the increase rate of real PIPE was increasing. However, the rate of profit began to decrease since 1967, while the rate of capacity utilization was still continuing to increase until 1970 and turned to decrease thereafter. Nevertheless, the increase rate of real PIPE has begun to decrease since 1967. The small scale recession at 1970 forced to decrease both the rate of profit and the rate of capacity utilization; the both rates at 1971 were very low in relation to the corresponding rates at 1970. Towards the last boom years before the oil crisis, the both rates had been again increasing. Correspondingly, the increase rate of real PIPE was increased. But, after the oil crisis, both of them have been sharply decreased, even though there is a little recovery since 1976.

c-ii The U.S.: There is no apparently corresponding movement between the rate of profit and the rate of capacity utilization. The rate of profit has been maintained at rather stationary level, while the rate of capacity utilization has been gradually decreased. And the increase rate of real PIPE has a tendency to decrease. However, in more detailed observations, the rate of profit has a very narrow amplitude of cyclical movement; an increasing tendency for 1962–65, a decreasing tendency

Chart 3.


Rate of Profit (%)
Japan
4
3
2
1
0
80
90
100
Rate of Capacity Utilization(%)
75
76
77
74
65
71
72
63
62
64
66
67
73
68
69
70
Rate of Profit (%)
U.S.A.
5
4
90
100
110
Rate of Capacity Utilization(%)
75
76
77
74
73
72
71
70
69
68
67
65
66
64
63
62

for 1966–70, and again increasing tendency since 1971.

d. The price of product is composed of the input price and the marked-up profit. The marked-up profit may be determined at the acceptable maximum level under the competitive situations that have become more and more severe since the latter half of the 1960's. And the rate of profit has never shown an apparent increasing tendency for the period. Then the increase of the price of product depends mainly on the increase of the input price. The changes of the input price and its components are shown by Tables

Table 5: Input Price in Manufacturing Industry

(1970 = 100)

	Input Price	Raw Materials	Personnel Cost	Depreci-ation	Financial Cost	Miscel-laneous Cost
Japan						
1962	94.9	87.2	90.7	110.1	101.8	113.8
1963	103.8	98.1	96.8	116.6	85.4	124.8
1964	95.8	94.4	92.1	112.0	107.2	95.7
1965	96.8	96.7	96.2	108.6	115.6	90.7
1966	96.7	98.3	94.4	99.2	105.5	91.5
1967	95.9	107.8	92.3	92.5	93.8	66.6
1968	95.6	96.9	93.3	91.3	92.8	95.2
1969	96.4	97.6	94.3	92.3	91.6	96.1
1970	100.0	100.0	100.0	100.0	100.0	100.0
1971	100.0	97.7	104.9	105.8	110.3	100.0
1972	99.1	96.3	107.0	100.7	101.7	101.1
1973	108.8	106.9	118.0	96.3	102.5	113.2
1974	145.7	147.2	151.5	117.1	155.9	143.0
1975	152.9	155.6	158.3	125.0	176.7	143.9
1976	156.3	179.8	158.7	117.0	166.4	96.7
1977	158.0	166.5	163.9	115.2	150.4	142.0
U.S.A.						
1962	84.5	84.8	93.4	80.8	39.9	80.6
1963	84.0	84.1	92.2	80.3	40.8	81.1
1964	83.7	84.4	90.9	80.0	41.1	80.3
1965	85.0	86.4	89.4	80.0	49.0	81.4
1966	87.9	88.8	85.2	82.4	63.6	93.6
1967	89.0	88.3	87.2	88.0	68.1	97.5
1968	90.8	92.7	88.0	89.3	83.3	89.8
1969	94.8	95.6	89.9	90.8	114.8	95.9
1970	100.0	100.0	100.0	100.0	100.0	100.0
1971	102.8	105.6	99.1	104.4	80.5	101.0
1972	107.0	109.7	100.4	107.8	92.9	108.9
1973	120.4	123.9	106.8	113.2	168.1	119.7
1974	142.3	150.4	127.7	116.2	200.7	130.5
1975	157.4	169.7	138.3	136.6	156.5	146.3
1976	162.5	192.6	143.4	136.3	136.3	98.4
1977	172.5	188.1	154.4	142.8	180.1	150.0

Source: Bank of Japan, International Comparative Statistics.

Note: Prices of input elements required for producing one unit of manufacturing products.

5 and 6 and Chart 4.

d-i Both in Japan and in the U.S., the largest component of the input price is an expense for raw materials.

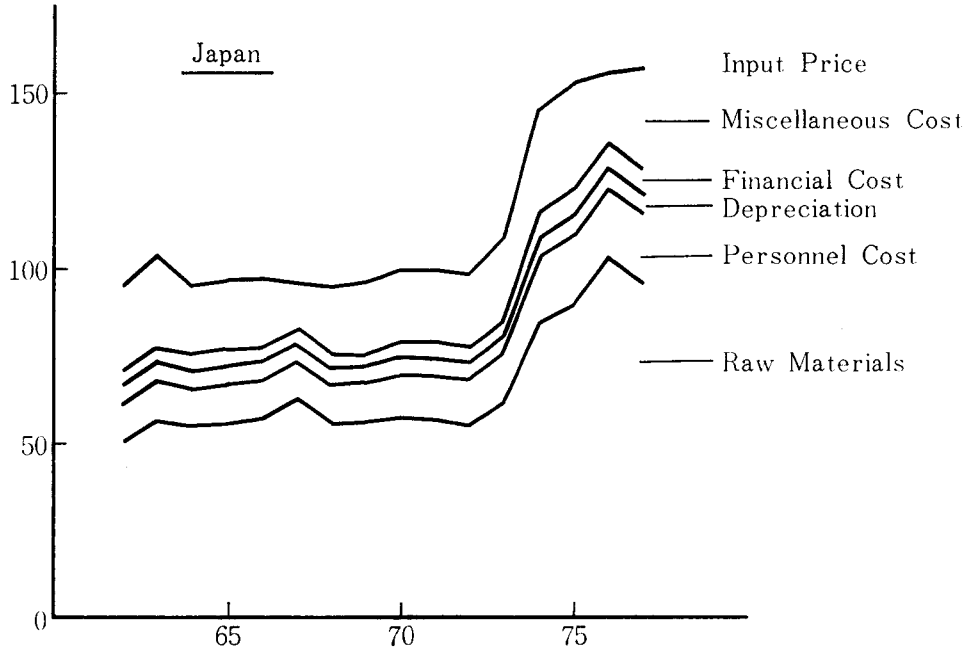
d-ii However, as shown by Table 7, the most influential component, that affects to raise the input price, is a personnel cost in Japan, while an expense for raw materials in the U.S., that are measured in terms of an input price eleasticityof each component.

d-iii An increase of the expense for raw materials does not always reflect full of the increase of raw material prices, especially of oil price. The increase of raw material prices has induced to develop technologies for saving raw material consumptions. Specially, since the oil crisis, the development of technologies to save oil consump-

Table 6: Contributions by Elements composing Input Price

	Input Price	Raw Materials	Personnel Cost	Depreci-ation	Financial Cost	Miscel-laneous Cost
Japan						
1962	94.9	50.5	10.9	5.2	4.6	23.7
1963	103.8	56.8	11.6	5.5	3.8	26.1
1964	95.8	54.7	11.1	5.3	4.8	19.9
1965	96.8	56.0	11.5	5.1	5.2	19.0
1966	96.7	56.9	11.3	4.7	4.7	19.1
1967	95.9	62.4	11.1	4.3	4.2	13.9
1968	95.6	56.1	11.2	4.3	4.2	19.8
1969	96.4	56.5	11.3	4.3	4.1	20.2
1970	100.0	57.9	12.0	4.7	4.5	20.9
1971	100.0	56.6	12.6	5.0	5.0	20.8
1972	99.1	55.8	12.8	4.7	4.6	21.2
1973	108.8	61.9	14.2	4.5	4.6	23.6
1974	145.7	85.2	18.2	5.5	7.0	29.8
1975	152.9	90.1	19.0	5.9	8.0	29.9
1976	156.3	104.1	19.0	5.5	7.5	20.2
1977	158.0	96.4	19.7	5.4	6.8	29.7
U.S.A.						
1962	84.5	46.8	19.9	3.0	1.1	13.7
1963	84.0	46.4	19.6	3.0	1.1	13.9
1964	83.7	46.6	19.4	3.0	1.1	13.6
1965	85.0	47.7	19.0	3.0	1.3	14.0
1966	87.9	40.0	18.1	3.0	1.7	16.1
1967	89.0	48.7	18.6	3.3	1.8	16.6
1968	90.8	51.2	18.7	3.3	2.2	15.4
1969	94.8	52.8	19.1	3.4	3.1	16.4
1970	100.0	55.2	21.3	3.7	2.7	17.1
1971	102.8	58.3	21.1	3.9	2.2	17.3
1972	107.0	60.6	21.4	4.0	2.5	18.5
1973	120.4	68.4	22.7	4.2	4.5	20.6
1974	142.3	83.0	27.2	4.3	5.4	22.4
1975	157.4	93.7	29.5	5.1	4.2	24.9
1976	162.5	106.3	30.5	5.0	3.7	17.0
1977	172.5	103.8	32.9	5.3	4.9	25.6

Chart 4.


Japan
Input Price
Miscellaneous Cost
Financial Cost
Depreciation
Personnel Cost
Raw Materials
150
100
50
0
65
70
75

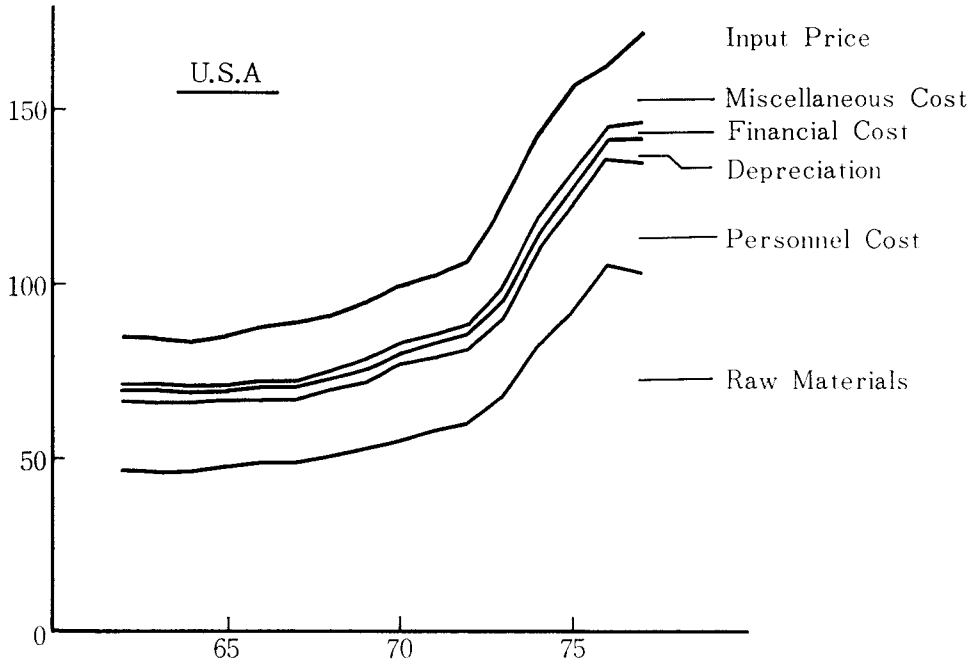

U.S.A
Input Price
Miscellaneous Cost
Financial Cost
Depreciation
Personnel Cost
Raw Materials
150
100
50
0
65
70
75

Table 7: Estimates of $LC = a_0+a_1LR+a_2LW+a_3LD+a_4LF$

	a_0	a_1	a_2	a_3	a_4	R^2
Japan						
1962–77	0.614	0.422	0.468	0.292	−0.090	0.997
		(6.256)	(6.193)	(4.537)	(−1.636)	
1962–69	1.109	0.079	0.692	0.163	−0.153	0.994
		(1.794)	(6.282)	(6.843)	(−7.938)	
1970–77	0.410	0.409	0.599	0.574	−0.262	0.999
		(3.447)	(4.166)	(1.264)	(−0.895)	
U.S.A.						
1962–77	0.636	0.495	0.317	0.109	0.059	0.999
		(7.193)	(3.950)	(1.721)	(4.583)	
1962–69	2.024	−0.152	0.107	0.024	0.136	0.998
		(−0.601)	(1.369)	(0.289)	(3.465)	
1970–77	0.706	0.375	0.323	0.314	0.084	0.999
		(4.845)	(3.100)	(3.186)	(5.449)	

Notes: LC: logarithm of input price,
LR: logarithm of expenses to raw materials,
LW: logarithm of personnel cost,
LD: logarithm of depreciation,
LF: logarithm of financial cost.

tion has been accelerated.

d-iv The similar tendency has been true for the personnel cost. The increase of wage rate has caused to decrease a labour input for producing one unit of product, as shown by Table 8. This has been promoted through the transition of industrial structure from the labour intensive industries to the capital intensive industries, or by introducing more labour saving technologies into an industry. Estimates of a labour input elesticity of wage rate are shown by Table 9. Either in the case of Japan or of the U.S., the tendency to save labour input was promoted more strongly in the 1960's than after 1970, even though the raise of wage rate has been realized more sharply after 1970 than in the 1960's. In Japan, the transition of industrial structure had been almost completed in the 1960's. And, either in Japan or in the U.S., the power of the labour union to resist unemployment has become more and more strong in the 1970's, especially after the oil crisis. Thus, in Japan, the labour input elesticity of wage rate become about a half in the 1970's in relation to that in the 1960's. While, in the U.S., it became almost zero in the 1970's, even though it had a larger value than that of Japan in the 1960's; this means that there is no more decrease of labour input due to the raise of wage rate in the U.S.

d-v As a whole, as shown by Chart 4, either in Japan or in the U.S., the input price has been sharply increased after the oil crisis. This is mainly caused by the sharp increase of the oil price that has a character of the monopolistic raise of price. Then the input price for industrial production in the developed economics has been sharply increased with their downward rigidity. This has created the hyper-inflation in the developed economies. Through the world trade and financial net-

Table 8: Personnel Cost, Employment and Wage Rate in Manufacturing Industry
(1970 = 100)

	Japan			U.S.A.		
	Personnel Cost	Employment	Wage Rate	Personnel Cost	Employment	Wage Rate
1962	90.7	250.6	36.2	93.4	140.8	66.3
1963	96.8	247.1	39.2	92.2	134.8	68.4
1964	92.1	180.7	51.0	90.9	128.6	70.7
1965	96.2	175.4	54.8	89.4	121.1	73.8
1966	94.4	156.9	60.2	85.2	114.1	74.7
1967	92.3	139.1	66.4	87.2	112.1	77.8
1968	93.3	123.8	75.4	88.0	106.5	82.6
1969	94.3	106.5	88.5	89.9	102.5	87.7
1970	00.0	100.0	100.0	100.0	100.0	100.0
1971	104.9	93.0	112.8	99.1	93.4	106.1
1972	107.0	83.2	128.6	100.4	88.7	113.2
1973	118.0	75.9	155.6	106.8	88.2	121.1
1974	151.5	76.9	197.0	127.7	98.7	129.4
1975	158.3	73.4	215.7	138.3	98.2	140.8
1976	158.7	66.7	237.9	143.4	94.2	152.2
1977	163.9	63.9	256.5	154.4	93.7	164.8

Source: Bank of Japan, International Comparative Statistics.
Note: Personnel cost and employment are concerned with the requirements for producing on unit of manufacturing products.

Table 9: Estimates of $LN = a_0 + a_1 LW$

	a_0	a_1	R_2
Japan			
1962–77	3.421	−0.687	0.976
		(−16.816)	
1962–69	3.964	−0.996	0.997
		(−34.036)	
1970–77	2.815	−0.415	0.963
		(−8.724)	
U.S.A.			
1962–77	2.843	−0.411	0.843
		(−5.859)	
1962–69	4.269	−1.169	0.975
		(−10.684)	
1970–77	1.964	0.005	0.019
		(0.046)	

Notes: LN: logarithm of employment,
Lw: logarithm of wage rate.

works that closely connect each country to the others, the inflation can be easily diffused over the world; the world-wide inflation is created. However, the OPEC countries may raise the oil price so as to slide itself with the world-wide inflation. This, in turn, again accelerated the world inflation. Here, the developed economies,

the non-oil-producing developing economies also, can not escape from a sort of vicious-cycle, unless the increase of input price is checked by a development of alternative raw material and energy sources and the other effective measures. This is one of the main causes of the stagflation after the oil crisis, joined together with the relative decrease of effective demand.

e. Affected by the growing severity of competition, Japan has accepted the decrease of the rate of profit, while the U.S. has selected the decrease of the rate of capacity utilization. This has resulted the gradually decreasing relative price of the price of Japanese products to the price of the U.S.'s products. This might be one of the reasons why the Japanese competitiveness could become more and more strong than that of the U.S. Accordinglty, as shown by Table 10, the sales of manufactured products of Japan have been largely expanded, while that of the U.S. have been stagnant, especially after the oil crisis. This has, in turn, accelerated the decrease of the rate of capacity utilization of the U.S.

As shown by Chart 5, the gap between production capacity and effective demand has been expanded at one stroke after the oil crisis, mainly due to the restrictive policies of aggregate demand that were adopted for controlling the severe inflation. This has caused to decrease the investment inducement in plants and equipments more severely than ever before.

f. Here we conclude, even roughly, that the real causes of the current stagflation are

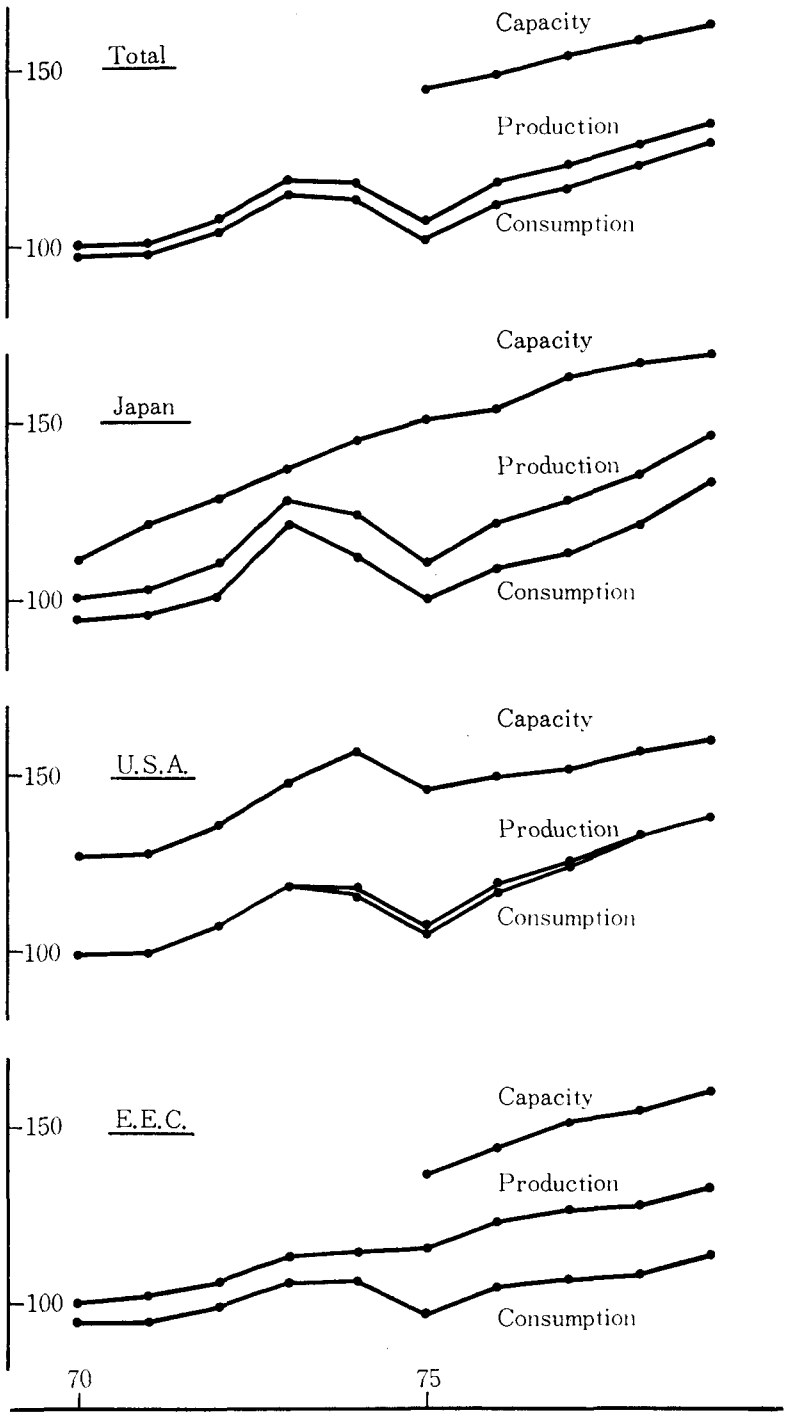
(1) the gap between production capacity and effective demand in the developed economy as a whole, that has been grown since the 1960's and severely strengthened after the oil crisis, and the related decrease of investment inducement in plants and equipments, and

(2) the *vicious cycle* of the world inflation and the oil price, that was started by the oil crisis.

