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23rd ANNUAL REPORT

THE RESEARCH INSTITUTE FOR
ECONOMICS AND BUSINESS ADMINISTRATION
KOBE UNIVERSITY

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CONTENTS

Page

Alternative Approaches to the
Accounting for Education ..... Nobuko NOSSE 1

Personnel Management of Japanese Companies
in Thailand: A Field Paper ..... Hideki YOSHIHARA 11

Evaluation of Performance Using
Multiple Criteria ..... Komayuki ITOW 63

Some Bargaining Process Models in
the Shipping Exchange ..... Tetsuji SHIMOJO 69

Asset Diversification under the Flexible
Exchange Rate System ..... Kazuhiro IGAWA 85

ALTERNATIVE APPROACHES TO THE ACCOUNTING FOR EDUCATION

Nobuko NOSSE

I Introduction

Because of the rising interest in Education in both sides of the Atlantic, Education Accounting has been a major subject of Social Accounting since 1970's. Around this subject there have appeared several pioneering works, but among those Professor Kendrick's human investment accounting and Professor Stone's education accounting seem to be most notable ones by their respective special influences in the followers. Both works, being built on different ideas, are contrastedly different on their scopes, approaches and their conclusions from each other; Kendrick intends to estimate all educational expenditures, gross human capital formation and its depreciation and human capital *within* the national accounting framework and as a corollary favors to revise the convention of the national accounts while Stone intends to build education accounting matrix *outside* the frame of the national accounts but within the new SSDS[1] for non-market activities without proposing any revision of the SNA.

Since the upsurge in interests in education came up later over one decade than the time of establishment of the national accounting convention, people who have wished to estimate education expenditures along the line of new thoughts, must face a trouble with the old national accounting way for education which treates outlay for education as a current expenditure, that does not enhance human capacity over the future periods. Against this long-lived tradition, those people have to be confronted with alternative ways of (i) estimating the education expenditure as an investment by discarding the convention of human capital and (ii) building the format for education separately while keeping the national accounts intact, both correspond to the idea of Kendrick and Stone respectively. It is thus clear that both works have been in main directions for education accounting. We intend to make a survey on both works with a scrutinization as shown below.

II Human Investment Accounting

Human capital, now growing to a popular term among both economists and accountants, is a general name both for tangible and intangible capital concerned to

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[1] UN, *Towards a System of Social and Demographic Statistics*, 1975.

human being. Among all human capital, education embodied in human being is most typical and representative. Under the concept of human capital since Professor T. W. Schultz's pioneering series on 'Economics of Education,'[2] diversified topics have been studied by his followers.[3] Professor Kendrick's human investment accounting[4] is a positive application of the human capital theory to national income and capital accounting.

Kendrick's aim is to introduce the expanded capital concept into the national accounts and to estimate NNP, investment and national capital in the set of the national accounts and the national balance-sheet along the line of human capital. Kendrick attacks first the national accounting convention which does neglect human capital and treats education outlay as a consumption. Then he points that this treatment is based on wrong convention derived from business accounting which has adhered only to physical capital but never has considered human capital as capital at all.

He asserts that both capital, either physical or human, should be treated as those on equal footing, and on this way he transfers education outlay and related expenditure from consumption to investment within US National Accounts and estimates the figures of US for 1929–1969. Kendrick defines capital as a stock from which we can expect to get some stream of income (either monetary or psychic) over future periods. His concept of capital undoughtedly corresponds to Schultz's capital concept or H. Johnson's 'generalized capital concept'[5] which is applicable indifferently to both physical capital and human capital. His estimates of rates of return of both capital during 1929–1969 indicate an evidence of the applicability of this generalized capital concept.

According to his list, human capital expenditure contains many items. It covers outlay for education both formal and informal, all sort of training costs, costs for improving health and safety, mobility costs for occupation and rearing costs of children to working age. It is obvious that his coverage counts items concerned to human capital in broadest sence. It is remarkable also that he counts not only actually paid expenditure such as school fees but also imputed 'foregone income' which has foregone and is an

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[2] T. S. Schultz, *The Economic Value of Education*, 1963.

[3] Among them schooling model by Becker, on the job training model by Mincer are most famous. See G. S. Becker, *Human Capital, A theoretical and Empirical Analysis with Special Reference to Education*, 2nd ed., 1975. J. Mincer, 'On the Job Training: Costs, Returns, and Some Implications,' *Journal of Political Economy*, Vol. 70, No. 5, part 2 (Supplement), 1962, pp. 50-80. For surveying, see T. W. Schultz, *Human Resources*, 1972. J. Mincer, 'The Distribution of Labour Incomes: A Survey with Special Reference to the Human Capital Approach', *Journal of Economic Literature* (Mar. 1970) pp. 1-26, and G. Psacharopoulos, *Earning and Education in OECD Countries*, 1975.

[4] J. W. Kendrick, 'The Treatment of Intangible Resources as Capital,' *The Review of Income and Wealth*, series 18, No. 1, Mar. 1972. J. W. Kendrick, 'The Accounting Treatment of Human Investment and Capital,' series 20, No. 4, Dec., 1974.

[5] H. G. Johnson, 'Towards a Generalized Capital Accumulation Approach to Economic Development,' 1964, reprinted in *Economics of Education* edited by M. Blaug, Vol. 1, 1968, pp. 34-44.

opportunity cost but not itself as a cost in the national accounting context. This way of thought corresponds to that of human capital school's such as Schultz. He calculates also the maintenance cost of human capital which is to be deducted from labour compensation.

Another notable point in his work is depreciation of human capital. As Kendrick assumes that capital whether physical or human equally suffers from depreciation and he estimates the value of human capital depreciation by applying double-declining balance method for tangible capital. The valuation of human capital is taken on cost basis as that of non-human capital. He estimates the national total of the human capital and its depreciation by totaling cummulated costs of education of age-groups of the population of the US and their depreciation cost based on the above method.

Finally Kendrick draws a set of current national accounts—production account, income account and capital account—and of balance-sheet in a consistent way. His work is pioneering one in estimating education investment and the related items in the national accounts and has been widely referred by human capital accountants such as Bowman[6] as we shall be seen later and has been supported by some national accountants such as Ruggles and Ruggles[7] and Gearly.[8]

III Education Population Accounting

Against the Kendrick's approach based on human capital theory, Stone has developed education accounting from the viewpoint of the student population analysis.[9] At outset he defines education activities as a non-market oriented activities which compose objects of the SSDS and then provides a demographic matrix called sometimes as PAM, while he does not intend to give any revision of the SNA at all.

Stone himself wrote the reason why he does retain the convention of the SNA on the education expenditures.[10] It is as follows. 'Although the fact of "a higher level of education with a higher level of life time earnings" being undeniable as Becker and his

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[6] M. J. Bowman, 'Postschool Learning and Human Resource Accounting,' *The Review of Income and Wealth,* series 20, No. 4, Dec. 1974.

[7] N. Ruggles and R. Ruggles, 'A Proposal for a System of Economic and Social Accounts,' in M. Moss (ed.), *The Measurement of Economic and Social Performance,* 1973. Ruggles and Reggles, Design of Economic Accounts, 1970.

[8] R. C. Geary, 'Reflections on National Accounting,' *The Review of Income and Wealth,* series 19, No. 3, Sept. 1973.

[9] R. Stone, *Demographic Accounting and Model Building,* 1971. R. Stone, 'The Fundamental Matrix of Active Sequence,' in A. Carter and D. Bródy (eds.), *Input-Output Techniques,* 1972. R. Stone, 'An Example of Demographic Accounting: The School Ages,' reprinted in his *Mathematical Models of the Economy and Other Essays,* 1970. R. Stone, 'A System of Social Matrices,' *The Review of Income and Wealth,* series 19, No. 2, June 1973. UN, *Towards a Systems of Social and Demographic Statistics,* 1975, pp. 42-50, 93-99.

[10] UN, Statistical Commission, *System of National Accounts (SNA), Supplementing the National Accounts for Purposes of Welfare Measurement* (E/CN. 3/459) July 1974.

followers assert and as Psacharopoulos' estimates show, their suggestion that the human capital concept should be introduced into the national accounts raises wider issues. If we dealt all education and other human expenditures including maintenance and improvement of human capital as capital expenditure according to the suggestion, final consumption would hardly appear on the income account because all consumption is splitted into maintenance (that is an intermediate outlay) and improvement (a capital expenditure) and final output would only be net investment'. He adds that the objective relation between these expenditures concerned to human capital and future earnings have not assessed even in the case of education. As for the depreciation of the education outlay he does not explain but his disagreement with the suggestion to introduce the expenditures of research and development into capital expenditures is notable; his objection to the suggestion is based on impossibilities of objective measurement and he says that to trace a pattern of depreciation of such expenditures over their life time in economically meaningful way is difficult that those expenditures should be dealt as current expenditures. By above reasons Stone concludes that the most reasonable way is to treat the problem according to the present way of the SNA with some detailed information if needed, and education activity should be explored in the SSDS as other non-market oriented activities.

Now turn to Stone's education accounting. He starts by defining education as an aging phenomenon of population. For the taxonomic convenience, he sets the boundary of educational (or learning as he says) activity between formal education and informal education. He takes only the former as to be entered in his education accounts and makes several formats for recording student population from infants to age 25 or a bit elder. The formats constitute a proto type of the education accounts.

The main consideration in designing the education accounts is simple, basically two: One is 'age' and another is 'institution' and both are main categories for classifying the various students on different states definitely. Institution is, by Stone's explanations, typically a school and generally considered as an organ of performing their own educational subject to give educational training to students who are coming in and leaving out after schooling. Stone says that the 'states' of the student population is distinguished by these categories.

Institution can be decomposed into its sub-groups further. And one institution and one sub-group of it often performs plural subjects. Stone gives a short explanation for understanding 'institution'. According to it, 'institution' corresponds to 'industry' and 'subject' corresponds to 'commodity' in the 1–0 accounts.[11] He adds that the institutional division serves for showing different educational products of different quality produced in different academic streams.

The student population moves age by age, grade by grade, institution by institution

[11] Stone, *Demographic Accounting, ibid.* pp. 48-50.

and then at last leaves from the boundary of whole formal education. Stone explains the mechanism of this transition by the idea of 'transition coefficients' which he developed it in his demographic accounting. Using his 'transition coefficients' or 'transition proportion ratios' which are defined as ratios of survivors to the initial stocks of the student population in every state (age, institution, etc.), whole picture of students in an economy is defined as follows.

$$\Lambda n \equiv Si + b \tag{1}$$

where S is a matrix of surviving students, b is a column vector of new students both from domestic area and foreign countries, i is a unit vector, n is a column vector of the student population at the beginning of a year, Λ is a shift operator defined by the relation of $\Lambda^{\theta} n(\tau) = n(\tau + \theta)$.

The transition matrix is defined as

$$C = S\hat{n}^{-1} \tag{2}$$

where C is a matrix of transition coefficients. By combining (2) and (1)

$$\Lambda n = C\hat{n}i + b$$
$$= Cn + b \tag{3}$$

under the stationary equilibrium of $\Lambda^{\theta} n = n$ and $\Lambda^{\theta} b = b$,

$$n = Cn + b \tag{4}$$
$$= (I - C)^{-1} b \tag{5}$$

where I is a unit matrix.

As a first step Stone assumes that the C-matrix is constant and then he relaxes it by adjusting C by its trend of changes during θ. By these relations, the future structure of student population of which belongs to various cohort at the stages of education can be estimated. Under this frame of thinking, assumption of complementarity among students on each step of institutions which composes one academic stream exists. This is a reflexion of the British situation where little competitiveness among educated population and among students in diversified academic streams except 'six formers'.[12]

Stone does not explain explicity his idea on educational capital and flow accounting. But we can speculate it as it is a non-monetary accounting with accounts for flow and stock in terms of real unit, and the accounts accommodate the real educational stock and flow by the numbers of students classified by states, that is, ages and institutions and other sub-categories such as grades and results of tests.

Stone intends to link the education accounts with the other fields of the SSDS such as employment accounts which provide man-power data and income formation accounts which provide data on generation, distribution and redistribution of incomes[13] which he aims to link it with the education industry accounts of the SNA.

[12] Here exists dual complementarity among students i.e. complementarity of students in one academic stream and complementarity of graduates of different academic streams. But the six formers confront with competition as they have to prepare the state examination.

IV Some Comments on Both Works

The survey on both works given in the above section suggests that they are, very contrary on the scope and the method and that it is difficult to compare them on the same dimension for finding a meeting place of them.

Before trying to find the way of the possibility for co-ordination of them, we must give scrutiny to their own virtues and defects by referring the comments given on them.

First we take Kendrick's approach. Against his broad coverage of human capital expenditure commentors even those people of human capital school make objections. It is natural because when we read through his long list which is fully contained by schooling, both private and on the job training, improvement of health, labour mobility outlay, and rearing costs of children to working age we notice that investment feature of human capital expenditure gradually vanishes but consumption feature on the contrally appears. Actually to set a boundary between current expenditure and capital expenditure in human outlays is utterly a difficult problem because people set the boundary according to their own purposes. Thus the boundary is not absolute but conditional as Seers and Jolly suggest. They indicate that in the poor society even consumption of foods has some investment features.[14] Among the Kendrick's list, the most equivocal item is 'rearing costs'. Seers and Jolly[15] and Bowman[16] and Ruggles and Ruggles[17] also exclude it from human capital expenditure. Opinions on the boundary are diversified even in the human capital accountants. For example, some people like Seers and Jolly favor to count only schooling among human capital investment and some like A. Lewis takes it at a certain level of schooling such as above secondary schooling.[18] As the situation being so, people is obliged to set the boundary arbitrarily, there has not been any common convention established yet. Even schooling there is some element of consumption, for example, in the case of higher education for female there is far less definit relation between education and earning than the case of male. On the other side, if we take maintenance cost of human capital like Kendrick,[19] we must stand the warning of 'disappearing tendency of consumption' given by Stone. All these issues likely invite 'entanglement between consumption and investment' controversy for us, and if we wish to avoid it, we must

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13 Stone, 'Social Matrices,' *ibid.* Stone suggests that it may be useful to consider a number of subsystems alonga life sequence. The models of subsystems are conceived in terms of Markov chains respectively. The subsystems are considered to be combined as a group by interchangeability of data and their isomorphic structure.

14 D. Seers and R. Jolly, 'The Treatment of Education in National Accounting,' *The Review of Income and Wealth,* series 12, No. 3, Sept. 1966, P. 199.

15 D. Sees and R. Jolly, *ibid.* p. 199.

16 Bowman, Principles in the Valuation of Human Capital,' *The Review of Income and Wealth,* series 14, No. 3, Sept. 1968, p. 223, footnote 14.

17 Ruggles and Ruggles, *The Design of Economic Accounts, ibid.*, p. 43.

18 Seers and Jolly, *ibid.*, p. 201.

abandon the Kendrick's fully contained list of human investment or otherwise have to make another shorter list of the items by screening the investment nature of human capital outlays. But even in the latter case we have no objective convention on screening yet. Moreover, to estimate costs of human capital maintenance in the national accounts should be posed. These considerations may give some justification to Stone's standpoint against Kendrick.

Next unsettled problem is that of depreciation. Against Kendrick's favoring to cost basis, Seers and Jolly[20] and Bowman[21] take replacement cost basis. Seers and Jolly's objection to cost basis is that human capital formation and its depreciation take longer periods than those of physical capital and as a result likely suffers worse effect of inflation than physical capital if we use original costs basis. Some part of this objection may be solved by reflating original costs by price indices but problems may be remained. On the other hand, Bowman made a catalogue for various methods of measurement of human capital[22] such as **i** a number of school years, **ii** efficiency equivalent units, **iii** base-year life-time earned incomes, and **iv** approximations to base-year real costs. Bowman herself favors the present value method more than the replacement cost method as a proxy of the former, for its virtue of logical meaningfulness.[23]

Lastly on measurement of human capital. If we take human stock concept instead of human capital, we are free from the problem of periodical and monetary estimation. Seers and Jolly measure human capital as stock measured by number of educated and of learning population.[24] (It will be remembered that Stone's human capital is a real stock as shown in the above section.) Another problem arises further concerned to human capital. It is a problem whether we can apply this concept to all people, male and female indifferently or should we introduce some adjustments for female (or should apply only to male.) This is raised by Bowman and she supports[25] the former like Kendrick.

Then we understand that there may exist some different opinions and methods within the human capital accounting. Surely the existence of such a disagreement on the subject is caused by immatureness of human capital accounting and needs further study for establishing the convention of the accounting for education.

Second turn to Stone. We have another population approach to education published by Armitage and Smith[26] which is written a bit earlier than Stone. Comparing this with

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[19] To deduct human capital keeping costs is meaningful from the point of *income distribution* because this deduction makes possible to compare rates of return of human capital and those of non-human capital. This is, however, beyond the NA study.

[20] Seers and Jolly, *ibid.*, p. 199.

[21] Bowman, 'Postschool Learning,' *ibid.*

[22] Bowman, 'Human Capital: Concepts and Measures.' in H. Hegelund (ed.), *Money, Growth and Methodology*, 1961, pp. 147-68.

[23] Bowman, 'Postschool Learning,' *ibid.*

[24] Seers and Jolly, *ibid.*, p. 208.

[25] Bowman, 'Postschool Learning,' *ibid.*, p. 493.

[26] P. Armitage and C. Smith, 'Computable Models of the British Educational System' (1967), reprinted in M. Blaug, *Economics of Education*, Vol. 2, pp. 202-37.

Stone's education accounting, Armitage and Smith's work provides a simpler and clearer picture than the latter while Stone's education accounts is more informative because his suggestive explanation on sectoring. Stone's population matrix, however, have suffered some critics, one from Ruggles and Ruggles and another from Blaug. In their 'Proposed System of Economic and Social Accounts',[27] Ruggles and Ruggles gave a comment on Stone's 'Social Matrices,' and criticised as follows: Stone's approach analyses simply from a population side but there exist various needs in social and economic problems for analysing instead of general need which Stone's social matrices intend to meet.

We think this comment is right. Actually Stone simply aimed to construct a sub-system for student population while a lot of topics such as post-schooling, learning by doing without formal schooling, earning of disadvantaged with higher education have emerged. For those Stone's population approach hardly serves as a strong weapon and we must provide another tools for them.

Blaug's comment is given from another angle.[28] He explains that the human capital approach and the population approach are alternative types for education planning, the former fits to neo-classical universe like US where high substitutability among students is secured while the latter fits to Leontief universe like UK where 'social demand' for education has remained to exist and high complementality among educated population is seen because restrictive supply of educational service especially in higher education and high complementarity among educational institutions have prevailed. Blaug's comment is valuable as it helps understanding both theories of education accounting and suggests where is a solution for co-ordinating them.

V Summary and Conclusion

Now we reach to make a summary to get a conclusion. First for simpler comparison, we show Table 1 below.

Table 1: Alternative Treatment in Accounting for Education

	Coverage of Human Investment	Scope	Valuation	Design of accounts	Attitude to National Accounting
Kendrick	Education in broad sence, i.e. On the job training, Private training, Outlay for labour mobility, Outlay for improving in health, Rearing costs of children	Human Investment Accounting *within* national accounting system	Monetary measurement Cost basis	Conventional sectoring	Require revision of accounting category especially investment and consumption
Stone	Formal education	Education Population Accounting *outside* national accounting system but *within* SSDS	Real measurement (in terms of numbers of students population)	Institutional sectoring. Institution is grouped by different educational activity	No revision

Using Table 1 where both analyses are epitomized we can understand them more clearly than before and are able to consider their proposals further on the prospect of education accounting. Our conclusion on them is as follows.

1. Kendrick's approach is pioneering and most suggestive. But his proposal to revise the national accounts and the national balance-sheet seems to raise some problem to be solved further. The reason why we get this conclusion is that though many research are going on the problem of demarcating the line concerned to human investment is unsettled yet and that rules of depreciation for human capital, of measuring human capital and its maintenance costs also have not been established.

2. Instead of revision of whole national accounting convention, we favor exploring accounting for education studies *within* the SSDS or other welfare-oriented accounting, not only by population accounting matrix but by various scopes concerned to human capital. The new trend in human capital approach has been coming up in one way on which Psacharopoulos gave a survey and another which are epitomized in the SSDS. Empirical case studies in the education accounting give a great help to establish conventions and working rules in this infant field.

3. Stone's analytical tool for education is very strict and effective tool for analysing the 'social demand' from population side. As Blaug wrote it is useful for all countries where complementarity among educated population and among academic streams are prevailing like UK but not a country like US. But turning to real world, there are, however, no pure Leontief universe nor pure neo-classical universe but are quasi Leontief world or quasi neo-classical world or hybrid of them. For example, Japanese school system was a quasi Leontief type and after the postwar revision taken by SCAP she has been turned to a quasi neo-classical type, but she still remains a hybrid element.[29] Contrastedly to Japan, Western countries such as West Germany and France have not changed drastically their restrictive education system. But in these countries, and even in England a gradual change of school system has been emerged.[30] The situation being such, it is necessary to have an analytical tool based on education population model like Stone and at the same time another analytical tool based on human capital approach for complimenting it.

4. Both approaches of Kendrick and Stone open an entrance of generalized education accounting for macro-accountants to be explored further. Relied on both approaches and by solving the issues remained step by step, we shall be in a more closed position for most interesting part of the whole welfare-oriented accounting.

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[27] Ruggles and Ruggles, 'A Proposal for a System of Economic and Social Accounts,' *ibid.*, pp. 116-17.

[28] M. Blaug, 'Approaches to Educational Planning,' *Economic Journal*, June 1967, pp. 262-87.

[29] Ministry of Education, *Wagakuni-no-Kyōikusuijun* (Survey on Contemporary Education in Japan), 1976, Ch. 2 and Ch. 6

[30] Ministry of Education, *op. cit.*, Ch. 2 and Ch. 6.

PERSONNEL MANAGEMENT OF JAPANESE COMPANIES IN THAILAND: A FIELD REPORT*

Hideki YOSHIHARA

I Objectives and Method of the Research

(1) Criticisms upon Japanese Personnel Practices

At the end of 1975, the Japanese direct investments represented 38.5% of all foreign direct investments in Thailand.[1] This Japanese share of 38.5% is more than twice as large as the second largest share (13.9%) of the United States of America.

More than one hundred manufacturing Thai-Japanese joint ventures are doing business in Thailand. Although the capital of these companies is owned by Thai partners and Japanese partners, most of the companies are managed by the Japanese partners in a more or less Japanese way. Therefore, in the present paper which deals with the management practices rather than the ownership of these companies, these companies are called "Japanese managed companies" or simply "Japanese companies." In the same way the Thai-U.S. joint ventures are called "Amercian managed companies" or simply "American companies."

As the presence of Japanese companies in Thailand has become more and more conspicuous, the critical views upon them have become stronger and more widespread. The following are typical criticisms of Japanese personnel practices in Thailand.[2]

In the first place the accusation has been made that the pay scales of Thai employees have been kept at a relatively low level and that the working conditions and environment are bad or dangerous. It is widely believed that wages are much higher and that working conditions are much better in American managed companies than in Japanese managed companies. Secondly, it has been criticized that in Japanese companies the promotion of Thai employees is slow and strictly limited, and that only little efforts are made to develop Thai technical and managerial staffs. Thirdly, the attitudes and behaviors of Japanese staffs have been a target of bitter criticism. It is said that they seldom speak

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* This paper is a revised version of the author's earlier paper: *Personnel Practices of Japanese Companies in Thailand*, the Economic Cooperation Center for the Asian and Pacific Region (ECOCEN), Bangkok, Thailand, 1975.

[1] More accurately, 38.5% of all the registered capital of purely foreign owned companies and Thai-foreign joint ventures which have been promoted by the Board of Investment of Thailand (BOI) are owned by Japanese investors at the end of 1975. The source of the data is BOI.

[2] For the critical views upon the Japanese way of management in Thailand, see; Khien Theeravit, *Report on Research into Japanese-Thai Economic Interaction*, October 1973, translated by the Japanese Trade Center (JETRO) and the Japanese Chamber of Commerce in Bangkok. "Changing the Japanese Image," *Business Review*, November 1973, pp. 21-23. "My boss is Japanese," *Business in Thailand, June 1974, pp. 49-50.*

Thai to their Thai colleagues and workers, that their attitudes are arrogant, and that they tend to form a small closed society of Japanese people. Lastly, it is widely believed that, mainly because of their poor personnel management, the Japanese companies have been plagued recently with labor disputes more frequently and more seriously than other companies such as American managed companies, British managed companies, or Thai managed companies.

Then, are these kinds of popular criticisms upon Japanese personnel practices well founded on facts and figures? Although a rather ample amount of arguments and opinions are seen in various academic literatures, commercial magazines and newspapers regarding the Japanese way of management, data of facts and figures are incredibly small in amount. This state of "many arguments but too few data" is unfortunate. It tends to depress motivations of the Japanese companies to search and develop constructive solution programs, and sometimes it induces diverse psychic and even destructive reactions. On the other hand the present situation, where emotionalism clouds the real issues, presents a serious handicap to the Thai Government. In the present situation the Thai Government will meet many difficulties in collecting reliable data and formulating a proper foreign investment policy.[3] To remedy this situation is the major motivating force of the present field research.

(2) Framework of the Research

The main objectives of the present research are three:

1. to show and analyse the personnel management of Japanese manufacturing companies in Thailand
2. to identify the nature and the causes of personnel problems in these companies
3. to make recommendations on how personnel management of these companies could be improved.

In the research the author's attention is centered on the following subject matters:

1. wages and welfare of Thai employees
2. Thai managerial personnel
3. Japanese staffs sent from Japanese parent companies
4. labor problems

In the research three different ways of investigation are employed:

1. collection and analysis of printed data from published and unpublished materials
2. simple questionnaire survey by mail and telephone
3. semi-structured interviewing.

In order to understand the unique characteristics of the Japanese way of personnel management, it is necessary to make a comparison of Japanese managed companies with

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[3] See; "Japanese Investment in Thailand: Many Questions but Few Answers," *Business in Thailand*, March 1974, pp. 64-68.

American managed companies or Thai managed companies. So, due consideration is given to the comparison. The Japanese personnel management has undergone a considerable change these years and thus in the research an effort is made to make clear not only the current conditions, but also the past situations of personnel practices in Japanese companies.

There exist several types of Japanese managed companies in Thailand such as trading companies, construction companies, travel agencies, banks, insurance companies, restaurants, and manufacturing companies. The present research treats only the manufacturing companies, that is, those Japanese companies which are engaged in manufacturing activities with their factories located in Thailand.

These Japanese manufacturing companies are mostly members of the Japanese Chamber of Commerce in Bangkok. Their names and some other important data are shown in Table 1-1 and Table 1-2.

Interviewing was made in sixteen Japanese manufacturing companies. Their industrial classification is:

1. textiles ..... 7 companies
2. iron and steel, and non-ferrous metals ..... 1 company
3. transportation equipment ..... 2 companies
4. electric machinery ..... 2 companies
5. foodstuffs ..... 2 companies
6. chemicals ..... 1 company
7. rubber products ..... 1 company

In the case of these Japanese companies, the interviews were held with their Japanese managers. Only in three companies short supplementary interviews were held with Thai managerial personnel. Each interview usually took two hours and was based on a list of questions given beforehand. In order to carry out the comparative approach the author held interviews with two American managed companies and two Thai managed companies.

