

KOBE ECONOMIC & BUSINESS REVIEW

**34th
ANNUAL REPORT**



**RESEARCH INSTITUTE FOR ECONOMICS
AND BUSINESS ADMINISTRATION
KOBE UNIVERSITY**

1989

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RECENT INFLATION OF LAND PRICES IN METROPOLITAN AREAS OF JAPAN¹⁾

—A CASE STUDY OF REGIONAL ACCOUNTING—

Nobuko NOSSE

1. Introduction

Although regional accounting has been encouraged to improve thanks to the present SNA²⁾, studies on this line have been few and their interests have only focussed on current activities in certain regions.³⁾ Regional accountants have neither tried to observe accrued capital gains nor losses caused by holding assets and debts held within some region.

In Japan, however, one of the urgent problems is the enormous capital gains accrued by the rapid rise of urban land prices in the two metropolitan areas, i.e., the Tokyo area and the Osaka area. Especially, the land price rise in the Tokyo Metropolitan area which started in the mid-1970's has had effects on many Japanese households and institutions owning or occupying land therein. Hence it is needed to develop an idea of reconciliation accounts in order to analyse capital gains due to land price inflation in these metropolitan areas, as construction of reconciliation accounts is the first step to make a grand design by revitalization of urban policy.

Our purposes in this paper are; i. to show the background of our problems⁴⁾ and the theoretical framework, ii. to get the least square estimates which explain the hyper-inflation of land prices for residential use, iii. to observe the results obtained in ii, to explore the usefulness of regional reconciliation accounts for the analysis of rising land prices and related factors in order to derive an effective urban policy making.

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- 1) This paper is an outgrowth and substantial modification of "A Reconciliation Account for Analysing Hyper Inflation in Land Prices, Paper prepared for reading at 20th General Conference of IARIW, 1987.
 - 2) United Nations, *A System of National Accounts*, ST/STAT/SER. Series F No. 2 Rev.3, 1968. Par.1.90. Pars.9, 21-9, 30.
 - 3) J.V. Sourrouille, "Regional Accounts; Theoretical and Practical Problems in the Recent Experience of Argentina", *The Review of Income and Wealth*, series 22, 1976, pp.13-36. R.J. Walters, "A Framework for Regional Accounts; An Australian Perspective," *The Review of Income and Wealth*, series 33, 1986, pp.401-415.
 - 4) OECD Group on Urban Affairs, *Urban Policies in Japan*, 1986. See also, J. Hibbert. *Measuring the Effects of Inflation on Income, Saving and Wealth*, 1983.

2. Background and Theoretical Framework

i Background

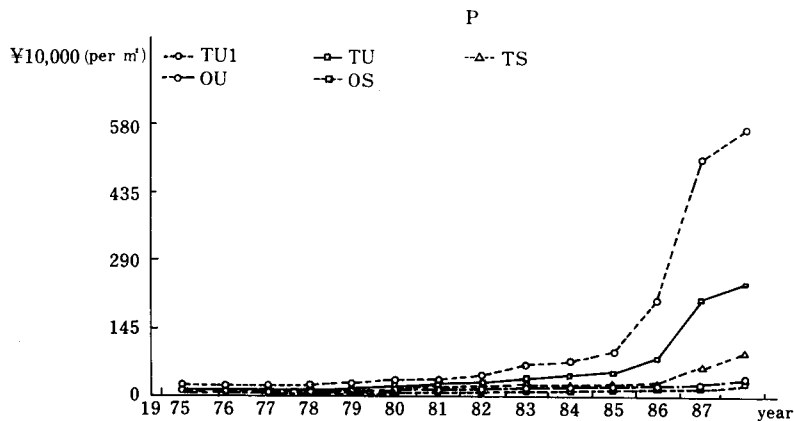
The reason why we intend to limit our observation to Metropolitan areas i.e. the Tokyo Metropolitan area (abridged as TM) and the Osaka Metropolitan area (abridged as OM) and neglect the rest of Japan is the following:

Binary comparison of TM and OM is important because Tokyo, the capital since 1868 and Osaka, the neighbour city of the former capital, Kyoto, have been far more urbanized and centralized and congested than any other regions in Japan. The recent tendency has been more rapid inflation of land prices in TM because of its far more flourishing expansion than in OM. In both areas, however, common factors are working and it is worth while analysing them. Although our final object of research is to explain the inflation of land prices in overall areas of TM and OM⁵⁾, the scope of this paper is obviously limited. As representative and matured residential quarters, we have selected six districts for TM and OM each, and among these we have taken four districts of the inner city wards (abridged as U) in TM and OM each and two suburbs (abridged as S) in TM and OM respectively.