Table 10: Quantity Index of Sales of Manufacturing Products

	Japan	U.S.A.
1962	29.8	64.1
1963	31.4	68.1
1964	45.1	72.9
1965	47.5	79.4
1966	54.5	86.5
1967	65.3	89.7
1968	76.5	96.1
1969	91.7	101.7
1970	100.0	100.0
1971	107.8	102.8
1972	120.6	111.2
1973	137.9	117.7
1974	134.5	104.9
1975	132.9	96.6
1976	146.2	104.0
1977	152.0	108.0

Chart 5.


Total
150
100
Capacity
Production
Consumption
Japan
150
100
Capacity
Production
Consumption
U.S.A.
150
100
Capacity
Production
Consumption
E.E.C.
150
100
Capacity
Production
Consumption
70
75

g. In addition to these main causes of the current stagflation, we should also consider the other changes of economic situations, surrounding the developed economies, that brought about the stagflation.

g-i Through the satisfactory growth process of the developed economies over the 1960's, the industrial structures of these economies have generated a resemblance among themselves. As the results, some of the industries of each economy has turned themselves into a comparatively disadvantageous position. According to the economic rationarity in a free market, whenever an industry becomes comparatively disadvantageous, this industry should be adjusted so as to compose the industrial structure only of comparatively advantageous industries. Otherwise, some distortions can be generated in the industrial structure that may cause certain difficulties among the economies concerned. Actually, the positive adjustments have never been taken satisfactorily. So some frictions in international trade and the other difficulties have been generated among the developed economies. These might, in turn, accelerate the severity of the stagflation in the developed economy as a whole.

g-ii As a result of the sharp increase of the oil price, the OPEC countries could get a great ability to earn foreign exchange. So far, their balance of payment has been set the keynote in favour of themselves. Then the increase of oil price has accelerated to accumulate a large amount of foreign exchanges in the OPEC countries, while the same amount of foreign exchanges has been flowed out of the non oil producing countries, either the developed or the developing countries. This means a leakage of purchasing power out of these countries. Recycling of the oil money, that is controlled by the OPEC countries, is strongly requested by the oil importing countries.

Among the oil importing countries, different degrees of influences of the increase of oil price have been realized. Even in the developed countries, some of the countries have been severely affected by the increase of oil price, and the others have had a little influence. Consequently, differences in an economic power between the strong and the weak countries, that had been built up over the 1960's and upto 1973, have been expanded, depending on whether they could get a big recycle of oil money or not. The economic power of the strong countries (Japan, the U.S., F.R.G., etc.) has become more strong, while more weak of the weak countries (U.K., Italy, etc.). Bipolarization in the developed countries has been generated.

This is one of the severe results of the oil crisis. And this, in turn, has accelerated the stagflation in the developed economies. Actually, a distortion in industrial structures of the developed economies should be one of the most fundamental bases of the difference of economic power among the developed economies. This distortion has been generated due to some unavoidable circumstances; a country could not abolish industries, that became comparatively disadvantageous on the process of economic growth, due to some domestic needs for maintaining a certain

level of employment, etc.

However, in any case, this sort of distortion should be only a frictional matter for a development of stagflation in itself. The distortion can be disappeared through a positive adjustment of industries among the developed economies, even including the economies of the newly industrialized countries. Nevertheless, even if the distortion is cancelled through the positive international adjustment of industries, the stagflation among the developed economies may not be disappeared, because it is not the real cause of the stagflation.

C. Measures to Curb Stagflation

a. Considering these situations surrounding the current stagflation, the most fundamental measures to curb the stagflation should be considered in the following two aspects:

a-i To generate the satisfactory and stable effective demand for products that are corresponding to the production capacity of the developed economy as a whole. Otherwise, the developed economy may not escape from either the decrease of rate of profit or the rate of capacity utilization. And the investment inducement may not be satisfactorily generated for a warranted growth of the developed economy as a whole.

a-ii To develop an alternative resources to the oil and the other industrial raw materials that the prices have been sharply increased after the oil crises. Otherwise, the developed economies can not expect to check the inflation mainly due to the monopolistic increase of the oil price.

III Income Gap between the North and South

A. Current Situation of the Income Gap

a. Main target of the North-South problem is to close the income gap between the developed economy and the developing economy.

As shown by Table 11, at 1960, an income level, measured by a per-capita GNP, of the developed economy as an average was US$2,005 in terms of 1970 prices, while US$164 of the developing economy (excluding the OPEC economies). The income gap ratio, defined as a ratio of the former to the latter, was 12.2 at 1960.

Over the 1960's, the income level has been increased either in the developed economy or in the developing economy. At 1970, the income level of the developed economy became US$2,898, while US$195 of the developing economy. The income gap ratio was 14.9. This means that the global income distribution had a tendency to become unfavourable to the developing economy over the decade.

Since 1970, the income gap has never shown a favourable tendency to the developing economy, even though a little favourable change was faintly appeared only for two years after the oil crisis, when the developed economy was in the big depression and the growth rate of real GNP was nearly zero.

Table 11: Gap between the Developed Economy (DE) and the Developing Economy (LDE)

	GNP ('70 prices) [Bil. US$]		Population [Mil. persons]		Income Level [US$/Person]	
	DE	*LDE*	*DE*	*LDE*	*DE*	*LDE*
1960	1,275	220	636	1,342	2,005	164
1970	2,040	337	704	1,731	2,898	195
1971	2,122	354	721	1,775	2,943	199
1972	2,224	374	738	1,821	3,014	205
1973	2,366	404	744	1,868	3,180	216
1974	2,366	428	751	1,916	3 150	223
1975	2,366	445	757	1,945	3,125	229
1976	2,489	468	762	1,975	3,266	237
1977	2,591	489	767	2,029	3,378	241
1978	2,692	511	772	2,083	3,487	245
1979	2,780	534	777	2,139	3,578	250
	(Percentage Distribution)		(Percentage Distribution)		(Gap Ratio)	
1960	85.3	14.7	32.2	67.8	12.2	
1970	85.8	14.2	28.9	71.1	14.9	
1971	85.7	14.3	28.9	71.1	14.7	
1972	85.6	14.4	28.8	71.2	14.7	
1973	85.4	14.6	28.5	71.5	14.7	
1974	84.7	15.3	28.2	71.8	14.1	
1975	84.2	15.8	28.0	72.0	13.7	
1976	84.2	15.8	27.8	72.2	13.8	
1977	84.1	15.9	27.4	72.6	14.0	
1978	84.0	16.0	27.0	73.0	14.2	
1979	83.9	16.1	26.6	73.4	14.4	

Source: UN, Statistical Yearbook.
Note: (Gap Ratio) = (Income Level of DE)/(Income Level of LDE).

b. Over the 1950's of the East-West tension, there was an aid competition, either economic or military, between the U.S. and the U.S.S.R. In this period, a large amount of economic aid of the developed countries had flooded into the developing countries. But, unfortunately, the most part of the amount was wasted in vain. At least, the economic aid could not contribute to promote an industrialization of the developing countries.

After the period, in the 1960's, a positive performance of economic aid of the developed economies to the developing economies had been disappeared. The developed economies had never taken a serious consideration of a development of the developing economies, and concentrated their efforts to raise their own economic activity levels. Not only of the economic aid to the developing countries but also of the prices of primary commodities exported by the developing countries, the developed economies had controlled them for promoting their own economic growths. Aggravation in the income gap through the 1960's was mainly caused by this sort of lack of positive contribution of the developed countries to the developing countries.

c. The aggravation in the income gap over the period and the lack of the positive contribution for improving the gap have accumulated a dissatisfaction of the developing countries to the developed countries. And this accumulated dissatisfaction gave the OPEC countries and excuse for sharply increasing the oil prices. Moreover, this has generated a very strong demand of the developing countries to establish the new international economic order (NIEO).

Considering the situations, it should become more and more important problem in the world economy to improve the income gap between the developed countries and the developing countries.

B. Basic Startegies for Improving the Income Gap

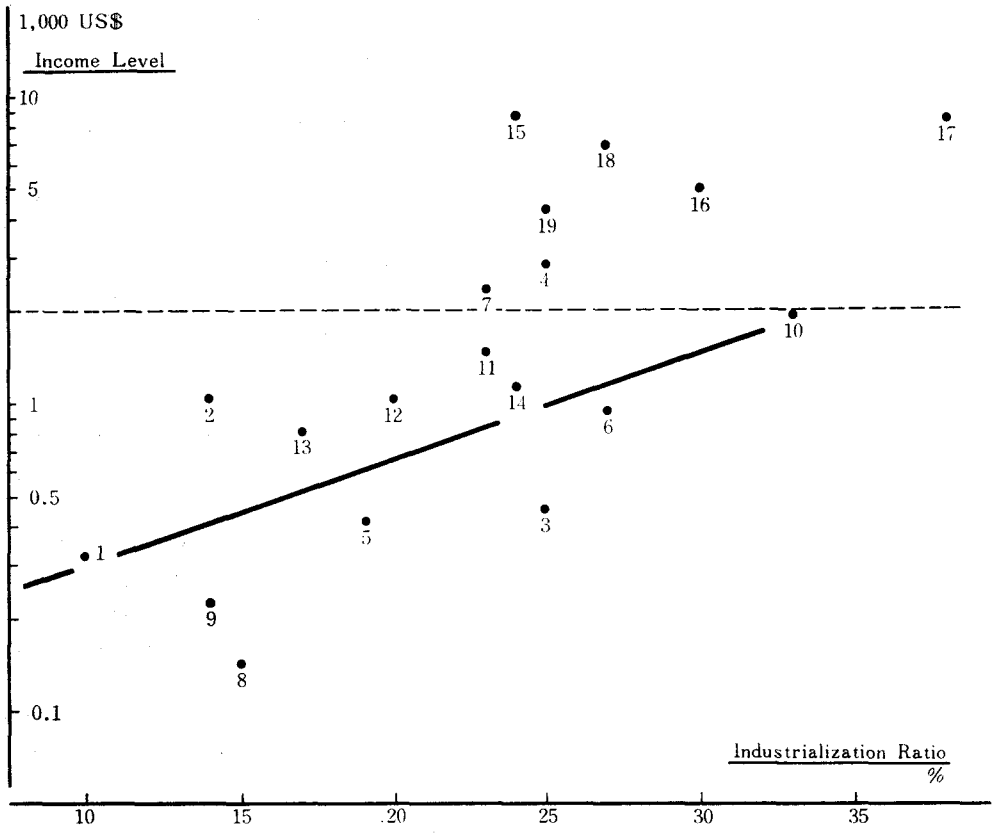
a. We have an empirical theorem that an increase of income level is closely related to a degree of industrialization. The degree of industrialization is usually measured in terms of a ratio of GNP originated by manufacturing industries to total GNP (an industrialization ratio). Chart 6 shows the relation of the industrialization ratio to the income level, using a cross-section data at 1976 of the 14 developing countries and the 6 developed countries. The dotted line, drawn in parallel with the horizontal axis, indicates the world average of income level at the year. Most of the developing countries are located below the dotted line; two exceptional cases are of Hong Kong and Singapore. Among these developing countries, the higher industrialization ratio corresponds to the higher income level, even though a certain difference in national conditions may produce some divergences from the standard, shown by the bold line.

Ususally, the industrialization has been considered as a process to raise the industrialization ratio of an economy. However, more widely, this should be considered as a process to accumulate capital in the economy. Through the process, an economy, mainly depending on an agricultural production, can develop to an economy that is composed of the more wide range of industries. Correspondingly, a supporting energy of the economy is transfered from the lower natural productivity to the higher capital productivity. At the same time, a productivity in the agricultural production can be increased by the higher capital productivity. This is easily understood by the fact that the productivity in the agricultural production in the U.S. is much higher than that in the Asian agricultural countries.

These conditions show generally that the industrialization may increase the income level. However, this is not always true for every countries. Some of the post industrial countries may increase their income levels as the industrialization ratio decreases due to the relative expansion of service industries. But, as of the developing countries, the theorem can be true without exception.

b. The developing economies have three bottlenecks for their own developments; capital, technology and market. By their own abilities to accumulate capital, to develop technology and to expand market, their economic growths can not expect to improve the income gap. Naturally, for the purpose, they need the economic aid from the developed economies in these aspects.

Chart 6.



1 : Indonesia	6 : Korea	11 : Brazil	16 : Japan
2 : Malaysia	7 : Hong Kong	12 : Chile	17 : Germany, F.R.
3 : Philippines	8 : India	13 : Ecuador	18 : France
4 : Singapore	9 : Pakistan	14 : Mexico	19 : UK
5 : Thailand	10 : Argentina	15 : USA	20 : Canada

So far, many economists have discussed about an inefficiency of the aid performances. A large part of the economic aid has been leaked out in vain. And the expected performances have never been realized. Surely, there are many cases that were scandalous. Therefore, we have to examine some measures to raise an efficiency of the aid performances. Generally, an accumulation of a social capital in the developing economies should be assisted by the aid of official base. And, for accumulating production capital, transfering technology and expanding market, the private direct investment and the related assistances are desirable.

c. Even though the industrialization is progressed by the assistance of the developed economies, the economic growth of the developing countries may not be realized satisfactorily, unless the expansion of market can be done so as to fully absorb the products of the developing economies. A domestic demand of the developing economies for their

products is very small due to the very low level of income. So, after the production capacity exceeds a certain level that an excess demand over the domestic demand is appeared, an export expansion becomes inevitable for absorbing the excess demand and growing the economies satisfactorily.

So far, many economists considered that the import-substituting industrialization was a main strategy of development of the developing countries. Certainly, they had this sort of time in the past. But, now, many of them have been over the time. They are, at present, doing their best for expanding their export markt. And some of them, the newly industrialized countries, are getting their satisfactory competitiveness in the world market, and catching-up the developed countries; even of the limited kinds of manufactured products. However, the most of the developing countries have been trying to expand their market with their rather weak competitiveness in the world market.

For assisting the export expansion of these developing countries, the special preference and the other measures have been adopted. Nevertheless, the expansion of an export share of the developing countries has never been remarkably progressed. Unsatisfactory adjustment of industries (or defencive adjustment of industries) in the developed countries has caused to check the expansion. This might be caused by the protectionsim of the developed countries. And we have to recognize the fact that the protectionism has been checking the satisfactory industrialization of the developing countries.

As a matter of fact, the protectionism has been caused by some of the domestic conditions of the developed countries, and be also inevitable at the situations that the developed countries have performed in the past decade. Then a sudden enforcement of the positive adjustment of industriaes may cause a large number of unemployment, and generate a depression in the developed countries. So the gradual enforcement was desirable for them.

d. As shown by Table 12, the export share of the developing countries to the world was 11.9% at 1970, and increased upto 12.1% at 1978. As of the manufactured products, the share was 6.3% at 1970, and also increased upto 8.2% at 1978. In relation to the corresponding shares of the developed countries, these shares are very small. And the increases of the shares are not so enormous that the industrialization of the developing countries can be remarkably promoted. As shown by Table 11, the income gap ratio has never been improved for the period from 1970 to 1978. So we consider that this degree of the export share increases can not remarkably improve the income gap ratio under the current situations. The improvement of the income gap through industrialization in the developing countries needs more rapid promotion of the industrialization than it was so far and more satisfactory transfer of market than ever before. The share of manufactured product exports from the developing countries to the developed countries was increased from 4.4% at 1970 to 5.3% at 1978 in the world market of the manufactured products. Most of the change in the share might be realized by the export expansion of the newly industrialized countries. This means that the

Table 12: Strutures of World Trade Network
(World Total = 100)

		World	DE	LDE	OPEC	CPE
(All Commodities)						
World	1970	100.0	70.6	16.2	3.1	10.1
	1978	100.0	66.7	16.3	7.5	9.5
DE	1970	71.8	55.2	11.4	2.5	2.7
	1978	67.4	47.7	10.2	6.1	3.3
LDE	1970	11.9	8.5	2.2	0.3	0.9
	1978	12.1	8.1	2.4	0.8	0.8
OPEC	1970	5.7	4.4	1.2	—	0.1
	1978	11.1	8.3	2.4	0.1	0.2
CPE	1970	10.5	2.6	1.3	0.3	6.4
	1978	9.5	2.5	1.3	0.4	5.2
(Manufacturing Products)						
World	1970	100.0	69.5	16.5	3.7	10.3
	1978	100.0	64.7	15.7	9.7	9.9
DE	1970	83.6	63.3	13.9	3.2	3.3
	1978	83.1	57.7	12.8	8.5	4.1
LDE	1970	6.3	4.4	1.4	0.2	0.2
	1978	8.2	5.3	1.9	0.8	0.2
OPEC	1970	0.2	0.2	—	—	—
	1978	0.2	0.1	0.1	—	—
CPE	1970	9.9	1.6	1.2	0.3	6.8
	1978	8.5	1.6	0.9	0.4	5.6

Sources: UN, Yearbook of International Trade Statistics.
UN, Monthly Bulletin of Statistics.
Note: DE = Developed Economies
LDE = Develop Economies
CPE = Centrally Panning Economies

export expansion of the other developing countries is needed for improving the income gap as a whole of the developing countries. For this purpose, it is desirable that the global adjustment of industries between the developed countries and the developing countries is more positively promoted than ever before.

IV Global Adjustment of Industries

a. In Section II, we explained that the developed economies have faced to the very severe problem to escape from the stagflation in themselves. And, in Section III, we considered that both the developed and the developing economies have to do their best for improving the income gap between them.

b. For the developed economies, that should escape from the stagflation,

(1) they have to take necessary actions for checking the continuously increasing prices of industrial raw materials and energies in relation to the world inflation, and

(2) they have to develop the satisfactory and stable market to fully absorb their own products.

The first point is mainly concerned with the technology development that contributes to save consumption of raw materials and energies; utilization of atomic power, subterranean heat, and the other sources of energies, and the other sources of industrial raw materials than petroleum. This sort of technological development may contribute to collapse the *raison d'être* of the OPEC that is based on a large dependence of the developed economies' oil consumption on the OPEC's oil supply.

The second point is rather economic problem. The new effective demand may be developed within the developed economies by themselves. If it is possible, they can partly escape from the current stagflation. A part from the measures to create the new effective demand in the developed economy as a whole and their effectiveness, if the current stagflation can be dissolved by any internal measures within the developed economy and the economy devotes itself to do its best for the purpose, the income gap between the developed and the developing economies may be left in unsolved. We have to consider a synchronized approach to these two aspects of the current problem.

c. A fundamental guideline of the synchronized approach is considered as:

(1) To increase the economic development aid to the developing economies from the developed economies so as to promote the industrialization in the developing economies,

(2) To raise the income level in the developing economies in relation to the income level in the developed economies so as to improve the income gap between them, and

(3) To create more effective demand for the products of the developed economies in the world market that includes both the developed and the developing markets.

Here, we consider, it may take a lot of time to complete Phases 2 and 3, mentioned above. In the meantime, the increased economic aid may contribute to increase an export of capital goods, produced in the developed economies, to the developing economies, when the most part of the aid is effectively directed to a funds for importing a development materials of the developing economies from the developed economies. Thus the effective demand for the products of the developed economies may be increased so as to improve the situations in the developed economy as a whole.

However, for completing these processes, an international adjustment of industries is inevitably needed. The industrialization in the developing economies can be promoted due to the shortage of effective demand for their products, unless the transition of market from the developed economies to the developing economies is promoted. When the industrialization is progressed and their supply of products exceeds their domestic demand, if the developed economies is defensively against an import of the products from the developing economies, the industrialization may be checked in vain. And the expected guideline may be interrupted. Thus the industrialization in the developing economies and the international adjustment of industries in the developed economies should be synchronizedly promoted. We call this a global adjustment of industries.

d. The global adjustment of industries is a sort of reorganization of the international system of division of labour that is carried on in the framework of the world

economy as a whole. Consequently, for effectively promoting the global adjustment of industries, the leading principle should be the principle of comparative advantage.