Interviews were also held with top ranking personnel of nearly twenty influential organizations in Thailand: Officials in the Labor Department of the Ministry of Interior;

Table 1-1: List of Japanese Manufacturing Companies in Thailand

1. Iron & steel, & non-ferrous metals (17 companies)			
Thailand Iron Works Co., Ltd.	Feb., 1960	15,000	40%
The Sangkasi Thai Co., Ltd.	Dec., 1960	7,500	40%
Thai Yazaki Electric Wire Co., Ltd.	Sep., 1963	35,000	94.29%
Far East Iron Works Co., Ltd.	Jan., 1964	20,000	22.5%
Thai Steel Pipe Industry Co., Ltd.	Apr., 1965	24,000	90%
Sinthani Industry Co., Ltd.	Jul., 1967	5,000	40%
G.S. Steel Co., Ltd.	Jan., 1968	60,000	40%
Siam Electric Industry Co., Ltd.	Feb., 1970	10,000	40%

Crown Seal Co., Ltd.	Jun., 1970	20,000	40%
Sahaviriya Plate Steel Co., Ltd.	Jul., 1970	3,000	37%
Chonviriya Steel Co., Ltd.	Sep., 1972	8,000	40%
Sahaviriya Light Gauge Steel Industry Co., Ltd.	Sep., 1970	7,000	37%
Thai Kobe Welding Co., Ltd.	Nov., 1968	3,500	53%
Thai Tinplate Manufacturing Co., Ltd.	Jul., 1973	70,000	45%
Thai Special Steel Co., Ltd.	Nov., 1973	8,000	49%
Phelps Dodge Thailand Ltd.	Jun., 1968	44,000	10.5%
Yawata Electrode (Thailand) Co., Ltd.	Jan., 1974	6,000	45%
2. Textiles (32 companies)			
Thai Toray Textile Co., Ltd.	Aug., 1964	60,000	48.4%
Thai Teijin Textile Ltd.	Oct., 1966	54,000	49%
Toray Nylon Thai Co., Ltd.	Jan., 1967	97,500	50%
The Bangkok Nylon Co., Ltd.	Jan., 1967	6,000	45%
Thai Kurabo Co., Ltd.	Jan., 1970	75,000	49%
Teijin Polyester (Thailand) Ltd.	Apr., 1970	218,000	50%
Thai Filament Textiles Co., Ltd.	Jan., 1971	35,000	49%
Thai Synthetic Textile Ind., Ltd.	Oct., 1970	80,000	50%
Thai Tricot Co., Ltd.	Jan., 1970	62,500	40%
Siam Synthetic Textile Ind., Ltd.	Jan., 1971	24,500	49%
Siam Synthetic Weaving Co., Ltd.	Mar., 1971	18,000	49%
Thai Suiting Mills Co., Ltd.	Jan., 1972	22,500	49%
Winner Textile Mills Co., Ltd.	Sep., 1971	25,000	18%
Capital Kanebo Textile Co., Ltd.	May, 1971	15,000	49%
Thai Nylon Co., Ltd.	Dec., 1963	17,500	87.5%
Thailand Jute Baling Co., Ltd.	Dec., 1964	5,000	25%
The Thai Cordage Mfg. Co., Ltd.	Feb., 1966	6,250	90%
Saraburi Jute Mill Co., Ltd.	Jan., 1970	25,000	99.8%
Peony Blanket Industry Co., Ltd.	Aug., 1962	14,300	70%
Thai Blanket Industry Co., Ltd.	Jul., 1964	63,600	50%
Thai Yazaki Mahaguna Textile Co., Ltd.	Dec., 1963	25,000	90%
Erawan Textile Co., Ltd.	Jan., 1965	48,400	49%
Thai Towel Co., Ltd.	Apr., 1966	7,000	44.28%
Thai Wacoal Co., Ltd.	Oct., 1970	8,000	49%
Tokai Dyeing Co. (Thailand), Ltd.	Mar., 1964	12,000	85%
Khonkaen Jute Mill Ltd.	Jun., 1971	20,000	75%
Union Kanebo Spinning Mills Co., Ltd.	Nov., 1972	35,000	40%
Thai Iryo Co., Ltd.	Aug., 1972	14,000	49%
Luckytex (Thailand) Co., Ltd.	Aug., 1972	200,000	20%
Bangkok Weaving Mills Ltd.	Nov., 1973	8,375	30%
Thai-American Textiles Co., Ltd.	Apr., 1972	150,000	10%
Union Onuki Sewing Thread Co., Ltd.	May, 1973	10,000	40%
3. Transportation equipment (18 companies)			
Toyota Motor Thailand Co., Ltd.	Oct., 1962	64,500	82%
Prince Motors (Thailand) Ltd.	Jan., 1966	6,940	20%
United Development Motor Industry Co., Ltd.	Jun., 1966	5,000	60%

	Thai Hino Industry Co., Ltd.	Oct., 1966	10,000	70%
	Thai Honda Manufacturing Co., Ltd.	May, 1967	20,000	60%
	Thai Suzuki Motor Co., Ltd.	Jul., 1968	9,000	65%
	NHK Spring (Thailand) Co., Ltd.	Nov., 1964	10,000	85%
	Aoyama Thai Co., Ltd.	Feb., 1966	4,000	95%
	Thai Bridgestone Tire Co., Ltd.	Jan., 1969	50,000	60%
	Inoue Rubber (Thailand) Co., Ltd.	Oct., 1970	10,000	49%
	Siam Auto Parts Co., Ltd.	Aug., 1971	10,000	10%
	Yuasa Battery (Thailand) Co., Ltd.	Aug., 1964	6,000	40%
	Siam GS Battery Co., Ltd.	Jan., 1971	7,000	49%
	Isuzu Motor Co. (Thailand), Ltd.	Apr., 1966	34,664	96.54%
	Nippon Denso (Thailand) Co., Ltd.	Jul., 1972	15,000	65%
	Izumi Piston Mfg. Co. (Thailand), Ltd.	Nov., 1973	5,000	50%
	NHK Gasket (Thailand) Co., Ltd.	Nov., 1973	1,000	66%
	Kallawis Autoparts Ind., Co., Ltd.	May, 1974	5,000	40%
4	Chemicals (26 companies)			
	Thai Asahi Glass Co., Ltd.	Nov., 1965	24,000	49%
	Kao Industrial Co. (Thailand), Ltd.	Feb., 1966	9,000	67.77%
	Thai Asahi Caustic Soda Co., Ltd.	Nov., 1966	21,000	49%
	The Lion Dentrifrice (Thailand) Co., Ltd.	Jan., 1967	8,000	49%
	The Lion Fat & Oil (Thailand) Co., Ltd.	Mar., 1969	8,000	49%
	Hoechst Chemical Ind., Co., Ltd.	Mar., 1970	6,000	35%
	Takeda (Thailand) Ltd.	Oct., 1970	20,000	48%
	Thai Mikasa Chemical Ind., Co., Ltd.	Oct., 1970	5,000	49%
	Thai Polyplastic Industry Co., Ltd.	May, 1971	9,000	20%
	G.S. Ceramic Co., Ltd.	Apr., 1971	12,000	26%
	T.J.C. Chemical Co., Ltd.	Jun., 1971	5,000	49%
	Bangkok Foam Co., Ltd.	Mar., 1971	5,000	49%
	Thai Plastic & Chemical Co., Ltd.	May, 1971	50,000	33.33%
	Dainippon Ink and Chemicals (Thailand) Co.	Oct., 1962	6,000	100%
	Toyo Ink (Thailand) Co., Ltd.	Aug., 1972	1,800	100%
	Nippon Paint (Thailand) Co., Ltd.	May, 1968	4,000	49%
	Thai Kansai Paint Co., Ltd.	Jan., 1970	10,000	40%
	Thai D.N.T. Paint Mfg. Co., Ltd.	Jan., 1971	3,600	45%
	Rock Paint (Thailand) Co., Ltd.	Mar., 1971	3,000	80%
	Kurita Thailand Co., Ltd.	Jun., 1972	2,000	44%
	Cocksec Chemical Industry Co., Ltd.	May, 1973	5,000	49%
	Thai Chemical Corp., Ltd.	Mar., 1974	12,000	40%
	Songkhla Coconut Charcoal Ind. Co., Ltd.	Nov., 1973	200	30%
	Bara Chemical Co., Ltd.	Mar., 1974	5,000	45%
	Thai Suiko Co., Ltd.	Jun., 1973	2,800	88%
	Taiken Chemicals Co., Ltd.	May, 1971	4,000	49%
5.	Electric machinery (5 companies)			
	National Thai Co., Ltd.	Jul., 1962	18,500	49%
	Kang Yong Electric Mfg. Co., Ltd.	Feb., 1965	6,750	29.6%
	Sanyo Universal Electric Co., Ltd.	Jan., 1970	12,000	49%

Thai Toshiba Electric Ind., Co., Ltd.	Jan., 1970	20,000	50%
UEI-Hitachi Co., Ltd.	Jan., 1971	10,000	35%
6. Foodstuffs (10 companies)			
Ajinomoto Co. (Thailand), Ltd.	Dec., 1961	31,250	79%
The Kumphawapi Sugar Co., Ltd.	Dec., 1963	22,500	100%
Pranburi Sugar Industry Co., Ltd.	Mar., 1964	21,000	95.2%
Thai Glico Co., Ltd.	Jan., 1971	1,800	48%
Yakult (Thailand) Co., Ltd.	Jun., 1971	15,000	75%
Thailand Japan Food Ind. Co., Ltd.	Oct., 1972	15,000	53%
Thai Pineapple Canning Industry Corp., Ltd.	Apr., 1972	50,000	49%
Thai Volcano Food Ind. Co., Ltd.	Oct., 1972	15,000	40%
Ryutaisuisan Co., Ltd.	Sep., 1971	1,200	66.6%
Summit Food Industries Co., Ltd.	May, 1974	5,000	48%
7. Other industries (5 companies)			
Union Yoshida Industry Co., Ltd.	Jun., 1962	10,000	49%
Nikka Wood Co., Ltd.	Jun., 1970	1,000	90%
Thai Turbo Refrigerating Co., Ltd.	Oct., 1969	1,000	93%
Union Rubber Products Corp., Ltd.	Nov., 1971	12,000	23.3%
Siam Wood Co., Ltd.	Jun., 1974	2,800	48.2%
8. Mining, agriculture and fisheries (8 companies)			
Thai Resources Developments Co., Ltd.	Oct., 1967	2,000	49%
Thai Nippon Minerals Co., Ltd.	May, 1967	500	49%
Nittetsu Kogyo Thailand Co., Ltd.	Mar., 1968	1,200	49%
Bangkok Drying & Silo Co., Ltd.	Dec., 1963	20,000	40%
The Thai Marine Food Co., Ltd.	Jul., 1966	1,000	49%
Thai Wood Production Co., Ltd.	Nov., 1970	2,000	48%
Thai Pineapple Plantation Corp., Ltd.	Oct., 1972	40,000	49%
Thai Tekkosha Co., Ltd.	Nov., 1971	8,000	49%

Notes:

1. Source: *Directory of Japanese Enterprises in Thailand,* the Japanese Chamber of Commerce in Bangkok, August, 1974.
2. In the table, the name, the date of starting operation, the amount of paid capital (in thousand baht), and Japanese share (%) of paid capital are shown for each company.
3. As of the end of June, 1974.
4. It should be taken into account that the industrial classification used by the Japanese Chamber of Commerce in Bangkok is slightly different from the standard classification. For example, companies producing tyres and tubes for automobiles are included in the category of transportation equipment.
5. The list contains several companies which are not managed by Japanese partners.
6. Companies doing business in the sector of mining, agriculture and fisheries are listed at the end of the list.

Dr. Puey Ungphakorn, who at the time of the research was an economic adviser to the Prime Minister; Dr. Snoh Unakul, who then was the Secretary-General of the National Economic and Social Development Board (NESDB); the Executive Director of the American Chamber of Commerce in Thailand.

Table 1-2: Japanese Manufacturing Companies in Thailand

Industry	Number of companies	Total amount of paid capital (in thousand baht)	Average amount of paid capital per company (in thousand baht)	Average Japanese share of paid capital (%)
Iron & steel, & non-ferrous metals	17	346,000	20,353	45.5
Textiles	32	1,462,825	45,713	43.0
Transportation equipment	18	273,104	15,172	67.6
Chemicals	26	241,400	9,285	45.3
Electric machinery	5	67,250	13,450	45.3
Foodstuffs	10	177,750	17,775	68.0
Other industries	5	26,800	5,360	40.6
Sub-total	113	2,595,129	127,108	–
Mining, agriculture and fisheries	8	74,700	9,338	46.6
Total	121	2,669,829	22,065	47.8

Notes:
1. Source: same as table 1-1
2. As of the end of June, 1974

All the field studies were conducted in and near the Bangkok metropolitan area during the eight-week period between July 14 and September 7 of 1974.

II Wages and Welfare of Thai Employees

(1) Thai Labor Force in Japanese Companies

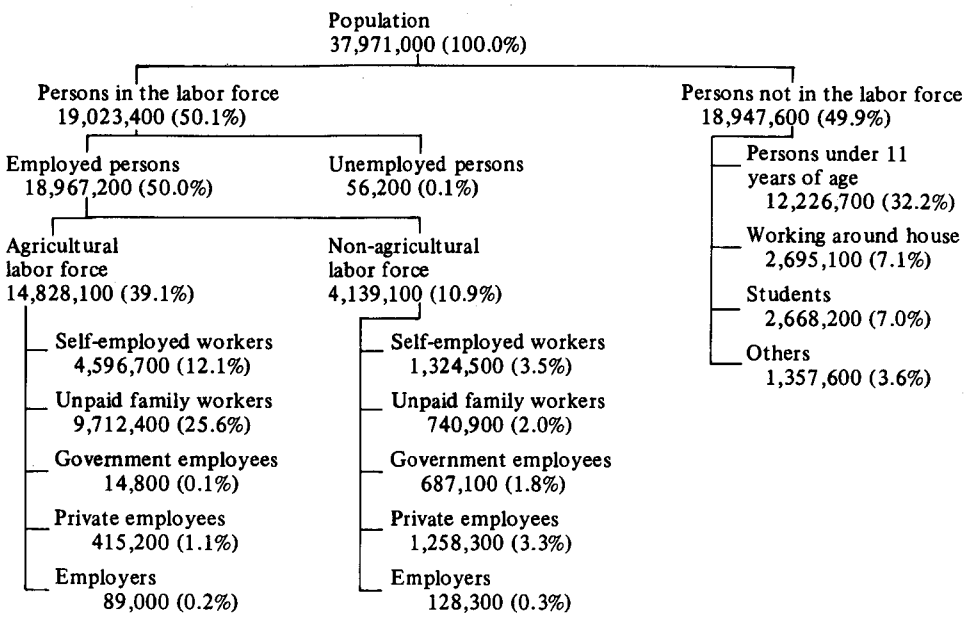
As is shown in Table 2-1, the population of Thailand in 1972 is almost 38 million and half of these people are in the labor force. Nearly 80 percent of the labor force is in the agricultural sector. The total number of wage-earners working in the non-agricultural sector is approximately two million and it is composed of 687,100 government employees and 1,258,300 private employees. And it is estimated that nearly 500,000 people are in the mining and manufacturing sector.

Although there exist no statistics showing the total number of Thai people employed in Japanese manufacturing companies, it is estimated that nearly 40,000 Thai people are employed. They represent roughly 8 percent of the total labor force in the mining and manufacturing sector. Thus, in terms of the employment of local labor force the Japanese manufacturing companies are playing an influential role in Thailand's economy.

Concerning the Thai employees in Japanese manufacturing companies, the following facts seem to deserve our attention (see Table 2-2).

First, in less than five years the total number of Thai employees working in Japanese manufacturing companies increased from 12,624 to 29,472 and the rate of this increase

Table 2-1: Population and Labor Force of Thailand



Notes:
1. Source: The Department of Labor in The Ministry of Interior of Thailand.
2. As of 1972.

over these years was 2.3 times. For the respective industry the rate of increase was: textiles (2.4); transportation equipment (2.1); iron and steel, and non-ferrous metals (1.3); foodstuffs (2.2); and others (3.9).[4]

Second, the textile industry has been constantly employing more than 50 percent of all the Thai employees of Japanese manufacturing companies over these five years. The average number of Thai employees per company as of December 1972 is calculated as follows: textiles (906); transportation equipment (168); iron and steel, and non-ferrous metals (332); foodstuffs (428); chemicals (227). There exist at least seven Japanese companies which employ more than one thousand Thai people and six of these companies are in the textile industry. Thus, in terms of the employment impact on the Thai economy, the Japanese textile companies are especially important.

Third, the textile industry employs more female workers than male workers, while all the other industries employ more male workers than female workers.

(2) Japanese Wage System

Whether the wage level of Japanese companies is higher or lower than that of

[4] It means that in the textile industry the total number of employees in 1972 is 2.4 times that of 1968.

Table 2-2: Number of Thai Employees in Japanese Manufacturing Companies

Industry	As of June, 1968				As of December, 1969				As of December, 1970				As of December, 1971				As of December, 1972			
	Male	Female	Part time	Total	Male	Female	Part time	Total	Male	Female	Part time	Total	Male	Female	Part time	Total	Male	Female	Part time	Total
Textiles	1,890	5,656	–	7,546	3,323	8,703	126	12,152	3,477	9,657	153	13,287	4,520	11,601	149	16,270	4,940	12,965	214	18,119
Transportation equipment	994	182	–	1,176	1,637	241	48	1,926	1,708	268	33	2,009	1,655	267	39	1,961	2,048	413	60	2,521
Iron & steel, & non-ferrous metals	1,628	106	106	1,840	1,826	105	163	2,094	1,710	116	71	1,897	1,746	165	105	2,016	1,941	229	154	2,324
Foodstuffs	617	97	230	944	722	114	900	1,736	795	107	687	1,589	862	163	639	1,664	953	185	1,002	2,140
Other industries (*Chemicals*)	824	294	–	1,118	1,017	429	537	1,983	1,587	662	8	2,257	1,924	916	142	2,982	2,628 (1,568)	1,580 (368)	160 (106)	4,368 (2,042)
Total	5,953	6,335	336	12,624	8,525	9,592	1,774	19,891	9,277	10,810	952	21,037	10,707	13,112	1,074	24,893	12,510	15,372	1,590	29,472

Notes:

1. Sources: *The Report on the Research on the Extent of Contribution to Thai Economy by Japanese Manufacturing Enterprises,* Japanese Chamber of Commerce in Bangkok, 1969, 1970, 1971, 1972 and 1973.
2. The companies covered by the research are shown in the table below. As mentioned earlier, practically all the Japanese manufacturing companies in Thailand are member companies of the Japanese Chamber of Commerce in Bangkok.

Date of research	Number of member companies (A)	Number of answers received (B)	$\frac{B}{A}$ (%)
June, 1968	43	37	86
Dec., 1969	55	49	90
Dec., 1970	64	54	86
Dec., 1971	63	54	86
Dec., 1972	71	64	90

American companies or that of Thai companies has been one of the most interesting and also important questions of the present research. After having attempted for nearly two months rather intensive field investigations in Bangkok, the author has found that it was hopelessly difficult to give a reliable answer to this question. The following three facts are the principal obstacles for the comparative approach to wage problems. The first is the difference in the wage system, the second is the difference in the industrial distribution of companies, and the third is the insufficiency of reliable wage data. The explanation of these three facts would hopefully reveal basic features of the wages of Japanese companies in Thailand.

In the Japanese companies the pay scale for employees is basically determined by two factors, that is (1) education and (2) length of service in the company.[5] The kind of job which he or she performs in a company has only a minor effect, at least in a direct sense, on the amount of money paid to him or her. And it should be pointed out that this wage system is basically same as that which is generally employed by Japanese parent companies in Japan.[6]

Table 2-3: Wages of Thai Employees in Japanese Manufacturing Companies

Industry	Average monthly wages of Thai employees (baht)				
	1968	1969	1970	1971	1972
Textiles	540	613	644	673	690
Transportation equipment	960	1,040	1,131	1,279	1,309
Iron & steel, & non-ferrous metals	877	1,363	1,187	1,231	1,294
Foodstuffs	858	721	827	931	1,195
Other industries	1,007	983	1,033	1,156	1,200
(Chemicals)					(1,347)
Total	718	812	795	841	903

Notes:

1. Sources: same as Table 2-2.
2. Average monthly wages are calculated in the following way:

$$A = \frac{B}{C} \times \frac{1}{12}$$

A: average monthly wages of Thai employees
B: annual total wages paid to all Thai employees
C: number of Thai employees

[5] In many companies the third factor of sex has a slight but a consistent influence upon the pay scale. This point will be treated later.

[6] James C. Abegglen, *The Japanese Factory: Aspects of Its Social Organization*, The Free Press, Glencoe, 1958. James C. Abegglen, *Management and Worker: The Japanese Solution*, Sophia University (Tokyo), 1973.

In American companies in Thailand the pay scale is basically determined by two variables, that is, (1) kind of job which each employee performs in the company and (2) length of period he or she has been holding a specific kind of job in the company. The educational background and the age of the employees do not have any direct influence on his or her pay scale. This marked difference in the wage system is the first obstacle for the comparison of pay scales of Japanese and American companies.[7]

The second obstacle is a different pattern of the industrial distribution of Japanese companies and American companies. Nearly one third of the Japanese manufacturing companies are in the textile industry and these Japanese textile companies employ more than 50 percent of all the Thai people working in Japanese manufacturing companies. In contrast, the American companies tend to concentrate in such industries as chemicals, transportation equipment, and foodstuffs. Only a few American companies are found in the textile industry.[8]

This difference has an important bearing upon the comparison of wage levels of these two foreign companies in Thailand. As it is clearly shown in Table 2-3, in the case of the Japanese companies the average monthly wages of textile employees are remarkably lower than those of the other industrial employees.[9] This kind of industrial inequality of wage levels would be more or less also the case for American companies. Then, a straightforward comparison of the aggregate wage data of these two foreign companies would be quite misleading.

The third obstacle is the lack of wage data. Wage data were considered confidential by most companies at the time of the research when the Thai economy was characterized by a widespread labor unrest. In fact, only a small amount of fragmentary wage data are available for the analysis.

(3-1) Starting Wages

In the case of the textile industry nearly ninety percent of the ordinary factory workers are female workers whose school career is limited to the primary school level. In other industries the bulk of the work force is composed of male workers, and the school

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[7] The comparison here may overemphasize the difference between the two wage systems. For example, in Japanese companies the Thai employees are assigned to different kinds of jobs according to their attributes such as their educational background, prior work experience, age and sex. Thus, the variable of jobs certainly has an influence, although it is an indirect one, in determining their pay scale.

[8] *Foreign Companies in Thailand,* the Japanese Chamber of Commerce in Bangkok, May, 1974.

[9] The industrial comparison of wage levels in Table 2-3 clearly exaggerates the relative lowness of the wage level of textile employees since it fails to take into consideration the features of textile employees as compared with other industrial employees. A fairer comparison would improve the relative wage level of textile employees. For example, the initial wages after the probationary employment period for new young female factory workers with education of the primary school level, show a narrower gap among industries (see Table 2-5 on page 23).

career of a considerable number of these male workers is extended to the middle school level. An outline of the educational system of Thailand is presented in Table 2-4.

There exists a considerable difference in the amount of starting wages among industries. Table 2-5 shows that workers in such industries as transportation equipment and chemicals start their working career with a higher pay scale than workers of other industries.

Male workers enjoy a higher level of starting wages than that of female workers in any industry as seen from Table 2-5. A main reason for the higher starting pay scale of male workers lies in the fact that they usually perform the kind of jobs in a company which demand strong muscles and high physical durability. Even when male and female workers hold the same kind of jobs, the performance by the male workers is believed, rightly or wrongly, to be more efficient and reliable.

The Thai female workers work as efficiently and reliably as the male workers, and many continue their business career even after getting married. Considering the high quality of female workers in Thailand, the present starting wage system and also the entire wage system in which we recognize a slight but a consistent inequality in the pay scale between male and female workers, may not be appropriate for the Thai labor situation. There are several Japanese companies where the same pay scale is equally applied both to male and female workers performing the same kind of jobs. It seems worthwhile for other Japanese companies to review their present wage system and consider if an equal application of one pay scale for male and female workers is suitable or not in Thailand.

Table 2-4: Educational System of Thailand

	Age range	Period of education
1. Primary school (Pratom)		
1. 1. Lower primary school (P4)	7-10 years old	4 years
2. 2. Upper primary school (P7)	11-13	3
2. Middle school (Maw Saw)		
2. 1. Lower middle school (MS 3)	14-16	3
2. 2. Upper middle school (MS5)	17-18	2
3. College and university		
3. 1. Junior college	19-20	2
3. 2. University	19-22	4

Notes:

1. Source: *The Outlook on the Thailand's Economy in 1974* (in Japanese), the Japanese Chamber of Commerce in Bangkok, 1974, pp. 21-24.
2. Primary school and middle school are called Pratom and Maw Saw respectively in Thailand.

Table 2-5: Starting Wages of Thai Workers in Japanese Manufacturing Companies

(baht/day)

Industry \ Type of workers		Lower primary school (p4)		Upper primary school (p7)		Lower middle school (MS3)		Upper middle school (MS5)	
		Male	Female	Male	Female	Male	Female	Male	Female
Textiles	1969	17.0	14.3			21.5	18.2	27.7	25.1
	1972	17.6	15.1	18.5	15.9	24.4	19.0	32.5	29.8
Transportation equipment									
(1) Transportation equipment	1969	22.0	18.6			23.9	22.0	29.6	31.2
(2) Car and motorcycle assembling	1972	23.6	19.6	23.9	19.5	24.8	22.8	31.6	30.0
(3) Parts for cars and motorcycles	1972	19.3	18.6	22.9	21.9	26.2	24.6	40.0	
Iron & steel, & non-ferrous metals	1969	21.6	18.5			22.3	19.5	29.5	
	1972	22.5	17.9	24.4	18.1	28.3	20.0	28.0	25.0
Electric machinery	1969	16.5	15.0			22.0	19.3	25.4	23.4
	1972	16.7	14.0	17.1	14.3	19.1	16.6	38.0	14.3
Chemicals	1969	22.8	18.2			26.9	23.2	32.6	28.6
	1972								
Foodstuffs	1969	20.8	19.2			26.8	19.3	26.0	31.8
	1972	21.1	17.9	21.1	18.4	27.3	20.7	31.2	26.0
Others	1969	12.0	8.0			12.0	8.0		
Total	1969	20.3	16.3			23.6	19.8	28.7	27.5
	1972	20.4	16.7	21.5	17.8	25.4	20.6	30.6	28.3

Notes:

1. Source: *Rōmu Chōsa* (Employment Survey), the Japanese Chamber of Commerce in Bangkok, March, 1970 and August, 1972.
2. The date of data is as follows:
   1969: December 1, 1969
   1972: December 1, 1972
3. The survey received answers from 40 (86.9%) member companies in 1969 and 53 (82.5%) member companies in 1972.

The starting wages have increased sharply these two or three years. The figures in Table 2-5 show a considerable rise in the initial pay scale in the recent past. At a micro level of individual companies the degree of increase shows itself more vividly as presented in Table 2-6. Roughly speaking, the rate of increse of starting wages of Thai workers in Japanese companies over these three years, reaches at least fifty percent and in several companies reaches as high as one hundred percent or more.

Table 2-7 gives us the data of six Japanese textile companies. As is evident from the figures of this table, a considerable difference exists in the level of the starting pay scale

Table 2-6: Increase of Starting Wages in Japanese Manufacturing Companies

Company (Industry)	Type of workers	As of June 1, 1972	As of August 1, 1974
Company A (Textiles)	P4 female workers	16 baht/day (=100)	29 baht/day (=181)
	P7 female workers	17 baht/day (=100)	30 baht/day (=176)
Company B (Transportation equipment)	P4, P7 workers	600 baht/month (=100)	1000 baht/month (=167)
	MS3 workers	600 baht/month (=100)	1050 baht/month (=175)
	MS5 workers	900 baht/month (=100)	1300 baht/month (=144)
Company C (Rubber products)	P4 workers	22.5 baht/day (=100)	38.5 baht/day (=171)
	P7 workers	25 baht/day (=100)	39 bath/day (=156)
	MS3 workers	26.5 baht/day (=100)	41.5 baht/day (=157)
Company D (Foodstuffs)	P7 male workers	525 baht/month (=100)	800 baht/month (=168)
	MS3 male workers	625 baht/month (=100)	990 baht/month (=158)
	MS5 male workers	625 baht/month (=100)	1100 baht/month (=176)

Notes:
1. Source: Data collected by interviewing.
2. For the notations of educational level of workers, P4, P7, MS3, and MS5, see Table 2-4.

Table 2-7: Starting Wages in Japanese Textile Companies

(baht/day)

Type of workers \ Company	Company A	Company B	Company C	Company D	Company E	Company F
I. P4 male workers	29	30	29	26	unknown	23.5
P4 female workers	29	29	28	21	unknown	21
II. P7 male workers	33	31	30	27	28	23.5
P7 female workers	31	30	29	21	27	21
III. MS3 male workers	35	33	34	31.5	31	24.5
MS3 female workers	33	32	31	24.5	30	22.5

Notes:
1. Source: data collected by interviewing.
2. As of August 1, 1974.
3. For the notations of educational level of workers, P4, P7, and MS3, see Table 2-4.

among these companies belonging to the same industry.

Lastly, let us examine if any difference is found in the level of starting wages among Japanese companies, American companies, and Thai companies. Although only a very limited amount of data is available we may say the following (see Table 2-8). In the case of the automobile tyres and tube industry the level of the starting wages in American companies is remarkably higher than that of in Japanese companies. One American

Table 2-8: Comparison of Starting Wages in Japanese, American and Thai Companies

(I) Tyres and tubes for automobiles		
American Company A	1. as of January, 1974 P4 male workers	 34 baht/day
Japanese Company B	1. as of January, 1974 P4 male workers P7 male workers 2. as of August, 1974 P4 male workers P7 male workers	 26.5 baht/day 29.5 baht/day 32.5 baht/day 35.5 baht/day
American Company C	1. as of August, 1974 P4 male workers	 60.6 baht/day
(II) Automobile assembler		
American Company D	1. as of January, 1974 P4, P7, MS3 male workers	 850 baht/month
Japanese Company E	1. as of January, 1974 P4, P7 male workers MS3 male workers	 950 baht/month 1000 baht/month
(III) Textiles		
Japanese Company F	1. as of January, 1974 P4, P7 female workers 2. as of August, 1974 P4, P7 female workers	 17 baht/day 21 baht/day
Japanese Company G	1. as of January, 1974 P4 female workers P7 female workers 2. as of August, 1974 P4 female workers P7 female workers	 19 baht/day 20 baht/day 26 baht/day 27 baht/day
Thai Company H	1. as of January, 1974 P4, P7 female workers 2. as of August, 1974 P4, P7 female workers	 16 baht/day 20 baht/day

Notes:
1. Source: data collected by interviewing.
2. A slight adjustment was made in the data so that we may make a comparison on a similar basis as far as possible.

automobile assembling company pays a little bit less to their new workers than its Japanese counterparts. The level of starting wages is generally higher in American companies than in Japanese companies. As is illustrated in Table 2-8, Japanese companies seem to pay to their new employees more than Thai companies. However, the gap of the pay scale of these two types of companies is not big.

(3-2) Minimum Wages

The first labor law of Thailand was enacted in January 1957, but soon repealed on the enactment of the Announcement of the Revolutionary Party No. 19, dated October

31, 1958. In order to supplement this Announcement and deal with the increasing cases of labor disputes the Settlement of Labor Disputes Act was enacted in December 1965. These labor laws were operative until the enactment of the National Executive Council Announcement No. 103, dated March 16, 1972. The Ministry of Interior Annoucements which followed were enacted on April 16, 1972.

One of the important changes introduced into the new labor law is the provision for minimum wages. The minimum wages have changed as described below:

1. February 1, 1973
   12 baht/day applied to four provinces (Bangkok, Nonthaburi, Samut Prakan, and Pathum Thani)
2. January 1, 1974
   16 baht/day applied to the same four provinces
3. June 14, 1974
   20 baht/day applied to six provinces (the same four provinces and two new provinces, Nakhon and Samut Sakhon)
4. October 1, 1974
   20 baht/day applied to the same six provinces, 18 baht/day applied to the South Region and 16 baht/day applied to the North and Northeast Region

In most companies the starting wages for employees with the lowest level of educational background represent the lowest wages in the companies.[10] Examining the data of starting wages in Japanese companies, American companies, and Thai companies, we may point out the following findings. First, the lowest wages paid in American companies and Japanese companies are higher than the legally determined minimum wages in all the companies examined. In most of the American companies and many of the Japanese companies the positive gap is remarkably big. Secondly, the author has not found a single Thai managed company whose lowest wages are lower than the legally determined minimum wages. However, there is no positive gap at all in some companies. Thirdly, many Thai employees working in small-sized companies and stores which are not promoted by the Board of Investment, get wages which are lower than the legally determined minimum wages.

(3-3) Comparison with Wages of Government Employees

Government employees represent a large group of wage-earners in Thailand (see

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[10] In fact we find two kinds of starting wages in most companies operating in Thailand. The first one is applied to their new workers during their probational employment period. According to the current law the maximum of this period is 180 days. The second kind of starting wages is applied to their new workers after they finish their probational employment period and is slightly higher – usually by one or two bahts per day – than the first one. In the present paper only the second kind of starting wages is treated mainly because of the relative sufficiency of the data.

Table 2-1). The current monthly wage rates for Thai civil servants are presented in Table 2-9. The starting wages are determined according to the level of education of new employees as follows:

1. 750 baht/month for graduates of middle schools
2. 1080 baht/month for graduates of vocational schools
3. 1645 baht/month for graduates of colleges and universities
4. 2230 baht/month for graduates having a Master's degree

With respect to the wage rates for civil servants, two factors need to be taken into account. First, there exists only one pay scale which is equally applied to male and female employees. Second, civil servants receive no bonus.

In the case of Japanese companies, the current monthly wage rates for new employees are as follows:

1. 700-1000 baht/month for graduates of primary schools
2. 750-1250 baht/month for graduates of middle schools
3. 2500-3500 baht/month for graduates of colieges and universities

In addition to these regular wages, Thai employees working in Japanese companies receive a bonus each year which amounts to at least one month wages and sometimes up to three-months wages.

It is now evident that the starting pay scale for government officials is remarkably lower than that for employees in Japanese companies. We may rather safely assume that not only the starting pay scale but also the overall pay scale is substantially lower for Thai civil servants than for Thai employees in Japanese companies.

Let us turn our attention again to Table 2-9 which presents us an interesting fact. In this table we see only very broad ranks or grades of government employees, but we do not find detailed classifications of jobs performed by government employees. One official of the Labor Department has explained to the author that wages of government employees are basically determined by two factors, that is, by the education and the length of service in an office. Thus, wage system for government employees resembles much more that of Japanese companies than that of American companies. Then, the Japanese wage system may not be strange to the Thai people and therefore may expect a ready acceptance by them.

(3-4) Pay Scale of Thai Workers in Japanese Companies

The wage data collected from 19 Japanese companies are presented in Table 2-10 and they tell us the lowest and the highest wages actually paid to their Thai workers in these 19 companies. The wage data collected from American companies and Thai companies are too scanty to tell whether the Japanese pay scale is higher or lower than the American pay scale or the Thai pay scale. A comparison of wages among these three types of companies would be an important subject for future researches.

Table 2-9: Salary of Government Employees in Thailand

Rank	No.	Monthly salary (baht)
Under first grade	1	*750* – 795 – 845 – 900
	2	955 – 1015 – *1080* – 1150
	3	1220 – 1295 – 1375 – 1460 – 1550
	4	*1645* – 1750 – 1860 – 1975 – 2100
First grade	1	1150 – 1220 – 1295 – 1375 – 1460
	2	1550 – 1645 – 1750 – 1860 – 1975
	3	2100 – *2230* – 2370 – 2520 – 2680
Second grade	1	1860 – 1975 – 2100 – 2230 – 2370
	2	2520 – 2680 – 2850 – 3030 – 3220
	3	3420 – 3630 – 3850 – 4085 – 4335
Third grade	1	3420 – 3630 – 3850 – 4085
	2	4335 – 4600 – 4880 – 5175 – 4485
	3	5810 – 6150 – 6505 – 6875 – 7260
The highest grade of the civil service rank	1	4880 – 5175 – 5485 – 5810
	2	6150 – 6505 – 6875 – 7260 – 7660
	3	8075 – 8505 – 8950 – 9410 – 9885

Notes:

1. Source: The Department of Labor in the Ministry of Interior of Thailand.
2. No bonus is paid to government employees.
3. Underlined figures show the starting salary for graduates of middle schools (750), vocational schools (1080), colleges and universities (1645) and Master's course in universities (2230), respectively.

(4) Bonus in Japanese Companies

One of the unique characteristics of the Japanese wage system is found in the bonus which is paid to all employees in addition to their regular wages.

According to Table 2-11, it is evident that most Japanese comapnies paid a bonus to their employees once a year in the past, usually in December. The data collected in the present research suggest that more companies than before paid a bonus twice a year in 1973 and 1974. Therefore, we may expect a gradual increase of Japanese companies paying a bonus twice a year in the near future.

The amount of the bonus paid in Japanese companies remarkably increased in these six or five years. As is shown in Table 2-12, in 1969 companies whose bonus was equal to one month basic wages amounted to nearly 60 percent of all companies, and in only one company the bonus was twice as large as one month basic wages. According to the data collected in 1974, companies whose bonus was equal to one month basic wages decreased to 10 percent of all the companies and companies whose bonus was more than twice as large as one month basic wages increased to 30 percent.

Table 2-10: Lowest and Highest Wages of Thai Workers in Japanese Manufacturing Companies

Industry	Number of companies covered	Average of the lowest wages (baht/month)	Average of the highest wages (baht/month)
Textiles	3	598	1057
Iron & steel, & non-ferrous metals	2	865	2265
Transportation equipment	2	800	1888
Electric machinery	4	735	1650
Chemicals	5	740	1742
Rubber products	1	1020	2050
Pulp and paper	1	600	800
Other industries	1	625	1500
Total	19	737	1583

Notes:
1. Source: the Japanese Chamber of Commerce in Bangkok.
2. As of August, 1974.
3. Overtime pay and bonus are not included.

Table 2-11: Frequency of Bonus Payments by Japanese Manufacturing Companies

Date of data / Frequency / Industry	As of December 1, 1969			As of June 1, 1972		
	Once a year	Twice a year	Unknown	Once a year	Twice a year	Unknown
Textiles	9	0	1	14	1	1
Iron & steel, & non-ferrous metals	4	2	0	6	2	0
Transportation equipment	10	0	0	12	1	0
Electric machinery	3	0	0	3	0	0
Foodstuffs	2	0	1	4	0	1
Chemicals	5	0	0	6	0	2
Total	33	2	2	45	4	4

Notes:
1. Sources: *Rōmu Chōsa* (Employment Survey), the Japanese Chamber of Commerce in Bangkok, March, 1970; August, 1972; May, 1974.
2. The figures in the table represent the number of Japanese companies.

Table 2-12: Amount of Bonus Paid in Japanese Manufacturing Companies

Industry \ Amount of bonus / Date (year)		0.1~0.9	1.0	1.1~1.9	2.0	2.1~2.9	3.0	3.1~	Unknown
Textiles	1969	2	5	2					1
	1972	1	8	4	2				1
	1974	1	2	3		1	1	1	
Iron & steel, & non-ferrous metals	1969		2	3					1
	1972	2	1	3			1		1
	1974					3			
Transportation equipment	1969		8	2					
	1972	1	8	2		2			
	1974			5	1				1
Electric machinery	1969		3						
	1972		2		1				
	1974				1	1	1		
Foodstuffs	1969			1	1				1
	1972			3	1				1
	1974			3					
Chemicals	1969		4	1					
	1972		2	2	1				3
	1974		1	2		1			
Total	1969	2	22	9	1				3
	1972	4	21	14	5	2	1		6
	1974	1	3	13	2	6	2	1	1

Notes:

1. Sources: same as Table 2-11.
2. The amount of bonus is described and classified in terms of the multiples of monthly basic wages of employees. Thus, the multiple 2.0 means that employees receive on the average that amount of bonus which is two times as large as monthly basic wages.
3. The figures in the cells of the table represent the number of companies.

With respect to the above analysis of the bonus in Japanese companies, we need to understand clearly that the frequency of payment of a bonus is one thing and the amount of the bonus is quite another. Companies that pay a bonus twice a year may pay less to their employees than those companies which pay a bonus once a year. In Japan practically all companies pay a bonus twice a year and usually pay in June or July and in December of the year.

The American companies doing business in Thailand generally have a bonus system. In one company the same amount of money which equals one month basic wages is paid as a bonus to all employees. In another company the amount of bonus varied from one month basic wages to two months basic wages according to the length of service of the employees. Data are too limited to tell if Thai companies also have a bonus system or not.

(5) Welfare of Thai Employees in Japanese Companies

The current labor law of Thailand proclaims that companies doing business in Thailand need to provide two kinds of welfare for their employees. First, companies are prescribed to provide their employees with clean drinking water, rooms for shower bath, and lavatories in accordance with the sanitary requirements and in adequate quantity according to the law. Second, companies are prescribed to provide their employees with first-aid or medical treatment facilities.

The author visited factories of twelve Japanese companies, two American companies, and two Thai companies, and had a chance to make first-hand observations concerning welfare actually provided in these companies. All these factories met the welfare standard prescribed by the law.

It should be pointed out here that the welfare prescribed by the labor law represents only a small portion of the whole welfare actually provided in these companies. In the case of the Japanese companies all or many of the following items are included in their welfare programs:

1. night shift allowance
2. full attendance allowance
3. bus service
4. dormitory
5. food
6. working uniforms and shoes
7. life and accident insurance
8. retirement money
9. loans
10. playgrounds and other facilities for sports
11. recreational activities

In order to see how these items are actually provided in Japanese companies, let us pick up one textile company and examine its welfare programs in some detail.

The company has two kinds of allowances: (1) full attendance allowance of 60 baht/month and (2) night shift allowance of 8 baht/shift which is paid to the workers on the night shift. Every employee receives 70 baht/month as a food subsidy. With respect to working uniforms, the following items are provided for every female worker once a year: (1) a work cap, (2) a pair of shoes, and (3) cloths for two sets of uniforms with 60 baht to cover the tailoring cost. More or less similar items are given to male workers.

The dormitory for male workers is a three-stories concrete building and the room space is approximately $6m^2$ per worker. It has an air-conditioned recreation hall ($68m^2$) with a television set, and a reading room ($30m^2$). The dormitory for female workers is a two-storied wooden building and the room space is nearly $9m^2$ per worker. It has two recreation halls each of which has a television set, and a sewing room ($50m^2$). The company has a three-storied concrete apartment building for its Thai managerial staffs.

Each apartment ($66m^2$) has two bedrooms, one living room and one dining room with kitchen. The rent is 100 baht/month and utilities (electricity and gas) are free. There is an independent building for servants.

The company has several facilities for sports such as (1) a twenty-five meter long swimming pool, (2) a playground for football, (3) three sets of courts for basketball, and (4) three sets of tables for pingpong. The company subsidy given to sporting and cultural activities of 750 employees amounted to 170,000 baht in 1974. The company has a budget of 120,000 baht for various recreational activities such as company group trips and parties.

The company has a clinic with two beds. The clinic provides daily one hour medical care by a doctor and 24 hour nursing for employees and their families. Medical consultation and medicine are free for employees and their families. Free health examination including X-ray examination is provided for all employees once a year. The company gives a subsidy to employees for their medical treatment up to one month basic wages per year. Sick employees who need medical treatment for a long time are paid half of their basic wages for three to twelve months depending upon the length of their employment period in the company. The company has a provident fund system for employees.

Lastly, the welfare programs of this company are concerned with education and training of the employees. Employees with a low level educational background are encouraged to attend an evening school outside the company. All expenses are paid by the company. 27 employees are now attending an evening school and they will get pay increases after they finish the course. The company has a free dressmaking class for female employees. For managerial and technical staffs, the company provides an opportunity of job training in the parent company. This subject will be treated in some detail in a later section when examining the management development program.

The welfare programs of this company represent one of the best welfare programs provided in Thailand. Howerver, in most of the Japanese companies, welfare programs with more or less similar items and qualities are provided for their employees.

Do American companies and Thai companies provide welfare programs for their employees? On the whole the welfare programs provided in American companies and Thai companies are not necessarily inferior to those provided in Japanese companies. This finding was a surprise to the author since the Japanese way of personnel management has been well known for its great emphasis upon welfare aspects of employees.[11] He had expected to find an obvious superiority of Japanese welfare programs over American and Thai welfare programs in Thailand.

[11] James C. Abegglen, *op. cit.*, 1958 and *op. cit.*, 1973.

III Management Staffing and Development

(1) Managerial Staffs in Japanese Companies

The data presented in Table 3-1 tell us that the ratio of foreigners to the total number of employees is higher in Japanese companies than in American and European companies. Since most of the foreign employees hold high level management positions in the companies, we may infer from these data that comparatively less Thai employees are promoted to the position of top management and middle management in Japanese companies than in American and European companies.

Table 3-1: Ratio of Foreigners to Employees

Number of employees (Size of companies)	Number of Japanese in Japanese companies	Number of foreigners in American and European companies
	Minimum – Maximum – Average (Number of companies covered)	Minimum – Maximum – Average (Number of companies covered)
0 ~ 99	2 – 3 – 2.4 (5)	0 – 3 – 1.2 (5)
100 ~ 299	2 – 8 – 4.7 (9)	0 – 2 – 1.0 (5)
300 ~ 499	1 – 10 – 6.2 (6)	2 – 9 – 4.3 (3)
500 ~ 999	3 – 18 – 9.0 (8)	2 – 12 – 7.0 (4)
1000 ~ 1499	6 – 28 – 13.8 (5)	
1500 ~	7 – 22 – 14.5 (2)	

Notes: 1. Source: Questionnaire survey by mail and telephone.
2. As of July or August, 1974.
3. All companies are manufacturing companies having factories in Thailand.
4. Full-time foreign employees only are counted.

The following factors may be pointed out as reasons for the relative insufficiency of promotion of Thai managerial staffs in Japanese companies as compared with American and European companies. First, in terms of the date of their starting operation, the Japanese companies on the whole are younger than the American and European companies. As we shall see soon, the development and promotion of Thai managerial staffs is a time consuming process.

Second, in the eyes of the Thai people, especially the young ambitious Thai people with a high level education, the Japanese companies are less attractive as employers than the American and European companies. This relative unattractiveness of the Japanese companies may be seen as a result of the following facts.

First, under the Japanese lifetime employment system the length of service of the employees plays a central role in determining their wages and positions, and thus for the young Thai people the pay scale tends to be lower in the Japanese companies than in the

American and European companies.

Second, the Western culture on the whole enjoys a high evaluation and admiration among Thai people, but the Japanese culture does not draw much interest and sometimes even receives a negative evaluation.

Third, there are many Thai people who speak English and also who want to improve their English. American and European companies are very attractive for these people. On the contrary, to work with Japanese managerial staffs and thus to learn to speak Japanese companies often presents a negative inducement to the Thai people.

Fourth, the feature of the Japanese way of management that puts much emphasis upon close direct contacts between managerial staffs and ordinary workers—this feature may be called "management by direct contact"—presents a negative inducement to Thai people. Young talented Thai people who are natural candidates for managerial personnel, generally have a strong dislike for working in factories with ordinary workers. The American way of management may be characterized as the "management by indirect control," under which managerial staffs rarely have direct contacts with ordinary workers and mostly work in their office rooms wearing white shirts and ties.

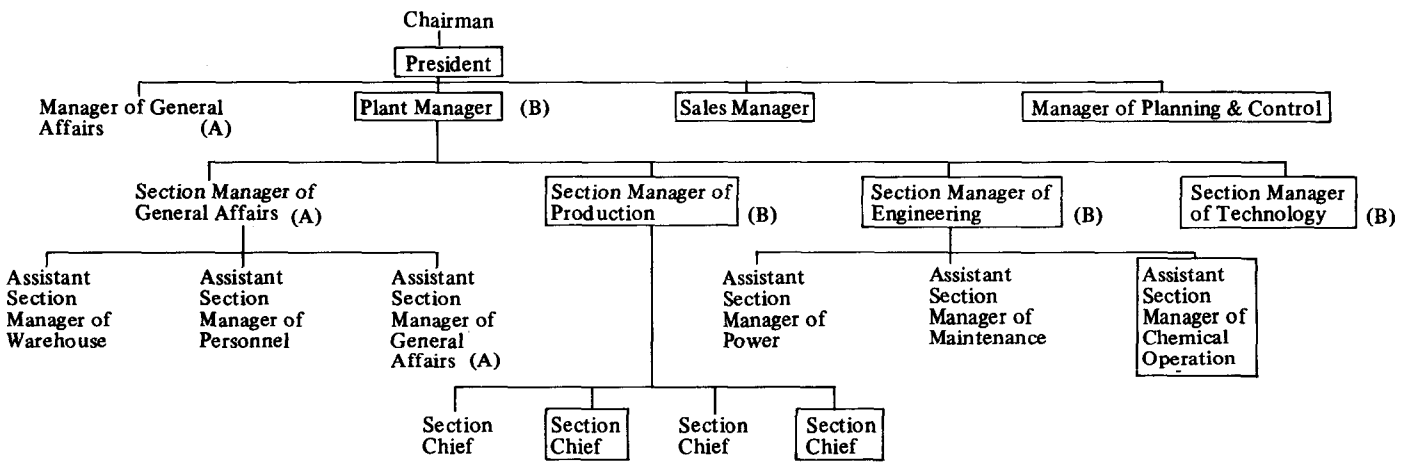
The third factor which may explain to some extent the relative insufficiency of promotion of Thai managerial staffs in Japanese companies is another feature of the Japanese way of management, that is, the lack of formalization of management procedures and thus the underdevelopment of manuals for managerial personnel. In Japanese companies managerial staffs, whether they are Japanese or Thais, learn to perform their jobs mostly through experience. To learn by experience takes much time, especially when most of the important management procedures are not formalized and remain implicit.

Next, let us examine what kind and level of managerial positions are occupied by Thai employees in Japanese companies.

Figure 3-1 outlines the current organizational structure of one Japanese company who employs more than 700 workers and whose main products are foodstuffs. The Chairman of this company is a Thai who is one of the major investors in this company. He is mainly engaged in the public relations activities of the company. More specifically, his main managerial function is to maintain and develop a good relationship with Thai Government officials and Thai business leaders. He performs his role in the company on a full-time basis, but in many companies the Thai partners who hold the position of chairman work on a part-time basis. They usually run their own companies on a full-time basis, and therefore their participation in and influence upon the management practices of Thai-Japanese joint ventures tend to be partial and limited.

The President of this company is a Japanese and the overall responsibility of managing this company falls upon him. He has been sent to this company by the parent company in Japan, and it is almost certain that he will return to the parent company after he finishes his work period in Thailand. Some companies have no position of a

Figure 3-1: Organization of a Japanese Company (Foodstuffs)



Notes:

1. Source: data collected by interviewing.
2. Only the outline of the organization is described using general terminology.
3. As of August, 1974.
4. Notation is as follows:

   ☐: Japanese employees sent from the parent company (A), (B): The same person holds the management posts.

chairman. In that case, the position of the president is usually occupied by the Thai partner, and the vice-president or the managing director is a Japanese.

As shown in Figure 3-1, the President has four subordinate managers. Only the Manager of General Affairs is a Thai and the other three managers are all Japanese. It should be pointed out here that we only rarely find Thais at this level of the managerial hierarchy in Japanese companies. Especially the management posts which are responsible for the financial matters, and the export and import activities are almost exclusively filled by Japanese managers.

The Plant Manager of this company is a Japanese as in most other Japanese companies. His main responsibility is to manage the day-to-day operations of the plant. In this company he holds three additional posts, that is, that of the Section Manager of Technology, the Section Manager of Engineering, and the Section Manager of Production. On the surface this situation is often interpreted as an evidence of the policy of exclusive staffing by Japanese employees in the high level managerial posts. In reality, however, this situation may be interpreted from the viewpoint of the progress of management development of Thai employees. This Japanese plant manager may be an excellent man, but his time and energy would not be sufficient for properly performing tasks of four different management posts. In fact, a part of his managerial jobs are done by his Thai assistants. These Thai assistants are provided with a good opportunity to learn how to perform managerial jobs in Japanese companies. They will take over some of this Japanese manager's jobs and hold higher management posts in a year or two.

Figure 3-1 shows that there are fourteen management posts below the rank of the Plant Manager. Of these fourteen posts, six posts are occupied by four Japanese and the other eight posts are held by seven Thais. This division of managerial jobs at the plant between Thais and Japanese seems to represent a general pattern of Japanese companies in Thailand. Roughly speaking, half of the management posts below the level of a plant manager are occupied by Thai employees.

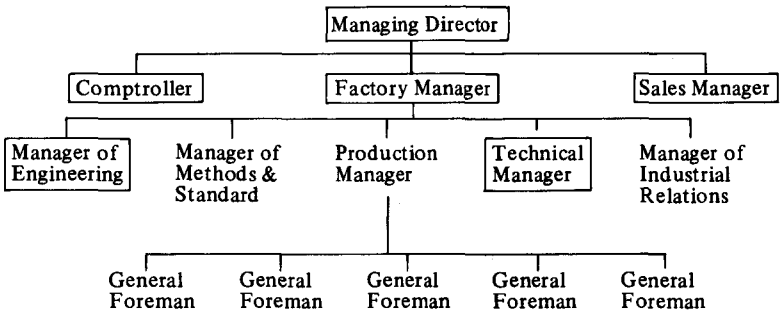
The lower management posts of this company which are not shown in Figure 3-1 are all occupied by Thai employees. And this seems to be the case for other Japanese manufacturing companies in Thailand.

Although not represented in Figure 3-1, most companies have Japanese technical experts and advisory staffs. The former Japanese are not a part of the managerial personnel of the company and the latter Japanese advisory staffs are different from the ordinary line managers and supervisors in the sense that they are not given the formal authority to give orders to line managerial personnel and workers. Many of these Japanese advisory staffs used to be line managers, and management posts of these line managers have been gradually filled by Thai managerial personnel.

Figure 3-2 outlines the organizational structure of one American company that produces tyres and tubes for automobiles, and Figure 3-3 shows the outline of the organizational structure of another company whose main product is electric wire. The

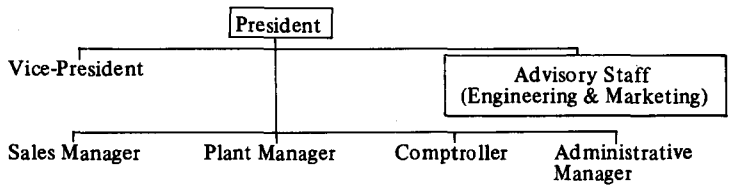
former company employs approximately 700 and the latter company has about 250 employees. All of the lower management posts that are not shown in Figure 3-2 and Figure 3-3 are held by Thai employees. The data available are too insufficient to judge whether the cases of these two companies correctly represent the overall trend of American companies in Thailand.

Figure 3-2: Organization of an American Company (Rubber Products)



Notes:
1. Source: data collected by interviewing.
2. As of August, 1974.
3. Notation is as follows:
   □ : Foreign managers (four Americans, one New Zealander, and one Filipino).

Figure 3-3: Organization of an American Company (Electric Wire)



Notes:
1. Source: data collected by interviewing.
2. As of August, 1974.
3. Only the higher portion of managerial hierarchy is described.
4. Notation is as follows:
   □ : Foreigners (an American and a British) sent from the parent company.

(2) Profile of Thai Managerial Staffs

Table 3-2 summarizes the data of one Japanese company whose main product is foodstuffs. First, all the higher rank Thai managerial staffs have been in this company since 1961 when this company was established. One plausible explanation of this

Table 3-2: Profile of Thai Managerial Staffs of a Japanese Company (Foodstuffs)

Management post	Number	Education	Date of entering the company	Monthly salary (baht)
Chairman	1	Chulalongkorn University	1961	unknown
Manager of General Affairs	1	Police College	1961	10,000
Section Manager of Personnel	1	Middle School	1961	9,000~10,000
Section Manager of Warehouse	1	Middle School	1961	
Section Manager of Maintenance	1	Technical School	1961	7,000~9,000
Section Manager of Power	1	University (unfinished)	1961	
Section Chief	2	University (unfinished)	1961	
		Chulalongkorn University	1961	
Foreman	8	University (unfinished)	1961	5,500~6,000
Assistant Foreman	7	University (unfinished) Vocational School	1961~1966	4,500~5,500

Notes:
1. Source: data collected by interviewing.
2. As of August, 1974.
3. In addition to monthly salary, Thai managerial staffs are paid a bonus once a year which roughly amounts to a two-months salary.

interesting fact may be that this company has followed the policy of lifetime employment and internal development for its Thai managerial personnel. In fact, all of them except the Chairman have experienced a stepwise promotion from lower ranks to their present ranks of management posts. This company has never recruited managerial personnel from other companies or government organizations. Second, there exists no big gap in the pay scale between any two consecutive ranks of management posts. It needs to be emphasized here that this type of pay scale for managerial personnel is quite compatible with the above mentioned company's policy of lifetime employment and internal development of its managerial personnel.