V The Long-Term Perspective

a. Here we consider the strategy of global adjustment of industries that may give a simultaneous solution to both (1) the stagflation among the developed economies and (2) the income gap between the developed and the developing economies. However, one may refuse this consideration. He may say that this sort of strategy may have the limit, sooner or later. The market, that is developed and expanded by the global adjustment of industries, may become relatively small in the near future as the production capacity of the world economy as a whole is accumulated. Considering this sort of reputation, we may have the other strategies to generate a new source of effective demand than the global adjustment of industries.

b. However, what we consider in this paper is not only to generate the newly developed effective demand for the products of the developed economies, but also to improve the income gap between the developed and the developing economies.

As a matter of fact, we have to suffer again from the gap between production capacity and effective demand in the near future, even though we may escape from the current gap problem through the newly developed market in the developing economies, that is created by the global adjustment of industries. Expecting this sort of consequences, it is desirable now to make an effort for developing the other sources of the effective demand. But, by concentrating our efforts only on it, we can not neglect to improve the income gap that is one of the very important problem of the world economy. (*30 September 1980*)

CURRENT COST ACCOUNTING AND THE CONCEPT OF SPECIFIC PURCHASING POWER CAPITAL

Isao NAKANO

I Introduction

In recent years, the current cost accounting has become predominant in accounting theory and practice. The U.S.A. and England have been the first to adopt it in their standards for inflation accounting.[1)]

If we rather arbitrarily select some of the characteristics which are shared by many forms of current cost accounting so far internationally proposed, the following points can be cited.

(1) The assets on the balance sheet are to be valued at their replacement costs on the closing date.

(2) Current revenue should be charged with the costs and expenses which are valued at their replacement costs at the respective dates of sale or at the average replacement costs during the current year. This aims to calculate the so-called "current operating profit" in the income statement.

(3) Especially in both the German proposal and the English standard for current cost accounting,[2)] the historical acquisition costs, and not current costs, are stipulated to be the valuation basis for that part of current expenses which are deemed as financed by debts rather than by (shareholders') equity capital.

The purpose of this paper is to argue that a specific current cost accounting model with the above four elements in it can be better understood as an accounting system based on the "specific purchasing power capital" concept rather than that predicated on the maintenance of physical capital (or productive capability) of the firm.

II The Concepts of Physical Capital and Specific Purchasing Power Capital

The annual income of a firm may be said to mean an increment during a fiscal year of the "capital" (in some sense) which has been invested in the firm except for the increment from the capital transactions. In the current traditional accounting

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1) Financial Accounting Standards Board, Financial Reporting and Changing Prices, Statement of Financial Accounting Standards No. 33, 1979. The Institute of Chartered Accountants in England and Wales, Current Cost Accounting, Statement of Standard Accounting Practice No. 16, Accountancy, April 1980.

2) As for the English proposal, see the literature cited in footnote (1) above. The German accounting model is contained in: Stellungsnahme HFA 2/75: Zur Berücksichtigung der Substanzerhaltung bei der Ermittlung des Jahresergebnisses, Die Wirtschaftsprüfung, Heft 22, 1975.

system, the periodic expenses are being valued at historical acquisition costs. This implies that the sum of nominal units of money invested in the past are being regarded as capital (i.e., "the nominal capital concept"), with its increment during the year treated as annual income (viz., the income concept as an increase in nominal capital). The well-known model of monetary capital circulation

$$G—W—G' \begin{cases} G \\ g \end{cases}$$

can best represent these capital and income concepts. (In that formula, G and G′ mean the amounts of invested and recovered nominal monetary capital respectively, whereas g denotes income as an increment in nominal capital (that is, G′ less G).

In contrast, the physical capital concept will dictate "capital", the measuring rod for business income, as the quantities of various kinds of goods in the firm rather than the amount of money invested in the past. In other words, annual profit is allowed to emerge only after current realized revenue has recovered enough fund for replacing those goods and services which have been consumed in relation to the earning of the revenue and which will serve to maintain the same level of the firm's productive capability as before. Annual income is considered as the difference between the revenue and that fund under this theory. Accordingly, the required valuation basis for the expense items is ideally their actual or prospective replacement prices on the date the replacement was (or will be) made. That is, it is required here to value the expenses at "the replacement costs on their replacement dates". The capital circulation formula

$$W—G—W' \begin{cases} g \\ W \end{cases}$$

adequately represents the business income under the physical capital maintenance concept. (In this formula, W—G is the realized revenue, and in the stage G—W′, G—W denotes the recovery of the consumed productive capacity through current price valuation of the expenses, while g signifies the profit under this theory which is the excess of the revenue after the recovery).

Finally, we will try to explain the specific purchasing power capital concept and its maintenance which is the focal point in this article. In a technical sense, this concept of maintenance is to be achieved by the matching with annual revenue of periodic expenses which have been valued by their "replacement prices on the dates of sales", not on the days of actual or prospective replacements. Obviously, this charging results in recovery of the specific purchasing powers (with respect to the firm's consumed set of productive factors) as of the sales dates and not necessarily as of the replacement dates, because sales and replacements may be made on different days and hence at different prices.

This capital concept differs from the general purchasing power capital concept (associated with the price-level accounting) in that purchasing powers "specific" to the firm's production factors are stressed rather than a broad cross-section of the economy's price spectrum. Secondly, the difference between the specific purchasing power capital

and the physical capital concepts may be considered to lie in difiering views as to the degree of freedom on the point-in-time when management will replace the consumed productive factors. If the actual or planned replacement dates are immovable and inevitable in the sense that replacing on other dates would have damaged the business activities seriously, then the fund recovered from the revenue are doomed to reinvestments on the specific replacement dates, so that the purchase price on replacement dates will be the logically inevitable valuation basis for the expenses. However, if no such rigid restrictions are assumed to exist on the firm's replacement behavior and management can consider repurchasing the consumed goods and services on any dates around the days of sales (i.e., the time when the fund flows in) within some limited time domain, we find some room for price speculations. In other words, the firm can attempt to benefit from repurchasing on deliberately chosen dates at hopefully minimum prices. In this model, the difference between sales day prices and replacement day prices obtains the character of a price speculation gain or loss which will reflect the extent of success or failure of the speculation activity by repurchasing on other than sales dates. Since this is an element of profit or loss, supporters of this model will say that it is not to be excluded from disclosure by the valuation on replacent-date-purchase prices.

We have no evidences for deciding which model and which capital concept will be more close to the actual business activities. Our point is to assert in the following that the current cost accounting model introduced above will be better explained by the specific purchasing power capital concept than by the physical capital theory (or by any other accounting theory for that matter).

III The Year-End Asset Valuations and the Specific Purchasing Power Capital

This section aims to demonstrate that the valuation of non-monetary assets at their year-end replacement prices on the balance sheet—the usual procedure required by our current cost model—can be best justified by the specific purchasing power capital concept.

First, under the "physical capital" concept, capital is defined as no other than physical objects (or productive capability) of the firm, which are embodied in the collection of the assets on the debtor side of the balance sheet. Physical or technical attributes are the concern of this theory. Accordingly, the assets per se must logically be viewed from the physical side. An implication of this is that no unambiguous valuation basis derives from such requirement for representation of physical or technical attributes, because physical quantities can only be expressed by a physical unit and not directly reflected by any monetary amount.

In other words, the point is that since the physical or technical attributes can be most adequately represented by physical quantities, the assumed requirement for physical capital information is inconsistent with the proposed "monetary value" (i.e., replacement cost) balance sheet instead of "physical-measure"-based balance sheet.

Then, we will next proceed with examining the propriety of "specfic purchasing

power" concept. In this theory, assets are viewed as embodiments of the specific purchasing power capital sacrificed to acquire the assets. If so, the attribute to be measured as the logical consequence of this capital concept must be the amount of that sacrificed specific purchasing power as expressed under the economic conditions (including the price-level) at the year-end. Obviously, this amount is to be measured by valuing the assets at their year-end replacement prices, because if this amount of money, and not the (non-monetary) assets per se, were on hand in the firm on the balance-sheet date this money would be just enough to purchase the assets involved at the year-end (that is, it has presently the same amount of the power to repurchase the goods as the originally invested monetary capital possessed at the time the assets were bought). Accordingly, we see that this capital concept is consistent with the replacement cost valuation of assets on the balance sheet.

In the literature, however, this valuation basis is usally supported by other theories: (1) the view that replacement costs represent the discounted present values of the cash flows which will be generated by the asset in the future,[3] and (2) the view that replacement costs reflect "value to the business" or "deprival value" of the asset.[4] The following discussion is an attempt to refute them.

On the former view, modern economic analysis proves that the same asset does provide different sizes of present values to different firms, and even to different pieces of the same asset in a firm. And when an equilibrium is being established between supply and demand, leading to a certain trade price P, the amount of present value estimated by a firm which pay the price to buy the good will be equal or greater than P. The good with the present value of just P will be the least profitable one bought by the least profitable (i.e., marginal) firm of all traders which participate in the purchase. All other goods bought possesses present values more or less exceeding the asset's current replacement price.[5] This demonstrates that the year-end replacement price is usually too small for a measure of the present value of the asset.

Certainly, a so-called "long-run equilibrium" is also conceivable in which active perfect competition and the firms' long-range adjustment by way of addition to or sale of their plant assets have resulted in the asset's excess value (between the present value and the current replacement price) being totally cut off. In this state, the average present

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3) Committee on Accounting Concepts and Standards, Accounting and Reporting Standards for Corporate Financial Statements 1957 Revision, in: Accounting and Reporting Standards for Corporate Financial Statements and Preceding Statements and Supplements, American Accounting Association. J. S. Cook and O. J. Holzman, Current Cost and Present Value in Income Theory, Accounting Review, Oct. 1976. P. T. Wanless, Reflection of Asset Valuation and Value to the Firm, Abacus, December 1974.

4) David Solomons, Economic and Accounting Concepts of Cost and Value, in: M. Backer (ed.), Modern Accounting Theory, Prentice-Hall, Inc., 1966. Report of the Inflation Accounting Committee, Inflation Accounting, (Sandilands Report), Her Majesty's Stationary Office, 1975. Inflation Accounting Steering Group, Current Cost Accounting, 30 Nov. 1976, ED 18.

5) A. D. Barton, Expectations and Achievements in Income Theory, Accounting Review, Oct. 1974, p. 670.

value of a unit of the asset throughout all firms becomes equal to the single current replacement price. In this case alone, replacement price can be considered an accurate measure of the asset's present value.[6]

From the above analysis, we see that under a less than perfect competition or monopoly, or if a perfect competition does hold but the long-run equilibrium does not exist at the balance sheet date it is possible that

the average present value (per unit) of an asset $\neq$ its current replacement price.

On the "deprival value theory. The "value to the business" or the "deprival value concept is said to emanate from J. C. Bonbright. It is stated that "the value of a property to its owner is identical in amount with the adverse value of the entire loss, direct and indirect, that the owner might expect to suffer if he were to be deprived of the property."[7] In applying this idea to accounting valuation, it is insisted that in some cases the "deprival value" as the "value if lost" is to be approximated by the asset's replacement price. Its logic is that if the discounted present value of the net cash inflows of the asset or its net realizable value is larger than its current replacement price the firm will in case of the loss of the good immediately replace the same kind of the good to obtain a gain between its present value (or its net realizable value) and its current replacement price. Accordingly, under that condition the good will be replaced. It follows that the amount of loss incurred from the assumed deprival is only the expenditure for the repurchase (viz., the current replacement price). In this sense, the replacement cost valuation of an asset is insisted to reflect its "deprival value" as an aspect of the value complex.

Admittedly, "the loss if deprived" can be said to measure a sort of benefit from holding, not losing, the asset, and hence deserves to be called a kind of value. A serious problem, however, is that even under the above-mentioned conditions the replacement price cannot become an accurate measure of the "deprival value" of an good for following two reasons.

(a) It is unreal to assume that if a good has been deprived the firm will always repurchase the same kind of asset.[8] For example, a shipbuilding company may change its deprived assets to a plant of automobile manufacture which promises to bring a higher profitability, that is, to incur a smaller total costs for the recovery of the original level of present value. In this case, the deprival value must be the replacement cost of a car-manufacture plant assuring the original present value, not of shipbuilding assets. Consequently, the replacement cost valuation of assets which measures the former plant price does not produce an accurate measurement of deprival value.

(b) In case of asset deprival, replacement can not be made timelessly. A time lag inevitably occurs between the two events, which may possibly generate a large additional loss by causing the business activity to stop (especially in case of plant assets).

These two points demonstrate a great deal of complexities which surrounds a meas-

6) J. S. Cook and O. J. Holzman, op. cit.

7) J. C. Bonbright, The Valuation of Property, McGraw-Hill, 1937, p. 71.

8) R. J. Chambers, Value to the Owner, Abacus, June 1971.

urement of total loss from (assumed) deprival and the impossibility of estimating it accurately by the year-end replacement cost of the asset itself.

We may thus conclude that all explanations other than that based on the "specific purchasing power capital" concept does not succeed in justifing replacement cost valuation. This in turn may be said to confirm the validity of that concept.

IV Periodic Expense Valuation on Sales-Dates or Year-Average Replacement Costs and the Specific Purchasing Power Capital

For the purpose of maintaining the "physical capital" (or productive capability) of the firm, each periodic expense item must be valued by the replacement price on repurchase dates, that is, by the price at which the good or service consumed was (or will be) actually replaced. In other words, sales (or consumption) and repurchase are usually made on different dates, so that especially when replacement follows selling etc. and current buying prices are rising, the monetary fund recovered from "selling-dates" replacement cost valuation of the expenses is insufficient for the repurchase of the goods and hence for the maintenance of physical capital. This purpose cannot always be achieved except by the expense valuation on replacement-date prices. This in turn implies that "physical capital" theory cannot well explain the income determination which is based on selling-dates expense valuation.

By contrast, under the "specific purchasing power capital" concept, the amount to be charged to annual expenses should be what would have to be paid to replace the consumed goods as of the selling dates. Therefore, the expense baluation vased on "selling-day-replacement prices" is necessary and sufficient here. Hence, the expense measurement method in our current cost accounting model has been well explained by the "specific purchasing power capital" concept.

The foundations for this capital concept has already been developed in section 2. Its gist lies in the assumed freedom with respect to the time-point at which management will replace the consumed (or sold) asset items. A possible price differential between selling-day replacement price and repurchase day price is a reflection of the extent of success of failure in purchasing at a minimum price. This speculation gain can be revealed by the selling day valuation model, but not by the physical capital model with its replacement day expense measurement.

Apart from the theories based upon capital maintenance concepts, accounting literature contains several different approaches to the selling-day replacement cost valuation of expenses. One of them has been developed by Edwards and Bell.[9] According to them, replacement cost changes between the acquisition time of an asset and their consumption/sale date represents a "holding gain" or "cost saving" from the firm's holding activity of the good, not a profit from production or selling efforts. Segrega-

9) E. O. Edwards and P. W. Bell, The Theory and Measurement of Business Income, University of California Press, 1961, pp. 73–74.

tion of this element from annual net income by selling-day replacement cost valuation of the expenses is claimed to serve to produce a net income as a pure representation of production-selling gain.

We do not believe this theory is correct. Actual production and selling activities inevitably demand a certain length of time, and hence the replacement price variation during this time interval firmly relates to those business activities, that is, the price change is so firmly associated with these activities that it cannot be separated from the price variation owing to the holding activity. In this sense, the "holding gain" partly includes that price change which has been inevitable in carrying out the production/selling operations per se. In other words, the net income number net of the insisted holding gain does not contain the inevitable price differential as an expense—or price risk—for those operations. Our conclusion therefore is that it is not a correct measure for production/selling outcome.

A second argument in support of selling-day price valuation specifically concerns the inventory asset. A minimum level of inventory assets required for business operations is said to be an "involuntary investment", and any replacement cost change on this stock cannot be avoided as far as current business activity is concerned, because that inventory has to be continually replaced and maintained. Accordingly, it is claimed that the efficiency of current business operation should be based upon a net income number net of that price change which cannot be avoided from a short-run point-of-view.[10)]

Example. Assume that the acquisition cost of the stock of a certain merchandise is 1,000,000 yen and its selling day replacement cost 1,300,000 yen. The acquisition in the past of the goods at a price by 300,000 yen chieper than the current price is an accidental result of the routine inventory acquisition activity and by no means reflect the extent of management's superior ability in inventory policy.

Consequently, the difference 300,000 yen should be eliminated from annual net income. Conversely, if the selling-day replacement cost should drop to be 800,000 yen, any inefficient acquisition policy can never be inferred from the price differential 200,000 yen (= 1,000,000−800,000). In any case, then, such irrelevant price change from the acquisition date to the selling day had better be excluded from annual net income by valuing the expenses at their selling day replacement costs.

However, this line of thought is also susceptible to the following objection. The maintenance of a minimum inventory level is obviously not any externally forced destiny for the firm but a deliberately chosen management policy. This self-evident fact implies that the business income number could better perform its efficiency measurement function if the management's decision on the inventory policy (or its prior judgement that it would be economically more advantageous to commit to the maintenance than not) could be evaluated a posteriori in terms of the size of the realized annual income.

10) E. Schmalenbach, Dynamische Bilanz, 13. Auflage, Köln und Opladen, 1962.

Then, what will be the benefits and costs associated with the inventory maintenance policy? Its advantage may be said to consist in assuring a relatively smooth production/selling activities, which will come to be reflected in the level of current annual realized revenue. On the other hand, the disadvantages of that policy include the incurrence of storage costs and the interest charge as well as the price change risk relating to the required continuous replenishment of the goods. The former burdens will result in an increase in the amount of those expenses, whereas the later finds its expression in the difference between the actual acquisition cost and the selling day replacement cost of current annual cost of sales. If this price differential shows a plus (in a period of rising inventory price), it indicates that the price risk has incidentally produced a result favorable to the firm (i.e., a cost saving). But in case the difference has proven to be a minus, we see that a price decline has forced the firm to pay a higher acquisition price than the replacement price as of the sales date, viz., that the price risk has produced an unfavorable result to the firm.

Consequently, a correct measurement of business income as an indicator of management efficiency calls for reflecting the above-mentioned price differential in current net income. This in turn shows that annual expenses must be valued by historical acquisition costs, not by selling day replacement costs.

A third argument advanced in support of selling day replacement cost valuation of the expenses stresses the "random, uncontrollable" nature of the above price differential because it comes from external price changes. Furthermore, this characteristic is contrasted with the "normal" income element of the current operating profit—the difference between the realized revenue and selling-day-price-valued expenses. The point here is that if the random holding gains (or losses) are eliminated from annual income, the residual "normal" income will better facilitate a prediction of future income numbers of the firm.[11]

Admittedly, this is a very interesting hypothesis, which has to be tested by empirical researches. However, the results of such studies has not so far supported this hypothesis conclusively.[12]

As a conclusion for this section, we can say that the specific purchasing power capital concept alone can adequately explain the expense valuation by selling-day replacement costs and that the other arguments are not free from various unsolved problems.

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11) J. C. Burton, Financial Reporting in an Age of Inflation. Journal of Accountancy, February 1975. L. Revsine and J. Wygandt, Accounting for Inflation: the controversy, Journal of Accountancy, October 1974.

12) See the articles by the following authors. Frank, Journal of Accounting Research, Spring 1966; Greenball, Journal of Accounting Research, Supplement No. 6 (1968); Estes, Journal of Accounting Research, Autumn 1968; Brenner, Journal of Accounting Research, Autumn 1970; McIntyre, Accounting Review, July 1973; Kratchman, Malcom and Twark, Accounting Review, October 1974.

V The Maintenance of Nominal Capital with Respect to Liabilities and the Specific Purchasing Power Capital

The Opinion Statement of the Institute of German Public Accountants[13] as well as a series of Statements by the Institute of England Chartered Accountants (the Hyde Statement,[14] Exposure Draft 24[15] and the Statement of Standard Accounting Practice No. 16[16]) contain a unique measurement rule relative to the debt capital of the firm. According to it, the application of current replacement cost valuation of the periodic expenses and the resulting maintenance of the firm's productive capability is to be restricted to that part of the assets which is considered as the shareholders' contributions. With respect to the assets assigned to the liability to the firm, the rule aims to calculate annual income on the basis of the maintenance of the nominal capital by returning to the historical cost valuation of the relevant part of expenses. Hence, the problem emerges how any logical explanation will be possible of such coexistence of two sorts of capital maintenance rules in a single accounting measurement system. The purpose of this section is to show that a successful coherent understanding of this measurement structure will be possible by the "specific purchasing power capital" concept, but not by the "physical capital" concept.