Table 3-3 presents us the data of one Japanese textile company. The profile of the Thai managerial personnel of this company is different from that of the first food company. At a glance one difference is apparent. Three of the four high rank Thai managerial staffs were recruited rather recently from other companies and government organizations. As this company has grown very fast and the demand of the Thai Government to replace Japanese employees by Thai employees has been very strong, the method of internal development alone has not been enough to supply necessary Thai

Table 3-3: Profile of Thai Managerial Staffs of a Japanese Company (Textiles)

Management post	Age	Education	Date of entering the company	Training at the parent company	Previous employer	Monthly salary (baht)
Assistant Factory Manager	39	Chulalongkorn University Sdudied at the University in West Germany	1971	(1) 4 months in 1972 (2) 10 days in 1973	Thai company	16,900
Manager of General Affairs	39	Tharmasart University Master's course at Keio University, in Japan	1970	2 weeks in 1973	American company in Thailand and BO1	12,900
Section Manager of Factory Administration	52	Army Academy	1973	17 days in 1974	Army	11,300
Assistant Manager of Financing & Accounting	35	Chulalongkorn University	1966	3 weeks in 1974	Another Thai subsidiaries of the parent company	9,750

Notes:

1. Source: data collected by interviewing.
2. As of August, 1974.
3. These Thai managerial staffs are paid bonus in addition to their monthly salary.

managerial staffs. As we will see later in some detail, more and more Japanese companies, to meet the Thai Government demand, are being forced to rely upon, in addition to their traditional method of internal development, the method of recruiting Thai managerial personnel from outside companies and government organizations.

In order to carry out its policy of recruiting necessary managerial personnel from outside, the company has had to adapt a pay scale to fit this policy. The effort of this adaptation has shown itself in the make-up of the pay scale for managers and supervisors of the company. In contrast to the case of the first food company, the pay scale of this textile compnay has a rather big gap between the salary for the higher rank and the salary for the lower rank of management posts. While the lower part of the pay scale is characterized by a smooth stepwise increase of salary, the upper part of the pay scale is rather discontinuous. In order to recruit first-class managerial staffs from outside organizations, it is usually necessary for the company to offer high ranking management posts and high salaries even when they are incompatible with the existing procedure of promotion and pay scale.

The third company producing electric appliances represents one of the very rare cases in which the responsibility of managing the company is jointly assumed by the Thai and Japanese partners. Thus, this company should be rightly treated as a Thai-Japanese joint management company. The data of this company are presented in Table 3-4.

As the Thai partner is actively engaged in the management practice of the company, there are only five Japanese employees sent from the Japanese parent comapny, and four of them are technical experts whose main responsibility is to assist the Thai technical experts and workers. There is a big gap of salaries which exists between the higher rank management posts and the lower rank ones. While four production managers who are Thais receive more than 10,000 baht/month, the monthly salary of twenty foremen who are the direct subordinates of these production managers, ranges from 2,000 baht to 5,000 baht.

(3) Development of Thai Managerial Staffs

The promotion of Thai employees to management posts in Japanese companies seems to have progressed along two lines. The first line is a straightforward replacement of Japanese managerial staffs by Thai managerial staffs. Almost all the Japanese companies studied in the research have decreased more or less the number of their Japanese employees and promoted Thai employees to fill the vacant posts.

Table 3-5 and Figure 3-4 present us the data from one Japanese company which is doing business in the transportation equipment industry. These data show how the decrease in the number of Japanese employees has followed the promotion of Thai employees to management posts in this particular company. The case of this company is not an exception but represents a general trend of many other Japanese companies in Thailand.

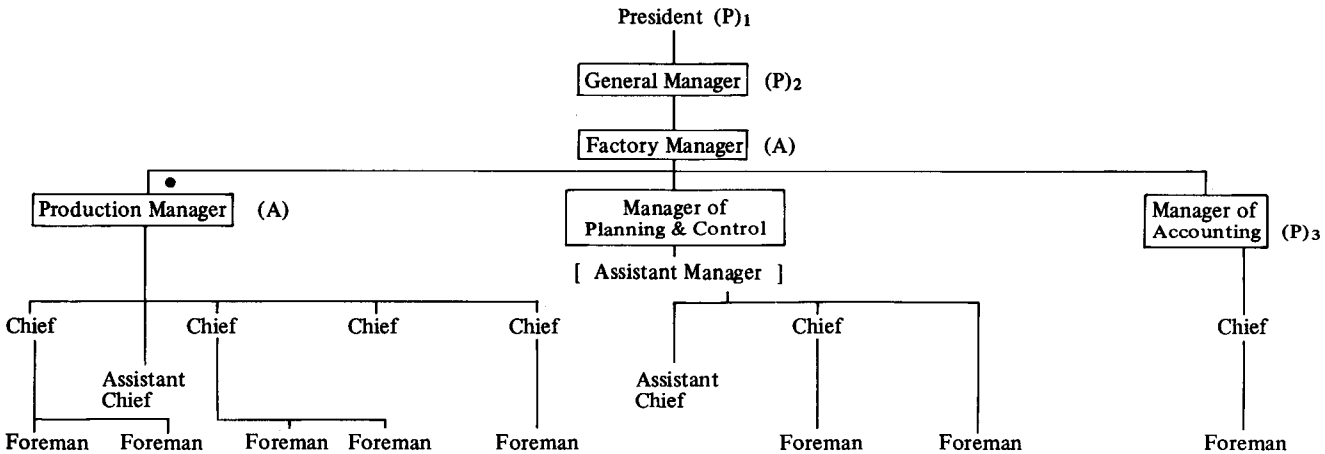
Table 3-4: Profile of Thai Managerial Staffs of a Japanese Company (Electric Appliances)

Management post	Age	Education	Date of entering the company	Training at the parent company	Work experience	Monthly salary (baht)
Managing Director	41	Master's course at the university in U.S.A.	1970	Several times	Has been the president of a Thai company	44,000
Manager of Finance	43	Chulalongkorn University	1972	None	Thai company	unknown
Manager of Purchase	32	University and studied in U.S.A.	1970	None	unknown	unknown
Manager of Personnel	42	University and studied in England and Australia	1973	None	American or European company in Thailand	unknown
Production Manager of Product A	35	Chulalongkorn University	1970	Twice (two weeks each time)	Thai company	10,000~ 15,000
Production Manager of Product B	33	Chulalongkorn University	1970	Once	American company in Thailand	
Production Manager of Product C	28	Chulalongkorn University	1971	Once	Japanese company in Thailand	
Production Manager of Product D	42	Chulalongkorn University	1973	Once	American company in Thailand	

Notes:

1. Source: data collected by interviewing.
2. As of August, 1974.
3. Thai managerial staffs receive a bonus once a year whose amount equals a three-months salary.

Figure 3-4: Organization of a Japanese Company (Transportation Equipment)



Notes:
1. Source: data collected by interviewing.
2. As of August, 1974.
3. Notation is as follows:
   (P)1: Part-time Thai manager
   (P)2, (P)3: Part-time Japanese managers who have a position in another Thai subsidiary of the parent company.
   (A): The same person holds two posts.
   ▭: Japanese employees sent from the parent company
   [ ]: Locally employed Japanese
4. All the posts of Chief were occupied by Japanese employees in 1966.
5. This figure corresponds to Table 3-5.

Table 3-5: Decrease of Japanese Employees in a Japanese Company (Transportation Equipment)

Type of Japanese Employees \ Year	1966	1969	1970	1972	1974
(1) Sent from the parent company					
1.1. Full-time	9	5	3	3	2
1.2. Part-time	0	1	2	2	2
(2) Locally employed	4	2	2	2	1
(3) Total	13	8	7	7	5

Notes: 1. Source: data collected by interviewing.
2. Part-time employees are those who have a position in another Japanese company in Thailand.
3. This company is the same as that of Figure 3-4.

The second line of progress is less clear-cut than the first one and therefore harder to trace. Many Japanese companies have recently increased the Japanese employees who are advisory staffs to line managers and supervisors. Most of them were once line managers and supervisors having a formal authority to give orders to their subordinates. These posts of line managers and supervisors are now filled by Thai employees. Thus, the change of Japanese employees from line managers to advisory staffs have usually followed the promotion of Thai employees to the posts of line managers and supervisors.

Next, let us examine the pace and the extent of progress in the promotion of Thai employees to management posts in Japanese companies in the past. The data presented in Table 3-6 were originally collected in Thailand by two Japanese researchers during May and June of 1972. This table tells us:

1. Of all the 38 Japanese manufacturing companies covered by the research, 28 companies (74%) increased their value of PLM (Percentage of Local Managers).
2. There are 10 companies that did not increase their value of PLM, but none of them showed a big decrease in their value of PLM.

Based upon these results, they concluded that the progress of promotion of Thai employees to middle management posts in Japanese manufacturing companies was quite evident.[12]

The development of Thai managerial staffs in Japanese companies has continued its progress since 1972 when the above quoted research was conducted. When we regard Figure 3-1 on page 35 as a representative organization of Japanese companies in Thailand, we may point out the following three points. First, the move to replace Japanese employees by Thai employees has achieved a marked progress for the posts of the

[12] *Kyōchōteki Kaigai-tōshi-katsudō ni Kansuru Chōsahōkoku* (Research Report on Overseas Japanese Companies in Asia), the Osaka Chamber of Commerce & Industry and the Center for Small Business Development in Asia, March 1973, pp. 30-32.

Table 3-6: Development of Thai Middle Management

PLM in 1972 / PLM in the year of initial operation	0 ~ 19	20 ~ 39	40 ~ 59	60 ~ 79	80 ~ 100	Total
0 ~ 19	4	3	1	2		10
20 ~ 39		4	4	3		11
40 ~ 59			2	2	2	6
60 ~ 79				5	3	8
80 ~ 100					3	3
Total	4	7	7	12	8	38

Notes:
1. Source: Kyōchōteki Kaigaitoshi ni Kansuru Chōsahōkoku (Research Report on Overseas Japanese Companies in Asia), the Osaka Chamber of Commerce & Industry and the Center for Small Business Development in Asia, March 1973, p. 30, Table 9.
2. PLM (Percentage of Local Managers) of each company is calculated as follows:

$$\text{PLM} = \frac{\text{number of Thai middle management}}{\text{total number of middle management}} \times 100$$

3. Of those 18 companies which are on the dotted diagonal line, 8 companies increased their PLM.

Assistant Section Manager. The majority of these posts are now filled by Thai employees. Second, some progress has been made in the promotion of Thai employees to the management posts of the Section Chief of the production department. It is estimated that nearly half of these posts are now held by Thai employees. Third, only little progress has been made as for the posts of the Section Manager and the Manager of various functions. The majority of these management posts are still occupied by Japanese employees.

Then, how far and how fast will the development of Thai managerial personnel progress in the future? Based upon the data collected, the following trends may be pointed out. First, nearly all the management posts except that of the President and the Plant Manager (we are still referring to Figure 3-1) will be filled by Thai employees in the future. The role of the Japanese managerial staff will be limited to the overall responsibility of managing the company. Second, the accomplishment of this replacement of Japanese employees by Thai employees will take several years. Hasty action would bring difficulties and troubles to the companies. Third, several Japanese advisory and technical experts will help Thai managerial and technical personnel. These Japanese specialists may work on a full-time basis in the company or they may periodically make short visits to the company.

One large Japanese textile company has an explicit plan to guide its replacement process of Japanese employees by Thai employees. As is shown in Table 3-7, it is planned that the Japanese employees would decrease at a fast pace and after 1978 there would be only two Japanese employees in this company. However, according to the plan, several Japanese would periodically visit the company as technical advisors and trouble-shooters.

Next, let us examine the factors and forces working toward the reduction of Japanese employees and the promotion of Thai managerial staffs in Japanese companies.

The first factor is the accumulation of management experience and the improvement of management skills on the part of Thai employees. It is not hard any more to find qualified Thais who can effectively handle management problems of the day-to-day operation of the company.

The second factor is a severe shortage of manpower on the part of the Japanese parent companies. The Japanese parent companies which have manufacturing subsidiaries in Thailand, usually have similar foreign subsidiaries in many other countries. And these parent companies are facing the problem of how to allot their scarce manpower resources among their many foreign subsidiaries. Thus, it becomes increasingly hard for Thai subsidiaries, that is, Japanese managed companies in Thailand, to procure the necessary supply of Japanese employees from their parent companies.

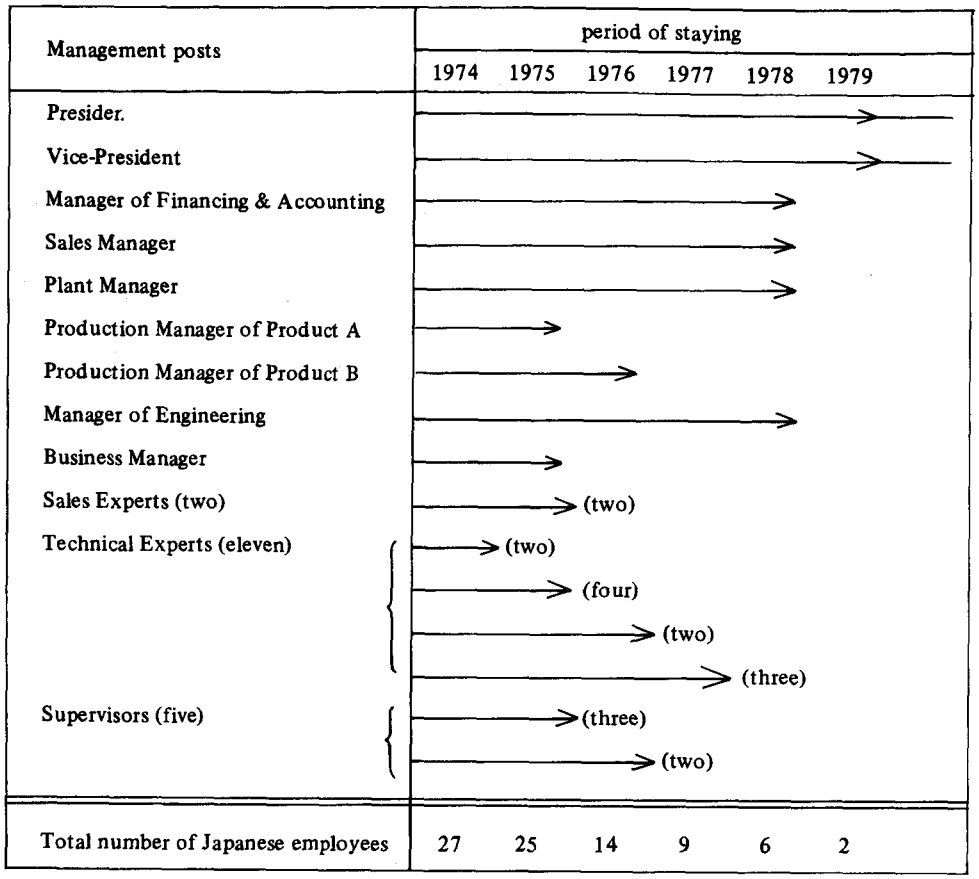
The third factor is the high cost of sending Japanese employees to foreign subsidiaries. This cost consists of many kinds of payment such as: (1) basic salaries, (2) hardship allowance, (3) cost-of living allowance, (4) housing allowance, (5) education allowance, (6) relocation allowance, etc. As Japanese people have enjoyed a great rise in their wage level in Japan these ten or fifteen years, it is getting harder and also costlier to persuade them to leave Japan and work abroad, especially in developing countries.

The fourth factor is the Thai Government policy and attitude toward foreign business activities and foreign employees in Thailand. The Thai Government enacted two laws in 1972, that is, the Law on Occupation of Aliens and the Alien Business Law. The basic aim of these laws is to limit the scope of economic activities of aliens in order to protect the Thai people and to ensure their full employment. It is quite evident that these two laws have a great impact upon the Japanese companies and speed up the reduction of the number of Japanese employees in these companies.

Then, what kind of management development programs have been devised and carried out in Japanese companies? Japanese companies generally have three kinds of programs, that is, (1) on-the-job training of Thai employees, (2) sending them to training courses provided by outside organizations, and (3) training them at the parent companies in Japan. The first and the third program are far more important than the second and thus deserve a brief description here.

The first method of on-the-job training, although it may not be conspicuous to outside people, is the major device for training Thai employees. The training of ordinary factory workers is carried out by this method alone. And the Thai managerial and

Table 3-7: Reduction Plan of Japanese Employees of a Japanese Company (Textiles)



Notes:
1. Source: data provided by the company.
2. As of August 14, 1974
3. In the table only the number of full-time regular Japanese employees is presented. After 1977 there would be several part-time Japanese as technical advisers and trouble-shooters.

technical staff also learn how to perform their jobs in Japanese companies mostly through this on-the-job training.

There are good reasons why the method of on-the-job training receives such a great emphasis in Japanese companies. First, under the "management by direct contact" of Japanese companies, as compared with the "management by indicrect control" of American companies, face-to-face contact and interaction among managerial staffs, technical personnel and workers tend to be frequent and close. In this situation it is easy and usually fruitful to use the method of on-the-job training. Second, another feature of

Japanese way of management, that is, the lack of well-prepared manuals makes it a necessity to rely upon this method of training.

The third method of training at Japanese parent companies has been widely used by Japanese companies in Thailand. This method has been applied to two groups of Thai employees, that is, (1) technical experts and first-line supervisors, and (2) high ranking managerial personnel. The following four aims seem predominant for this kind of training:

1. to get new technical knowledge and learn new skills
2. to get familiarity with the Japanese way of management
3. to get acquainted with Japanese society, economy and culture
4. The chance to go to Japane is given to Thai employees as a reward.

Table 3-8 gives us some data concerning this method of training, that is, (1) the number of Thai employees who received the training, (2) the date and the length of the training, and (3) the number of the employees who left the company after training. The case of this textile company has the following features. First, this company has placed a greater importance upon the training at the Japanese parent company than other Japanese companies in Thailand. Second, Thai employees who received training in Japan were mostly managerial personnel and are expected to hold key management posts in the near future. Ordinary workers, technical experts and first-line supervisors are trained by the method of on-the-job training. Third, in this company 30 employees received training in Japan, but only two of them left the company later. The ratio of spin-outers to all trainees is much higher in other Japanese companies. For example, in another large Japanese textile company, of 47 Thai employees who once received training in Japan, only 23 stay on at the same company and the remaining 24 left the company.

IV Japanese Employees

(1) Profile of Japanese Employees

The "Ugly American" is rapidly being replaced by the "Ugly Japanese" in many Asian countries. And it is widely believed that Japanese businessmen working in these countries are mainly responsible for this situation. As mentioned at the beginning of this paper, Japanese businessmen working in Thailand are being faced with widespread criticism and severe accusations. In this section an attempt is made to shed light on the profile of Japanese employees in Japanese manufacturing companies in Thailand and check the validity of the popular criticism made upon them.

(a) Number and Posts

The number of Japanese employees and their posts in Japanese companies have already been examined in the earlier part of this paper. The conclusion from that examination is that the average number of Japanese employees in Japanese companies is larger than that of foreign employees, mostly Americans and Europeans, in American

Table 3-8: Training at the Parent Company of a Japanese Company (Textiles)

Employees \ Year	1969	1972	1973	1974	Remark
Mr. A				7Feb./23Feb. (–, 16d.)	
Mr. B				20Jun./13Jul. (–, 23d.)	
Mr. C			14May/4Jun. (–, 20d.)		
Mr. D	Aug./Nov. (3m., –)				
Mr. E		19May/29Sep. (4m., 8d.)	5Oct./15Oct. (–, 10d.)		
Mr. F				26Jun./20Dec. (5m., 24d.)	
Mr. G				14May/24Jul. (2m., 10d.)	
Mr. H				14May/24Jul. (2m., 10d.)	
Mr. I			2Apr./9Jun. (2m., 7d.)		
Mr. J			2Apr./9Jun. (2m., 7d.)		
Mr. K			2Apr./9Jun. (2m., 7d.)		
Mr. L		15Jun./27Sep. (3m., 12d.)			
Mr. M	Aug./Nov. (3m., –)				
Mr. N				14May/24Jul. (2m., 10d.)	
Mr. O				14May/24Jul. (2m., 10d.)	
Mr. P				14May/24Jul. (2m., 10d.)	
Mr. Q	31May/28Aug. (3m., 25d.)		2Apr./11May (1m., 9d.)		
Mr. R			2Apr./9Jun. (2m., 7d.)		
Mr. S			2Apr./9Jun. (2m., 7d.)		left the company
Mr. T		15Jun./27Sep. (3m., 12d.)			
Mr. U		15Jun./27Sep. (3m., 12d.)			
Mr. V	31May/28Aug. (3m., 25d.)				left the company
Mr. W				14May/24Jul. (2m., 10d.)	
Mr. X				14May/24Jul. (2m., 10d.)	
Mr. Y	Aug./Nov. (3m., –)		23Jul./1Sep. (1m., 8d.)		
Mr. Z			23Jul./1Sep. (1m., 8d.)		
Mr. a			23Jul./1Sep. (1m., 8d.)		
Mr. b			28Apr./1Sep. (4m., 3d.)		
Mr. c		15Jun./27Sep. (3m., 12d.)			
Mr. d			23Jul./1Sep. (1m., 8d.)		
Total	5	5	13	10	
Grand Total		33 (30 persons)			

Notes: 1. Source: data provided by the company.
2. As of August 8, 1974.
3. Notations:
(1) 19 May/29 Sep. means from May 19 to September 29.
(2) 4m., 8d. means 4 months and 8 days.

and European companies (see Table 3-1 on page 33). And it has also been found that most of these Japanese employees occupy higher rank managment posts in their companies.

(b) Fluency in Thai

The popular belief that Japanese businessmen in Thailand seldom speak Thai seems to lack a factual basis. The Japanese employees in Japanese managed companies in Thailand are more fluent in speaking Thai than Americans in American managed companies. And there are good reasons for this relative fluency of Thai by Japanese businessmen.

It is said that many of the middle school graduates and almost all of the university graduates in Thailand speak English. Thus, it is rather easy to find and hire Thais who speak English. English speaking Americans work with these English speaking Thai colleagues and assistants in their companies. On the other hand, it is hard to find and hire Thais who speak Japanese. Generally speaking, Japanese employees can not rely upon Japanese speaking Thais in their companies. Instead, in order to communicate with Thai managerial staffs, technical experts and ordinary workers, the Japanese employees need to speak Thai. Thus, it becomes a necessity for the Japanese employees to learn to speak Thai.

The second reason is the difference between the Japanese way of management and the American way of management. Under the "management by indirect control," it is usually not necessary for American managers to learn to speak Thai since they only need to communicate with their Thai managerial assistants who speak English. In Japanese companies operating in Thailand, the Japanese managers usually have face-to-face relationships not only with the Thai managerial staff, but also with the ordinary Thai workers. And under this "management by direct contact," the Japanese managers are forced to learn to speak Thai since first-line Thai supervisors and Thai ordinary workers speak only Thai.

(c) Length of Stay in Thailand

The average Japanese businessmen stay in Thailand for three to five years. Those Japanese who assume an overall responsibility of managing the companies tend to stay longer than the average Japanese employees. On the other hand, the Japanese technical experts tend to stay shorter.

There seems no substantial difference in the length of term of office between Americans in American managed companies and Japanese in Japanese managed companies. On the average, the Americans stay in Thailand for three to five years. However, there are some Americans and Europeans who have stayed in Thailand very long, say, twenty or even twenty-five years. And these businessmen, although they represent only a small portion of the whole Western businessmen working in Thailand, may probably produce a conventional and an exaggerated image that Americans and Europeans generally stay very long in Thailand.

(d) Remuneration

It is widely believed among Japanese businessmen in Thailand that they are far more poorly paid than American businessmen in Thailand. Accroding to their belief, the remuneration of the Americans is twice to three times as high as that of the Japanese. Since remuneration is composed of not only basic salaries but also various additional allowances and fringe benefits, it is extremely hard to make a reliable comparison between Americans and Japanese in this matter. Howerver, according to the author's investigations, on the whole there exists no substantial difference in the remuneration between American businessmen and Japanese businessmen working in Thailand.

There exists a big gap of the pay scale between Japanese employees and Thai employees in Japanese companies in Thailand. It is not uncommon that the amount of remuneration of Japanese employees is twice to three times as high as that of the highest paid Thai employees. This big gap basically results from a big difference in the overall wage level and the living standard between Thailand and Japan. Japanese businessmen working in Thailand naturally demand that they be paid at least equally as their fellow businessmen working in the Japanese parent companies. Although there may be good reasons, such a big gap of the pay scale tends to arouse a bad feeling toward Japanese employees among the Thai employees and the Thai people in general.

(e) Vacation and Home Leave

Japanese people are well known throughout the world as hard workers. The Japanese employees in Japanese companies in Thailand work very hard indeed. Almost no Japanese employees have ever taken more than a three day long vacation during their stay in Thailand which usually lasts three to five years. It should not be thought from this that the Japanese companies operating in Thailand do not have a vacation policy. On the contrary, in all the companies studied in the research, the Japanese employees are provided with the right to take a two to three week long vacation every year. But they simply do not exercise this right.

The Americans in Thailand seem to work as hard as the Japanese, but the Americans take a long vacation in their home country or in Thailand. According to a survey, the American businessmen in Thailand are usually provided with home leave every year or every other year. The length of home leave ranges from three weeks to over five weeks. They are given local vacations in non-home-leave years. The length of the local vacation ranges from one week to four weeks. And it should be emphasized that all Americans exercise their right to take their vacation.[13]

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[13] *Asia/Pacific Regional Compensation Survey, Series I, Expatriate Allowances and Fringe Benefits, Thailand,* 1974 edition, Business International, 1974.

(2) Effects of Reducing Japanese Employees

As seen in the foregoing section of this paper, the number of Japanese employees has decreased considerably these two or three years and is anticipated to decrease further in the near future. In this section let us examine what kind of effects are being produced by this reduction of Japanese employees.

The Japanese employees are either managerial staffs or technical personnel. When some of these Japanese employees leave their companies, their functions need to be performed by Thai employees. Thus, we may well expect that the reduction of the Japanese employees leads to the development of Thai managerial and technical personnel in Japanese companies. In more general terms, it is expected that reducing the Japanese employees will speed up the transfer of management skills and technical know-how to Thai employees.

As mentioned earlier, the Thai Government enacted two laws in 1972, that is, the Law on Occupation of Aliens and the Alien Business Law. One important aim of these two laws is to place a rather narrow limit upon managerial and technical foreign employees and thus to promote the transfer of their management skills and technical know-how to Thai employees.

Then, is the reduction of Japanese employees a panacea for the development of Thai managerial and technical personnel? In order to give an answer to this question, we need to examine whether the Thai employees can take over the managerial and technical functions of their Japanese predecessors. This latter question leads us to the examination of the following considerations.

First, the efficiency of performance of managerial and technical functions by Thai employees considerably depends upon their management skills and technical expertise. Thus, in order to promote the replacement of the Japanese employees by Thai employees, it is necessary to devise and carry out an effective training program aimed at the development of their management and technical capabilities.

Second, we need to understand that the reduction of the Japanese employees proceeds smoothly under certain conditions but not so under other conditions. Generally speaking, when the management and technical problems that Thai employees need to deal with are mostly simple and familiar to them, reducing the Japanese employees may not seriously hurt the overall efficiency of operations of a company. On the other hand, mainly because of the lack of experience and the less developed capabilities of Thai employees, they may probably meet a serious difficulty in dealing with a complicated and novel type of management and technical problems.

Almost all Japanese manufacturing companies started their operations with the view to produce and sell their products to the Thai market. Many of them have still retained this local-market-oriented nature of their operations. But some Japanese companies are examining the feasibility of entering into the export business (see Table 4-1).

Table 4-1: Sales and Exports of Japanese Manufacturing Companies in Thailand

(million baht)

Industry \ Year		1969	1970	1971	1972	1973
Textiles	Total sales	645	840	1,366	1774	2,324
	Total exports	(1.4) 9	(0.8) 7	(2.2) 30	(3.5)62	(7.4)173
	Exports to Japan				27	58
Transportation equipment	Total sales	1,003	1,254	1,405	1,615	2,086
	Total exports				(0.1) 2	(0.1) 2
	Exports to Japan					2
Iron & steel non-ferrous metals	Total sales	720	875	883	926	983
	Total exports	(0.7) 5	(0.5) 4	(2.0) 18	(1.8) 17	(6.3) 62
	Exports to Japan					
Foodstuffs	Total sales	206	273	289	337	412
	Total exports		(2.2) 6	(3.1) 9	(3.9) 13	(19.4)80
	Exports to Japan				7	25
Others	Total sales	224	307	406	507	847
	Total exports	(2.7) 6	(8.1) 25	(0.5) 2	(2.8) 14	(5.7) 48
	Exports to Japan				10	21
Chemicals (included in the above category 'Others')	Total sales					471
	Total exports					(6.2) 29
	Exports to Japan					10
Total	Total sales	2,798	3,549	4,349	5,159	6,652
	Total exports	(0.7) 20	(1.1) 42	(1.4) 59	(2.1)108	(5.5)365
	Exports to Japan				44	106

Notes: 1. Source: same as Table 2-2.

2. The figures in the brackets show the percentage ratio of exports to total sales $\left(\frac{\text{total exports}}{\text{total sales}} \times 100\right)$.

3. The item of "Exports to Japan" has been investigated since 1971.

It needs to be emphasized here that the reduction of the Japanese employees has a different impact upon local-market-oriented companies and export-oriented companies. When companies enter into the export business, they begin to face many complicated and novel management and technical problems in addition to their familiar problems. It is often said that the success in the export business depends upon three factors, that is, (1) low cost, (2) high quality, and (3) reliability in delivery. These three factors need to attain an internationally determined high standard. Thus, in those companies which are going to promote their export activities, the reduction of the Japanese employees would raise more confusion in management and technical processes and thus more seriously hurt the efficiency of operations than in local-market-oriented companies.

The decrease in the overall efficiency of company operations would give a fatal blow to the competitiveness of the companies in their export market. Those Japanese managed

companies which are exclusively engaged in business activities in Thailand mostly compete with Thai managed companies and foreign managed companies in the Thai market which is more or less sheltered from the outside market. But, in the export market, the Japanese managed companies in Thailand meet a bitter competition from other companies such as the Japanese parent companies, the American parent companies and their foreign subsidiaries. These latter competitors may not have the same kind of handicap as encountered in replacing the more competent Japanese employees by less competent Thai employees.

As is represented in the figures of Table 4-1, the Japanese textile companies in Thailand are most enthusiastic in exploring the export business, and these companies are most seriously troubled with the reducing efficiency due to the replacement of Japanese employees by the Thai employees.

To sum up, it is important to undersatnd that the reduction of the Japanese employees produces two sets of effects. The first effect is to speed up the development of the Thai managerial and technical personnel. The second effect is an adverse effect upon the overall efficiency of operations of the companies.

(3) Japanese Way of Management

So far, occasional references have been made to the features of the Japanese way of management as compared with the American way of management. Let us attempt some elaboration on the subject here.

The Japanese way of personnel management has several characterisitcs, but the following three seem to be predominantly important: (1) lifetime employment, (2) collectivism or group-orientedness, and (3) low level of formalization.

When Japanese people enter a company, they usually expect to stay there until they retire. And the company makes great efforts to meet their expectation. As a matter of fact, to fire their employees is a means of last resort available to Japanese companies.

Japanese people usually apply for particular companies, but not for particular jobs that the companies offer. They enter the companies with only a general and vague image of their job assignment. Japanese companies usually do not hire new employees with the intention to fill particular vacant posts. New employees are assigned to particular jobs after they undergo a series of training which sometimes last one or two years. And they change their jobs in the same company many times as they grow older and get more expertise. This unique feature of the Japanese way of management is called "lifetime employment system."[14]

Under the lifetime employment system of the Japanese companies, the remuneration

[14] James C. Abegglen, *op. cit.*, 1958 and *op. cit.*, 1973

of employees shows the following characteristics. First, the length of service plays a central role in determing the pay scale for employees. A particular job he or she performs in a company or the efficiency and reliability of doing the job usually does not have a direct influence in determining his or her pay scale. Second, Japanese companies put a great emphasis upon welfare programs. There exists a kind of unwritten agreement between employers and employees that the formers take care of the welfare of each employee until he or she retires.

The second feature of the Japanese way of management is collectivism or group-orientedness. The following two unique methods of management in Japanese companies come out of this feature: (1) decision by consensus and (2) management by direct contact.

In Japanese companies decisions usually are the product of a group decision process which involves a close coordination of ideas and opinions of the managerial and technical personnel affected by a certain issue. And the coordination is achieved mainly through frequent, informal and face-to-face contacts among the participants.

We have contrasted the "management by direct contact" of the Japanese companies with the "management by indirect control" of the American companies. In American companies operating in Thailand, the American managerial staff seldom have direct contacts with ordinary workers or even with first-line supervisors. The scope of their face-to-face relationship is usually limited to their direct subordinates, that is, the Thai middle management. They receive data concerning day-to-day operations of their companies through these Thai managerial assistants, analyse the data, and issue orders and instructions also through these Thai managerial assistants.

The Japanese way of management shows a marked difference in this respect. The Japanese managerial and technical personnel usually has a face-to-face relationship not only with the Thai managerial staff but also with ordinary Thai workers. Japanese plant managers know the faces and even the names of most of their Thai workers.

It is an interesting fact that the difference between the American way of management and the Japanese way of management is clearly represented in the difference of the layout of their office buildings. A typical office of an American company has several small rooms provided for the high ranking American and Thai managerial personnel. Each of them works separately in his own office room with his secretary. On the other hand, a typical office of a Japanese company in Thailand is composed of one big room and one small room. The latter small room is provided for the president or the plant manager of the company, but usually used as a reception room. All office staffs ranging from top ranking managerial personnel to ordinary office workers work together in one big room. There are no separation walls in the room.

The third feature of the Japanese way of management is that formalization of management procedures is poorly developed. In order to understand this feature, we need to pay attention to the different historical background of the Japanese way of

management and the American way of management.

Up until the early days of the 20th century, the labor force of American companies was largely made up of immigrants from various countries. Many of them were poorly educated and could only understand fragments of English. Interpreters were hired for them in some firms. The American way of management has evolved out of the long practice of managing employees who were heterogeneous in culture, race and language. So, formalization of the procedure of management has developed to a high degree and the important procedureal aspects of the management process have come to be explicitly stated in various manuals such as the managers' guides, job descriptions, and organization charts.

The Japanese way of management has been formed from a completely different historical background. Since the beginning of the Meiji era (1868-1912), the Japanese employees, from the president to the ordinary workers, have been rather homogeneous in their cultural background, race and language. They have shared to a relatively high degree a common basis for mutual understanding. In this situation, formalized methods of communication such as explicitly written instructions and job descriptions have played minor roles, and instead unstructured methods of communication such as informal interactions and facial expressions have gained a great importance. Thus, many management procedures have not been formalized and thus remain implicit.

V Labor Problems

(1) Development of Thai Workers

In the early 1960s when many Japanese managed companies started their operations in Thailand, working in a factory was a completely new experience for the Thai people. Therefore, the Japanese companies had to deal with many primitive labor problems arising from the lack of work discipline of the Thai workers. Typical labor problems confronting the Japanese companies at that time were the following: There were Thai workers

1. who were late and absent without notice,
2. who did not go to work until they had spent all their money,
3. who did not go to work when it rained just like farmers,
4. who left their companies without notice,
5. who stole products, materials, and tools from their companies,
6. who did not wear work uniforms or put on work shoes,
7. who chattered during their working hours,
8. who enjoyed gambling in a factory,
9. who drank during their working hours.

In the relatively short period of ten or fifteen years, the Thai workers have achieved a remarkable development. In a word, they have changed from an undisciplined farm work

force to a disciplined work force suitable for modern factories. And most of the primitive labor problems mentioned above have disappeared.

In his interviews with managers of Japanese companies and American companies in Thailand, the author seldom heard complaints regarding absence and turnover by the Thai workers. Far from that, these managers were satisfied with a good record of presence and turnover by their Thai workers. Roughly speaking, the annual turnover rate of the Thai workers in Japanese companies is around 25%. The same figure 25% also seems to apply to the American managed companies in Thailand.

Many Japanese managers have expressed satisfaction with the Thai workers with respect to the efficiency and the reliability of their working. The rapid pace of development of the Thai workers affords a welcome surprise to many Japanese people.

(2) Comparison of Labor Strikes between Japanese and American Companies

Thai economy has experienced a sharp increase in labor strikes since 1973 as shown in Table 5-1. While in the seventeen years from 1956 to 1972 there occurred 219 cases of labor strikes, in 1973 alone there occurred 501 cases. This rise of labor strikes continued in 1974 when 241 cases already occurred till August 15.

It is a common knowledge that this abrupt increase in labor strikes in Thailand since 1973 has been brought about by the following causes:

1. worsening of the living standard by recent inflationary price increases in consumer goods
2. new labor laws which give workers the right to organize themselves
3. misunderstanding and lack of communication between management and workers
4. lack of experience and skills in dealing with labor problems on the part of management, workers and government officials
5. recent social and political trends which are favorable to workers rather than to management

As mentioned at the beginning of this paper, it is widely believed in Thailand that Japanese managed companies have experienced more labor strikes than American managed companies. The author met an official of the Labor Department who was quite convinced that on the average Japanese companies have had labor strikes more than twice as often as American and European companies in Thailand. Unfortunately, there are no statistics which show labor strikes classified by the nationality of management of companies in Thailand.

It may be worth while emphasizing here that any attempt of comparison of the frequency of labor strikes between Japanese and American companies in Thailand should give proper attention to the following two facts. First, as presented in Table 5-2, roughly 40% of all the labor strikes in the manufacturing sector in 1973 occurred in the textile industry and approximately one third of the Japanese managed manufacturing companies

Table 5-1: Labor Strikes in Thailand, 1956–1974

Year	Number of strikes occurred	Number of workers involved	Number of days lost
1956	12	66	3,673
1957	21	203	12,947
1958	4	8,458	4,202
1959	11	846	8,060
1960	2	3	64
1961	2	68	93
1962	3	81	63
1963	4	118	159
1964	6	300	539
1965	17	3,753	6,566
1966	17	5,413	18,764
1967	2	470	470
1968	14	1,867	3,217
1969	18	5,345	23,593
1970	25	2,888	6,004
1971	27	5,153	12,646
1972	34	7,803	19,903
1973	501	177,887	296,887
1974 (till Aug. 15)	241	69,947	228,041.5

Note: Source: The Department of Labor in the Ministry of Interior of Thailand.

are doing business in the textile industry. There are only a few American managed textile companies in Thailand. Second, in some industries such as the transportation equipment and the rubber products, the American managed companies have experienced more labor strikes than the Japanese managed companies.

Based upon the data and general observations gained through the filed research, the author is inclined to think on the following lines. On the surface it may appear that on the average the Japanese companies have had more labor strikes than the Amercan companies. But, when we examine this difference in some detail and attempt a fair comparison using a more or less similar basis, this difference in the frequency of labor strikes between Japanese and American companies mostly disappears.

With respect to the duration of labor strikes, there exists a difference between Japanese and American companies. In the case of the Japanese companies, only two cases of labor strikes lasted more than one week. Most cases of labor strikes in Japanese

Table 5-2: Labor Strikes in Thailand, Classified by Industry

(in 1973)

Industry (Manufacturing)	Number of strikes occurred	Number of workers involved	Number of days lost
Foodstuffs & soft drinks	28	13,365	15,595
Weaving, knitting & animal skin products	157	62,476	112,829
Wood & wooden products including furniture	17	5,832	14,247
Paper & its printed products	11	2,941	3,380
Chemicals including petro-chemicals and rubber products	56	9,224	19,532
Petroleum and its products	24	7,499	13,674
Basic metal industry (Iron and steel)	14	4,068	33,479
Metal products, machinery and its parts	82	12,625	1,938

Note: Source: The Department of Labor in the Ministry of Interior of Thailand.

companies were settled in less than three days. In the case of the American companies, labor strikes seem to last much longer than in Japanese companies. The author identified at least five cases of labor strikes which lasted more than one week.

Let us examine the causes which have produced this marked difference in the duration of labor strikes in Japanese and American companies. We may point out the following three factors as the main causes. The first and the most fundamental factor seems to be a different way of management in Japanese and American companies. From the viewpoint of communication between high ranking managerial personnel and ordinary workers, the "management by direct contact" in Japanese companies seems to be superior to "the management by indirect control" in American companies. In fact, Japanese managers generally were much more familiar with the day-to-day operating and personnel problems of the ordinary Thai workers than foreign managers in American companies. The Japanese plant managers usually know the faces and names of their Thai workers.

The second factor is a difference in the managers' attitudes toward labor strikes. The Japanese managers on the average take a weak-kneed attitude toward labor strikes and have a tendency to make easy concessions to the strikers' demands. And they also are extremely sensitive to the bad image of having a labor strike and thus attempt to do almost anything to settle it quickly. On the contrary, the managers of American companies seem to take a more resolute attitude in dealing with labor strikes.

The third factor is a difference in the extent of the decentralization of authority from the parent companies to the Thai subsidiaries. Japanese managers in Thailand are generally given the necessary authority to deal themselves with their labor problems. This is not necessarily the case in American companies in Thailand. Some of the so-called American multinational corporations have advanced standardization of procedures of management and operation throughout the world to such an extent that managers in Thai subsidiaries are not given the necessary authority of independent bargaining with strikers.

VI Recommendations

(1) Recommendations to Japanese Companies in Thailand

Judging from what we have seen in the foregoing part of this paper, we may say that most of the popular criticism of Japanese companies operating in Thailand is not well founded on facts and figures. In other words, data and information collected through the field research, although they are insufficient in amount and also in reliability, tell us that on the whole the Japanese way of personnel management is not as bad as said by Thai critics.

We can not deny the fact that there exist in Thailand at the present time strong and wide-spread critical views and accusations of the Japanese way of personnel management. Thus, there exists a gap between popular criticism and actual practices. In order to understand the nature and the reason of this gap, we need to recognize the fact that popular criticism of Japanese companies in Thailand is much more deep-rooted than it appears at first sight.

We may easily point out several factors which have indirectly but fundamentally contributed to the generation and diffusion of the current critical views upon Japanese companies in Thailand. First, since the last drastic political change which occurred in October 1973, the Thai Government has maintained a cautious attitude toward inward foreign direct investments and the existing foreign subsidiaries.[15] This attitude has the backing of the nationalism of the Thai people.

Second, we need to understand the asymmetrical relationship of the parent companies as investors and Thailand as a host country.[16] Many of the parent companies which have manufacturing subsidiaries in Thailand may be regarded as multinational enterprises or the like. Their distinctive feature, as compared with the usual national enterprises which have business activities mostly within the boundary of a single country, is found in their ability to formulate corporate plans and mobilize corporate resources in

[15] At the time of writing this paper there occurred a coup-d'état in Thailand (October 1976).

[16] Raymond Vernon, *Sovereignty at Bay: The Multinational Spread of U. S. Enterprises,* Basic Books, 1971.

terms that extend beyond the boundary of any single country. And the Thai subsidiaries are integrated as part of a multinational system of enterprises and thus are under the direction of their parent company, at least with respect to their basic corporate policy problems. On the other hand, the jurisdiction of the Thai Government is restricted to a single country, that is, Thailand. It rather naturally follows from this asymmetrical relationship that foreign subsidiaries operating in Thailand appear in the eyes of the Thai Government less controllable and thus more problematical than genuinely Thai enterprises.

Third, we need to recognize the fact that the presence of foreign companies in Thailand is sometimes seen as a threat to Thailand in terms that are not only economic but also political, social and cultural.

Fourth, foreign companies are often made the scapegoats for the internal power struggle in developing countries like Thailand.

These four factors seem to be helpful in understanding why the Thai Government and the Thai people show critical attitudes toward foreign managed companies in general. However, in order to understand why the Japanese managed companies are so exceptionally notorious in Thailand, we need to add some more factors.

The fifth factor is the so-called over-presence of Japanese companies in Thailand. As seen at the beginning of this paper, the Japanese direct investments represent nearly forty percent of all foreign direct investments in Thailand. And the Japanese companies are largely producing consumer products. Thus, the activities of Japanese companies are clearly visible and easily attract the attention of government officials, academicians, students, journalists, and ordinary people.

As a sixth factor, we may point out the features of Japanese-Thai trade relationship; (1) the trade with Japan occupies the largest share both in exports and imports, and (2) the trade balance has constantly been unfavorable to the Thai side. A strong discontent with the Japanese trade naturally contributes to fostering critical attitudes toward the Japanese business activities in Thailand.

In Thailand American and European culture seems to enjoy a higher evaluation and attract more attention than Japanese culture. Most Thai people are indifferent to Japanese culture and only a small number of Thai people speak Japanese. Many of the Thai people who graduate from universities speak some English. Thus, for these Thai people, working in American and European managed companies is easier and more attractive than working in Japanese managed companies.

Lastly, we need to pay attention to the special position of the Japanese people working in Thailand. In Thailand Americans and Europeans are regarded and treated as foreigners, but the Japanese are not necessarily so. It is often said that the Thai people and the Japanese people are both Asians. Thus, the Thai people expect that the Japanese behave in the same way as they do. They are not tolerant with regard to the Japanese way of life which appears extraordinarily luxurious in the eyes of many Thai people.

Working under the direction of Japanese managerial personnel sometimes induces complex psychological reactions among the Thai people while working under the direction of Americans or Europeans rarely does so.

The above analysis leads us to the following two recommendations to the Japanese companies.

First, Japanese companies should make serious efforts to improve all the aspects of their personnel management practices in a more energetic way than till now. Their efforts will surely improve the overall image of the Japanese companies and dispel some of the current critical views of the Japanese way of personnel management.

However, it would be evidently too optimistic to think that their efforts alone be enough to dispel all the anti-Japanese attitude and movements in Thailand. As we have seen, critical attitudes and movements against Japanese companies have deep-rooted causes and the solution of these causes is hardly within the reach of the individual Japanese companies. The Japanese staffs working there should be prepared to regard some level of an unfriendly and unpleasant atmosphere as a normal condition for their activities. And they should learn how to live peacefully and productively within it.

(2) Recommendations to the Japanese Government

There has been a rather close relationship between Thailand and Japan in terms of trade and investment. This relationship is economic in nature. However, the relationships between these two countries on the cultural level have never been close. Ordinary Japanese people on the whole have little interest in Thailand and its people. And even those Japanese businessmen who have stayed in Thailand for several years have seldom shown interest in the cultural and social aspects of Thailand. On the other hand, the knowledge and interest of the average Thais concerning Japanese cultures are very limited and superficial. They have never read Japanese novels, seen Japanese classic dramas and paintings. Thus, the relationship between Thailand and Japan has been unbalanced in the sense that only economic aspects have been emphasized.

In order to change the present Thai-Japanese relationship toward a more balanced relationship, it is evidently necessary to promote cultural relationship between these two countries. And the Japanese Government can best take the leadership in promoting cultural relationships thanks to her financial strength and organizing power.

The realization of a more balanced relationship between Thailand and Japan would hopefully reduce tensions between the Japanese companies on the one hand and the Thai Government and the Thai people on the other hand.

(3) Recommendations to the Thai Government

Based upon the findings and arguments of the research, the following two recommendations are presented to the Thai Government.

First, the Government should start serious efforts to collect reliable data concerning

foreign direct investment in general and personnel management practices of the Japanese managed companies in particular. The efforts would doubtlessly contribute to the formulation and execution of proper policies and procedures by the Thai Government concerning foreign companies. And it is also recommended that the Thai Government make efforts toward wider circulation of its various data. This effort would hopefully remedy to some extent the current unhappy situation of "many arguments but too few data."

Second, the Thai Government should formulate and carry out its policy of foreign direct investment on a principle of selectiveness. An equal application of one and the same policy to all the Japanese managed companies is not advisable from the standpoint of promoting their contribution to the Thai economy. It seems very important for the Thai Government to realize that there exists a kind of trade-off relationship between promoting Thaiization of Japanese companies and fostering their competitiveness on the international market. Promotion of Thaiization of foreign companies means the following: (1) to increase the share of ownership of Thai investors, (2) to increase the use of materials and parts produced in Thailand, (3) to promote the replacement of foreign employees by Thai employees, etc. With respect to the subject of personnel management of Japanese companies as seen earlier, this means that promotion of the replacement of Japanese employees by Thai employees may probably reduce the competitiveness of the export-oriented Japanese companies.

It follows from the above argument that the Thai Government should first distinguish between local-market-oriented Japanese companies and export-oriented Japanese companies. And then the Thai Government should sagaciously limit the application of its policy of Thaiization to the former inward-looking Japanese companies.

Notes:

1. The field studies in Bangkok were undertaken by the author with the collaboration of Dr. Vichitvong Na Pombhejara of the Economic Cooperation Center for the Asian and Pacific Region (ECOCEN) and were financed by the Japan International Cooperation Agency.
2. A part of the studies made in Japan was financed by the subsidy of the Ministry of Education of the Japanese Government (fiscal year 1974, Project No. 933010).
3. Exchange rates in 1974:
   1 US dollar = 20 baht
   1 baht ≒ 15 yen

EVALUATION OF PERFORMANCE USING MULTIPLE CRITERIA

Komayuki Irow

I Introduction

In a previous paper we introduced a model of budget simulation relative to long range planning, and whose aim was not the expected gain from a given project, but management planning as a going concern.[1] There, financial balance was considered as a fundamental issue associated with the choice of one among a set of projects. Financial problems should be investigated in detail so as to hold a financial balance before a given project is completed. Here, financial balance means financial structure preventing the company from going bankrupt. In order to take this balance into consideration, management must not only evaluate various possibilities of financial conditions of a single period but also those of ensuing periods.

Concretely speaking, when a given project is completed at a certain period, management must not only investigate the existence or the availability of funds required by the project, the outlay and the return yielded by the investment behavior, the expected profit (as total) evaluated by these outlay and return but also take into account the expected gain from the project and the availability of funds relative to the net cash flow at ensuing periods. Several factors having effects on this cash flow are complicated by production, sales, trade cycle, foreign currency (these two beyond the control of management) and so on.

Thus, there is no doubt that the selection of projects is associated with the consideration of many factors. However, often only one among such criteria as the rate of return requirement, net present value et al. is used for the analysis of projects. It does not seem to us that this produces practical results satisfying the management in the choice of projects.[2] In spite of this fact, projects are seldom chosen on the basis of multicriterion. The reason is that as the number of criteria increases, the difficulty in the choice becomes more and more aggravated.

However, if the decision makers want to select projects from practical and wide viewpoints of management, multicriterion has to be taken into account even if this is not easy. Thus, when indices are fixed and when values of these indices are able to be evaluated, we are interested in the selection process of projects by which they are aggregated.

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[1] See [10]

[2] We do not deny that the rate of return requirement, net present value et al. are well worth of study.

II Formalization of the Problem

Let us assume that there are m projects $S_1, S_2, \ldots, S_m$ and that it is desired that the most reasonable one be selected. Also the action of selection is taken on the basis of n different indices $a_1, a_2, \ldots, a_n$. Project S_i has a value K_{ij} with concern of index a_j. Then our alternative K_i is n-tuple consisting of K_{ij}, that is,

$$
\begin{aligned}
&K = \{K_i \mid i \in I\},\\
&K_i = (K_{i1}, K_{i2}, \ldots, K_{in}),\ i \in I,\\
&K_{ij} = K(S_i, a_j),\ i \in I,\ j \in J,\\
&S = \{S_i \mid i \in I\},\\
&A = \{a_j \mid j \in J\},\\
&I = \{1, 2, \ldots, m\},\\
&J = \{1, 2, \ldots, n\},
\end{aligned}
$$

For convenience, assume that the increase of value K_{ij} leads to the increase of desirability.

Our problem of choice is to make a choice of alternative K_i from the set K with semiorder.

III Preference Discrimination

The previous described problem of choice appears to be logically solved by the theory of preference. Suppose that for any two alternatives K_i and K_j, there exists the following preference relation R, that is to say, either K_iRK_j (K_i is preferred to K_j), or K_jRK_i (K_j is preferred to K_i) or, K_iRK_j and K_jRK_i (neither is preferred to the other). In the last case, it is said that K_i is indifferent to K_j. The existence of preference relation is a strong assumption, for it is uneasy for a decision maker to express always preference on alternatives. Provided that their attribute is simple, he may be able to have no difficulty to evaluate them. However, it is not rare, in the case of the set of alternatives here considered, that he cannot determine which of the three properties is adequate.

This strong assumption, that is, the existence of the preference relation R, induces the following procedure. For some element K_a ($K_a \in K$), the set G_a is produced which consists of elements indifferent to K_a. Accordingly, this set G_a is the subset of the set K and the domain indifferent to K_a. Next, for a second alternative K_b ($K_b \in K$ and $K_b \notin Ga$),the domain G_b produced is indifferent to K_b. After interations of this procedure the set K is divided into the domains with indifference property, $G_a, G_b, \ldots$.

It is possible that a decision maker makes a choice of one among the projects if there are not too many. But the greater the number of projects generated by computer simulation is, the more difficult it is to clarify the preference of any element in the set of

projects. Our problem is what to select in the above situation.

There are works, of what is called the interactive approach, in the same vein as the above described procedure.[3] This approach consists in formulating, step by step, the preference function for the decision maker.

Now, suppose that the implicit preference function $U(K_i)$ for a decision maker exists. Then he has an improvement of choice action by using his local information. Local information, that is to say, marginal substitution rate plays an important role in the interactive approach. On the assumption of differentiability, the marginal substitution rate is

$$\overline{W}l = (\alpha U(K_i)/\alpha K_{il})/(\alpha U(K_i)/\alpha K_{i1}),$$
$$l = 1, 2, \ldots, n.$$

The gradient of a preference function $U(K_i)$ is defined by a vector $(1, W_2, W_3, \ldots, W_n)$. Since the direction of the gradient is expected to increase the satisfaction of a decision maker, he has to search along this direction in the domain.

This approach requires many responses by a decision maker. Roughly speaking, his preference may contain a contradiction by aggregating his local information, and so we suspect that he cannot introduce the same details of his consciousness as the level of marginal substitution rate into his preference function, even if approximately, there is especially a doubt in the case of making a choice of projects. Consequently, the above discussion shows that the interactive approach brings into the level of the marginal substitution rate the difficulty that he must, at any time in the selection, hold one of the three properties in the preference relation R. This choice method with ambiguity runs the risk of losing the equivalence relation.[4] There remains the possibility to make a choice contrary to dividing the set K into the domains with indifference.

IV Method by Ordering

The interactive approach aims at solving the multicriterion problem by making use of the local information of a decision maker. On the other hand, the method by ordering obtains the local information necessary for the choice action by interpolating the given global information.[5]

Assume that a decision maker provides global information L. This information has the same structure as the set K of alternatives. That is to say,

$$L = \{L_1, L_2, \ldots, L_l\},$$
$$L_i = (L_{i1}, L_{i2}, \ldots, L_{in}),\ i = 1, 2, \ldots, l.$$
$$L_{ij} = L(\cdot, a_j),\ i = 1, 2, \ldots, l,\ j = 1, 2, \ldots, n.$$

[3] See [4], [6], [8].

[4] Equivalence relation:
i) $A \sim A$, ii) $A \sim A' \Rightarrow A' \sim A$, iii) $A \sim A'$, $A' \sim A'' \Rightarrow A \sim A''$,
where the symbol $\sim$ denotes a relation between the elements.

[5] See [5].

For understanding, $L\ (S_i, a_j)$ is rather clearer than the expression $L\ (\cdot, a_j)$ but it is not certain that the argument S_i in $L\ (S_i, a_j)$ is always involved in the set S of projects, for the argument S_i is an imaginary project to produce L_i. We have no problem when we take the above note into consideration even though the notation L_{ij} is $L\ (S_i, a_j)$.

Assume that L_i an element within the global information L, has the ith priority among l's elements. The cardinal number l of the set L is required to be large enough to represent the preference of a decision maker. Therefore, if the cardinal number is small, rough actions of choice are generated. On the other hand, if a decision maker needs careful actions in some parts of the domain, he must provide such parts with more information.

Speaking of the design of the global information L, the most desirable lement L_1 in the set L may be a vector which consists of ideal values corresponding to indices or values giving necessary and sufficient satisfaction to a decision maker. And the least desirable element L_l may consist of the least on each index among the values which are acceptable to him.

After the construction of the global information the procedure of choice works in the following manner. It is determined what preference order an alternative K_i takes. That is to say, let a value K_i be between L_t and $L_{(t+1),1}$, by linear interpolation,.

$$\alpha_1 = t + \frac{L_{t1} - K_{i1}}{L_{t1} - L_{(t+1),1}}$$

be evaluated. The first component K_{i1} of the alternative K_i takes the α_1 th priority within the global information. The iteration of the same procedure on the second index results in the α_2 th order of preference. The procedure is continued until the computation on the nth index is completed.

Consequently the preference orders on each index in the global information concerning K_i is determined. Then the preference order α_i of K_i in the global information is defined as:

$$\alpha^i = \max\ \{\alpha_1, \alpha_2, \ldots, \alpha_n\}$$

This α^i assures us that no component of vector K_i takes a lower priority than the α^ith priority.