Example. A complete exposition of the varieties of techniques adopted by each proposal to assign the expenses to the two capital sources must be resigned here for a concise development of theoretical issues. Therefore, only the numerical example in the Hyde Statement will be cited here.

(1) The case where the firm's total liabilities exceed its monetary assets.

(a) Total monetary assets	300 pound ($\times$1,000)
(b) Total liabilities (short-term and long-term)	756
(c) Owner's capital (including the difference between the historical and current costs of fixed and inventory assets)	684

(d) Gearing ratio (the ratio to total capital of liability capital assumed to be mixed in the periodic expenses)

$$= \frac{\text{net liabilities (net of monetary assets)}}{\text{net liabilities+owners' capital}}$$

$$= \text{(b)}-\text{(a)}/[\text{(b)}-\text{(a)}+\text{(c)}]$$

$$= (756-300)/(756-300+684)$$

$$= 456/1{,}140 = 40\%$$

13) The article in footnote (2) above.

14) Accounting Standards Committee (England). Inflation Accounting—An Interim Recommendation, Accountancy, December 1977.

15) Exposure Draft 24, Current Cost Accounting, Accountancy, May 1979.

16) The second article in footnote (1).

(e) Difference between current-cost adjusted and historical-cost-based depreciations (average replacement cost less historical cost)	70
(f) Difference from adjusting the cost of sales	80
(g) Adjustment of current-cost expenses for gearing = [(e)+(f)]×(d) = (70+80)×0.40 =	60

This adjustment for the expenses 60 represents that part of the total replacement cost adjustment 150 (= 70+80) which, though necessary for the maintenance of the productive capability of the firm, are not required for keeping the nominal capital of the liabilities intact for their final redemption. From this viewpoint, this adjustment 60 is to be added back to business profit after non-operating items in the income statement, which results in an increase in the annual net income.

Note that in item (d) of the above example the liabilities entering the gearing caluculation is to be "net liabilities" after deducting the monetary assets. The reason for this calculation probably is the assumption that liability is first of all assumed to be applied to acquire monetary assets and that only the residue of it, if any, is mixed with the owners' capital, the homogeneous mixture being applied to the inventory and (non-monetary) fixed assets. Of course, this is an arbitrary assumption, and leaves room for alternative hypotheses.

(2) The case where the firm's total monetary assets exceed its total liabilities.

In this situation, a "net residual of monetary assets" is to be computed as the total monetary assets less total liabilities. Then, some appropriate price index is applied to this to obtain a purchasing power loss (if the prices are rising) of the residual monetary assets. Accordingly, this amount is to be an expense in the income statement. Its purpose is to reflect in the current expenses the increase in net monetary assets which is necessary to maintain the firm's operating capability.

Now, let us investigate an underlying theory, if any, of this measurement. Note that the non-monetary assets of the firm are divided into two parts—a part financed by the shareholders' capital and the other part financed by liabilities. Such dichotomizing of the assets seems inconsistent with the "physical capital" concept, because if the assets are according to this concept viewed as physical entities (or technical, productive capability) we can only divide them under the "physical" or "technical" dimension but not from the "value" point-of-view. For example, it is possible to identify the assets to "production", "transportation service", "repair", "power supply" and so forth from a technical standpoint—that is, under the "physical capital" concept. But no matter how long we may stare at these physical entities, we cannot grasp any clue—or rather any logical foundation—for dividing these assets from a "value" or "fund" dimension. This kind of division is only possible if we are in advance considering the

assets as "monetary" or "value" entities rather than physical objects. In other words, the alleged dichotomizing of assets into the owners'-capital-financed and the liability-financed is logically allowed only when we define those assets as embodiments of the funds, that is, as "value or fund" in essence which is transitorily taking the exterior form of non-monetary assets. The crucial point is that only "monetary existence (monetary amounts)", not "physical objects" does logically allow any division according to capital (or fund) sources.

By contrast, our "specific purchasing power capital" concept defines "capital" and "assets" as monetary (i.e., as embodiments of invested money funds) and not as "physical", so that ours is not logically inconsistent with the idea of separation of assets according to the fund sources. If we admit this capital concept can survive in this two-dimensional accounting system, our tentative interpretation of the measurement might be that the replacement-cost-valued expenses deriving from the shareholders' capital is based on the maintenance of specific purchasing power capital whereas the liability-financed expenses valued by historical costs is dictated by the maintenance of nominal capital. But the question immediately arises of how we can coherently explain such two-dimensional income measurement system with two kinds of valuation bases and two kinds of underlying capital concepts.

Sieben and Schildbach is stressing the significance of the disclosure of the debtors' purchasing power gain in times of inflation[17] —item (g) 60 in the above example. This is the difference between the amount of maintained specific purchasing power capital from replacement-cost-based valuation of liability-financed expenses and the amount of its nominal capital to be maintained and returned at the redemption date. In a period of rising prices the former is larger than the latter, resulting in a positive difference. This is a purchasing power gain accruing to the firm because of its being a debtor. Sieben and Schildbach seem to be emphasizing the usefulness of revealing this actually accruing gain from the disclosure point-of-view.

But remember that the maintenance of the firm's productive capability cannot be assured unless that difference (60) is retained in the firm. Accordingly, we will have to make a stronger case than pointing out the usefulness of the disclosure for substantiating inclusion of the debtors' gain in annual business income.

In our opinion, debtors' gain consists in a "gift" of specific purchasing power from the creditor to the debtor, although it is a legally forced and involuntary gift. If we ignore for a moment the existing laws on debtor-creditor relations and regard creditors as being on the same footing with shareholders, we can find no particular differences between liability and owners' capital. Hence, if the amount equivalent to the original specific purchasing power capital is being maintained and returned with respect to the shareholders' capital, then the same should logically be done for the liability capital. In this case, no purchasing power gain will accrue to the debtor "firm"

17) G. Sieben and T. Schildbach, Substanzerhaltung und anteilige Fremdfinanzierung, Betriebswirtschaftliche Forschung und Praxis, 25 Jg., Nr. 9, October 1973, S. 592.

from holding liabilities during inflation. This gain does accrue because the existing law allows the firm to return on redemption only the nominal amount invested and to force the creditor to resign the receipt of, and give to the firm gratis, the difference between the real value and nominal amount he lent.

This "gift" theory of purchasing power gain has the following implication for the understanding of the two-dimensional accounting system. This accounting measurement really is not a combination of the maintenance of specific purchasing power capital and of nominal capital but at the first stage wholly directed toward the former maintenance goal—even with respect to the liability of the firm, making at the second stage a recording of the purchasing power "gift" from the creditors to the firm which indicates a partial liquidation of the firm's purchasing power capital into a profit.

Concisely, this income determination system is (a) based upon the maintaining of specific purchasing power capital of the firm, (b) with a modification concerning the creditors' equity so as to faithfully reflect the partial liquidation (and deprival) of their invested purchasing power into the net income attributable to the shareholders

VI Conclusion

We have selected three characteristics which are shared by a number of current cost accounting proposals in the world, and conceived of an accounting model containing them simultaneously. And we have attempted to demonstrate that that model can be more consistently explained by the "specific purchasing power capital" concept than by the "physical capital" concept or by any other theories so far advanced.

AN INPUT-OUTPUT TABLE FOR EVALUATION OF THE SHIPPING ACTIVITIES

Tetsuji SHIMOJO

I Forewords—three methods to evaluate

This paper will discuss and propose a slight modification of the input-output table for the sake of correct evaluation of contribution of the shipping industry to the national and international economy of a country. In ordinary input-output table for most countries, their ocean shipping industry is usually placed offshore from its native land, for its activities are evaluated only as exports and not as domestic transaction. It might be caused by a fact that all shipping activities to carry the import goods are counted into the import amounts of the other industries as the freights paid for the shipping services of national and foreign merchant marine. We are going to investigate for the appropriate method to evaluate the *raison d'être* and contribution of the ocean shipping industries on the national economy and the international balance of payments.

It was true that the ocean shipping industry had been the most important industry for most developed countries in their modernization process. Although the most apparent reasons for these countries to possess their own merchant fleet are not merely economic but also political, it can not be denied that their economic expansion was greatly depending upon the national shipping activities. Even if we would eliminate non-economic effects of the shipping industry such as military and psychological, a country can enjoy much more effects of owning their own merchant marine on the national income through freight earning, opportunity of employment of their nation, and impulses to the other industries.[1)]

Let us investigate these effects by using the terminology for input-output analysis;

Y_i: gross domestic production of i-th industry

W_{ij}: inter-industrial transaction from i-th to j-th industry

F_i: final demand (consumption, government, investment) for i-th products

E_i: exports of i-th products

M_i: imports of i-th products

V_j: value added in j-th industry.

These concepts have the following relations;

$$X_i = \sum_j W_{ij} + F_i + E_i - M_i$$

$$X_j = \sum_i W_{ij} + V_j \,.$$

The gross national products GNP is expressed by $F+E-M$, and the balance of pay-

1) Sempei Sawa, *The System of Shipping Theory*, Tokyo, 1949, pp. 206–234.

ments BOP by $E-M$.

And let us prepare the following abbreviated concepts to express the shipping activities for a country;

WAG: wage received by national seamen from foreign shipping industry
HEX: exports of ship services or receipts of charter hire
HIM: imports of ship services or charter hire paid abroad
PEX: exports of port services or receipts of port charges
PIM: imports of port services or port charges paid abroad
NEX: freights earned by national shipping for carriage of export goods
NIM: freights earned by national shipping for carriage of import goods
FIM: freights paid to foreign shipping for carriage of import goods
NCR: freights earned by national shipping in cross trades
NPS: passenger fares received by national shipping from residents
NFP: passenger fares received by national shipping from foreigners
FPS: passenger fares paid to foreign shipping from residents.
ENT: costs paid by other industries to operate their own ships

The ocean shipping sector consists of three subsectors, ship-owning, ship-operating, and ship-maneuvoring,[2] though the last one does not so far constitute an independent industry in most countries. Needless to say, the ship-owning sub-industry supplies ship services by chartering its own ships to another, and it earns charter hire and pays ship expenses to the other industries. The ship-operating sub-industry bears all expenses to operate its ships chartered from the ship-owning sub-industry. The expenses to operate ships consist of port charges, cargo handling and fuel expenses. It earns, in turn, freights for carriage of import and export goods as well as in cross trades. The ship-maneuvoring sub-industry, if any, may be thought as an independent sector that supplies ship-maneuvoring services of seamen, but it is ordinarily considered to belong to and to receive wages from the ship-owning sub-industry.

A country which has no sufficient domestic industry to employ its nation, and which has no sufficient external commerce to be carried by ships, can only have an "industry" to sell seaman labor power abroad. Then the industry can earn an amount of money in a form of wages. The amounts of wage are deemed as production, value added, and, at the same time, export of the industry. This connection is expressed as follows;

$$X_s = E_s = V_s = WAG$$
$$F_s = M_s = W_{sj} = 0 \qquad (j = 1, 2, 3, \ldots, n)$$
$$\therefore\ GNP_s = BOP_s = WAG$$

where the suffix s means the shipping industry, and GNP_s and BOP_s are deemed as a contribution of shipping industry to the whole amount of GNP and BOP respectively.

If the country mentioned above has another industry who owns ships and supplies

2) Tetsuji Shimojo, *Economic analysis of Shipping Freights*, Kobe Univ., 1979, pp. 9–13.

ship services to the domestic and foreign ship-operating industries, the ship-owning industry can earn charter hire from these ship-operating industries. Its production, therefore, is the amounts of charter hire, a part of which is passed on to the domestic ship-operating industries and the rest is exported. A part of its earning, on the other hand, is paid to the other industries as its expenses, and the rest is the value added. We can express the case;

$$X_s = E_s = HEX$$
$$\sum_i W_{is} + V_s = HEX, \qquad W_{ss} = 0$$
$$F_s = M_s = 0$$
$$\therefore \quad GNP_s = BOP_s = HEX.$$

It must be noted in this case that the shipping contribution to the other industries are represented by W_{is} $(i \neq s)$, and, at the same time, that imports of the other industries may increase according to their capacity to supply.

If the country owns ships and can operate them but has no sufficient external trade, a ship-operating industry of the country can operate its ships only on the routes between foreign ports. The freights earned from its activities in the cross trade are deemed as an export of the shipping services. The production of the industry is the amount of freights earned, most of which is treated as an export of the industry. Meanwhile, in this case, it must be noted that the industry has to pay a part of its earning to not only domestic industries but foreign sectors as various expenses for port, cargo and fuel. The relation may be expressed as follows;

$$X_s = E_s = NCR$$
$$\sum_{i \neq s} W_{is} + V_s = NCR, \qquad W_{ss} = 0$$
$$M_s = PIM, \qquad F_s = 0,$$
$$\therefore \quad GNP_s = BOP_s = NCR - PIM.$$

The *PIM* above may have to be treated as import of port services and not of shipping services, but it is apparently caused from existence of the national shipping. By the way, some amounts may be transacted between ship-owning and ship-operating sub-industries, but they are offset at a time of aggregation into the shipping industry.

As far as the country has no external commerce to be carried by ships, the shipping industry can apparently contribute the country's balance of payments as in the manners we have investigated. But, as has been seen in the third case above, a problem is left in a comparison between revenues and expenses of the industry. If the country owns no ship and operates only ships chartered from foreign countries, then the expenses may be increased by the charter hire to be paid abroad.

We can calculate and compare X_s, GNP_s, and BOP_s, for various assumed cases in this manner. Where an external commerce is assumed to exist in the country, where all national cargo are carried by ships chartered from foreign country, or where, on the contrary, all national cargo are carried by national-own shipping, all such cases can be evaluated by means of our notations. Especially, if the country has some volumes of

external commerce to be carried by ships, then the situation will change significantly. In the most general case we can express the activities of the shipping industry as follows,[3]

$$E_s = NEX+NIM+NCR+HEX+NFP$$
$$M_s = -HIM-EPS$$
$$\sum_{j \neq s} W_{sj} = ENT, \qquad W_{ss} = HIM$$
$$F_s = FPS+NPS$$
$$X_s = NEX+NIM+NCR+HEX+NPS+NFP+ENT$$
$$GNP_s = NEX+NCR+HEX+NPS+NFP+NIM-HIM$$
$$BOP_s = NEX+NCR+HEX+NFP+NIM-HIM-FPS.$$

Here we find some problems with regard to the effects of existence of the shipping industry. Firstly, as we have mentioned above, it was for the sake of convenience that we absorbed *PIM* into the imports of shipping services. The same reason requests us to add *PEX* to E_s. But *PEX* can not be an effect of existence of the national shipping. Let us, therefore, treat *PIM* as well as *PEX* as the imports and exports of port sector respectively. The effect of the national shipping on port and other industry sectors, in any way, can be evaluated in the course of analysis using the whole I-O table.

The second problem is a treatment of *FIM*. In an ordinary I-O table freights for carriage of import goods $FIM+NIM$ are contained in CIF value of import amounts, so *FIM* is deleted from M_s in order to avoid double account while *NIM* is added to E_s instead. Consequently, all the shipping activities, excluding passenger fares received from resident, can be treated only in the overseas sector, and their transaction with other domestic industries fail to be expressed explicitly.

This is due, needless to say, to the fact that imports of commodities are reckoned in CIF values. All other values in the I-O table are reckoned in producer prices. Imports also should be reckoned in producer prices, or FOB values. If imports are reckoned in FOB values, imported cargo will become national cargo at the moment they are shipped from foreign ports, and all the freights will be transacted domestically whether they were loaded on national or foreign ships. The part of freights to be paid for foreign ships may be treated again as imports of shipping services.

This assumption will change the figures as follows;

$$E_s = NEX+NCR+HEX+NFP$$
$$M_s = -FIM-HIM-FPS$$
$$\sum_{i \neq s} W_{sj} = FIM+NIM+ENT, \qquad W_{ss} = HIM$$
$$F_s = FPS+NPS,$$
$$GNP_s = NEX+NCR+HEX+NFP+NPS-FIM-HIM$$
$$BOP_s = NEX+NCR+HEX+NFP-FIM-HIM-FPS$$

while X_s does not change. It is important for us that both the GNP_s and BOP_s seem to have reduced by the amounts of import freights $FIM+NIM$ in this definitions. But

3) Tetsuji Shimojo, "Econometric Analysis of Shipping Balance of Payments", *The Review of Kobe University of Mercantile Marine*, No. 18, 1970, pp. 25–47.

this implies that those amounts for the shipping services or the exclusive products of shipping industry have been transfarred from the oversea sectors to the entogenous segment in the I-O table. And this is the reason why X_s remain unchanged.

By the way, evaluation of the shipping freights in the national income statistics is almost same as the manner is the ordinary I-O table we have previously seen. Only a difference is treatment of *NIM* in E_s and M_s. In the national income statistics, *NIM* that is contained in the amounts of imports is substracted from import amount of shipping services. If the amount of imports of shipping services $HIM+FPS$ are less than the amounts of *NIM* like, say, Japanese case, M_s will be positive in spite of the other figures of imports being negative. Expressing this manner of evaluation in our notations, we find;

$$E_s = NEX+NCR+NFP+HEX$$
$$M_s = -HIM-FPS+HIM,$$

which are easily obtained by transfarring *NIM* from E_s to M_s in the original I-O table.

For the sake of further investigation, let us identify these three methods in evaluating exports and imports of shipping services; hence we call the original method as CIF method, our proposed method as FOB method, and the last as NIS method.

II Comparison among the three methods

In the input-output tables of Japan in 1970 and 1975, the ship-owning and ship-operating sub-industries are consolidated into an industry, the ocean shipping industry, while they were treated as two independent industries in 1965 table. The reason why they were consolidated in later tables is explained that the principle to classify industries is according to the users of the respective production equipments.

In any way, the production of ship-operating industry is the amounts of total freight earning minus charter hire paid to domestic and foreign ship-owning industries. And, on the other hand, the production of ship-owning industry is total charter hire received from domestic and foreign ship-operating industries minus charter hire paid to foreign ship-owning industry. Consolidating these two net productions, we can obtain the production of the ocean shipping industry by offsetting the amount of charter hire transacted between domestic ship-owning and domestic ship-operating industries. The result figures are shown in Table 1.

From these figures we can calculate the outputs of the ocean shipping industry X_s, E_s and M_s according to our definition. In the calculation of X_s there is no difference among the three methods mentioned in the previous chapter. The figures may become as follows;

$$X_s = ENT+NEX+NIM+NCR+NFP+NPS+HEX = \begin{array}{r} 406{,}994 \text{ in } 1965 \\ 946{,}244 \text{ in } 1970 \\ 2{,}038{,}937 \text{ in } 1975 \end{array}$$

All of the figures are different from those in the I-O tables of the respective years. In

Table 1. Revenues and Expenses of Ocean Shipping

Item	1965	1970	1975
NEX	99,969	239,760	569,072
NIM	271,232	585,720	981,421
NCR	24,934	87,840	231,895
NFP	3,645	720	942
NPS	424	266	850
FPS	2,196	1,080	1,592
FIM	227,900	493,200	780,584
HEX	5,737	31,680	253,150
HIM	55,152	183,600	738,256
ENT	1,053	258	1,607
SLF	42,362	0	0

(Source) Activity of Ocean Transport, *MOT*, Japan.
and Balance of Payments, Bank of Japan. *ENT* and *SLF* were estimated from I-O table of each year.
(Unit) Million Yen.

order to investigate the causes we tried to estimate the definitions used to make those figures. In the I-O table in 1965 the NIS method was applied, and the figures seem to have been calculated by the following definitions;

$$X_s = ENT+SLF+NEX+NIM+NCR+NFP+NPS+HEX = 449{,}356$$
$$E_s = NEX+NCR+NFP+HEX = 134{,}285$$
$$M_s = NIM-FPS-HIM = 213{,}884$$

Here we find a considerable difference between the figures and ours, and the cause is that an amount as large as 42,362 Mn. of internal transaction within the shipping industry is taken in account. The internal transaction within a certain industry, like between the ship-owing and ship-operating sub-industries, should be offset in order to avoid double account at the time of aggregation. It is agreeable, however, that a small amount of transaction between the ocean shipping and the other industries may exist as the item *ENT* listed in Table 1, because of the operating expenses of ships owned and operated by the other industries, although they are not the genuin production of the ocean shipping industry.