The most preferred element in the set K of alternatives is specified on the basis of the preference order α^i. The procedure is notationally summarized as follows:

$$\min_{K_i} \max_{\alpha_j} \Phi(K_i)$$

where $\Phi(K_i) = \{\alpha_1, \alpha_2, \ldots, \alpha_n\}$

Owing to the structure of the global information, the procedure may not work. For example, if $L_{t1} < L_{(t+1),1}$, the preference order over the interval $[L_{t1}, L_{(t+1),1}]$ has an inverse relation to values on the first index. Observe the two values K_{i1}, K_{j1} in the interval $[L_{t1}, L_{(t+1),1}]$. Then, the preference orders, $\alpha_1(i)$ and $\alpha_1(j)$ on the first index are evaluated from K_{i1} and K_{j1}. As a result, the order numbers, $\alpha_1(i)$ and $\alpha_1(j)$, have the

relation $\alpha_1(j) < \alpha_1(i)$. Both this consequence and the relation $K_{i1} > K_{j1}$ are inconsistent with the assumption that the increase of value leads to the increase of satisfaction.

The relation, $L_{ij} < L_{(i+1),j}$, in the global information means that the index j has no effect on the preference order of alternatives over the interval $[L_{ij}, L_{(i+1),j}]$. One of the reasons why such an event happens may be that the value in this interval is far beyond the satisfaction level of a decision maker. A second reason is that this index may not have primary importance to alternatives at the time of selection. In order to reduce this difficulty, the following technique is used.

Consider that K_{i1} is between L_{t1} and $L_{(t+p),1}$, where $L_{t1} < L_{(t+p),1}$. Then the preference order α_1 concerning K_{i1} is evaluated as follows:

$$\alpha_1 = \frac{\sum_{i=0}^{p} (t+i)}{P+1} + \frac{L_{(t+p),1} - K_{i1}}{L_{(t+p),1} - L_{t1}}$$

The resultant shows that actions of choice in this interval are not dependent on the index concerned.

V Conclusion

The method to use local information, that is to say, the interactive approach requires too many responses of a decision maker. These may lead him to illogical action, especially, actions breaking the transition law while the method to use global information, that is to say, the method by ordering needs interpolation concerning preference order. Linear interpolation is used in this paper, but another interpolation may be adequate in other case.

However, the method by ordering is considered to work more easily than the previously proposed method by relative value.[6] Relative value depends on so many factors, such as the set of objective, the set of outcomes, environment and so on. For the purpose of condensing these factors into a relative value a too big job is required. Moreover, when a relative value is applied to a maximim criterion, it is suggested that a rigid check on indices is taken into consideration. This rigid check intends eliminating indices which do not define proference relation intrinsically.

But, in some cases an index which is considered as less important may have greater power of discrimination than the most important index. As previously described, when there exist values on the most important index which is beyond satisfaction, the choice effect of these values becomes negligible. Then, if a index which is evaluated as of secondary importance has values being under the satisfaction level, this index must be taken care of with great attention.

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[6] See [11].

Therefore, even if the importance of indices is carefully inspected before a choice action is taken, there remains the possibility that the outcome from the above inspection is worth nothing for the selection process. This situation of choice complicates qualitative problems minutely.

In the case of dealing with the indices which have lost effect on the choice action, in respect to practice the method by ordering is of great advantage to that by using relative value.

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SOME BARGAINING PROCESS MODELS IN THE SHIPPING EXCHANGE

Tetsuji SHIMOJO

I Why Rates Differ?

Many charter contracts are reported from the Shipping Exchanges everyday. They are of many kinds, and it is natural that they differ from each other, because of their differences in cargo, route, form of contract etc. However, we find that two undistinguishable contracts very often have different rates at almost the same time in spite of their similarity of cargo, route, and form of contract. Many explanations have been attempted as to the causes of such differences using every information obtained, but there still remain things that can not be explained otherwise than as caprice or misestimation of shipowners and charterers.

In this paper, we will propose a way of explanation for the causes of such differences between rates of similar contracts. Differences of cargo, route and form of contract are to be neglected for our purpose. Also, if needed, we will observe the rates after converting them into the Time Charter Equivalent in order to eliminate the effects of particular conditions of the contracts.[1]

The conversion of the various rates into the time charter hire rates can be done by a simple calculation. The earnings of a shipowner during a voyage with a certain cargo is expressed as

$$R \times T,$$

where R is the freight rates in the voyage charter contract, and T the quantity of cargo in tons. If the expenditure for the above voyage is denoted by V, then the net revenue during the voyage is expressed as

$$R \times T - V.$$

The expenditure mainly depends upon the particular contract, the nature of the cargo, the distance of the route, the conditions of the loading and unloading ports, and so on. Most of the differences of the rates depend on this expenditure, and by eliminating such expenditure we can get new rates of almost the same basis. The only peculiarity remaining is the length of the voyage, or the period taken for the earning.

The net revenue during the voyage can be converted into a rate per month per ton dead weight of the ship, namely,

$$(R \times T - V) \div \frac{D}{30} \div W,$$

[1] In Japan this formula is well known as Charter Base. See Shimojo [1].

where D denotes the days taken for the voyage, and W denotes the tonnage dead weight of the ship. This rate is equivalent to a charter hire rate per month per ton dead weight during the period as long as the contact lasts. In the following discussion, we assume that all rates are of the same kind without any peculiarity in the differences of cargo, route, and condition of contract.

II When to Conclude a Contract?

We are at the stage of discussing the behavior of shipowners and charterers who are going to conclude a contract. It is not only convenient but also realistic to assume that the shipowners and the charterers will not change their stands with each other. The shipowners have only ships by which they can supply shipping services, and the charterers have only cargo which they must ship before a certain time in the future. The charterers will not resell anything they have already bought.[2] In this point transactions in the shipping market differ from those in the markets of merchandise, real estate, money, etc.

It is needless to say that shipowners and charterers always behave to maximize their expected profits. Our present purpose is to observe their behavior in the bargaining process of chartering. This can be done from two sides. One concerns the time when they decide to conclude a contract with the conditions they have reached by that time; and the other concerns the period of contract, that is when it is to commence and how long it is to last.

Ships are not always ready to sail. In general and normal conditions, ships work in accordance with their present contracts. The shipowners, however, must have other contracts in advance, in order to fix the next voyage as soon as the present contract is terminated. If there is an 'idle' period after completion of the present contract due to the absence of a new contract, the shipowners incur considerable losses. For the shipowners, therefore, the commencement of the new contract must coincide with the date of completion of the present contract, and the agreement must be made by that time.

If the new contract is not concluded when a ship is freed from the previous contract, there will be an idle time for the ship. Such a situation rather often occur during adverse conditions of markets, and the shipowners may adopt the following measures;[3]

(a) undertake a voyage in ballast to better their position
(b) wait, fully prepared for operation, for a favourable offer of freight
(c) have the ship classified for later operation
(d) lay the ship up without crew
(e) scrap the ship

Among the above, (a) and (b) are rather optimistic measures, while in the case (c)

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[2] This assumption is to avoid the possibility of speculation to resell the charter contracts.
[3] Svendsen [3] p. 231.

there must be some probability that a new contract can be expected before the completion of classification, and that such an adverse condition is not expected again during the following year. The case (d) is the real laying-up, but, it is an important problem what ships' costs can be saved by this measure.[4] The most drastic measure is the case (e), which means the withdrawal of the ship from shipping operation.

In a depressed market, in which offers for cargo movement are very scarce and very low rates are prevailing, the shipowners of comparatively high cost ships will consider taking measures like the above. Even in this case, however, their behavior will differ from each other, according to their individual thoughts or feelings about the future trend of the market.

If the freight rates are expected to be higher than the laying-up point rate of their ship it is the most reasonable to consider that the shipowners make the greatest efforts to conclude a new contract before the ship is freed. Unless the markets go up, shipowners will prefer to conclude new contracts as soon as possible. Because the nearer the time ships are to be freed, the more difficult it will be for them to get advantageous contracts, Meanwhile, if the markets are clearly going up, they will prefer to defer their contacts. conclusion in order to take the opportunity to get better contracts. These facts lead to the conclusion that the time when they are willing to conclude contracts depends upon their expectations of the future of the markets.

The same applies to the behavior of the charterers, partly in reverse way. The charterers, standing on opposite side to the shipowners, prefer to defer their contract conclusions when the markets are going down, and otherwise they try to get the quickest possible contracts. If they fail to conclude a contract before their cargo is ready, there arise many difficulties, payment of compensation for the delay of arrival, expiration of usance, at worst, risks of cancellation in addition to storing costs. So they are sometimes obliged to pay considerably high freight rates to ship their cargo.

The charterers can begin their bargaining for chartering when their trade transactions are completed. If their trade transactions are permanent, they may have contracts in advance for their future shipments. Otherwise, it may be impossible to bargain as the prices and quantities may change from time to time. Anyway, they must have concluded their charter contracts before the time of shipment of their exporting contracts of the cargo, reserving enough time for the ship to join the loading port. The possibility to find appropriate ships will be smaller, the nearer the time of shipment comes. To get better contracts, therefore, they must finish their bargaining as early as they can.

Concluding the above discussion, we will assume for the time being that the future of the market is stable and that offers of both ships and cargo are readily available. In such a situation, shipowners and charterers can expect almost equal profits through their

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[4] Laying-up is said in Japan not always to save ships costs in these days, as laying-up cost is very expensive due to compensation for fishery and impossibility to fire the crew.

contracts at whatever time they conclude them. Meanwhile, the closer the time of a ship to be freed or the time of cargo to be shipped, the severer the conditions for the cargo and ships, and the more difficult to reach their objects satisfactorily. And at last when the critical time has come, it may become impossible for them to expect a similar level of profit, and thereafter, it is clear that the profit will become smaller day by day.

The illustration of this relation is shown in Fig. 1, which gives the curve of possibility in concluding contracts. The vertical axis denotes "possibility" and the horizontal axis denotes "time" measured from the present to the future. The curve in Fig. 1 means that the men in the market, both shipowners and charterers, have the opportunity to conclude a chartering contract for a certain time. The closer the 'Time' of the ship's freeing or the cargo shipment, the smaller the possibility of an advantageous contract will become, and finally the possibility will be entirely nil. A small possibility to make an ordinary contract means that they will be unable to get appropriate cargo or ships in time, unless they make much more concessions to the demand of another party.

This discussion can be applied to various market situations as shown in Fig. 2, in which a line *a* represents the case where the future of makrets is stable. It is easily understandable that the other cases *b* and *c* represent the market tending upward and downward respectively.

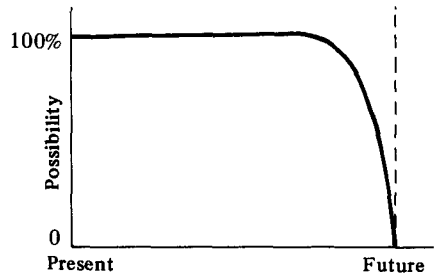

Fig. 1. Possibility of Ordinary Fixture

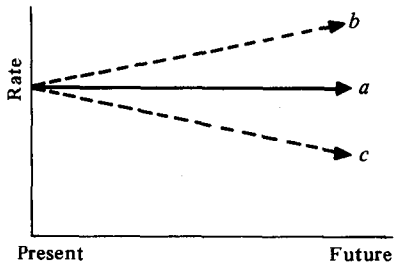

Fig. 2. Expected Freight Rate

For example, if a shipowner expects the freight market to be stable, then he can expect almost identical profits from his contract whenever he may conclude it.

The profit he can expect, however, will decrease when the time of his contract conclusion is close to the time his ship becomes free. The expected profit must be deflated by the smaller possibility of obtaining an ordinary contract and by the concession he must make in the bargaining process. Smaller profit is equivalent for him to cheaper freight rate.

We may, therefore, call the rates discounted by the smaller possibility as the certainty equivalent of freight rates. The three curves in Fig. 3 are of the certainty equivalents for the shipowner in the various market situations corresponding to those in Fig. 2 respectively.

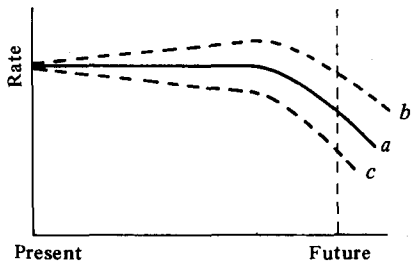

Fig. 3. Certainty Equivalent for Shipowner

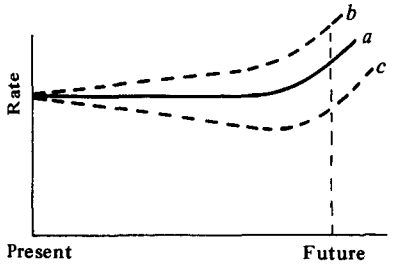

Fig. 4. Certainty Equivalent for Charterer

Fig. 4 represents the corresponding connection for the charterer. Even in the case of a stable future *a*, the nearer the time of the contract conclusion will be to the time of the shipment of his cargo, the more difficult it will be for him to obtain an ordinary contract as his stand becomes less favorable. The favorableness of the charterer expressed in terms of freight rates, therefore, will swing upward, in contrast to the case of the shipowner, at the time around the shipment of the cargo. When the market is expected to be steady in the future *b*, it would be more profitable for the charterer if he concluded a contract as early as he can, or otherwise, he should defer contracts to the last moment before his certainty equivalent curve turns to the upswing.

III Bargaining Process Model No. 1

Now we will discuss the process in which a shipowner and a charterer behave like described above and bargain for a contract at the shipping exchange through a ship broker or a chartering agent. The minimum conditions for the commencement of bargaining for them are that the kind and size of the ship owned by the shipowner is appropriate to the cargo to be shipped by the charterer, and that the time and place the ship is free is acceptable to the time and place the cargo is to be shipped. Coincidence is not always needed, but must be near enough to be minimized by a little concession of either party.

In all chartering bargaining, concessions must be made in advance at the beginning, or offers must contain allowances from the beginning so that no more concessions will be needed in quantity and time of slupment. However, there may be situations where the bargaining can not be commenced without a rather big concession of either party because of the scarcity of ships or of cargo. In such a case the party making the concession may demand compensation for his concession in the rate or other contract conditions. We will discuss this connection in a later part of this paper.

Now suppose that both parties have commenced their bargaining without any concession in advance. They are assumed to be satisfied regarding the ship and cargo. They are now at the stage of negotiating the rate, most important for them and most interesting for us. There is still a probability, however, that the negotiation produces no

fruit as both may insist upon their own profit. Estimating the thinking of the opposite party, and anticipating own profit, both the shipowner and the charterer will propose a rate which they consider appropriate. This rate is called their "idea."

The shipowner has a rate per ton dead weight his ship must earn during the voyage now in question, and the charterer has a rate he can afford to pay for the shipment under his contract. But neither rate will be the "idea" as it is. Both parties know the rates most recently fixed at the exchange for the same kind of cargo and for the same route. Moreover, they have calculated in their mind the level of a rate which they are likely get successfully in the present bargaining. That is the reason why the rates they are going to quote will not be the same as minimum rates the shipowner must earn and the maximum rates the charterer can afford to pay. In any way, the rates in their minds are no more than vague rates with considerable spread.

An approximative set of the rates can be considered being a distribution of the rate ideas. Let us consider the process in which a rate will be reduced from the distributions of rate ideas borne by both parties. It is convenient to assume that both parties have the same distribution, a normal distribution with a mean \$15 and a standard deviation of about \$1. Their distribution is like shown in the first two columns of Tab. 1. If we suppose that the shipowner must earn \$14 at least and that the charterer can afford to pay \$16 at most, we can calculate the expected pay-offs of each party as shown in the rest of the columns of Tab. 1. As either of the expected pay-offs is positive, both parties will desire to conclude this bargaining successfully.

Tab. 1. Distribution and Expected Pay-offs of Shipowner and Charterer

Distribution		Shipowner		Charterer	
Rate	Probability	Pay-off	Expected Pay-off	Pay-off	Expected Pay-off
13.50	0.02	−0.50	−0.01	2.50	0.05
14.00	0.08	0	0	2.00	0.16
14.50	0.20	0.50	0.10	1.50	0.30
15.00	0.40	1.00	0.40	1.00	0.40
15.50	0.20	1.50	0.30	0.50	0.10
16.00	0.08	2.00	0.16	0	0
16.50	0.02	2.50	0.05	−0.50	−0.01
			1.00		1.00

Each party, estimating its opponents' thinking, proposes its own idea, or decides strategically a level of rate. Let us observe how a shipowner reduces his own idea under the situation mentioned above. This is shown in Tab. 2. The first column regarding the shipowner's expectation shows various rate levels, the second shows the probability of each rate, and the third the accumulated sums of probabilities from the lower level of rates. The first two of the three rows of the charterer's expectation are the same as the shipowner's two columns, while the third row is accumulated from the higher level of

rates. For, it is more probable that the shipowner strategically proposes a higher rate, as the higher rate is more favorable for him. The charterer stands on the opposite side. But the reason why figure of rates and probability of the charterer are the same as those of the shipowner is not that both parties have the same expectations, but that the shipowner, without knowing his opponent's expectations, will naturally think that his opponent also have similar expectations under the same situation of the market.

The part of Tab. 2 filled with 0 and 1 means, for example, the shipowner quotes \$14.50 in the probability of 0.30 as seen from the accumulated sum of probability, and if the charterer accepts \$14.50 immediately it is 0.90, therefore the probability that the contract will be concluded successfully at \$14.50 is 0.30 x 0.90 = 0.27. In the correspondence of the shipowner's idea and the charterer's idea, similarly, the combination of both ideas shows 1 in Tab. 2 means immediate agreement, and the combination showing 0 means necessity of bargaining as immediate aggreement between both parties can not be obtained. Tab. 2 includes additionally the probability of contract agreement and the expected pay-offs in view of the shipowner. The shipowner's idea maximizing the expected pay-off is somewhat above the level of \$15.00, so that he can quote at the beginning, say \$15.20.

Under our present assumption that both parties have the same expectations, the charterer's behavior can be explained in a similar manner. In conclusion, we can say in this case that the charterer will quote about \$14.80. Needless to say, this refers to the case in which immediate agreement can not be made. Bargaining for concession of the opponent party must be commenced in this case.

Tab. 2. Reduction Process of Shipowner's Idea

Shipowner's Expectation			Charterer's Expectation 13.50 0.02 1.00	14.00 0.08 0.98	14.50 0.20 0.90	15.00 0.40 0.70	15.50 0.20 0.30	16.00 0.08 0.10	16.50 0.02 0.02	Probability of Success	Expected Pay-off
13.50	0.02	0.02	1	1	1	1	1	1	1	0.020	−0.001
14.00	0.08	0.10	0	1	1	1	1	1	1	0.098	0
14.50	0.20	0.30	0	0	1	1	1	1	1	0.270	0.135
15.00	0.40	0.70	0	0	0	1	1	1	1	0.490	0.490
15.50	0.20	0.90	0	0	0	0	1	1	1	0.270	0.405
16.00	0.08	0.98	0	0	0	0	0	1	1	0.098	0.196
16.50	0.02	1.00	0	0	0	0	0	0	1	0.020	0.050

In the stage of proposing the 'idea,' it is reasonable that each party quotes a more favorable rate, namely, the shipowner's idea will be higher than the charterer's. That is the reason why a bargaining process between the parties will always be needed. If the shipowner quotes a lower rate than the charterer, then the charterer will accept it immediately without quoting his own ideas, and vice versa. It is not rare in such a situation that considerable differences exist between the expectations of the two parties.

But we observe only the case where there is enough distance between their ideas, to require that the bargaining process be commenced.

At the beginning of the bargaining, there is still a distance between their ideas namely their demand and supply curves have no point of intersection except on the vertical axis which means 'no' answer. Fig. 5 shows the supply curve of the shipowner and the

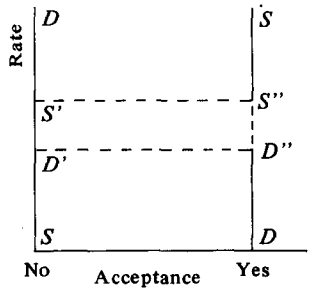

Fig. 5. Demand and Supply Curves

demand curve of the charterer, both of which are drawn as lines separated into two parts, *SS'* and *S''S*, *DD'* and *D''D*. The horizontal axis represents their answers to accept the contract at the given rate, 'no' = 0, and 'yes' = 1, instead of the quantity supplied and demanded.

Negotiations between the parties may shorten the distance between their ideas, and at last they may reach a point of coincidence. The process to find the point, however, may vary considerably; acceptance at the center of the distance, or agreement to either idea with the opponent making a considerable concession. Any way, we would like rather to discuss the process taking a limit of time into consideration.

As we have seen in Figs. 3 and 4, the time the ship becomes available and the time of the shipment of the cargo tend to shorten the distance between their "ideas." When the limit of time is still in the far future the conclusion will only be 'no.' But the nearer the time approaches, the lower *S''* and the higher *D''* will be. These phenomena may be drawn as in the graph, Fig. 6, in which the two intercepts on the vertical axis correspond to the two points *S''* and *D''* in Fig. 5 respectively. These points will run along the curves as the time gets nearer to the limit of time, and at last they will intersect. This means

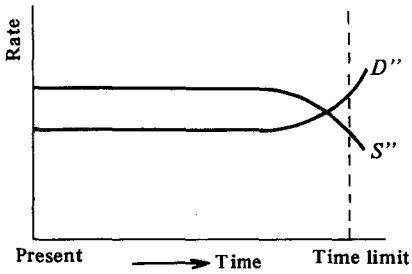

Fig. 6. Locus of two ideas

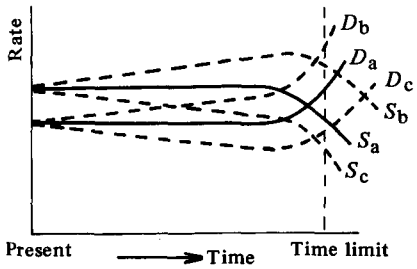

Fig. 7. Time and Rate to accept

that their greatly opposite ideas gradually come closer to an acceptable point. Putting Fig. 3 over Fig. 4 we can observe similar cases in various market situations, see Fig. 7.

A similar observation can be made in the case where their limit of time is not the same, but it will be needless to draw this case. When the shipowner or the charterer is rather bullish or bearish independently of the markets, the curves in Fig. 7 will only vary in shape and we can easily observe their relations.

The only matter to be borne in mind is that the rates drawn in these figures are not real freight rates but the certainty equivalents of freight rates. In short, the certainty equivalents of rates are the rates that will bring their final profits, taking into calculation the losses they may bear in case of failure of contract agreement and its probability.

IV What to Expect and with What Confidence?

In this discussion we have put the emphasis on the time when the shipowner and the charterer make a new contract and before that we were dealing only with cases where a shipowner negotiates with a charterer the chartering of a ship. We now have to take up another frequent case involving the great differences in expectation of the two parties, and where either ships or cargo are so scarce that there is a keen competition.

To observe the bargaining processes in view of longer terms, we must suppose not only the marginal bargaining of one party with another, but also the selective bargaining of one with several others, where not merely the levels of freight rates but also contract conditions and the length of contracts as well as risk attitudes and favorableness of the men in the markets must be considered as very important elements. We will, therefore, make some preparations for these concepts in this chapter.

In the actual state of the markets, for example, charterers may have to run about in the exchange looking for shipowners who have ships without any contract. As we have seen, the shipowners will prefer in such a situation to keep their ships unfixed to the last moment of the expiration of their previous contract. Inversely, the charterers should conclude their new contract as soon as possible in such a situation. This difference in behavior may change their position more extremely as the time passes, and become more favorable for the shipowner and more adverse for the charterer.

While the price elasticity of the ship's tonnage supplied is rather small, that of the shipping services demanded is said to be large. Therefore, in the situation where contracts of immediate commencement or spot contracts are hardly available, the postponement of shipment will often arise. Such a tendency of future contracts are always linked with the tendency of longer contracts. To prospect the future of the market is not easy for either shipowner or charterer, and in order to avoid the risks caused by the uncertainty of future contracts they will be obliged to make their contracts last longer. And only by this measure charterers stand on more favorable ground in the course of the bargaining.

In inactive markets, when the shipowner must run about in the exchange for cargoes,

almost contrastive statements are possible. In this situation, however, the shipowner can not defer supply without losses due to the small elasticity of his commodity. As we have seen there are measure to compensate the small elasticity, but the shipowner must behave very actively to save losses caused by such measures, for example, to give the charterer considerable convenience in the contract conditions in order to get as high rates as possible.

In the charter bargaining, there are two convenient ways of approach namely the time charter hire rate and the length of time charter. Furthermore, in the length of time charter not only the duration of contract but also the time distance between the time of agreement and the time of commencement must be considered. Though the capability of the ship is the most important element of the charter, let us suppose in the following discussion that all ships are of equal capability.

In facing the bargaining, both parties have their own expectation as to the time charter hire rates in the future. Evaluating the present levels, and prospecting their future trend, they can estimate the rates at any point in the future., Or inversely, we can imagine their own 'expectation curve,' consisting of several rates which they estimated for points in the future. The 'expectation curve' is a line as drawn in Fig. 8, in which the vertical axis denotes the rates and the horizontal axis denotes the time originating at the present. The curve is continuous no matter whether it is straight or not.[5]

Suppose for a while that either of the expectation curves is declining in the future as in Fig. 8. Then he can estimate RC for the rate of the pending contract which commences at A and continues by the time B, as the estimates are PA at A and QB at B, and RC is the average of all rates during the period between A and B. Supposing the curve is straight and expressed by the formula $y = b + mx$ ($m < 0$ in Fig. 8), the estimate of rate y for the contract with a term from A to B is expressed as a linear function of the time distance x from 0 to C. We call the time distance x the prepositive time. This is defined by the formula,

$$\text{Prepositive Time} = \text{Lead Time} + \frac{\text{Duration of Contract}}{2} = OA + \frac{AB}{2}$$

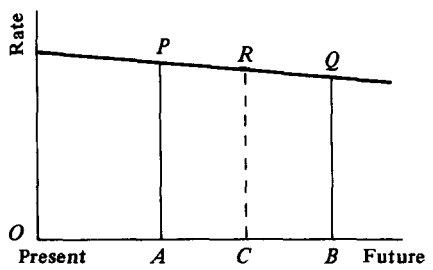

Fig. 8. An Expectation Curve

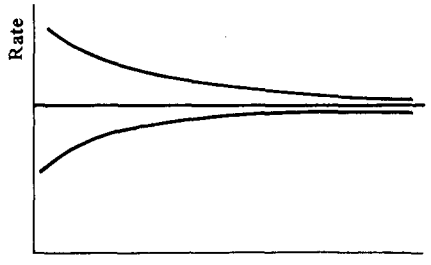

Fig. 9. Realistic Expectation Curves

[5] Expectation Curve is discussed theoretically in Shimojo [2].

We also call m expectation coefficient and b real time rate. The economical meaning of real time rate is the rate for the contract of zero prepositive time, or a contract commencing right now and expiring right now.

The expectation curve must be a curve, not a straight line. In the far future it will converge to a level as in Fig. 9. No matter how high or low the rate at the present may be, this state will not continue as it is for a long time, but will approach limitlessly a level in the length of time. These are the expectation curves held by the men in the markets.

For the time being let us consider the expectation curve separated into two parts, one part related to the near future and the other to the distant future. As for the contracts of short prepositive time, the level of rate a man in the market sees appropriate, is considered to be on an expectation half straight line, which may be an extension of the present market inertia. But it will not always be long. According to a measurement,[6] the effect will last for only a few months and most expectations of four or more months in the future will rapidly converge to a normal level. The latter part of the expectation curve shall be called the converging expectation curve. A remaining problem is how many months in the future the expectation curve is to be separated into two parts.

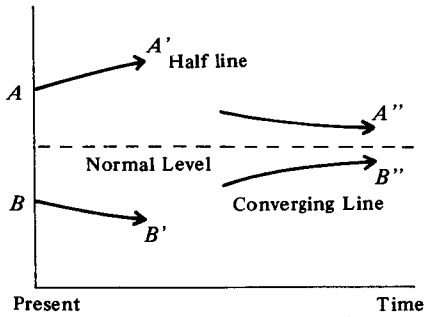

Fig. 10. Short and Long Expectations

As to the present level of the rate, there is the most recent conclusion of short contracts, and the men in the markets can easily estimate the real time rate, A and B in Fig. 10. They may expect the rate for new contracts that appear in the near future by taking the changes of the markets thereafter into their consideration. Due to the inverse interests of the shipowner and the charterer, the ideas they will quote respectively may differ considerably from each other, even if they have obtained the same expectation curve. Is the reason their strategy or confidence in their own expectation?