It may be noted that the figures of E_s and M_s are accurately same as our definition in the NIS method. In contrast, in the I-O table of 1970 the CIF method was applied instead of NIS. But there are some problems in the figures of X_s.

$$X_s = NEX+NIM+NCR+NFP+NPS+HES = 945{,}986$$
$$E_s = NEX+NIM+NCR+NFP+HEX = 945{,}720$$
$$M_s = -FPS-HIM = -184{,}680$$

We can not find *ENT* to be taken into account of X_s even if the amount is very small. This may be a mis-definition. But, we could not help a trouble we faced to at the time of calculation of *NPS*, *NFP* and *FPS*, for which information can be obtained only from the "Activity of Ocean Transport" edited by MOT Japan, in classification of entrance, departure and cross trade. This may cause the confusion in these figures of

passenger fares.

A similar confusion is taken place in the E_s of 1975 I-O table. In this table, the definitions seem to be as follows;

$$X_s = NEX+NIM+NCR+NPS+NFP+HEX = 2{,}037{,}330$$
$$E_s = NEX+NIM+NCR+NFP+HEX-FPS = 2{,}033{,}281$$
$$M_s = -FPS-HIM = -739{,}848$$

Neither we can find *ENT*, amounting ¥1,607 Mn. in the definition of X_s. Meanwhile, it is suspicious that the *FPS* or the same amount was substracted from E_s. We are afraid this may be caused by the confusion in concepts of passenger fares. In any way, we should be careful to treat these figures, at least, for the ocean shipping industry.

As a primary analysis, let us calculate import coefficients and endogenous demand coefficients with the figures quoted in the I-O tables, leaving their apparent mistakes. The coefficients are as follows;

Import coefficients $= M_s/X_s =$ 0.476 in 1965
−0.195 in 1970
−0.363 in 1975

Endogenous demand coefficients $= \sum_j W_{sj}/X_s =$ 0.224 in 1965
0.194 in 1970
0.267 in 1975

It is clear that the import coefficient in 1965 is not appropriate as it is positive. If the CIF method is applied to 1965 figures, the import coefficient becomes −0.127. All the figures, however, would be too small for Japan, because the transportation of Japanese export and import cargo are depending more strongly on foreign shipping activities. The endogenous demand coefficients theoretically express the degrees to which the total demand for the shipping services from the domestic industries are satisfied by the national shipping capacity. Thus, the endogenous demand coefficient of the Japanese ocean shipping must be much greater in view of the Japanese present status.

Such apparently erroneous coefficients come from the inappropriate treatment of import amounts both in the ocean shipping and the other industries. The freights received by Japanese merchant marine is interpreted as savings of foreign currency in NIS method and as export of shipping services in CIF method. Whichever it may be, however, evaluation of imports in CIF values has pushed the Japanese ocean shipping activities out of Japan. The International Monetary Funds suggests to count both exports and imports in FOB values for the sake of eliminating international leakage in balance of payments accounts. By evaluating the international transaction in FOB value, the freights paid for carriage of import goods can become domestic transaction amount of shipping services between the shipping and the other industries whether the goods may be carried by Japanese or foreign ships.

In 1975, total ¥2,777,178 Mn. of shipping services (2,037,330 produced and 739,848 imported) were supplied, out of which only 26.7% or ¥741,454 Mn. were demanded by domestic industries, or, moreover, only ¥1,607 Mn. were sold to the other

industries. Japanese industries excluding the shipping industry imported as much as ¥19,905 Bn., which include the shipping services amounting ¥1,762 Bn or 8.9% of total amounts for the carriage of these imported goods. It must be noted that almost a half of the amounts was supplied by Japanese ships, and that this fact can not be read from the I-O table compiled under the CIF method.

The imports of non-shipping industries, ¥19,905 Bn., include ¥1,762 Bn. of shipping services which are never the products of non-shipping industries. Every row of I-O table should indicate the amounts of only product purely produced by the respective industry. The shipping services, the exclusive products of the shipping industry, must be supplied by the shipping industry, or must be imported by them, if necessary.

According to this idea, let us redefine these amounts of shipping and non-shipping imports.

Non-shipping imports = 19,905,802−1,762,005 = ¥18,143, 797 Mn.

There leaves a problem of insurance, but we would neglect it for the sake of convenience. As we have defined before, the shipping imports should be expressed as follows;

$$\begin{aligned} M_s \text{ (FOB)} &= -HIM-FIM-FPS \\ &= -HIM-FPS+NIM-(NIM+FIM) \\ &= M_s \text{ (in NIS)} \qquad -(NIM+FIM) \end{aligned}$$

This means that the shipping imports in FOB method are easily calculated from the shipping imports in NIS method by subtracting total freights paid to Japanese and foreign ships for carriage of import goods. Thus the figure in 1975 will be;

$$M_s = -739{,}848+981{,}421-1{,}762{,}005 = ¥-1{,}520{,}431 \text{ Mn.}$$
$$(M_s \text{ in CIF}) \quad (NIM) \quad (NIM+FIM)$$

The corresponding figures in 1965 and 1970 are calculated as follows;

$$M_s \text{ (1965)} = 213{,}884-271{,}232-227{,}900 = ¥-285{,}248 \text{ Mn.}$$
$$(M_s \text{ in NIS}) \qquad (NIM) \qquad (FIM)$$
$$M_s \text{ (1970)} = -184{,}680-493{,}200 = ¥-677{,}880 \text{ Mn.}$$
$$(M_s \text{ in CIF}) \quad (FIM)$$

where difference of the methods used for these two original figures of imports causes the difierence in calculating methods, but the results are based on the same bases. The import coefficients calculated from these new figures of imports are shown below;

$$\begin{aligned} \text{Import coefficients} = M_s/X_s &= -0.634 \text{ in } 1965 \\ &= -0.717 \text{ in } 1970 \\ &= -0.746 \text{ in } 1975. \end{aligned}$$

It seems more reasonable to understand that the share of Japanese shipping industry in the whole supply of shipping services is only a third or a quarter, because, as we know well, though a half of the export and import goods is carried by Japanese ships, the most recently, a half of the share depends on the ships chartered from abroad. Thus the amounts received by Japanese ships are rather small when the payments of charter hire are taken into consideration.

For the endogenous demand coefficients, we must consider a farther procedure to

correct the amounts of transaction within the endogenous segment as well as the final demand sectors. The introduction of FOB imports to the I-O table implies to discount the import amounts by the freights for carriage of import goods. If all the amounts on the rows of non-shipping industries must not include the freights, we should devaluate these figures by the amount of freight paid for carriage of their respective import goods.

III Modification of 1975 I-O Table

When the import table attached to the I-O table is available, it is rather easy to modify the I-O table into a new table such that all the transactions therein do not include the freight needed for carriage of their import goods. Only a difficuly to overcome before the process is to estimate the amounts of freight contained in the values of respective commodity imported by the non-shipping indistries.

Here we will prepare a new Input-Output Table for 1975 in order to test our own theory to evaluate the effects of Japanese shipping industry on national economy. Let us start from the original table of 61 industry sectors. We have before all separated the shipbuilding from the transport machinery industry and divided the transport industries into seven subsectors, i.e., railway, road transport, ocean shipping, inland shipping including port services, air transport, other transport and warehousing. Thus we have prepared a 68-sector I-O table.[4)]

The first job of our modification of the I-O table from CIF to FOB basis is to estimate the freight amounts paid by the respective industry sectors for carriage of their import cargo. For some particular cargo, such as coal, iron ore, crude oil, lumber and grain, we can obtain the freight amounts paid to Japanese owned and operated ships along with the tonnage carried by them. We have calculated the ratios of freights in the whole amounts of CIF import for these items of cargo by means of the average freight rates per ton carried by Japanese ships. The ratios of some other items of cargo can be estimated if we can assume that they have been carried by liner shipping. And the rest items of cargo the ratios were estimated referring to the investigation of the Japan Maritime Research Institute in 1969[5)] and other fractional data available from various sources. The results of our estimation are as shown in Table 2.[6)]

The ratios of freights to CIF import amounts of i-th products are calculated by:

$$r_i = f_i/M_i$$

where f_i denotes the freight amounts paid by i-th industry for their imports. If an import table $[M_{ij}]$ is given, by multiplying a diagonal matrix $[R]$ consisting of r_i from the left

4) Government of Japan, 1975 *Input-Output Tables*, Tokyo, 1979.

5) Japan Maritime Research Institute, *Investigations to Freights and Insurance in Export and Import Prices*, Tokyo, 1969.

6) These figures were revised from those estimated for 1970 I-O table by ourselves. Many remarkable differences have been noted during the estimation. Generally speaking, the ratios of freights in 1975 were much less than those in 1970, for the shipping market in 1975 was considerably depressed. One of the effects can be seen in the value added coefficient for 1975.

Table 2. CIF and FOB Values of Imports and Freights 1975

Industry Sector	CIF	FOB	Freights	Per cent
1. Field crops	1,985,443	1,772,173	213,270	10.7%
2. Stock-raising	148,099	128,214	19,885	13.4
3. Agri. service	0	0	0	—
4. Forest	690,108	585,092	105,016	15.2
5. Fishing	177,338	161,464	15,874	9.0
6. Coal	1,024,865	902,484	122,381	11.9
7. Iron ore	670,393	462,340	208,053	31.0
8. Non-ferrous ores	504,282	450,114	54,168	10.7
9. Crude oil & N.G.	6,087,217	5,697,075	390,142	6.4
10. Other mining	274,738	225,552	49,186	17.9
11. Slaughtering	359,374	327,205	32,169	9.0
12. Processed fish	232,374	211,573	20,801	9.0
13. Grain flour	13,137	11,373	1,764	13.4
14. Edible products	758,734	690,817	67,917	9.0
15. Drinks & liquors	175,624	159,903	15,721	9.0
16. Tobacco	36,255	34,632	1,623	4.5
17. Ntr. fiber yarn	114,701	106,487	8,214	7.2
18. Chm. fiber yarn	2,709	2,515	194	7.2
19. Fabric & dyeing	272,079	259,902	12,277	4.5
20. Apparel	134,167	128,162	6,005	4.5
21. Wooden products	254,197	220,066	34,131	13.4
22. Furniture	22,218	20,229	1,989	9.0
23. Pulp & paper	155,900	136,364	19,537	12.5
24. Printing	37,012	33,699	3,313	9.0
25. Leather & fur	36,383	33,126	3,257	9.0
26. Rubber	39,320	35,800	3,520	9.0
27. Basic chm. prod.	263,059	215,964	47,095	17.9
28. Synthetic fiber	4,732	3,885	847	17.9
29. Other chm. prod.	383,076	314,495	68,581	17.9
30. Petr. refinery	775,379	636,564	138,815	17.9
31. Coal products	6,390	5,532	858	13.4
32. Non-metal prod.	38,051	26,130	11,921	31.3
33. Crude iron & steel	152,042	138,432	13,610	9.0
34. Prim. steel prod.	12,701	11,791	910	7.2
35. Non-ferrous prod.	541,859	517,607	24,252	4.5
36. Metal products	64,321	62,594	1,727	2.7
37. General machinery	461,448	449,056	12,392	2.7
38. Elect. machinery	430,754	419,186	11,568	2.7
39. Transport machin.	297,530	289,540	7,990	2.7
30. Precision machin.	216,234	210,427	5,807	2.7
41. Other manufact.	198,273	192,949	5,324	2.7

(Source) See text. (Unit) Million Yen

side of a coupled matrix of endogenous and final demand sectors (including the export column) of the import table, we can get a rectangular matrix of import freights $[P]$; i.e.

$$[P] = [R]\,[M_w \mid M_f] \qquad \text{.....(1)}$$

A new table not containing import freights is obtained by further subtraction of $[P]$ from the same size portion of original I-O table $[W \mid F]$; i.e.

$$[W \mid F]^* = [W \mid F] - [P] \qquad \text{.....(2)}$$

The row sums of $[P]$ must be added to the shipping row as the amounts of shipping services purchased by the other industries, and column sums of $[P]$ must be subtracted from the import column as the eliminated freights having been contained in CIF amounts. And lastly sum of all import freights is to be added to the import of shipping industry. These processes are expressed as follows;

$$M^*_i = M_i - [P]\,\mathbf{1}$$
$$[W_s \mid F_s]^* = [W_s \mid F_s] + \mathbf{1}'\,[P] \qquad \text{.....(3)}$$
$$M^*_s = M_s + \mathbf{1}'\,[P]\,\mathbf{1},$$

where $\mathbf{1}$ is a column vector and $\mathbf{1}'$ is a row vector all elements of which are 1.

These processes (1), (2) and (3) can alternatively be expressed in a process by redefining the matrix $[R]$ as follws;

$$[R] = \begin{pmatrix} -r_1 & & & & & & & \\ & -r_2 & & & & & & \\ & & -r_3 & & 0 & & & \\ 0 & & & \cdot & & & & \\ & & & & \cdot & & & \\ r_1 & r_2 & r_3 & \cdot & \cdot & 0 & \cdot & r_n \\ & & & & & & \cdot & \\ & 0 & & & & & & -r_n \end{pmatrix} \leftarrow \text{row of shipping industry}$$

As this matrix will make a negative freight matrix by multiplying the import matrix, the new I-O table assessed in FOB method is produced in a process;

$$[W \mid F]^* = [W \mid F] + [R]\,[M_w \mid M_f]. \qquad \text{.....(4)}$$

We should better suggest to use the original I-O table assessed in NIS method and not in CIF method, the reason of which has been discussed before. As may have been clear, almost all figures on the shipping row will be created by this correction process, and the amounts of export and import for shipping will be revised as follows;

$$E^*_s = NEX + NCR + NFP + HEX$$
$$M^*_s = -HIM - FPS - FIM$$

and, in addition to the above,

$$\sum_{j \neq s} W_{sj} = NIM + FIM, \quad W_{ss} = HIM$$

are realized.

By the way, we should discuss a substitutive method to make the new I-O table compiled in FOB method in the case where there is no import table available. Then, we have to assume that the import amounts are equally distributed in all transactions within the endogenous and final demand sectors including the export column. Namely, in order to make an assumed import table, the following ratios have to be calculated;

$$q_i = \frac{M_i}{\sum_j W_{ij} + F_i} \qquad \text{for all } i\text{'s except } i \neq s$$

It is easy to understand that the figures denote the ratios of import amounts to the total demands for the respective industries. Multiply a diagonal matrix consisting of q_i to the same size portion of original I-O table, and we get a rectangular matrix of same size: i.e.

$$[M_w \mid M_f]^* = [Q]\,[W \mid F]$$

where the left hand side is the assumed import table. The assumed import table should be substituted into the formula (4) above in the next process of calculation.

A series of these procedures can be combined into a step of multiplication, i.e.

$$[W \mid F]^* = ([I]-[D])\,[W \mid F]$$

where

$$[I]-[D] = \begin{pmatrix} 1-d_1 & & & & & & & \\ & 1-d_2 & & & & 0 & & \\ & & 1-d_3 & & & & & \\ 0 & & & & \cdot & & & \\ d_1 & d_2 & d_3 & \cdots & 1 & \cdots & d_n & \leftarrow \text{row of shipping industry} \\ & & 0 & & & \cdot & & \\ & & & & & & 1-d_n & \end{pmatrix}$$

and

$$d_i = \frac{f_i}{\sum_j W_{ij}+F_i}\,.$$

We have applied this formula to the I-O tables of 1965 and 1970 as we could not collect the import table for these years, and we applied it, for reference, to that of 1975 as well. Now we have seven tables to compare with each other.

Table 3 shows these seven I-O tables in the form of 2-sector table, and Table 4 shows the principal elements and coefficients produced from different tables. Compar-

Table 3. Seven Different 2-secter I-O Tables

1965 CIF

	N	S	T	F	EX	IM	X
N	359,815	1,679	361,494	335,804	32,971	−34,444	695,283
S	10	997	1,007	4	4,054	−572	4,494
T	359,825	2,676	362,501	335,808	37,025	−35,016	700,317
V	335,998	1,817	337,815				
X	695,823	4,494	700,317				

1965 FOB

	N	S	T	F	EX	IM	X
N	356,123	1,672	357,795	334,679	32,803	−29,454	695,823
S	3,702	1,004	4,706	1,128	1,511	−2,851	4,494
T	359,825	2,676	362,501	335,808	34,314	−32,305	700,317
V	335,998	1,817	337,815				
X	695,823	4,494	700,317				

1970 CIF

	N	S	T	F	EX	M	X
N	850,087	3,272	853,359	756,753	75,993	−80,388	1,605,717
S	3	1,836	1,839	11	9,457	−1,847	9,460
T	850,090	5,108	855,198	756,764	85,450	−82,235	1,615,177
V	755,630	4,349	759,979				
X	1,605,717	9,460	1,615,177				

1970 FOB

	N	S	T	F	EX	M	X
N	840,550	3,269	843,819	755,646	75,851	−69,599	1,605,717
S	9,540	1,839	11,379	1,107	3,742	−6,779	9,460
T	850,090	5,108	855,198	756,764	79,593	−76,378	1,615,177
V	755,630	4,349	759,979				
X	1,605,717	9,460	1,615,177				

1975 CIF

	N	S	T	F	EX	IM	X
N	1,757,495	8,735	1,766,230	1,554,328	180,435	−199,058	3,301,935
S	16	7,398	7,415	24	20,333	−7,398	20,373
T	1,757,511	16,134	1,773,645	1,554,353	200,767	−206,456	3,322,308
V	1,544,424	4,239	1,548,664				
X	3,301,935	20,373	3,322,308				

1975 FOB

	N	S	T	F	EX	IM	X
N	1,748,649	8,691	1,757,340	1,546,506	179,526	−181,438	3,301,932
S	8,861	7,442	16,304	7,847	11,427	−15,204	20,373
T	1,757,510	16,134	1,773,643	1,554,352	190,953	−196,642	3,322,305
V	1,544,424	4,239	1,548,663				
X	3,301,934	20,373	3,322,307				

1975 FOB*

	N	S	T	F	EX	IM	X
N	1,741,466	8,695	1,750,160	1,552,777	180,434	−181,438	3,301,932
S	16,044	7,439	23,483	1,575	10,519	−15,204	20,373
T	1,757,510	16,134	1,773,643	1,554,352	190,953	−196,642	3,322,305
V	1,544,424	4,239	1,548,663				
X	3,301,934	20,373	3,322,307				

(Note) 1975 FOB is calculated with the assumed import table and 1975 FOB * is made from the actual import table.

ing these figures annually we can see quantitative and qualitative changes in the ocean shipping industry of Japan, and comparing these figures by methods, we can observe the difference in implication of these coefficients. As we have discussed above, generally

Table 4. Principal elements and coefficients of several I-O tables

Item	1965 CIF	1965 FOB	1970 CIF	1970 FOB	1975 CIF	1975 FOB	1975 FOB*
Endogenous total output	1,007	4,706	1,839	10,492	7,415	21,348	23,483
To own industry	997	1,004	1,836	1,885	7,398	7,489	7,439
To other industries	10	3,702	3	8,607	17	13,859	16,004
Final demand (excl. export)	4	1,128	11	1,751	24	2,911	1,575
Export	4,054	1,511	9,457	3,996	20,333	11,319	10,519
Import	−572	−2,851	−1,847	−6,779	−7,398	−15,205	−15,204
Gross domestic products	4,494	4,494	9,460	9,460	20,373	20,373	20,373
Endogenous total input	1,817	1,817	5,108	5,108	16,134	16,134	16,134
From other industries	1,679	1,679	3,272	3,223	8,736	8,645	8,699
Value added	1,817	1,817	4,351	4,351	4,239	4,239	4,239
Import coef.	−0.1272	−0.6344	−0.1952	−0.7166	−0.3631	−0.7463	−0.7463
Value added coef.	0.4043	0.4043	0.4600	0.4600	0.2081	0.2081	0.2081
Endogenous demand coef.							
to gross domestic output	0.2240	1.0472	0.1944	1.1091	0.3639	1.0479	1,1527
to total domestic demand	0.1988	0.6407	0.1626	0.6461	0.2670	0.6000	0.6601
(I−A)							
Index of dispersion power	0.9243	1.0477	0.8632	0.8688	1.1905	1.1892	1.1903
Index of dispersion sensitivity	0.6676	0.6011	0.5439	0.7758	0.5554	0.8348	0.9873
(I−A+M)							
Index of dispersion power	1.0003	0.7784	0.7853	0.5158	0.8372	0.6082	0.6094
Index of dispersion sensitivity	0.5878	0.4621	0.5420	0.4616	0.5271	0.4686	0.5071
(I− (I−M) A)							
Index of dispersion power	0.9772	0.9873	0.7221	0.7847	0.7646	0.8751	0.8851
Index of dispersion sensitivity	0.5753	0.5843	0.5004	0.6257	0.4840	0.6083	0.6466
Import coef.**	−0.5658	−0.4887	−0.9986	−0.5537	−0.9946	−0.6268	−0.6067

(Note) 1975 FOB* is made by the actual import table not assumed one. ** Import coef. in the last row is defined as $M_s/(\sum_j W_{sj}+F_s)$ where F_s excludes export.

speaking, the FOB method seeems more appropriate in expressing the shipping activities than the other method.