The expectations of shipowners and charterers in the bargaining process are separated into two parts, that of the nearer future and that of the longer future. And a shift from one to the other takes gradually place. In general the shift is accomplished before eight months in the future. The length of the nearer half line can perhaps be explained by the

[6] Yoshida [4] which is quoted in Shimojo [2] p. 71.

confidence on their own expectation or by the proneness in their risk attitude. A bullish party would have a long half line with inertia of high rate, but a bearish party would have a short one even in an active situation. It will be now clear that the shapes of expectation curves are a very convenient tool to explain the behavior in bargaining processes.

V Bargaining Process Model No. 2

There can not exist a charter contract with zero prepositive time. A charter contract of only a single voyage commencing immediately is the shortest case in the prepositive time. Though the length of a charter contract is sometime as long as the whole life of the ship, let us limit the length by say 12 months at the longest in our discussion, as our main purpose is to compare the behavior in relation to shorter and longer contracts.

Shipowners will prefer longer contracts as far as the rate may be high enough to cover their basic costs, and thence they can accept any length of contracts. Meanwhile charterers will have a limit as regards to the length of contracts unless they have long range projects of shipments even if the rates are low enough. But here in our following discussion we will assume that either of them is willing to accept any length of contract as long as the rates are considered reasonable by them. That means, neither the shipowner nor the charterer will have any restriction as regards to the length of the contract, so that they can obtain their own advantage by means of adjustment of the length of the contract when the rates are not satisfactory.

We can now consider under the above assumption that the shipowner in the active market and the charterer in the depressed market are on symmetric stands. Hence we may be allowed to observe only the case of the shipowner in the active market.

In long term observation we can assume a stable level of the rates. The rates for the contracts of the very distant future satisfy both parties at that level. We can call it Normal Level. An active market means that the recent rates for contracts with very short prepositive time are well above this level. The recent level of such rates shall be called Actual Level.

We are dealing with the case in which the Actual Level is above the Normal Level. The shipowner will propose the rate nearer to the Actual Level for contracts with a short prepositive time. As the length of the prepositive time in pending contracts becomes longer, he may hardly propose his idea according to his own expectation half straight line. And for contracts of a very long prepositive time he can no more refer to the half line but only to the converging expectation curve.

Hence we can state the following: the shipowner's ideas must be the average of the rates for all voyages included in the contract, and the rate for each voyage is decided by a corresponding point on the expectation curves. The rate he sees appropriate for the prepositive time can be defined at every point of the prepositive time, so that his

expectation curve must be considered continuous in spite of our previous discussion. If so we can explain his ideas for any length of the prepositive time in Fig. 11, in which A is the Actual Level and N is the Normal Level. Suppose a shipowner having an expectation curve AE in Fig. 11, he has ideas in mind corresponding to every prepositive time from the present t_0 to the future t_1, t_2, ..., etc. For a single voyage commencing at t_0 and ending at t_1 he has the idea l_1 very near to the level A. A segment of the line between the vertical lines denotes the average level during the period. For the second single voyage his idea is at the level l_2, and the rate for the two consecutive voyages is the average of l_1, and l_2, the level of the first dotted line r_2. Needless to say r_1 coincides with l_1.

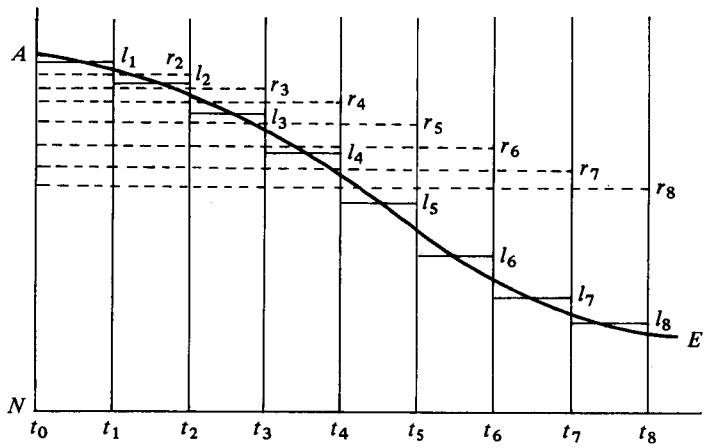

Fig. 11. Rate of Single Voyages and Consecutive Contracts

Other levels for subsequent single voyages, l's and other rates r's can be similarly explained. The prepositive times we previously defined are the distance from the vertical axis to the central points on the dotted lines, so the real expectation curve of the shipowner must be redefined as the curve drawn from the point A to the central points of the dotted lines, which almost coincide with the original expectation curve AE.

For example it will be equivalent for the shipowner to conclude a contract with a length of two voyages at the rate r_2 or to conclude two contracts of single voyages at the levels l_1 and l_2 respectively. In general to conclude a contract at the rate r_n or to conclude n single voyage contracts at the levels l_1 to l_n respectively is indifferent to the shipowner, namely $r_n = \sum_{i=1}^{n} l_i/n$. We now have a new concept of the expectation curve to be named the transient expectation curve or the indifferent expectation curve.[7]

It may not be needed for our present purpose to distinguish the two expectation curves, the transient and the indifferent, the characteristics of which we can state as follows:

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[7] Shimojo [2] p. 70.

(a) On a very short segment in the prepositive time, the curve coincides with the short-term expectation half straight line. And if the prepositive time is 0 then the curve is at the Actual Level.

(b) On a very long segment in the prepositive time, the curve is converging limitlessly to the Normal Level or consists of a converging expectation curve.

(c) Between a very short segment in the prepositive time and a very long segment, the curve must be continuous so that a real rate will always be defined corresponding to every value in the prepositive time.

As to the indifferent curve we can add the following:

(d) Every point on the curve has a correspondence in the rate and the prepositive time of the contract. And all of the pairs will give the same advantage to the shipowner as far as his expectation is effective.

(e) In every point farther away from the point N, it will give more advantage to the shipowner and less advantage to the charterer.

Similarly we can discuss the case of the depressed market, also from the view point of the charterer. In Fig. 12 two curves are drawn for the active markets and for the depressed markets. The present level of rates or the Actual Level is objective and not negligible for either the shipowner or the charterer. A new agreement at the next moment and informations about the changes thereafter, all must be known by them, so that there will not be a great difference between the expectations of the two parties. Nevertheless there will be considerable differences in the shapes of their effective expectation curves, which include strategical or personal variations. The two curves in Fig. 13 are rather typical, that of the shipowner S is more optimistic and that of the charterer C is pessimistic. Any way it must be borne in mind that the further from N a point may be, the more advantageous it will be for the shipowner, and that the closer to

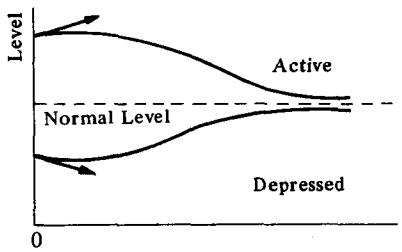

Fig. 12. Indifferent Curves in Active and Depressed Markets

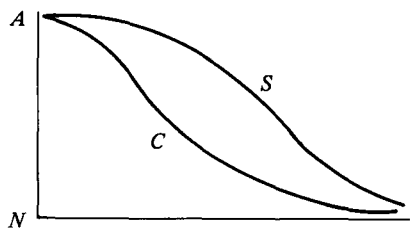

Fig. 13. Indifferent Curves of Shipowner and Charterer

N a point may be, the more advantageous it will be for the charterer.

If the indifferent expectation curves have the characteristics mentioned above, at the beginning of the bargaining process between the shipowner and charterer two curves will be supposed like in Fig. 13. For the offers of very short contracts in prepositive time or

very long contracts both parties can be satisfied with a small concession, but it will be rather difficult in the case of medium length contracts in prepositive time to be satisfied through easy negotiation, as the distance between the two curves is rather large.

Fig. 13 represents a standard case. Generally we can image much more variations of curves. Afterwards both parties will approach each other through negotiations and concessions. We consider the bargaining process to bring the curves nearer by means of changing the shapes or shifting their position through debate and exchange of informations.

VI Epilogue

We have discussed mainly two phases of the bargaining process between the shipowner and the charterer in the shipping exchange. One concerned the time to conclude a contract, and the other the length of the contract duration. Reality is much more complex than our models of very simple form, in which we may have neglected something important for the sake of symmetry.

Here we should add a matter to our discussion. Based on our computation from the tanker market reports during the years from 1970 to 1975, some interesting results have been observed. We have dealt with more than 10,000 contracts which mention the date of the agreement, the loading and unloading ports, the types and quantities of cargo, the date of commencement, the number of consecutive voyages and rates in the World Scale. Classified and summarized, we got a series of monthly tables and graphs, the graphs which are drawn in the form of Fig. 12. We are now further computing our concepts of parameters, in the course of which we found that the size of ships was the second most important element to draw expectation curves.

In the tanker market reports most rates are converted into the World Scale or standard rate for each route so that our computation needs only a little conversion to standardize routes. In the tramp contracts, however, it is very difficult for us to level the data because of the differences of routes and cargo. Conversion into the time charter equivalent is one of the possible methods, but that needs very much up to date informations.

It is to be borne in mind that the expectation curve we have defined in this paper was that of individuals in the markets. In contrast the one we got from computation was no more than a locus of points, each of which had been reached by two partners in the market. These points will not always appear on the curve, but are scattered widely around the curve. They are a very cluster of points. What curve the cluster should theoretically represent is merely our assumption.

The purpose of our empirical studies is to observe this cluster and to reduce some informations regarding the changes in time and situation. Many problems must be resolved before this purpose can be achieved. Producing data from daily market reports,

leveling the data by adding the up to date informations as to the routes and stowage factors, standardizing the agreements by eliminating the characteristics of ships and cargo, and other conversions are needed. The classification of the data at the date of agreement and at the prepositive time and the plotting the cluster is a rather easy task, but extracting the useful informations out of the cluster will be a difficult and important task.

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ASSET DIVERSIFICATION UNDER THE FLEXIBLE EXCHANGE RATE SYSTEM

Kazuhiro IGAWA

I Introduction

The objects of my research are, generally speaking, to explain whether or not an investor diversifies his asset portfolio, with an increase of foreign exchange flexibility and risks. The needs for this type of studies are evident from the increase in international capital flows, the growth of multi-national companies and the development of international financial markets.

After the world shifted from the fixed (adjustable peg) exchange rate system to the flexible (managed float) exchange rate system, the degree of international asset diversification seems to be increased. However, it is an open problem whether an increase in foreign exchange flexibility (or risk) increases or decreases the degree of portfolio diversification. My research provides some arguments for an increase in asset diversification, in the sense that asset portfolio is determined considering "pure hedging", which is explained in the later section.

In this paper, using a consumption oriented portfolio analysis, we want to investigate the problem: "How an investor determines his portfolio composition under flexible rates." Our main interests are to analyse and to explain this problem rather intuitively, using simple examples or diagrams and few equations. However, we will show, in appendix, that the basic relations obtained from the simple examples hold also for more rigorous treatments in general cases.

II Positions of Other Scholars

As done by Grubel [1968], a direct application of the models of portfolio selection developed by Tobin and Markowitz may explain the real world phenomenon of international diversification of asset holdings. In those models, an investor determines his portfolio composition taking into account its expected rate of returns and its variances, more generally, taking into account the value of wealth at the end of the period in terms of domestic (or foreign) currency. If he invests all his wealth into the assets which yield higher returns, he may suffer larger risks. Therefore, a risk averse investor will chose diversified asset holdings as an optimum portfolio, evaluated from the utility function, which depends on the value of wealth.

We will find, however, some difficulties in the direct application of the Tobin-Markowitz type of analysis in the case of international portfolio selection. This is because, it is not indifferent for an investor what currency is used to evaluate his value of

wealth. If an investor restricts his consumption to exportable goods (importable goods) and if his wealth is evaluated in terms of the home (foreign) currency, then the direct application will explain properly the phenomena of international portfolio investment. However, if he consumes both exportable and importable goods, it is not rational to evaluate his wealth only in terms of home or foreign currency.

Heckerman [1972-2] pointed out the above facts and explained them as follows: The assets denominated in home (foreign) currency guarantee the purchasing power only in terms of exportable (importable) goods. Therefore, a wealth evaluated in home currency does not properly reflect the value and risks of purchasing power of the wealth, if importable goods are also consumed. The reason for this is, if the home currency appreciats (depreciats) then one unite of the domestic currency can control more (less) importable goods and he will face foreign exchange risks by consuming importable goods, the risks are zero for exportable goods.

In his paper, Heckerman [1972-1] developed a technique for specifying a real value of wealth (real purchasing power) when relative prices of consumption goods change. Then, he applied the Tobin-Markowitz type analysis with the real value of wealth to the international financial assets portfolio selection. There, he has introduced many assumptions for an investor's utility function to get the approximated real value of wealth. Among them, the assumption of homothetic indifference curves seems to be the strongest one. However, we can avoid this assumption and still be able to analyse the same problems, if we adopt the consumption oriented theory of portfolio selection, instead of the Tobin-Markowitz type analysis.

Thus, in the following sections we reexamine and clarify Heckerman's [1972-2] intention with a consumption oriented portfolio analysis. That is, we explain the effects of foreign exchange risks on asset holdings, taking into account the special relations that holding a certain asset is risk free for specific goods and hedging has a basic role for portfolio diversifications in this case.

III Consumption Oriented Portfolio Analysis

The consumption oriented portfolio model which we use in this paper is analogous to the one by Stiglitz [1970]. Stiglitz analysed the case of portfolio selection in two kinds of financial assets; a long term (2 period) bond which is a perfectly safe asset in terms of consumption in the future (second period), but is a risky asset in terms of consumption in the first period, and a short term (one period) bond which is safe in terms of consumption in the first period, but is risky in terms of consumption in the following periods. It has been shown that an investor normally diversifies his asset holdings, if he wishes to avoid uncertainty in his comsumption stream. Of course, he may partly or completely specialize in an asset of higher rate of return, by speculation.

The price of the long term bond at the end of this period, which is the price of the

short term bond of the second period, is unknown to the investor at the time he has to make his original asset allocation. Thus his net wealth at the end of this period is unknown. His consumption of the first and the one of the second period are determined after the price of the short term bond of the second period is determined. However, the relative price of consumption goods of the second period to that of the first period, which is equal to the price of the short term bond of the second period, is also unknown to him at the time of portfolio allocation. He makes his decision considering the distribution of unkown variables.

If we consider the present consumption and the future consumption in Stiglitz's model as the consumption of the exportable (home) goods and the importable (foreign) goods, and consider the short term bond and the long term bond in his model as the home currency and the foreign currency respectively, we will get fundamentally the same model as in Heckerman's paper [1972-2]. The unknown variable in this case is the foreign exchange rate. With this model, we can properly explain the phenomena of diversified asset holdings under the flexible exchange rate system.

IV The Basic Model

It is usual that an income stream does not coincide exactly with an expenditure (consumption) stream. To bridge the gap of the two streams, each individual holds some assets. Taking into account the real purchasing power of these assets, he may not be indifferent to the different types of assets. If every thing is certain, his portfolio behavior will be simple. However, when he decides his portfolio, it is usual that there exist some uncertainties for the future consumption stream. The above general phenomenum can be made more specific to clarify the main aspects of international portfolio diversification under flexible rates, where future foreign exchange rates are not certain.

Let us consider the following very simple case. The individual can consume either home goods C or foreign goods C^*. He seeks to maximize the utility of C and C^*, in terms of a concave utility function. Income W_0 is paid out in home currency at time 0. Purchases of consumption goods can only be made at time 1. In the meantime, his income is held in the form of financial assets. These assets take the form of home currency L and foreign currency L^*.

The portfolio choice is subject to the wealth (income) constraint

$$W_0 = L + r_0 L^*$$

where, r_0 is the current exchange rate. Wealth at time 1 in terms of home currency is

$$W_1 = L + r_1 L^*$$

where r_1 is the expected exchange rate, a random variable. At time 1, the individual is again free to engage in foreign exchange transactions. His consumption plan is thus

subject to the budget constraint

$$W_1 = PC + r_1 P^* C^*$$

where, P and P^* are, respectively, the prices of home and foreign goods at time 1, assumed to be known with certainty.

If r_1 were also known with certainty, the problem would have a trivial two-stage solution. In the first stage, L^* or L is chosen to maximize W_1, given W_0, r_0 and r_1. If the exchange rate is expected to depreciate, i. e. $r_1 > r_0$, the maximum is achieved by holding all assets in the form of the foreign currency. In the opposite case of expected appreciation all assets would be held in the form of domestic currency. In the second stage, utility is maximized subject to given W_1, P, P^* and r_1, which is an elementary utility maximization problem. It is the uncertainty of r_1 which makes the problem non-trivial.

Uncertainty can always be eliminated by avoiding foreign exchange transaction at time 1 at the uncertain rate r_1. In this case of what may be called "pure hedging" the individual buys at time 0 any foreign exchange he desires to spend at time 1. In this case, the problem is,

$$\begin{aligned} \text{maximize} \quad & U(C, C^*) \\ \text{subject to} \quad & PC = L \\ & P^* C^* = L^* \\ & L + r_0 L^* = W_0 \end{aligned}$$

which is again trivial. The individual will rather find it advantageous to assume some exchange risk for the sake of speculative gains from exchange rate variations.

Non-rigorously, an increase in mean of r_1 relative to r_0 will make it profitable to buy at time 0 more foreign exchange than is needed at time 1, the excess to be sold in the foreign exchange market for a profit. An expected appreciation of the home currency, on the other hand, will make it profitable to buy less foreign exchange at time 0 than will be spent to foreign goods at time 1, the shortfall to be covered through the exchange market, again at a profit. As a consequence, the problem ceases to be trivial.

It will now be developed more rigorously. Our problem is maximizing the mean of utility, with respect to L (or L^*)

$$\{E\ U\ (C,\ C^*)\} \tag{1}$$

$$\text{subject to} \quad L + r_0 L^* = W_0 \tag{2}$$

$$L + r_1 L^* = W_1 \tag{3}$$

$$W_1 = PC + r_1 P^* C^* \tag{4}$$

$$\text{and} \quad U_1 = U_2 P / r_1 P^* \tag{5}$$

where E is used for taking the statistical expectation. Equation (5) is derived from the maximization of $U(C, C^*)$ subject to equation (4) (see, appendix [3] (1)). It will help us to use a very simple example which shows the fundamental properties of the optimum solutions of this problem. The corresponding relations in the case of the above general framework, will be shown in the appendix.

V An Example

Let us specify the utility function and probability density function of r_1, $F(r_1)$, as follows:

$$U\{\min(C, C^*/k)\} \tag{1-1}$$

$$U' > 0,\ U'' < 0$$

$$F(r_1) = \begin{cases} \text{Prob. } (r_1 = 1/2) = 1/2 \\ \text{Prob. } (r_1 = 2) = 1/2 \end{cases} \tag{6}$$

and without loss of generality, we assume

$$P = P^* = 1, r_0 = 1,\ W_0 = 1$$

Where, utility function (1-1) means that home goods and foreign goods are perfect complements. The probability density function (6) and initial condition $r_0 = 1$ means that there are two possibilities that the foreign exchange rate depreciates half and appreciates twice. It should be noted here that $Er_1 \neq r_0$.

Now, we can solve the problem graphically as follows: see, Fig. 1. From the utility function (1-1), an indifference curve is L shaped and kinked on the ray of 45 degree line (OR) through the origin, in the case $k = 1$.

Thus, an optimum consumption is on the ray for any given W_1, and

$$C = W_1 / (1 + r_1) = (W_1/r_1) / (1/r_1 + 1) = C^*$$

The constraint (2) is a line (WW^*) which runs from the point ($L = 1, L^* = 0$) to the point ($L = 0$, $L^* = 1$). Of course, the pure hedging point is H, ($L = 1/2$, $L^* = 1/2$) or ($C = 1/2, C^* = 1/2$), where the line (WW^*) intersects the line (OR).

Now, corresponding to a point (say A) on the line (WW^*) we will get a portfolio combination of L and L^* (La and L^*a). La and L^*a also express the proportion of W_0 distributed into L and L^*, from the assumption of $W_0 = 1$. Passing through the point A, we will get two constraint lines of W_1, i.e. Y_1Y_1 (in the case $r_1 = 1/2$) and Y_2Y_2 (in the case $r_1 = 2$), and these lines reflect the constraint (3) and (4). If the case of ($r_1 = 1/2$) occurs then W_1 is determined by equation (3), given L and L^*, and the optimum consumption point, on the line Y_1Y_1, is C_1. On the other hand, if the case of ($r_1 = 2$) occurs then the optimum consumption point, on the line Y_2Y_2, is C_2.

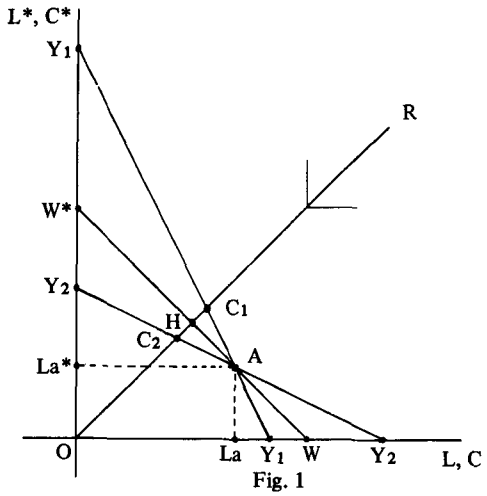

Fig. 1

If point A moves toward W (i.e., the asset holding of L is increased and that of L^* decreases) then point C_1 moves toward R and the point C_2 moves toward O. If, in the opposite case, point A moves toward W^*, then both points C_1 and C_2 move toward H, at first, and when A is on point H, both C_1 and C_2 are on H, and after that, C_1 moves toward the origin and C_2 moves toward R. We are now in the position to determine the optimum point of A, i.e. the optimum portfolio of L and L^*.

Without using the utility function explicitly, we can guess the optimum point of A is on H, from the above arguments about the movements of C_1 and C_2 corresponding to the movements of A. This is because, a mean consumption level which is the middle point of C_1 and C_2 is always at H regardless of the position of A, from equation (6), and the variability of consumption is smallest (zero) when A is at H. We can verify this by using the utility function: see, Fig. 2.

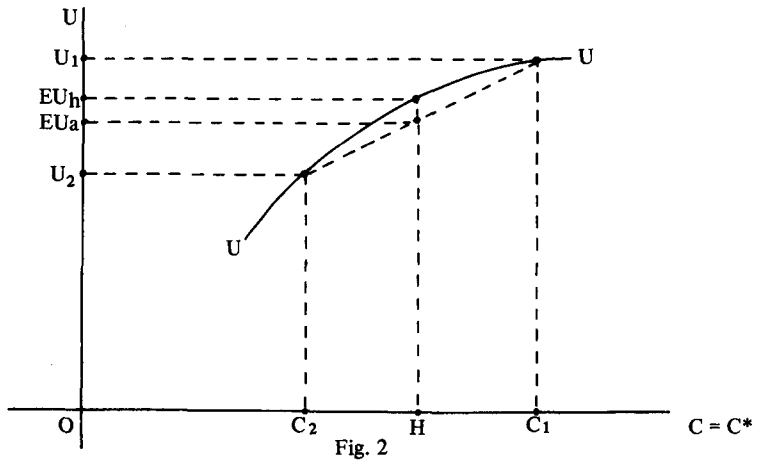

Fig. 2

Corresponding to the ray OR, we can write the concave utility function (UU). The points C_1 and C_2 in Fig. 2 are corresponding to the consumption points C_1 and C_2 in

Fig. 1, where those points are determined for a certain point of A. U_1 and U_2 are the utility levels which correspond to the points C_1 and C_2, respectively.

Thus, the mean utility level, EUa, is the middle point of U_1 and U_2 from equation (6). If point A moves toward H, both points C_1 and C_2 move toward H and when A is on H, the points C_1 and C_2 are both on H, and we will get the mean utility level EUh. We can easily find $EUh > EUa$ from the strict concavity of the utility function, the line UU. Thus, the optimum point of A is on H as we have expected. This is not a strange conclusion as $PC = r_1 P^*C^*$, even if $Er_1 \neq r_0$.

VI Changes in k

We should note that pure hedging gives us the same portfolio as the above optimum point, and thus the example used there is a critical case. If the utility function or probability density function is different from equation (1-1) and $k = 1$ or (6), a pure hedging may not be an optimum. To see this, if k in the utility function (1-1) is not one but two, i.e. indifference curves are kinked on the ray OR^* which pathes the point H^* ($C = 1/3$, $C^* = 2/3$) and origin, then an optimum point differs from a pure hedging point, see Fig. 3. The ray OR^* is biased toward the vertical axis (consumption of foreign goods) and the pure hedging point is H^*, where consumption of foreign goods is larger and cunsumptin of home goods is smaller than those obtained at H (in the case $k = 1$). Now, we can expect an optimum portfolio point to be to the right of H^*, the pure hedging point in the case $k = 2$. We can see this as follows. Let us use necessary conditions for maximization, (see appendix [1], equations (7-1) and (7-2)),

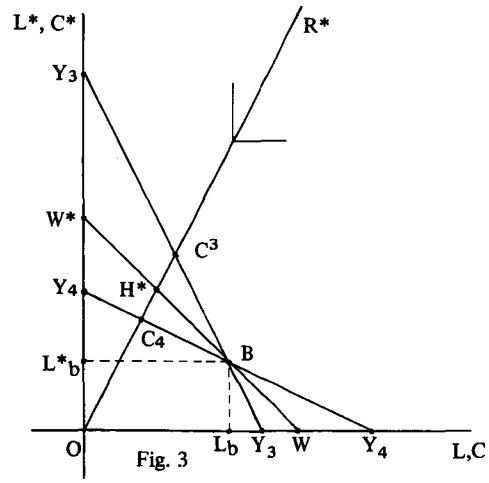

Fig. 3

$$EU'(C)(1 - r_1/r_0) / (1 + r_1 k) = 0 \tag{7}$$

where
$$C = W_1 / (1 + r_1 k) = C^* / k \tag{8}$$
$$W_1 = L + (W_0 - L)\, r_1 / r_0$$

At pure hedging portfolio, $L = C = 1/3$ and the left hand side of equation (7) becomes positive, i.e.

$$U' \ (1/3)(1/4 - 1/5) / 2 > 0$$

Therefore, the optimum L (L^*) should be greater (smaller) than L (L^*) of pure hedging and an investor will speculate in home currency. If at point B on WW^*, where $L = Lb$ and $L^* = L^*b$, equation (7) holds, i.e.

$$[U' \ \{(1 + Lb) / 4\} \ / 4 \ - \ U' \ \{(2 - Lb) \ / 5\} \ / 5] \ / 2 \ = \ 0$$

then the point B gives us an optimum portfolio. With this portfolio, we will attain consumption C_3 (when $r_1 = 1/2$) and C_4 (when $r_1 = 2$).

It should be noted that an expected consumption becomes larger as a portfolio point moves from W^* toward W and a fluctuation of consumption becomes larger as a portfolio point moves from H^* (where there is no fluctuation) toward W or W^*. The optimum point B is determined by evaluating a mean and a fluctuation of consumption with an utility function.

VII Criteria for Speculation

It will be interesting to find the criteria which a portfolio investor uses to speculate in the home currency or in the foreign currency.

The criteria for the case of utility function (1-1), with any kind of probability distribution of r_1 is: (see appendix [2]),

$$\text{(i)} \quad \text{If} \quad E\{(r_1 - r_0) \ / \ (1 + r_1 k)\} > 0 \tag{9}$$

then an investor speculates in foreign currency from pure hedging.

$$\begin{aligned} \text{(ii)} \quad \text{If} \quad & -E\{(r_1 - r_0) / (1 + r_1 k)\} \\ & = r_0 E\{(1/r_1 - 1/r_0) / (1/r_1 + k)\} > 0 \end{aligned} \tag{10}$$

then he will speculate in home currency.

$$\text{(iii)} \quad \text{If} \quad E\{(r_1 - r_0) / (1 + r_1 k)\} = 0 \tag{11}$$

then pure hedging is the optimum.

We can explain the criteria (i) as follows. A capital gain by speculating in foreign currency in terms of home currency is $(r_1 - r_0)$. Then an increase in consumption will be $(r_1 - r_0) \ / \ (1 + r_1 k)$, from equation (8). Thus an expected capital gain in terms of consumption — which is relevant in our analysis — by speculating in foreign currency is $E\{(r_1 - r_0)/(1 + r_1 k)\}$, and this is the left hand side of criterion (9). Therefore, if the criterion (9) is satisfied, the individual speculates in foreign currency. Similarly, the

criterion (ii) means that a capital gain by speculating in home currency, in terms of foreign currency, is $(1/r_1 - 1/r_0)$ and an increase in consumption will be $(1/r_1 - 1/r_0)/(1/r_1 + k)$, from equation (8). Thus, an expected capital gain in terms of consumption is $E\{(1/r_1 - 1/r_0)/(1/r_1 + k)\}$, which has the same sign as the left hand side of equation (10). And if this is positive, the investor speculates in home currency.