The endogenous transaction on the row of shipping sector $\sum_j W_{sj}$ has expanded significantly with this correction, and the endogenous demand coefficients reckoned from these figures have also become more reasonable for Japanese actual situation: the figures are as follows;

$$\text{Endogenous demand coefficient} = \sum_j W_{sj}/X_s = \begin{cases} 1.047 \text{ in } 1965 \\ 1.203 \text{ in } 1970 \\ 1.153 \text{ in } 1975. \end{cases}$$

That all the figures are greater than 1 implies that the whole capacity of Japanese shipping industry to supply the shipping services is rather smaller than the domestic demand, or that the whole demand for the shipping services can be satisfied only by the full capacity of the national shipping even if all exports are postponed. This leads, however, not always to a conclusion that more merchant marine should be built immediately.[7]

In contrast, the endogenous demand coefficients to the total domestic demand represent the ratio of the shipping services utilized by the other industries as raw materials for their production to the total domestic demand for the shipping services. The exogenous demand of the shipping services are deemed as the final products such as the passenger fares. In view of the structure of Japanese external trades, the ratio of raw materials is considerably large so that the coefficients must be more than a half. In 1975, for example, Japanese merchant marine carried 518 Mn. tons of cargo and earned ¥1,782 Billion of freights. If we suppose all cargo carried by liners being final products, as liners carried only 19 Mn. tons and earned ¥484 Bn., the ratios are only 3.6% in tons and 27% in Yen. Thus the endogenous demand coefficients calculated with figures in FOB table are likely more reliable.

IV Evaluation of Shipping Activity

For the investigation to the direct and indirect effects of an industry it is convenient to utilize the I-O table. The I-O table expresses the inter-industrial transaction during a certain period, and from the table we can obtain many information such that, for example, how much shipping services an industry needed for a unit of its production, and how much of its products were demanded by the shipping industry. The shipping services needed for production of other industries, however, can not be read sufficiently from the I-O table compiled by the CIF method. We must prepare more convenient I-O table reproduced by means of FOB method, for the sake of investigation into the effects of the shipping industry.

Here we have prepared 17-sector I-O tables for years 1970 and 1975, by selecting

7) This view was pursued in the paper quoted in 3).

some industries of comparatively close connection with the shipping industry, and by combining them with some other industries closely connected in view of their raw materials respectively. The relation between this classification and the 68-sector I-O table mentioned before is shown below;

1. Agriculture and foods	1. Field crops; 2. Stock-raising; 3. Agricultural service; 5. Fishing; 11, Slaughtering; 12. Processed fish meat; 13. Grain cleaning & flour; 14. Edible products; 15. Drinks & liquors; 16. Tobacco.
2. Coal	6. Coal; 31. Coal products.
3. Petroleum	9. Crude oil & natural gas; 30. Petroleum refinery.
4. Iron & steel	7. Iron ore; 33. Pig iron & crude steel; 34. Primary steel products.
5. Non-ferrous metal	8. Non-ferrous metal ore; 35. Non-ferrous metal products; 36. Metal products.
6. Miscellaneous products	10. Other mining; 32. Non-metallic mineral products; 41. Other manufacturing.
7. Fiber	17. Natural fiber yarn; 18. Chemical fiber yarn; 19. Fabrics & dyeing; 20. Apparel; 25. Leather & fur; 26. Rubber.
8. Wooden	4. Forest; 21. Wooden products; 22. Furniture; 23. Pulp & paper; 24. Printing; 59. Office supply; 60. Packing material.
9. Chemical	27. Basic chemical products; 28. Synthetic fiber material; 29. Other chemical products.
10. Machinery	37. General machinery; 38. Electric machinery; 39. Transport machinery; 40. Precision machinery.
11. Construction	42. Building construction; 43. Other construction.
12. Power, gas & water	44. Electric power; 45. Gas supply; 46. Water supply.
13. Commerce	47. Wholesale & retail; 48. Finance & insurance; 49. Real estate; 50. Real estate rent.
14. Other transport	51. Transport (excluding Ocean shipping and Inland water transport).
15. Ocean shipping	
16. Inland water transport (including port service)	
17. Other	52. Communication; 53. Public administration; 54. Education; 55. Research institute; 56. Medical service & social insurance; 57. Private non-profit institute; 58. Other service, 61. Activities not classified.

Table 5 shows the input coefficients collected from the row and column of the shipping industry of 1978 and 1975 I-O tables, all of which are compiled by the FOB method. Output in Table 5 means the row elements in the respective input coefficient matrix and input means the column elements. It is remarkable that the coal, petroleum

Table 5. Input Coefficients for the Shipping Industry

Industry	1970 Output	1970 Input	1975 Output	1975 Input	1975* Output
1. Agri. & foods	49332	0	56336	0	81596
2. Coal	556813	0	264802	0	580419
3. Petroleum	307186	574176	260885	1189775	456033
4. Iron & steel	137833	0	102377	0	125203
5. Non-fer. metal	63059	9892	41727	8164	66969
6. Miscel. product	64359	7992	38947	6687	51593
7. Fiber	41734	61817	30142	44821	71185
8. Wooden	60067	40046	44920	17875	88060
9. Chemical	84600	8835	66195	9030	74901
10. Machinery	29984	296876	19275	286708	6641
11. Construction	50723	5345	29560	8030	7091
12. Power, gas & c.	134922	4313	105931	6018	114945
13. Commerce	12265	348029	2529	738487	443
14. Transport	45149	42432	74836	64045	7745
15. Ocean shipping	1992348	1992348	3675703	3675703	3651542
16. Inland ship'g	54485	1954766	47322	1708423	34316
17. Other	22175	54282	18618	179500	11292

(Unit) 10^{-7}. (Note 1975* means the table calculated by the actual import table.
1975* Input was omitted for its similarity to that of 1975.

and iron & steel industries have considerable dependence on the shipping services for their production, and that other industries have no more than 1% of dependence on the shipping services. Such dependence, however, may be much different in the view from the shipping interest, namely, an industry having the biggest contribution to the shipping is the petroleum, and the second is the agriculture & foods in 1975. In any way, it may be very interesting to investigate such dependence on and contribution to the shipping services of the other industries, but here we have to postpone these problem to another occasion.

The most popular analysis using the I-O table is to observe its inverse matrix. The inverse coefficients B_{ij} are said to express the degree of influence that a unit of increase in demand for products give the j-th industry. The shipping row of the inverse matrix produced from CIF I-O table consists of nearly zero elements except the shipping element,[8] that implies that the shipping industry receives no influence from the other

8) After the inverse matrix computed from the Leontief coefficient matrix consisting all other industry sectors except the shipping, let us place a new row and a column for the shipping at the lowest row and the rightmost column, then the matrix can be expressed as follows;

$$\begin{array}{c|c} B & C \\ \hline D & E \end{array}$$

where B denotes the inverse matrix, C the newly added shipping column of minus input coefficients, D the newly added shipping row, and E the shipping-shipping element of Leontief matrix which seems nearly 1 by the reason mentioned in the text. Farther process of inversion to the matrix will result;

$$D^\circ = D/E$$
$$E^\circ = 1/E$$
$$B^\circ = B - CD^\circ$$
$$C^\circ = -CE^\circ$$

If D is nearly 0 and E is nearly 1, then there will happen no change in the matrix.

industries. On the contrary, however, in general, the shipping industry has been thought to depend much on its external circumstances. This fact seems to tell us that the import values in the I-O table should be expressed by FOB rather than CIF.

In the analysis of inverse coefficients, a problem is what formula has to be used for the Leontief coefficient matrix. If the import coefficient is not taken in account, the import of every commodities are deemed to be independent to the production of them, and all deficits in the commodity are to be imported. This case equilibrates as in;

$$M = AX+F+E-X.$$

Thus the Leontief coefficient matrix will be represented by $(I-A)$ and the inverse matrix by $(I-A)^{-1}$.

In contrast, there is another idea that the import is proportioned to the amount of production. If the ratio of the import to the production is supposed as

$$m_i = M_i/X_i,$$

then the equilibrium equation will be

$$X-AX+\hat{M}X = F+E$$

where $\hat{M}$ denotes a diagonal matrix consisting of m_i. Thus, in this case, the inverse matrix will be expressed as $(I-A+\hat{M})^{-1}$. As the matrix $\hat{M}$ is a diagonal one, the difference between $(I-A)$ and $(I-A+\hat{M})$ arises only on the diagonal elements, in which, in other words, the import coefficient has been eliminated from the imput coefficient of the transcation within the respective industry. This fact leaves a serious problem with regard to the shipping industry as we will discuss later.

Again, it is also insisted that the import must not be influenced by the export if all commodities represent their respective industries. Should the import be independent from the export, the import coefficient must be defined as

$$m_i = M_i/(AX+F)_i\ ,$$

and the equilibrium equation may be

$$X-AX+\hat{M}AX = F-\hat{M}F+E$$

and the inverse matrix will be expressed in $(I-(I-\hat{M})\ A)^{-1}$.

With regard to only the shipping industry, the first case is the most reasonable, for the import of the shipping services arises because of shortage in the domestic supplying capacity. If the import of shipping services is proportioned to the domestic production, and if the CIF I-O table is applied, then the element A_{ss} will be almost equal to m_s, and $I-A_{ss}+\hat{M}_s$ or shipping-shipping element in the Leontief coefficient matrix is not other than 1, as the transaction within the shipping is constituted by only the import of ship services or charter hire. Export of an industry products should not include import the same products, but the shipping industry in the I-O table is constituted by two sub-industries, the ship-owner and the ship-operation, and the two products, ship service and shipping service, are combined into one product. Therefore, the export of shipping industry includes the shipping services produced by the activities of ships

Table 6. Accumulated indirect effects in 1975 FOB*

Industry	$(I-A)$		$(I-A+\hat{M})$		$(I-(I-\hat{M})A)$	
	Row	Column	Row	Column	Row	Column
1. Agri. & foods	370399	107537	108203	30602	75996	48737
2. Coal	2501537	55901	495441	9238	453301	14437
3. Petroleum	2381210	7613470	298271	928813	337949	1454516
4. Iron & steel	1119887	275331	312368	89988	202028	140697
5. Non-fer. metal	485793	192622	129748	53189	90097	83564
6. Miscel. product	406487	124786	98911	38247	64636	60697
7. Fiber	368088	227120	114126	85058	75387	135097
8. Wooden	395270	337362	128406	108499	85678	172956
9. Chemical	580459	202813	137581	54848	90319	86489
10. Machinery	252595	1105923	64517	418949	41505	663548
11. Construction	258708	126033	66588	46074	41599	73691
12. Power, gas & c.	914048	154986	182005	43476	113803	69052
13. Commerce	62546	2272552	13224	859182	8303	1376578
14. Transport	605048	377818	88083	132112	55406	211134
15. Ocean shipping	16345294	16345294	7277941	7277941	11714230	11714230
16. Inland ship'g	410979	2887015	64172	1079935	47162	1716190
17. Other	176930	909710	42134	306774	26863	490137
Total 1	27835278	33316273	9621719	11562925	13524262	18511750
Total 2	11269984	16970979	2343778	4284984	1810032	6797520

(Unit) 10^{-7}. (Note) 1975 FOB* means the table calculated by the actual import table.
Total 1 is the total of all coefficients and in total 2 the 15th element is eliminated.

chartered from abroad. Thus this treatment of the shipping industry differs from that for $(I-(I-\hat{M})\ A)$. As we have aggregated several industries into 17 super-industry sectors according to main raw materials, the similar situation is considered in our analysis. Taking these situations into consideration, we would prefer the inverse matrix $(I-\mathrm{A})^{-1}$ in our farther discussion.

In Table 6 the shipping row and colmun in the inverse matrix $(I-A)^{-1}$ derived from 1975 FOB* are shown along with those in $(I-A+\hat{M})^{-1}$ and $(I-(I-\hat{M})\ A)^{-1}$ for reference. Before all, we can note that the row sum and column sum in $(I-A)^{-1}$ are the greatest in comparison with other definitions of inverse matrices. Total 1 in Table 6 denote the sums of coefficients in the respective columns and Total 2 denote the sums of them excepting the shipping elements. These figures indicate that the shipping industry have a slightly larger influence to and a slightly lower dependence from the other industries. Needless to say, from the inverse matrices derived from the CIF I-O tables, we can not find such conclusions.

V Epilogue

Many other methods of analysis using the I-O tables are proposed. Only purpose in this paper is to propose the FOB I-O table to be applied to those analysis in which existence of the shipping industry is regarded as important in any sense. It is partly the

same reason why the International Monetary Funds suggested to count both export and import in FOB for compilation of the balance of payments. The international coupling of I-O tables among several countries will need to treat the import values in FOB prices in order to include all shipping activities on the seas between these countries.

Even in the FOB I-O tables, the shipping activities for carriage of export goods are not evaluated as the contribution to the exporting industries, but as the export of shipping services. This point must bear in mind at the investigation to the evaluation of shipping industry. We are separately preparing an investigation to the *raison d'être* of the shipping industry from the view point of loading shares of the national merchant marine. The most remarkable contribution of the shipping industry is that for the balance of payments of the country. Many developing countries insist to reserve their own merchant marine in order to overcome their inferiority in currency status. How effective their own shipping capacity may be for their objectives has presented a problem to us. Some analysing tools we have referred to in the beginning of this paper as well as the FOB I-O table were invented for this purpose.[9)]

9) Tetsuji Shimojo, Katashi Taguchi and Hidetoshi Nakayashu, Economic Effects of Maritime Investment Policies in the Developing Countries, submitted to *Transport Policy and Decision Making*, 1980.

THE FUNCTION OF MODERN CORPORATE FINANCIAL REPORTING IN A MASS DEMOCRATIC SOCIETY

Hidetoshi YAMAJI

I Introduction

Today, corporate firms in advanced capitalistic countries issue financial and managerial reports to the public. This phenomenon is taken as a matter of course. Indeed we can find the fact that already in the old history of double-entry bookkeeping or early accounting, there existed simple financial statements which seemed to correspond to those of our times. But, in reality, it is a recent event that corporate firms came to disclose their financial and managerial information to the public. That is to say, in the early capitalistic economy, venture firms and early corporations had already disclosed simple financial statements to a few stockholders and a few creditors, but not to a great many anonymous people. We can not find even in the United States corporate disclosures to the public until the latter half of the 19th century and the century-turned times. In other capitalistic countries the phenomenon appeared many years later. The main theme of this study is the analysis of the economic and social foundations of the phenomenon that in the modern capitalistic countries, big corporations disclose their accounting information to the public. In the following description, we refer to this as "the corporate publicity", and to the problem why this corporate publicity has appeared in modern society as "the corporate publicity problem".

Now, turning to accounting researchers, what kind of hypothesis (resolution) have they presented concerning the corporate publicity problem? For the present, two hypotheses have been developed in American accounting literature. The first hypothesis is as follows; corporate firms disclose accounting information to obtain sufficient capital funds in the security markets. On the other hand, the public needs them to invest parts of its incomes in securities. Thus, corporate publicity is thought to have appeared only in the modern capitalistic society where the security markets had already developed to maturity. We refer to the first hypothesis as the security investment decision-oriented-hypothesis.

The second hypothesis is as follows; corporate management has the accountability because of its managerial stewardship, so it must measure the results of the firm's economic activities and report them to the stockholders. On the other hand, the stockholders have a right to know the results of the economic activities of the firm on the basis that they entrust their funds to the management. That is to say, corporate publicity is thought to have an old history from early capitalism, and in modern society it merely

increased in size, but didn't change in its nature. We refer to the second hypothesis as the accountability-oriented-hypothesis. In short, as the security investment decision-oriented-hypothesis regards the public as being security investment decision-makers, so the accountability-oriented-hypothesis looks on the public as stock (equity) holders. The common feature of the two hypotheses is the understanding of corporate publicity in connection with stock.

In Section II, we reexamine the above-mentioned two hypotheses and point out some of their limitations. In Section III, we will propose our new hypothesis on the corporate publicity problem. In Section IV, we interpret the historical materials in the United States from the viewpoint presented in our hypothesis. In Section V, our conclusion will be applied to the historical facts concerning Japanese corporate financial reporting, and mention the differences between the social foundations of the two countries which affect the corporate publicity of the two countries.

II Reexamination of the Two Hypotheses

II-1 Survey of the two hypotheses

It may be appropriate that before entering into the reexamination of the two hypotheses we should make their characteristics clearer.

In the "Report of the Committee on Foundations of Accounting Measurement",[1] Professor Ijiri pointed out that there were two areas in the accounting field. One is operational accounting and the other is equity accounting. Generally speaking, operational accounting is related to the aspect that the accounting system gives useful information to decision-makers. Equity accounting emphasizes the aspect that the accounting system measures the movement of the equity for stockholders and creditors and report it to them.

By employing the division of the accounting field proposed by Professor Ijiri, we are able to characterize more clearly the two hypotheses which have been developed in our Introduction. In our opinion the security investment decision-oriented-hypothesis may correspond to operational accounting, thus the accountability-oriented-hypothesis perhaps corresponds to equity accounting.

We start with the security investment decision-oriented-hypothesis.

Professor Ijiri says;

> *Operational accounting* means accounting designed to aid...investment decisions by investors. Since the decisions made by...investors are primarily resource allocation decisions or economic decisions, alternatively this subset of accounting may be called accounting for resource allocation or accounting for economic decisions. ...Financial accounting system designed to communicate the economic progress of the firm to the financial community serves as an input to resource allocation in the securities market. ...Operational accounting focuses on the pre-

1) A. A. A., "Report of the Committee on Foundations of Accounting Measurement," Supplement to Vol. XLVI of *Accounting Review*.

dictive value of information. That is, information about the results of the last period is useful only insofar as it reduces the user's uncertainty about future changes in the aspects of the firm of interest to him.[2)]

By using the description by Professor Ijiri about operational accounting, we can characterize more finely the security investment decision-oriented-hypothesis. In the hypothetical circumstance surrounding the corporate financial reporting which operational accounting and the security investment decision-oriented-hypothesis may suppose, the management discloses accounting information about its firm to the security markets in order to obtain funds with which it intends to buy equipments. Accounting information in this case has the function to let the decision-markers predict favorably the future of the firm concerned. That is to say, the management issues future-suggested-information with future-oriented-purposes. Turning our attention to the public (public is interpreted as the financial community in the writings of Professor Ijiri), it invests its current incomes in securities to secure its own much more future consumptions. Namely, it needs future-suggested-information with future oriented purposes, too. In such conditions corporate financial reporting works to aid the achievement of future purposes of both sides. And it seems that the security investment decision-oriented-hypothesis explains the appearance of corporate publicity by establishing a financial relation between big corporations and the investing public.

Let's advance our discussion to the second hypothesis. We quote again the description of Professor Ijiri to characterize more clearly the accountability-oriented-hypothesis.

> ... Equity accounting, on the other hand, focuses not on prediction but on the reconciliation of the equities of various interested parties of the organization. Equity accounting includes custodianship accounting; but it extends far beyond the custodianship function and control over the resources and activities of an organization, because it utilizes accounting measurement as a basis for achieving a state of affairs consistent with perceived social equity.... In this sense equity accounting may be described as *accounting for social and organizational equity*.[3)]

In such an accounting area (hypothesis), how does modern corporate financial reporting operate? Corporations (or management) measure the movements of the equities of various interested parties, since they have the accountability to report them to creditors and stockholders, that is, to equity-holders. They assume this accountability because they are entrusted with the capital fund by the equity-holders. For the public, it is characterized as equity-holders in this accounting area (hypothesis). In other words, the public considered as equity-holders wants to know the amounts of its dividends and interests, and the security of its own equities and incomes. In these circumstances, corporate financial reporting establishes itself as an institution. According to this hypothesis, corporate financial reporting can exist insofar as stewardship between management and equity-holders exists. Thus corporate financial reporting has in

2) *Ibid*, pp. 6–7.
3) *Ibid*, p. 7.

reality an old history from the medieval times.

Thus far, we have drawn up the features of two hypotheses on corporate publicity, by referring to the division of the accounting field as proposed by Professor Ijiri. Subsequently their limitations should be mentioned for the purpose of bringing into relief the superiority of our hypothesis.

II-2 Some limitations of the security investment decision-oriented-hypothesis

It seems that the point of view contained in the security investment decision-oriented-hypothesis has already appeared in the early statements of accounting principles issued during last thirty years by the American Accounting Association. Some statements of accounting principles by the A. A. A. assert that corporate financial reporting aids the investing public in buying and selling securities in the markets concerned. For example, a certain statement says that;

> In view of the facts that short-term creditors and governmental administrative agencies will typically have the power to require information specific to purposes and that no important differences in the basic informational requirements of the other interests cited seems to exist, the traditional emphasis on the requirements of the stockholder group appears to be sound. In considering disclosure standards, therefore, the Committee has been concerned primarily with the use of the financial statements (1) in the making of investment decisions and (2) in the exercise of investor control over management.[4]
>
> The use by investors of published financial statements in making investment decisions and exercising control over management should be considered of primary importance.[5]

Further we can quote W. A. Paton and A. C. Littleton;

> ... Capital should flow into those industries which serve the public interest, and within an industry into those enterprises in which the management is capable of using capital effectively. If capital in an enterprise is earning a return over a considerable period, this probably indicates that the capital is being capably employed in an industry serving an existing demand; if the capital is not earning a return over a period of time, this probably indicates the capital is lodged in incapable hands or in an industry whose service is not in continuing demand.[6]

Judging from the above-quotations, it seems that the viewpoint of the security investment decision-oriented-hypothesis is a generally accepted one in American accounting theories. But can we corroborate this hypothesis? By referring to the historical materials about corporate publicity, we can point out that there are many difficulties in regard to the corroboration of this hypothesis. It is said that the time of the appear-

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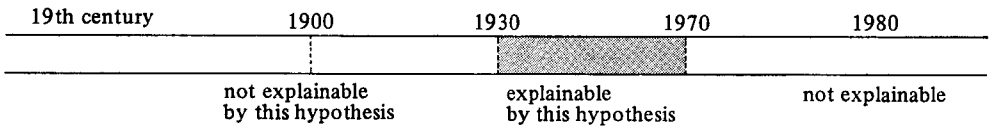
4) A. A. A., *Standards of Disclosure for Published Financial Reports*, Supplementary Statement, No. 8.

5) A. A. A., *Accounting and Reporting Standards for Corporate Financial Statements*, (1957 Revision).

6) W. A. Paton and A. C. Littleton, *An Introduction to Corporate Accounting Standards*, A. A. A., Chicago, 1940, (A. A. A. Monograph No. 3), p. 3.

ance of modern corporate financial reporting is the time extending over the latter half of the 19th century to the early years of the 20th century. From this time on, corporate publicity exists consistently in the American economic society. Thus, we must find the determinant of the establishment of corporate publicity which continues to exist from the latter half of the 19th century to 1980. The security investment decision-oriented-hypothesis regards the establishment of the financial relation between big corporations and the investing public as the determinant. This determinant contained in the hypothesis can explain the situation concerning corporate publicity from the 1930's to the 1960's. It can not explain, however, the conditions of corporate financial reporting from the latter half of the 19th century to the early years of the 20th century and the conditions after 1970. That is to say,

Figure I



Then, for what reason, do we think that the above-mentioned two periods are unexplainable periods by hypothesis? (The two periods are indicated as the white parts in Figure I.) Because in these two periods there emerged corporate publicity in a place where the investing public and the security markets didn't enter. We can enumerate several examples. In regard to the times from the latter half of the 19th century to the early years of the 20th century, two cases will be referred to in the following as typical cases where corporate publicity emerged but the security market problem hardly affected.

The first case is the agricultural movement in the latter half of the 19th century. In particular, our attention must be paid to the Granger Movement which was the first big movement and generated the first big organization of American farmers. In the developing process of the movement, there appeared two groups of states. The states belonging to the first group had laws which regulated the maximum fees for railroad corporations were called "strong" states. The other states belonging to the second group had only publicity requirements which required railroad corporations to report were called "weak" states. But contrary to our expectation, the "strong" states where the Granger Movement developed aggresively, failed to regulate railroads. And the "weak" states where the relation between railroad corporations and the public was in a stable condition and a modern mass democratic society came true, succeeded to regulate railroads. Still more the anti-railroad and anti-monopoly atmosphere in the American society, which was due originally to the agricultural movement, led the Congress to the establishment of the Interstate Commerce Commission. The I. C. C. regulated the railroad industry by requiring railroad corporations to disclose their financial statements. In this case, corporate publicity, which had not yet spontaneously emerged

in the railroad industry, had the functions of reducing the discontent of the farmers (the public) and of checking the excessive managerial activities of railroad corporations. It was not related to the security markets.[7]

The second case is the disclosure of financial statements of the United State Steel Corporation in 1903. This disclosure was the first for the U. S. Steel since its merger in 1901. It was the Price Waterhouse and Company and H. Gary that planned this disclosure. H. Gary was the financial executive in U.S. Steel of that day. Then what was the purpose of the financial disclosure carried out by H. Gary? We can consider several purposes. For example, there might have been the intention of selling watered stock of the U.S. Steel on the side of the board of directors. But it seems to me that H. Gary intended more strongly to reconcile the anti-monopoly public opinion. That is to say, in this case, corporate publicity also worked to reconcile public opinion and was not mainly concerned with the stock market problem. In other words, the function of corporate publicity to reconcile public opinion may include the one to satisfy the information needs of the investors in the security markets.[8]

These two cases tell us that from the latter half of the 19th century to the early years of the 20th century, corporate publicity mainly functioned to check monopolistic corporation activities on the public side, and to calm the anti-monopoly public opinion on the big corporation side. Namely it was not directly related to security market problems.

Next, it is necessary to mention shortly corporate publicity after 1970. After 1970, in the American economic society there emerged two new socio-economic problems. One is environmental pollution and the other is the conglomerate merger movement. Needless to say, these two phenomena existed already in the 1960's. Indeed, the extension of corporate financial reporting was required to counteract the anti- pollution and anti-monopoly movements. In these cases corporate publicity was used to calm the anti-pollution and anti-monopoly movements, on the corporation side, and it was used to check the activities of big corporations on the public side. In neither of the cases after 1970, can we find that corporate publicity is exclusively related to the security market problems.

Judging from the above mentioned three cases, we can not consider the establishment of financial relation between the investing public and big corporations as the

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7) S. J. Buck, *The Granger Movement*, University of Nebraska Press, Lincoln, (Originally published in 1913).

A. T. Hadley, *Railroad Transportation; its history and its laws*, New York, Putnam, 1903.

8) D. F. Hawkins, "The Development of Modern Financial Reporting Practices among American Manufacturing Corporations," contained in J.P. Baughman, ed., *The History of American Management*, N. J., Prentice-Hall, 1969.

J. D. Glover, *The Attack on Big Business*, Boston, The President of Fellows of Harvard College, 1954, (2nd ed.).

I. M. Tarbell, *The Life of Elbert H. Gary*, New York, Greenwood Press, 1969, (reprint). R. Hessen, *Steel Titan*, New York, Oxford University Press, 1975.

determinant factor for the appearance of corporate publicity. We must find another determinant factor which may fit a broader view and enable us to explain corporate publicity from the viewpoint of public relations.

II-3 Limitations of the accountability-oriented-hypothesis

Many accounting researchers explain external financial reporting on the basis of accountability which has its origin in the manorial system of medieval times. In the English manor, the master of the manor transfered his authority to manage it to the steward, and in turn the steward had the duty to report the financial conditions of the manor to the master at a certain time point. The relation between the master and the steward is called "stewardship". Then in accounting, such stewardship has been analogized with the relation between management and stockholders in modern capitalism. This analogy can often be seen in American accounting theories, so that we can quote several authors as examples;

> "Examples of these users and of the types of evaluations...for which they use financial accounting information are: Owners...evaluate the use and stewardship of resources by management."[9]
>
> "The objectives of accounting are to provide information for the following purposes: ... 3. Maintaining and reporting on the custodianship of resources."[10]
>
> "What are financial statements trying to present? Are they primarily an account of management stewardship, or primarily for investor guidance?"[11]
>
> "Perhaps the most universal justification for holding [the historical cost] doctrine is the so-called stewardship notion, the import of which is that business managers are accountable for the money tokens that come into their hands. No doubt they are, but a cash account is all that would be required to serve this function. The superstructure of accounting processes and financial statements generally would have no justification if this were the primary function of accounting."[12]
>
> "The traditional view, again, is that financial statements represent a stewardship report by management in which it accounts for its use of the resources entrusted to it by the owners of the company. The report has thus been used as a basis for determining whether that stewardship has been adequately discharged or not. In other words, how effective has management been? What is the nature of its accomplishment?"[13]

We quote here only five authors though P. Rosenfield gives quotations concerning the

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9) Accounting Principles Board Statement, No. 4, *Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises*, October, 1970, p. 44.

10) A. A. A., Committee to Prepare a Statement of Basic Accounting Theory, *A Statement of Basic Accounting Theory*, 1966, p. 4.

11) A. I. C. P. A., *Report of Special Committee on Opinions of the Accounting Principles Board*, Spring, 1965, pp. 12–13.

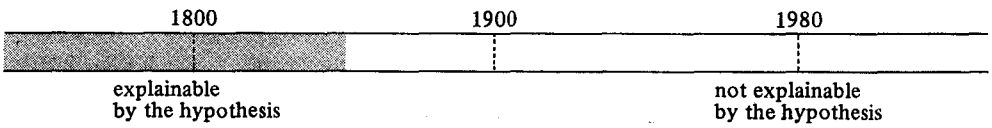
12) R. J. Chambers, *Accounting Evaluation and Economic Behavior*, Englewood Cliffs, N. J., Prentice-Hall, Inc., 1966, p. 354.

13) W. F. Frese and R. K. Mautz, "Financial Reporting by Whom?" *Harvard Business Review*, March-April, 1972, p. 8.

stewardship concept from works of seventeen authors.[14]

In spite of the support by many accounting researchers, we doubt that the concept of stewardship of the medieval times is useful to explain the relation between the management of big corporations and their stockholders in modern capitalism. Indeed as a steward was entrusted the manor by the master, so the management is entrusted the capital by the stockholders. So a trusteeship can be recognized in both cases. But we must note that there are great differences between the situations surrounding these two trusteeships. Notwithstanding the fact that the reporting from the steward to the master of a manor is seemingly similar to the reporting from management to stockholders, the meaning of the two reportings becomes quite different, when we analize them by taking into account social structure surrounding them. The reporting by the steward was based on a personal and individual relation and this relation perhaps continued to be the base of corporate financial reporting in the early capitalism. On the other side, the reporting by the management of modern big corporations is not based on personal relations but on impersonal and material relations. Thus, it is very difficult to explain modern corporate financial reporting based on material relations from the concept of stewardship duty which originated essentially from the personal relation. We must study the relation between the management of big corporations and stockholders (or the public) in the setting of the social structure produced by modern capitalism. We dare say that modern big corporations do not publish their financial statements to stockholders considered as equity holders but to stockholders as the public. That is to say, in regard to the corporate publicity problem, the concept of the stockholder is not important as an equityholder but important as the public which means a great many people pursuing common interests. The accountability-oriented-hypothesis may fit the period from early capitalism (or medieval times) to the first half of the 19th century but not the period from the latter half of the 19th century to the present.

Figure II



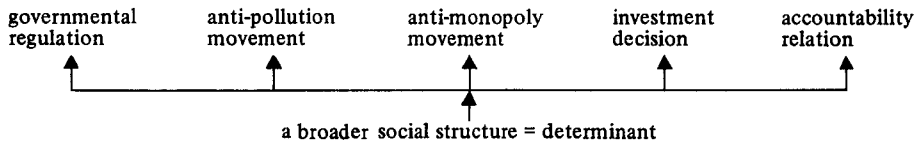
Subsequently we wish to outline the historical materials concerning corporate publicity in the U.S. which is thought to refute the accountability-oriented-hypothesis. We can enumerate several cases in modern times since the end of the 19th century where the government (federal or local) intervened in the private sector to extend corporate publicity. For example, the Interstate Commerce Commission, the Federal Trade Commission, and the Securities Exchange Commission respectively utilized corporate

14) P. Rosenfield, "Stewardship," contained in *Objectives of Financial Statements*, (Vol. 2, selected papers), compiled and ed., by J. J. Cramer, Jr. and G. H. Sorter, AICPA, 1974. By the way, quotations from (9) to (13) are from Rosenfield's paper.

financial reporting as the means of a regulation policy. What meanings they have, these examples? Judging from the fact that when stockholders and other interested parties wanted more ample and more accurate information about big corporations, and their management didn't disclose them timely, it seems that it didn't publich financial statements with stewardship duty (accountbility). The government intervened when the extension of corporate publicity, that is the accountability of the management, was required. Since the management didn't assume the accountability (duty), it was necessary that the government intervened to extend corporate financial reporting. Viewed from this angle, the accountability-oriented-hypothesis doesn't fit the time after the latter half of the 19th century. On the other hand, in Section IV we will be able to point out the case where perhaps there appeared corporate publicity without the accountability duty of management or government regulations. These cases will be made clear only by our new hypothesis.

In the above description, we didn't mean that the hypothetical social relations which two hypotheses supposed can not be recognized in the real world, but that there must exist a determinant for the emergence of modern corporate financial reporting which involves the relations supposed by the two hypotheses as particular subsets of the main social relations (social structure).

Figure III



III Presentation of New Hypothesis

In the above two sections, we have analized two hypotheses regarding corporate publicity and pointed out some of their limitations. In this section, we wish to present a new hypothesis which should cover those limitations.

The essence of our hypothesis is as follows; corporate publicity emerged in a situation where, on one hand, big corporations (or management) wanted to acquire the support of the public for their (its) activities concerning a certain economic problem, on the other hand, the public needed information about activities of big corporations in order to observe and criticize them. This situation (or social structure) does not prevail throughout history. It seems to have emerged in the U.S. between the latter half of the 19th century to the early years of the 20th century. In the following, we shall go into more detail.

We may all recognize that there was a big changing point in politics and economy at the turn of the century in the United States. What did the change bring to the American society? Indeed the answer to this question is deeply related to the understanding

of the social functions of corporate publicity. Our answer is as follows; the change transformed the American society into a "mass democratic society" where certain classes had to acquire the support of the public (the mass), if they wanted to safegard their power in competitive conditions. In other words, the acquirement of the public's support became a significant means of victory in free competition and search for the control power over other classes. On the other hand, the "masses", which is identical to the "public" in this context, obtained the power and opportunity of observing the classes competing for the leadership, by organizing themselves. But such a general understanding of the situation must be at least supported by works of sociology or of economics, if it should be accepted as a rational hypothesis. We may indicate the works of J. Schumpeter, V. Pareto, C. W. Mills and others. Their works extensively focus on "the theory of the elite". Thus "classes searching for the leadership or the control power over other classes" in our text may correspond to "elite". The elite in politics is thought to be individuals or political parties searching for the people's votes, as in *Capitalism, Socialism and Democarcy* by J. Schumpeter:

> It will be remembered that our chief troubles about the classical theory centered in the proposition that "the people" hold a definite and rational opinion about every individual question and that they give effect to this opinion—in a democracy—by choosing "representatives" who will see to it that that opinion is carried out. Thus the selection of the representatives is made secondary to the primary purpose of the democratic arrangement which is to vest the power of deciding political issues in the electorate. Suppose we reverse the roles of these two elements and make the deciding of issues by the electorate secondary to the election of the men who are to do the deciding. To put it differently, we now take the view that the role of the people is to produce a government, or else an intermediate body which in turn will produce a national executive or government. And we define: the democratic method is that institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of a competitive struggle for the people's vote.
>
> .....
>
> Second, the theory embodied in this definition leaves all the room we may wish to have for a proper recognition of the vital fact of leadership. The classical theory did not do this but, as we have seen, attributed to the electorate an altogether unrealistic degree of initiative which practically amounted to ignoring leadership. But collectives act almost exclusively by accepting leadership—this is the dominant mechanism of practically any collective action which is more than a reflex. Propositions about the working and the results of the decmoratic method that take account of this are bound to be infinitely more realistic than propositions which do not. They will not stop at the execution of a *volonté générale* but will go some way toward showing how it emerges or how it is substituted or faked. What we have termed Manufactured Will is no longer outside the theory, an aberration for the absence of which we piously pray; it enters on the ground floor as it should.[15]

15) J. Shumpeter, *Capitalism, Socialism and Democracy*, (Third Edition), Harper Torchbooks, New York, and Evanston, 1962, pp. 269–270.

And indeed we think that the classes searching for leadership positively employ the information disclosure as the means of acquiring the support of the public. Naturally the concept of information disclosure includes corporate financial reporting. But the concept itself has a broader meanings, that is, political, sociological and economic meanings. Therefore the corporate publicity problem must be analized from the viewpoint of information disclosure in the mass democratic society.

Attention must be given to the fact that the word "classes" is used here in a broader sense, that is to say, not that in Marxism. The classes searching for leadership in free competition doesn't necessarily mean "bourgeoisie," and neither does "public" necessarily mean "laborer class." We have more concrete and individual sense. In a case of "classes searching for leadership" it means "groups of big corporations," and "public" means "stockholders, consumers and workers critical forward them." In an extreme case, "classes" means "big corporations" and "an union of laborers", and "public" means "the rest of the people." Of course, in the political situation, the classes are equal to political parties searching for leadership, which is the situation illustrated by J. Schumpeter.

We shall next discuss more minutely the public side whose conceptual components perhaps vary with the ones of leading classes. Generally speaking, the development of a democratic atmosphere increases the opportunities to check and to criticize the activities of the classes searching for leadership. These opportunities comprise journalism, civil movements, establishment of universal suffrage, and so on. In each of them, the public demands information disclosure of the classes searching for leadership. Repeating ourselves, the classes searching for leadership thus disclose their own information in order to acquire the public's support and the public demands disclosure of the leading classes in order to check them, or, in the current sense, to participate in the competition as critics or judges.

The social structure of the "mass democracy" does not always appear historically and relative to different countries. It can be said that the above-mentioned social structure applies only recently to even such advanced capitalistic countries as France, Germany and Japan. Therefore for these countries the corporate publicity problem is a current problem. But in the United States, the social structure emerged at the turn of the century. Judging from these facts, the requirements of the emergence of corporate publicity seem to be the following;

i) extensive emergence of big corporations
ii) establishment of a middle class as the major part of the public
iii) enhancememt of democracy both in the area of political institutions and individual values
iv) development of traffic and communication systems

Stating reversely, corporate publicity becomes a social problem only in modern society to the extent that big corporations disclose their financial information outside, that is, to the public, only in a society fulfilling these four conditions. Namely the corporate publicity problem is part of the "publicity problem in the mass democratic society."

The verification of the hypothesis proposed by us regarding corporate publicity must be carried out in empirical and historical study, properly speaking. But this will be partly done in Sections IV and V, and here will we enumerate the results of other disciplines which suggest the same idea about the social structure of mass democracy as ours. They serve to verify our hypothesis, too. These disciplines concern industrial democracy, business history and public relations.

First, let us mention industrial democracy. From our viewpoint, it is important that in the U.S. there emerged democratic relations and institutions between big corporations and laborers in the times from the latter part of the 19th century to the early years of the 20th century. The emergence of collective bargaining and employee participation should be pointed out in this connection.[16] These phenomena in the area of industrial relations are the first participation problems of our times, and it seems that they may have a common social basis with the demand of the public for information disclosure.

Secondly, we shall discuss the function and image of modern management in business history. Traditionally, many researchers of business history support the progressive historical view. According to it,

> ...society is divisible into two classes. One is the good class, that is to say, the government representing the public opinion which has contributed to social progress, and the other is the bad class, namely, big business and its management representing conservatism which deny social progress. And history is interpreted as a continuous succession of struggle between the two classes, the victory of the good class and social progress carried out by the good class.[17]

But thereafter the progressive historical view was substituted by the revisionist historical view, and in turn, by the organizational synthesis view of A. Chandler, Jr. In this development of business history, the function and image of modern management of big corporations gained gradually importance.[18] That is to say, the image of old-fashioned management which oppressed laborers and the public has been substituted by the image of new management which is sensible to public opinion and political affairs, and positively responds to them. As a typical example of this new management, we can point out H. Gary, the financial executive of U.S. Steel in the early years of the 20th century. He used many modern management policies in which corporate financial reporting was involved. Postponing a detailed analysis to another paper, we can say that one of the reasons why H. Gary was able to utilize modern management policies would consist in the structure of mass democratic society as defined in our hypothesis.