In the above arguments about criteria (i) and (ii), we are just concerned with the expectations of consumptions and do not consider their fluctuations. This is because, in a pure hedging portfolio, a fluctuation of consumption is zero and negative effects through fluctuation are negligible if the portfolio is very close to that of pure hedging. Thus, it should be noted that whether one speculates in foreign or home currency does not depend on the attitude toward risk and it depends only on the expectation of r_1. Of course, the extent of the specialization clearly will depend on the utility function.

VIII Shifts in the Distribution of r_1

In the case of the above example with probability distribution (6), we will find

$$E\{(r_1 - r_0)/(r_1 + 1)\} = 0 \quad (\text{when } k = 1)$$

and pure hedging is the optimum. On the other hand, when $k = 2$

$$E\{(r_1 - r_0)/(1 + r_1 k)\} = -1/40 < 0$$

and the investor speculates in home currency as we have already found.

Now, it is easy to see that with the utility function (1-1) and $k = 1$, an investor speculates in foreign currency if the probability distribution is

$$F(r_1) = \begin{cases} \text{Prob. } (r_1 = 1/2) = 1/2 - \epsilon \\ \text{Prob. } (r_1 = 2) = 1/2 + \epsilon \end{cases} \tag{6-1}$$

and ϵ is positive. One will speculate in home currency if ϵ is negative (see appendix [7]). Let us consider the case of speculation in foreign currency when $k = 1$ and ϵ is positive in equation (6-1). If ϵ increases further, one may invest all his wealth into foreign currency (complete specialization in foreign currency). This will occur if an $L = 0$, the expected utility is non-increasing with respect to an increase in L (see appendix [4]).

Now, we will focus on this case. If point A is on W^* in Fig. 1, then $C_1 = 1/3$ and $C_2 = 2/3$ and if A moves from W^* toward W by a unit increase in L (thus a unit decrease in L^*) then C_2 decreases by 1/3 and C_1 increases by 1/3. Therefore, a change in the expected utility is, from the left hand side of equation (7),

$$\{\text{Prob. } (r_1 = 1/2)\ U'(1/3) - \text{Prob. } (r_1 = 2)\ U'(2/3)\}/3$$

Thus the investor does not move from W^*, i.e. specializes in foreign currency, if

$$\text{Prob. } (r_1 = 1/2) \leqslant U'(2/3) / \{U'(1/3) + U'(2/3)\} \tag{12}$$

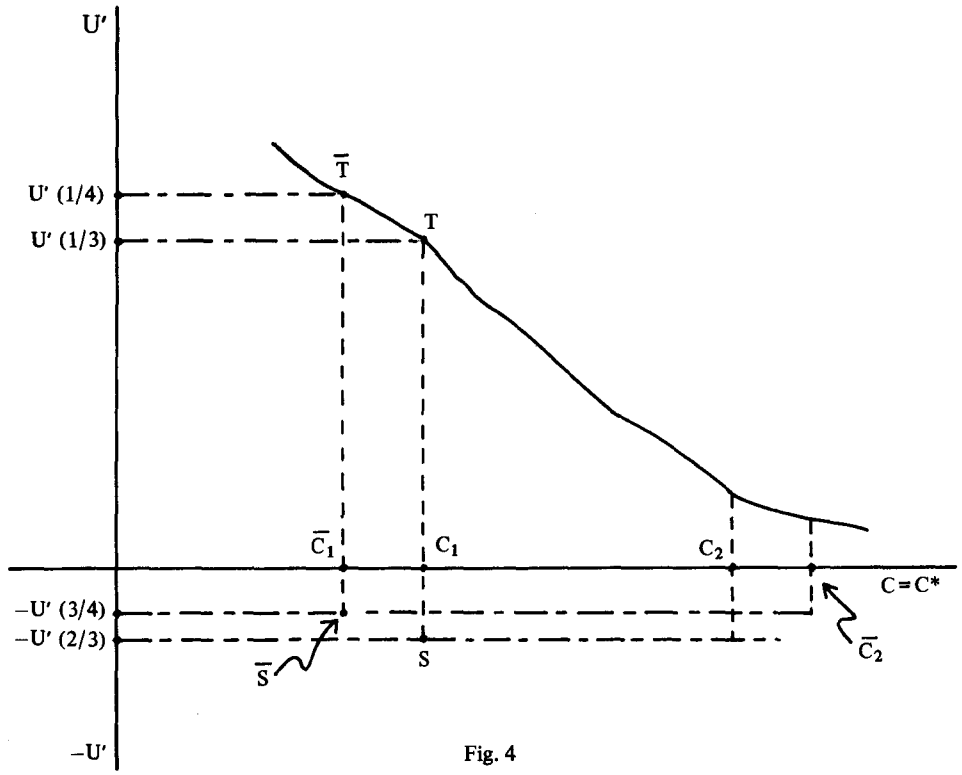

Fig. 4

In Fig. 4, the probability, Q, which satisfies equation (12) with equality can be found as

$$Q = (\text{length of } C_1S) / (\text{Length of } TS)$$
$$= 1/\{1 + (\text{length of } TC_1) / (\text{length of } C_1S)\}$$

IX Changes in Risks of r_1

Now, suppose that possible values of r_1 are not ($r_1 = 1/2$ and $r_1 = 2$) but ($r_1 = 1/3$, $r_1 = 3$) and the probability density function is

$$F(r_1) = \begin{cases} \text{Prob. } (r_1 = 1/3) = 1/2 \\ \text{Prob. } (r_1 = 3) = 1/2 \end{cases} \tag{6-2}$$

This means that there are two equal possibilities in outcomes of foreign exchange rates,

one is a three fold appreciation and the other is a one third depreciation. In this case, r_1 is more risky than in the case of density function (6), because of the large fluctuation of r_1 with the same probability. However, Er_1 is not the same value as before.

With this kind of increase in risk of r_1, the criterion for specialization in foreign currency becomes, corresponding to equation (12),

$$\text{Prob.}\,(r_1 = 1/3) \leqq U'(3/4) \,/\, \{U'(1/4) + U'(3/4)\} \tag{13}$$

The probability which corresponds to Q is $\bar{Q}$ and the latter is smaller than the former. This is because, $U'(1/4) \,/\, U'(3/4)$ is larger than $U'(1/3) \,/\, U'(2/3)$ by the assumption of decreasing marginal utility. This fact can easily be seen in Fig. 4. There $\bar{C}_1 = 1/4$ and $\bar{C}_2 = 3/4$ and these are consumption points when $(r_1 = 1/3)$ and $(r_1 = 3)$, respectively, at the complete specialization in foreign currency. $\bar{Q}$ is

$$\bar{Q} = (\text{length of } \bar{C}_1\bar{S}) \,/\, (\text{length of } \bar{T}\bar{S})$$

$$= 1/\{1 + (\text{length of } \bar{T}\bar{C}_1) \,/\, (\text{length of } \bar{C}_1\bar{S})\}$$

As easily seen, (length of TC_1) / (length of C_1S) is smaller than (length of $\bar{T}\bar{C}_1$)/(length of $\bar{C}_1\bar{S}$). Thus $\bar{Q}$ is smaller than Q. This implies that if Prob. $(r_1 = 1/3)$ is Q then the investor does not completely specialize in foreign currency, that is, with a small risk of r_1, he completely specializes in foreign currency and with a larger risk of r_1 he does not completely specialize in it.

The above analysis where the point A is on W^*, can be applied to any point of A on WW^*. Thus, we can say that an increase in the variability of (or increase in risks of) r_1 will decrease a speculation (see appendix [5] and [6]).

X Concluding Remarks

We will get the following demand functions, in general form, for assets and goods.

$$L = L(P, P^*, W_0, r_0, F(r_1))$$

$$L^* = L^*(P, P^*, W_0, r_0, F(r_1))$$

$$C = C(P, P^*, W_1, r_0, r_1)$$

$$C^* = C^*(P, P^*, W_1, r_0, r_1)$$

where, L and L^* are determined definitely if the density distribution of r_1 is given and does not depend on a realized value of r_1. On the other hand, C and C^* depend on a realized value of r_1 and thus it may be useful to define a mean demand for goods as follows:

$$D = EC = D(P, P^*, W_0, r_0, F(r_1))$$

$$D^* = EC^* = D^*(P, P^*, W_0, r_0, F(r_1))$$

Here, D and D^* are mean demands for home and foreign goods, at the time an investor determines his financial asset holdings.

We can derive the properties of these demand functions by the comparative statics analysis, as in appendix [7]. From the above arguments, using simple examples, however, it is not difficult to see intuitively that:

(i) if an expected capital gain by holding some currency increases by a shift of the position of the probability distribution of r_1 without changing its form of distribution, the speculative demand for the currency increases. On the other hand, if we assume gross substitutes in the consumption of home and foreign goods, – this assumption seems to be reasonable in the aggregated two goods case —, then an increase in r_1 decreases C^* and increases C. And thus, a shift of $F(r_1)$ which increases a mean of r_1 decreases D^* and increases D.

(ii) A rise in r_0 without affecting $F(r_1)$ reduces L^* and increases L, by substitution between the financial assets. The effects of a change in r_0 to C, C^* or D, D^* are ambiguous and may be very small in absolute value.

(iii) An increase in risk of r_1, i.e. $F(r_1)$ has more weight on tails, reduces the speculative demand for currency (toward pure hedging). D and D^* may not be very sensitive to the risk of r_1.

(iv) Income (or wealth) effects will normally be positive and increase in W_0 will increase L, L^* and C, C^* or D, D^*.

In this paper, we have presented the theory of a portfolio selection based on consumption valuations rather than on wealth valuations. We set up some assumptions which may seem unrealistic and make things too simple. To make the model more realistic, we should increase the number of countries, the number of commodities and financial assets. It may be necessary to introduce other sources of uncertainty, for example, that of income stream, of production of goods and of demand paterns. An inter-temporal analysis, in the sence that a model treates consumptions of different time periods, will be necessary for long-run problems. In this case, the portfolio selection of financial assets with different time periods, as in Stiglitz [1970], will become important. If we introduce transaction costs for exchanges between goods and financial assets or among financial assets, we will get a much more realistic model. In this case, some parts of risks will be reflected in the transaction costs or information costs and we will come to conclusions which reflect some properties of the analysis of transaction costs as investigated by Niehans [1969]. However, the main idea — speculation from pure hedging — of our analysis will still have an important role in those generalized cases.

[Appendix]

[1] In this appendix, we investigate the case with a more general concave utility function where C and C^* are smoothly substitutable for one another and general probability distribution functions of r_1. Our problem is

$$\text{maximize} \quad EU(C, C^*) \tag{1}$$

$$\text{subject to} \quad L + r_0 L^* = W_0 \tag{2}$$

$$L + r_1 L^* = W_1 \tag{3}$$

$$W_1 = PC + r_1 P^* C^* \tag{4}$$

$$U_1 = U_2 P / r_1 P^* \tag{5}$$

Necessary conditions for maximization are

$$EU_2 \ (r_0 / r_1 - 1) = 0 \tag{7-1}$$

$$\text{or} \quad EU_1 \ (r_1 / r_0 - 1) = 0 \tag{7-2}$$

Equation (5) means the marginal rate of substitution is equal to the commodity price ratio. Equation (7-1) implies that with one unit increase of foreign currency, expectations of direct and indirect increases in utility by an increase in foreign goods are equal. Similarly, equation (7-2) implies one unit home currency produces the same mean value of direct and indirect increases in utility by an increase in home goods. Here, indirect means shift from home (or foreign) currency to foreign (or home) currency at time 0 and again shift to home (or foreign) currency at time 1 to buy home (or foreign) goods.

It is worth while to make clear a pure hedging case. Let us use notations with circumflex "$\wedge$" on the corresponding variables, and thus

$$P\hat{C} = \hat{L}$$

$$P^*\hat{C}^* = \hat{L}^* - (W_0 - \hat{L}) / r_0$$

We will get the same consumption point if realized r_1 is equal to r_0, regardless of the distribution of r_1 and we use $\hat{r}_1$ for that r_1. Thus, we will get

$$U_1(\hat{C}, \hat{C}^*) = U_2(\hat{C}, \hat{C}^*) P / P^* \hat{r}_1$$

Therefore, we obtain the relations as follows:

$$(*) \ \text{if} \ r_1 \gtrless \hat{r}_1 \qquad \text{then} \ C \gtrless \hat{C} \ \text{and} \ C^* \gtrless \hat{C}^*$$

[2] In the case of a smoothly substitutable utility function and any kind of probability distribution functions, the criteria for speculation from pure hedging are as follows:

(i) if $Er_0/r_1 \leqq 1$ then $L^* > \hat{L}^*$, $L < \hat{L}$

(ii) if $Er_1/r_0 \leqq 1$ then $L > \hat{L}$, $L^* < \hat{L}^*$

(iii) if $1/Er_1 < 1/r_0 < E(1/r_1)$ then ways for speculation are ambiguous and there may be no speculation. Here, the relation of $E(1/r_1) > 1/Er_1$ is obtained by the convexity of g function,

$$g(r_1) = 1/r_1$$

Proof of criterion (i) is as follows:

(a) When $U_{12} \geqq 0$ and if $Er_0/r_1 - 1 \leqq 0$

then at $L = \hat{L}$, $L^* = \hat{L}^*$

$$EU_2(r_0/r_1 - 1) = E[U_2(C, C^*) - U_2(\hat{C}, \hat{C}^*)](r_0/r_1 - 1) + U_2(\hat{C}, \hat{C}^*) \cdot E(r_0/r_1 - 1) \leqq 0 \tag{14}$$

This is because, from $U_{12} \geqq 0$ and relations (*) in appendix [1]

$$U_2(C, C^*) - U_2(\hat{C}, \hat{C}^*) \gtrless 0 \text{ as } r_1 \gtrless \hat{r}_1 = r_0$$

Thus, the first product in the middle of equation (14) is negative. Therefore, L^* is larger than $\hat{L}^*$ (or L is smaller than $\hat{L}$).

(b) When $U_{12} < 0$ and variance of $(1/r_1)$ is small and if $Er_0/r_1 - 1 \leqq 0$ then $EU_2(r_0/r_1 - 1)$ can be approximated as follows, by the Taylor Series expansion around $\hat{r}_1$;

$$EU_2(r_0/r_1 - 1) \fallingdotseq E[\{U_{21}dC/d(1/r_1) + U_{22}dC^*/d(1/r_1)\}r_0(1/r_1 - 1/r_0) + U_2(\hat{C}, \hat{C}^*)r_0](1/r_1 - 1/\hat{r}_1) \fallingdotseq U_2(\hat{C}, \hat{C}^*)E(r_0/r_1 - 1) \leqq 0 \tag{15}$$

Therefore, L^* (L) is larger (smaller) than L^* (L).

We can prove the criterion (ii), similarly to the case of criterion (i).

[3] As a preliminary consideration let us look at the Slutzky decomposition and the definition of relative risk aversion in our general model.

(i) For given W_1 and r_1, from maximization of utility

$$U(C, C^*)$$

subject to budget constraint

$$PC + r_1P^*C^* = W_1 \tag{4}$$

we will get first order conditions, which is equation (5):

$$U_1 = U_2P/r_1P^* \tag{5}$$

From equations (4) and (5), we will get price effects as:

$$dC/d(P/r_1P) = \{U_2 - U_{12} - U_{22}P/r_1P^*)\,(L/P - C)\}\,/\Delta \tag{16}$$

$$dC^*/d(P/r_1P^*) = \{-U_2P/r_1P^* + (U_{11} - U_{21}P/r_1P^*)\,(L/P - C)\}\,/\Delta \tag{17}$$

Where $\Delta \equiv U_{11} - 2U_{21}P/r_1P^* + (P/r_1P^*)^2 U_{22}$

and this is negative from second order conditions. Income effects are as follows:

$$dC/dW_1 = \{U_{22}P/r_1P^* - U_{12}\}\,/\Delta \tag{18}$$

$$dC^*/dW_1 = \{U_{11} - U_{21}P/r_1P^*\}\,/\Delta \tag{19}$$

(ii) Assuming that an individual faces the uncertain wealth W_1, with mean $\bar{W}$ and variance σ^2, the certainty equivalent of W_1 is determined by δ which satisfies

$$EV(W_1,\ 1/r_1) = V(\delta\bar{W},\ 1/r_1)$$

where $V(W_1,\ 1/r_1)$ is the maximum value of utility attainable with wealth W_1 and foreign exchange rate r_1. From the Taylor Series expansion around $\bar{W}$, we will find

$$\delta = 1 - \rho(\sigma/W)^2/2$$

where, $\rho = V_{11}\bar{W}/V_1$

and this can be used as the measure of relative (wealth) risk aversion in a sense of the Arrow – Pratt measure of relative risk aversion. It is not difficult to see,

$$V_1 = U_1$$

$$V_{11} = U_{11}dC/dW_1 + U_{12}dC^*/dW_1$$

[4] Using the results in the above section, we find the conditions for complete specialization in a certain currency. We know the relations that at $L = 0, L^* = W_0/r_0$

$$\text{if } EU_2\,(r_0/r_1 - 1) \lessgtr 0 \qquad \text{then } L \lessgtr 0$$

and that at $L^* = 0,\ L = W_0$

$$\text{if } EU_1\,(r_1/r_0 - 1) \lessgtr 0 \qquad \text{then } L^* \lessgtr 0$$

Now, the conditions for $EU_2\,(r_0/r_1 - 1) \lessgtr 0$ and for $EU_1\,(r_1/r_0 - 1) \lessgtr 0$ are as follows;

(i) If $E\,(r_0/r_1 - 1) \leqq 0$ and $\rho \leqq \eta_1$ where, $\eta_1 = dl_nC/dl_nW_1$
then $EU_2\,(r_0/r_1 - 1) \leqq 0$ and thus $L \leqq 0$
If $E\,(r_0/r_1 - 1) \geqq 0$ and $\rho \geqq \eta_1$
then $EU_2\,(r_0/r_1 - 1) \geqq 0$ and thus $L \geqq 0$

(ii) If $E\,(r_1/r_0 - 1) \leqq 0$ and $\rho \leqq \eta_2$ where, $\eta_2 = dl_nC^*/dl_nW_1$
then $EU_1\,(r_1/r_0 - 1) \leqq 0$ and thus $L^* \leqq 0$
If $E\,(r_1/r_0 - 1) \geqq 0$ and $\rho \geqq \eta_2$

then $EU_1\,(r_1/r_0 - 1) \gtreqless 0$ and thus $L^* \gtreqless 0$

We can prove the conditions (i) as follows. From equations (16) – (19), we will get

$$\begin{aligned}\{dU_2/d\,(1/r_1)\}_{L=0} &= U_{21}\,\{dC/d\,(1/r_1)\}_{L=0} + U_{22}\,\{dC^*/d\,(1/r_1)\}_{L=0}\\ &= -U_2 r_1 P\,dC/dW_1 + \{(U_{12}{}^2 - U_{11}U_{22})\,PC/P^*\}\,/\Delta\\ &= -U_2 r_1 P\,(dC/dW_1)\,(1 - \rho/\eta_1)\end{aligned}$$

Thus $\{dU_2/d\,(1/r_1)\}_{L=0} \gtreqless 0$ as $\rho \gtreqless \eta_1$

Therefore, from equation (14) and these relations we will get conditions (i).

The proof of conditions (ii) is similar to that of conditions (i).

[5] There are some relations between the volume of speculation and the degree of risk aversion. We can prove the following propositions:

"The less risk averse the individual the more he speculates."

Proof: If $U^A\,(C, C^*)$ is the utility function of the first individual and if $U^B\,(U^A\,(C, C^*))$ is the one of the second individual, the latter is less (more) risk averse if $U^{B\prime\prime} > 0\ (< 0)$. This is because, the measures of relative risk aversion are:

$$\rho_A = U_{11}{}^A W_1/U_1{}^A \quad \text{(for the first person)}$$

$$\rho_B = (U^{B\prime\prime}U_1{}^A + U^{B\prime}U_{11}{}^A)\,W_1/U^{B\prime}U_1{}^A \quad \text{(for the second person)}$$

and $\rho_B > \rho_A$ as $U^{B\prime\prime} > 0$

Let us define $\bar{r}_1$ by

$$V(W_0 + (\bar{r}_1 - r_0)\,L^*_A,\ 1/\bar{r}_1) = V(W_0,\ 1/\hat{r}_1)$$

i.e., minimum level of r_1 at which $L^*{}_A$ attains a level of utility of $C = \hat{C}$ and $C^* = \hat{C}^*$. Assuming that $r_1 > \bar{r}_1$ and $L^*{}_A > \hat{L}^*$ and at $L^*{}_A$.

$$EU_2^A\,(r_0/r_1 - 1) = 0$$

it is no difficult to see the relations that

$$U \gtreqless \hat{U} \quad \text{as} \quad r_0/r_1 - 1 \gtreqless 0$$

and $dU^A/d\,(1/r_1) < 0$

where, $\hat{U}$ is the level of utility attained when $r_1 = r_0$. Therefore, we will get

$$dU^{B\prime}/d\,(1/r_1) = U^{B\prime\prime}\,dU^A/d\,(1/r_1) < 0 \quad \text{as} \quad U^{B\prime\prime} > 0$$

and thus, at L^*_A

$$EU^{B\prime}U_2^A\,(r_0/r_1 - 1) < 0 \quad \text{as} \quad U^{B\prime\prime} > 0$$

It follows that

$$L^*_B > L^*_A > \hat{L}^* \quad \text{when} \quad U^{B\prime\prime} > 0$$

If $L^*_A < \hat{L}^*$ and $r_1 < \bar{\bar{r}}_1$, where $\bar{\bar{r}}_1$ is a maximum level or r_1 which satisfies

$$V(W_0 + (\bar{\bar{r}}_1 - r_0) L^*_A, 1/\bar{\bar{r}}_1) = V(W_0, 1/\hat{r}_1)$$

then, by a similar way of proof as above, we will get

$$L^*_B < L^*_A < \hat{L}^* \qquad \text{when} \quad U^{B''} > 0$$

It should be noted that utility is no longer monotonic in r_1 and the range of r_1 must be suitably restricted, using $\bar{r}_1$ or $\bar{\bar{r}}_1$.

[6] Let us clarify the effects of a change in uncertainty (or risk) of the foreign exchange rate. First, we will define U_L,

$$U_L = \partial U/\partial L = -U_1 \, (r_1/r_0 - 1)/P \tag{20}$$

From the theorem of Rothschild & Stiglitz [1971] we can say as follows: If U_L is a concave (convex) function of r_1 then an increase in riskiness will decrease (increase) L. This is so because, if U_L is a concave (convex) function of r_1 then the increasing risk decreases (increases) EU_L and lowering (increasing) L restores the first order conditions that EU_L is equal to zero.

Now, the double differentiating equation (20), we will get:

$$\begin{aligned} \partial^2 U_L/\partial r_1^2 &= -\{(\partial^2 U_1/\partial W_1^2) L^{*2} (r_1/r_0 - 1) + 2(\partial U_1/\partial W_1) L^*/r_0\} /P \\ &= -[(\partial^2 U_1/\partial W_1^2) W_1 + \\ &\quad 2(\partial U_1/\partial W_1) W_1/r_0 L^* (r_1/r_0 - 1)] \, L^{*2} (r_1/r_0 - 1)/W_1 \end{aligned} \tag{21}$$

Apriori, we cannot determine the sign of $\partial^2 U_L/\partial r_1^2$, which will depend on the utility function and the probability distribution of r_1. However, with the following assumptions that

$$\rho' \leqq 0 \quad \text{and} \quad 1 + \rho < 2W_1/r_0 L^* (r_1/r_0 - 1)$$

where, $\rho' = \partial \rho/\partial W_1$

$$\begin{aligned} &= [\{(\partial^2 U_1/\partial W_1^2) W_1 + (\partial U_1/\partial W_1)\} U_1 - (\partial U_1/\partial W_1)^2 W_1]/U_1^2 \\ &= [(\partial^2 U_1/\partial W_1^2) W_1 + (\partial U_1/\partial W_1)(1 + \rho)]/U_1 \end{aligned} \tag{22}$$

we will get, from equations (21) and (22), the following relations:

(i) if $(r_1/r_0 - 1) > 0$ then $\partial^2 U_L/\partial r_1^2 > 0$

(ii) if $(r_1/r_0 - 1) < 0$ then $\partial^2 U_L/\partial r_1^2 < 0$

It follows that if the relative risk aversion increases and if ρ (which is negative) is sufficiently large in its absolute value then U_L is convex when r_1 is larger than r_0 and is concave when r_1 is smaller than r_0. It is more probable, when the expectation of r_1 is larger than r_0, that L is smaller than $\hat{L}$ (L^* is larger than $\hat{L}^*$) and an increase in the variability of r_1 increases L. On the other hand, if the expectation of r_1 is smaller than r_0 then $L > \hat{L}$ ($\hat{L}^* < \hat{L}^*$), and thus, more probably, an increase in the variability of r_1

decreases L. Therefore, it is more likely to be the case that with an increase in the variability of r_1, an investor will decrease his speculation, if the relative risk aversion is large in absolute value and non decreasing.

[7] From the necessary conditions (7-2) and (5) and budget constraints (2), (3), (4), we will get comparative statics results as follows;

$$\begin{aligned}\Delta^* dL = & -[E\{U_{11}dC/dr_0 + U_{12}dC^*/dr_0\}(r_1/r_0 - 1) - EU_1 r_1/r_0^2]\, dr_0 \\ & -[E\{U_{11}dC/dr_1 + U_{12}dC^*/dr_1\}(r_1/r_0 - 1) + EU_1/r_0]\, dr_1 \\ & -[E\{U_{11}dC/dW_0 + U_{12}dC^*/dW_0\}(r_1/r_0 - 1)]\, dW_0 \qquad (23)\end{aligned}$$

where, $\Delta^* = E\{U_{11}dC/dL + U_{12}dC^*/dL\} > 0$

from the second order conditions for expected utility maximization and;

$$\begin{aligned}dC/dW_0 &= (dC/dW_1)\, r_1/r_0 \\ dC^*/dW_0 &= (dC^*/dW_1)\, r_1/r_0 \\ dC/dr_0 &= (dC/dW_1)(-L^*) \\ dC^*/dr_0 &= (dC/dW_1)(-L^*) \\ dC/dr_1 &= (dC/dW_1)L^* + \{dC/d(P/r_1P^*)\}(-P/P^*r_1^2) \\ dC^*/dr_1 &= (dC^*/dW_1)L^* + \{dC^*/d(P/r_1P^*)\}(-P/P^*r_1^2)\end{aligned}$$

Here, dC/dW_1, dC^*/dW_1, $dC/d(P/r_1P^*)$, $dC^*/d(P/r_1P^*)$ are the same for equations (16) – (19). From equation (23), we will get dL/dW_0 (dL^*/dW_0), dL/dr_0 (dL^*/dr_0) and dL/dr_1 (dL^*/dr_1). The income effects (dL/dW_0 and dL^*/dW_0) will be both normally positive. If the financial assets substitution effect, i.e.

$$(dL/dr_0)_S = EU_1 r_1/r_0^2 \Delta^*$$

is dominant then dL/dr_0 is positive and dL^*/dr_0 is negative. If other financial assets substitution effect, i.e.

$$(dL/dr_1)_S = -EU_1/r_0 \Delta^*$$

is dominant, dL/dr_1 is negative and dL^*/dr_1 is positive. It will be reasonable to assume the dominance of financial assets substitution effects to determine the assets portfolio with two financial assets.

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of Industry ..... *Noboru Inaba*
Export Price Behavior in Selected
Industrial Countries ..... *Akihiro Amano*
Flow of Funds Accounts and Capital
Market Structure in Japan (3) ..... *Jiro Ono*
Theories of Personnel Management
in the 1920's ..... *Koji Okubayashi*
Managerial Objectives and Corporate
Behavior: An Empirical Analysis ..... *Tadao Kagono*

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CONTENTS

Research on Labor Co-Determination in West Germany ..... *Keiji Kubo*
La garde à vue et son contrôle en droit comparé (1) ..... *Kuniji Shibahara*

THE 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.

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 Economics
(4) Latin-American Economy
(5) 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, that is, Experts Group on Structural Change in World Economy, Committee of International Finance, Committee of Information Systems, Research Group for the Domestic Water Transportation 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 classification, 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 facility 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.