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16) Kazuyoshi Kōshiro, America Sangyominshusei no Kenkyu, (*The Study of American Industrial Democracy*) (in Japanese), Tokyo-daigaku Shuppankai, 1966.

17) *Cf.* Satoru Tsujihara, "Big Business oyobi Leader-Kan no Shiteki Hensen," ("Historical Views of Big Business and its Leader—With Special Reference to the Chandlerian School in American History —" (1), (in Japanese), *The Economic Review* (Otaru University of Commerce), Vol. XXX, No. 2, (October, 1979), pp. 41–42.

18) L. Galambos, "Parsonian Sociology and Post-Progressive History," *Social Science Quarterly*, Vol. 50, June, 1969.

Thirdly and finally, we may mention public relations. In his book, E. L. Bernays points out that the practice of public relations in American industries emerged at the turn of the century.[19] Public relations were established as engineering for obtaining a consensus in the situation where big corporations were emerging, becoming monopolistic and anti-monopoly public opinion appeared. It seems that the basis for the establishment of public relations lies in the structure of the mass democratic society.

Still more, the political situation at the turn of the century must be made clear for supplementary data. T. Roosevelt and U. Wilson, belonged to different political parties, but both utilized the publicity policy in the election campaign for the presidency. In particular, U. Wilson asserted as campaign promise that purification of politics would be carried out by means of information disclosure about governmental activities. The reason why both presidents could use this publicity policy in the election campaign lies also in the structure of the mass democratic society of those times.[20]

The findings of these three disciplines, which are all deeply related to the phenomena in the real world based on the social structure of mass democracy, may be able to supplement the verification of our hypothesis. Thus, we can consider corporate publicity as the same phenomenon as those treated by the three disciplines, and explain the corporate publicity problem on the base of the social structure of mass democracy. This view may be supported by some researchers. But there remains the task to verify our hypothesis through historical analysis.

IV Historical Study of the Corporate Publicity Problem in the United States

In this section, the task to interpret the historical materials about the corporate publicity problem in the United States is given to us. But only cases of Sections II and III which were used to disprove two hypotheses will be treated. And each historical case will be briefly analized. More minute case-studies will be found in future articles of this author.

IV-1 Corporate financial reporting of the American railroad industry in the latter half of the 19th century

The first railroad corporation in the United States, which was incorporated in 1827, was the Baltimore and Ohio Railroad Company. This railroad was established mainly with municipal funds. And this case became typical for the 1830's to 1850's. That is to say, in those years relatively small and local railroads were incorporated, and they were not always financed by private funds of stockholders, but on the contrary, chiefly by municipal funds.

19) Yoshinori Ide, "America ni okeru Seifu PR no Kōzō to Kinō," ("Public Relations in the Administration of the United States: Structure and Function,") (in Japanese), *The Journal of Social Science*, Vol. XVI, No. 6, (March, 1965).

20) *Encyclopaedia of Social Sciences*, ed., by E. R. A. Seligman, New York, The Macmillan Company, 1934, "Publicity," by E. Grueing.

In such a situation, the municipal governments required that these railroad corporations published financial statements. For the public (in this case the public was residents of the citizens whose funds and taxes were invested in railroad corporations), it didn't demand the disclosure of information about the railroads, since the railroads in this period were thought to be essentially managed by municipal governments, and it was not necessary for the public therefore to check by themselves the managerial activities of the railroads.

But soon after these small and local railroads merged reciprocally and became big trunk line railroads which came to raise funds necessary for their own expansion in the security markets. At the same time, the financial disclosure of railroads increased in importance since the railroads utilized the funds of a greater number of people than the early railroads. Thus the relation between security investment decision and accounting information drew the attention of the public. So far as we have already seen, in this case it seems that the arising of corporate publicity was related to the establishment of the security markets, that is to say, the security investment decision-oriented-hypothesis may be truely able to explain the corporate publicity problem. But we find this view mistaken when we analize the situation concerning the security markets by taking into account the writings of H. V. Poor.[21]

H. V. Poor edited *the American Railroad Journal* from 1849 to 1862, and published *the Manual of the Railroads of the U.S.* Therefore, he was an expert in analizing corporate financial reporting of the railroad industry of that time. His direct motivation to analize it was to render useful information to the investing public which invested its money in railroad securities. When the investing public which used to invest in local and small firms changed its investments from these to the big railroad corporations, it could no longer depend on such sensory experience as its acquaintance with the management of the small firms, and needed accounting information about the railroads. Thus corporate financial reporting became significant. On the other hand, the railroad corporations disclosed their information to obtain sufficient funds in the security markets. On this condition has already been based the security investment decision-oriented-hypothesis.

But there seem to be two meanings in the idea of H. V. Poor regarding the corporate publicity problem. First, since his motivation was communication of useful financial information to the investing public, he criticized the financial statements of some of railroad corporations as being misleading or wrong. For example, he criticized the Erie, the Hudson River, the New York Central and others. Because of these efforts, he was strongly supported by the investing public.

Then, what meaning can we attribute to the activities of H. V. Poor? It does not

21) A. D. Chandler, Jr., "H. V. Poor: Business Analyst," *Explorations in Entrepreneurial History*, Vol. II, No. 4, (May 15, 1950). "H. V. Poor, Philosopher of Management, 1812–1905," contained in W. Miller, ed., *Men in Business: Essays on the Historical Role of the Entrepreneur*, New York and Evanston, Harper and Row Pub., 1952. *Henry Varum Poor: Business Editor, Analyst and Reformer*, Massachusetts, Harvard University Press, 1956.

seem that the financial statements published by railroads of those days were useful from the viewpoint of supply and demand of funds to both the investing public and the railroads. On the contrary, for railroad corporations which published misleading statements, their image worsened so that they had more difficulties in obtaining funds. It was important that the relation between the railroad corporations and the investing public changed in nature from a simple supply-and-demand relation of funds to a democratic relation thanks to H. V. Poor. That is to say, the investing public became able to check the financial management of railroad corporations by means of the information communicated by him. As for the railroads, they intended to refine their financial statements and managerial activities in order to acquire the support of the public. It is interesting to note that in American corporate publicity there emerged such a critic against big corporations as H. V. Poor, who brought the relation between the corporations and the public from the one-way communication to the two-way communication demanding the extension of the disclosure of the corporations. In these conditions, corporate financial reporting has developed.

As a second and supplementary significance of H. V. Poor, we can mention his use of publicity policy in another area. He knew the importance of publicity. Therefore he used it (i) to check the railroads and (ii) to acquire the support of the public. (i) has already been stated. As an example of (ii), we can point out the fact that he employed publicity policy to get the support of the public for the development of the railroad industry. Namely he found it regrettable that the anti-railroad movement and anti-monopoly movement opposed a sound development of railroads, and demanded the publication of true statements of the railroad corporations for the purpose to silence the anti-railroad movement. This fact does not prove that in reality the railroad corporations utilized financial disclosure to acquire the support of the public, but it proves that there had already emerged a social structure where publicity policy could be useful to get the support of the public.

This analysis shows us that even the relation between security investment decision and accounting information disclosure must be considered as part of the establishing process of democratic relations between big corporations and the public.

IV-2 Agricultural movement and corporate publicity

From the 1860's to the 1880's, the railroad system in the United States developed in a way that the railroad corporations became powerful enough to ignore the public. In particular, the railroads exploited farmers by using differential rate systems which demanded high rates from farmers and low rates from influential people (for example, the legislature, newspapermen and others.)

Generally speaking, the discontent of farmers came from the following factors.[22]

i) ... As the world grows richer there is a more rapid increase in the demand for

22) E. W. Bemis, "Discontent of the Farmer," *The Journal of Political Economy*, Vol. 1, No. 2, (March, 1893).

the finer products than in the demand for raw material.... This means more growth of cities, factory towns and railroads than of farmers.

ii) A second cause of the farmer's relatively poor situation and therefore of his discontent, especially in the south, is lack of thrift, energy and intelligent in adopting improved methods of farming.

iii) A third cause of the farmer's ills... has been unforeseen natural difficulties, such as drought and grasshoppers.

iv) Greater blessings of government in cities, such as better schools and roads.

v) Unequal taxations of city and country.

vi) Then, in an age of combinations of both labor and capital, the farmer suffer from the difficulty perfecting a strong organization.

vii) Farmers are also naturally made discontented by such rapid accumulations of large fortunes as have been aided by secret railway rates or by securing for almost a song from the public valuable quasi-public franchises.

viii) The farmer also complains of the high rate of interest he must pay.

ix) The farmer feels aggrieved at the supposed forcing down of the prices of his products at harvest time by large sales by the "bears" for future delivery of products not at the time in the procession of the speculator.

x) ...the farmer complains of the general fall in agricultural prices in recent years, which has made his mortgage-loan, contracted when prices were high, more and more burdensome.

These factors of farmer's discontent are originated exclusively from the activities of big corporations, except for natural factors. And in this period the word "big corporation" was synonymous with "railroad corporation," therefore the farmers used to criticize the railroads. Then came the Granger Movement among mid-west farmers based on farmer's complaints against railroads and monopoly. This agricultural movement created the atmosphere of anti-railroad and of anti-monopoly. At the beginning, many local governments where the movement prevailed, regulated railroad corporations by various policies among which corporate financial reporting was included. In particular, weak states had publicity regulations which required railroads to disclose accounting information. On the public side, corporate financial reporting functioned to check railroad management and on the railroad side, it worked to conciliate the public opinion and therefore the discontent of farmers and to avoid more direct and more oppressive governmental policy against the railroads. But soon after the regulation of interstate activities of corporations by the states was judged a violation of the constitution by the supreme court, and the anti-railroad regulations at the state level were involved into federal regulation. This was the "Act of Regulate the Interstate Commerce" which established the Interstate Commerce Commission. The commission also made use of corporate financial reporting to regulate the railroad corporations. In this situation, we can recognize the emerging social structure mentioned in Section III, while the voluntary disclosure by the railroad corporations themselves is not yet seen clearly. The outline of the agricultural movement from the 1860's to the 1880's told us that corporate publicity having its origin in the establishment of a mass democratic social structure, did not appear necessary through the establishment of the

security markets.[23]

IV-3 Management policies in the view of H. Gary

As we have already stated, H. Gary was the financial executive of U.S. Steel and planned to publish minute financial statements in 1903. We can say that he was the first manager who noticed the importance of the public (or public opinion) and utilized this for his own purposes. We will show two cases concerning H. Gary's management policy.

The first case is the overthrow of C. Schwap who belonged to the camp of Carnegy at the time of incorporation of U.S. Steel and was the first president of the U.S. Steel. The nature of management by C. Schwap and Carnegy was characterized as old fashioned because they ignored the laborers and the public. In other words, they cannot recognize the existence of the public. On the other hand, H. Gary, who reckoned with it, brought about C. Schwap's downfall by using public opinion, that is, by making a scandal about Schwap in the press.

The second case concerns the extension of financial disclosure. When U.S. Steel was incorporated, the anti-trust movement gained force. Thus if U.S. Steel didn't adopt any policies to persuade the public, the firm would be devided into various smaller firms as in the case of Standard Oil. But in reality H. Gary adopted the publicity policy with the purpose to assert the rationality of his corporation. It seems that the financial reporting of U.S. Steel was part of this policy. The reason why H. Gary was able to carry out this policy is thought to lie in his timely recognition of the importance of the public.

V The Development of Corporate Financial Reporting in Japan

It was in 1873 (the 6th year of the Meiji period) that Western double entry bookkeeping was for the first time introduced to Japan. In this year, there occured two events concerning the modernization of accounting in Japan. One is the publication of *Chōai no hō* (How to enter in an account book) written by Yukichi Fukuzawa and the other is the enforcement by the First National Bank of double entry bookkeeping which was planned by A. Shand. The former is the beginning of the modern accountancy in Japan and the latter is the beginning of the modern accounting practice in Japan. For our interests, the modern accounting practice, in particular, modern corporate financial reporting must be mentioned in the following.

The First National Bank, which kept double entry bookkeeping for the first time in Japan, was also Japan's first corporation. On December 31st of the 6th year of the Meiji period the Bank published its first semiannual report which consisted of two statements, that is, a balance sheet (Hanki Jissai Hōkoku) and a profit and loss and

23) More detailed research will be made in my article, "19 seiki Kohan no America Gasshūkoku ni okeru Tetsudogaisha Kisei to Kaikeijohokokai," ("The Regulations and Accounting Disclosure of American Railroad Corporations in the Latter Half of the 19th Century,") (forthcoming) (in Japanese).

appropriation statement (Hanki Riekiwariai Hōkoku). Of course, the publication of the two statements by the Bank was not carried out spontaneously but according to the National Bank Act which was enacted on November 15th of the 5th year of the Meiji period.

It is necessary to describe the nature of the First National Bank *Incorporation* for the purpose of understanding the function of financial disclosure by the Bank. The Bank was originally established as the "Mitsui-Ono Partnership Bank" in the summer of the 5th year of the Meiji period. But as the National Bank Act was enacted on 15th November the 5th year of the Meiji period, the Mitsui-Ono Partnership Bank became the base of the First National Bank. At the time of the establishment of this Bank, stocks were offered for public subscription. But the people of these times had no knowledge about banking systems, so that the stocks were not sold in sufficient number. For this reason, the greater part of the Bank's stocks were held by the Mitsuis and the Onos. And the management of the Bank, in particular the presidency of the Bank, was carried out by Hachiroemon Mitsui and Zensuke Ono in monthly alternation.

In the Meiji period, Japan as an underdeveloped country, was in the process of enhancing the economy and organizing political institutions. With regard to the economy, the establishment of corporations was carried out by the government and such Zaibatsu as Mitsui, Ono, Sumitomo, Yasuda and others. The case of the First National Bank was a typical one. That is to say, the government gave financial and legal aid to the Zaibatsu. Therefore the modernization of Japan's economy was led by the state and the Zaibatsu. And for politics, the modernization of political institutions was equally conducted by the state. In economic history, Germany and Japan are characteized as the modernized countries "from above," while England and the United States as modernized "from below."

In these economic conditions, the government checked the economic activities of corporations established by the Zaibatsu, for the purpose of protecting the interests of stockholders and creditors. Therefore, the corporations had to report their financial statements first of all to the government and secondly to the public (stockholders). Still more, the financial disclosure by the corporations was not carried out according to the public's need, but according to the National Bank Act or the Commercial law enacted by the state. Allowances for interests to stockholders, creditors and depositors were made by the state, not by the Bank, corporation and equity holders themselves.

The corporations organized by the Zaibatsu published their financial statements as did the corporations of the United States but they differed from the corporate publicity in the U.S., when we take the above mentioned situation into account. As we have already seen, when on the one hand the public wanted to check the activities of big corporations, on the other hand the big corporations' purpose was to acquire the support of the public, there appeared modern corporate financial reporting as a two-way communication on the basis of the social structure of mass democracy in the United States. These phenomena emerged in the times from the latter half of the 19th century to the early years of the 20th century. For Japan, the public (or the mass) in

the Meiji period lacked the democratic feeling for checking by themselves the activities of the government and of the corporations organized by the government, because modernization was undertaken by the government. Therefore, the financial statements published by the corporations established by the government and the Zaibatsu were useful to only a few businessmen with political affiliations, but from social viewpoint they had only a ceremonial meaning. The corporate financial reporting in the Meiji period was indeed a one-way communication between the corporations and the public. The main reason for such a limitation seems to be that in the Meiji period no mass democratic society was established yet. In our opinion, the reality of a mass democratic society and the consciousness of the public of democracy is a recent phenomenon in Japan.[24]

In the near future we will develop more detailed case studies concerning the development of corporate financial reporting in Japan.

24) Japan Accounting Association, *Kindai-Kaikei Hyakunen*, (*Modern Accounting History in Japan*), (in Japanese), 1978.

Ichiro Katano, *Nippon Ginko-Kaikei Seidoshi*, (Revised Edition), (*Accounting History of Japanese Banks*), (in Japanese), Dōbunkan, 1977.

KOBE ECONOMIC & BUSINESS REVIEW

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NO. 23 (1977)

NO. 24 (1978)

NO. 25 (1979)

NO. 26 (1980)

KOBE UNIVERSITY ECONOMIC REVIEW 25, 1979

Edited by Faculty of Economics,
Kobe University, Kobe, Japan

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THE ANNALS OF THE SCHOOL OF BUSINESS ADMINISTRATION KOBE UNIVERSITY 1980

Edited by the School of Business Administration,
Kobe University, Kobe, Japan

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KOBE UNIVERSITY LAW REVIEW International Edition No. 13, 1979

Edited by Faculty of Law
Kobe University, Kobe, Japan

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RESEARCH INSTITUTE FOR ECONOMICS AND BUSINESS ADMINISTRATION, KOBE UNIVERSITY

HISTORICAL SKETCH

In 1919, a research organization named the Institute for Commerce was founded in Kobe Higher Commercial School, one of the chief predecessors of Kobe University, with a gift made by F. Kanematsu & Company, a leading mercantile firm in Kobe. The organization was designed to carry on and facilitate integrated research on business and commerce and to formulate and publish the results of these studies and investigations in such form as to make them available to the business community.

With the founding of Kobe University of Commerce, successor of Kobe Higher Commercial School, in 1929, the Institute extended its research activities by adding several divisions. One was the famous Latin-American Library, which soon became the center of research in this field in Japan. A room for statistics equipped with various computing machines was established and began publication of *Jūyō Tōkei Keizai* monthly and *Sekai Bōeki Tōkei* annually. A filing room was prepared to deposit press clipping files systematically arranged by topics and dates. Another room was designed to become the center of all possible original records and data having to do with the beginning and progress of Japanese business.

On the campus of Kobe University of Commerce, another organization named the Institute for Business Mechanization was founded in 1941 utilizing business machines donated by the IBM Corporation and others. With Professor Yasutaro Hirai as its head a broad and forward-looking plan for business mechanization in Japan was developed.

In 1944, Kobe University of Commerce changed its name to Kobe University of

Economics. After the War, however, the University was consolidated with three other colleges in Hyōgo Prefecture to become Kobe University. With this development, the two Institutes were also amalgamated into the Research Institute for Economics and Business Administration, Kobe University. At present, the Institute, with its twenty four full-time professional staff members, carries on studies and investigations in international economy, business administration, and information systems in Japan.

LOCATION AND BUILDINGS

The Research Institute for Economics and Business Administration is located on the campus of Kobe University, Rokko, Kobe. It consists of two three-storied buildings. One is named the Kanematsu Kinenkan and has a floor space of about 2,900 square meters, which includes a president's room, forty-one offices, six rooms used as a library, a room for statistics, etc. Another is built in 1964. It has a floor space of about 1,900 square meters, which is chiefly used as the Documentation Center for Business Analysis, a library and a conference room.

ORGANIZATION

Under the directorship of the president, the Institute operates with two research groups. Each research group and its sections are as follows:

A Group of International Economy

(1) International Trade
(2) International Finance
(3) Maritime Economy
(4) Latin-American Economy
(5) Oceanian Economy
(6) International Labour Relations

B Group of Business Administration

(1) International Management
(2) Business Administration and Information Systems
(3) Accounting
(4) Business Statistics

Besides the regular work of the Institute, research committees may be created to carry on any special work requiring the joint study of academic and business circles. At present, there are five standing research committees, as follows: Experts Group on the World Trade Structure, Committee of International Finance, Committee of Information Systems, Committee of Oceanian Economy and Committee of Maritime Labour.

For convenience and greater efficiency in carrying out its research activities, the Institute has a general office which is responsible for 1) the collection and preservation of a comprehensive collection of books, periodicals, pamphlets, and original records and data of finance, trade, commerce, industry and business generally; 2) the classifica-

tion, cataloguing, indexing arranging, annotation and compilation of these research materials; and 3) the formulation and publication of the results of the investigations and studies accomplished by the professional staff members of the Institute.

As an affiliated institute, the Documentation Center for Business Analysis has been established in 1964. It is the first systematic information facilities in the field of business administration in Japan that has been recognized and authorized by the Ministry of Education. The purpose is to collect and to make intensive control of all kinds of materials on business administration and to make them available to scholars, universities, governments, and business world with the aid of modern documentation techniques.