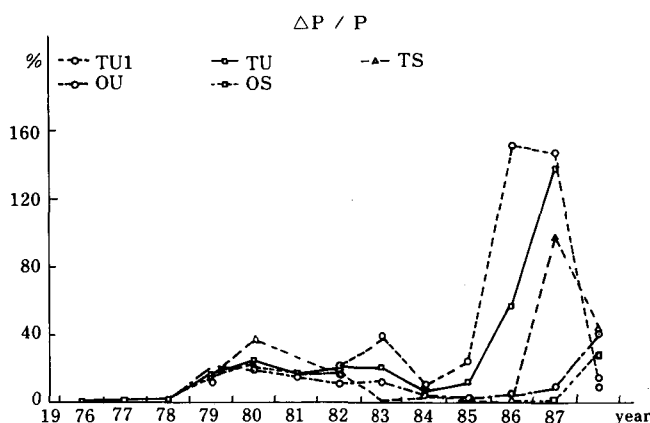
Identifying these, we have given numbers which represent the grades of residential land prices and their quality and add as subscripts the symbols of four selected areas.

Figure 1. Land Price and its rate of change

Land price for residential use P and its rate of change $\Delta P/P$ in the Tokyo and the Osaka Metropolitan areas (1975-1986)



5) In this paper we limit Tokyo Metropolitan area to Tokyo-to (Tokyo inner city and suburbs) and to Osaka Prefecture (Osaka city and suburbs) respectively. They are the central part of each Metropolitan area in broad sense which include more three surrounding prefecture (Kanagawa, Chiba and Saitama in Tokyo area and Kyoto, Hyogo and Nara in Osaka area) respectively.



Source : National Land Agency, *Official Land Prices*, 1975-88 editions.

Those are then as follows: $TU_1, \dots, TU_4, TS_1, TS_2, OU_1, \dots, OU_4, OS_1, OS_2$. The prices in 1975-1987⁶⁾ are shown in Figure 1.

For simplification, the average urban land prices in TM and OM are shown as TU and OU while the average suburban land prices in TM and OM are shown as TS and OS. In Figure 1, these average prices in TU, OU, and OS and an actual price of TU_1 are shown.

From Figure 1, it is clear that the inflation of land prices for residential use has prevailed in the two metropolitan areas, and that it is more serious in the inner city of Tokyo.

The figure suggests also that capital gains by holding land has risen in various ways depending on the different movements of the land prices. Incidentally, the annual rate of increase* in the CPI⁷⁾ in 1976-1986 is 3.8%, therefore, the annual increase rate of the average relative capital gains⁸⁾ in these areas is not less than 14% for TU, and for TU_1 , 20%, and for OU 6% respectively.

*In the calculation of the annual rate of increase, we use the following form throughout this paper: $P_t = P_0(1+r)^t$, where r is the annual rate of increase.

6) Source: National Land Agency, Japan, *Official Land Price*. 1975-1988 editions.

7) Source: Statistics Bureau Management and Coordination, *Consumer Price Index Survey*, 1985. *Monthly Statistics of Japan*, No.310, 1987.

8) J. R. Hicks (1946), M. B. McElroy (1971), R. Eisner (1980) and T. P. Hill (1984) make clear the composition of capital gains; gross capital gains consist of the portion of the change in general price inflation and relative capital gains, the portion of the change in individual prices of assets net of the change in general price inflation. The literature of inflation accounting is seen in P. S. Sunga (1987).

ii. Theoretical Framework

We intend, in the first place, to estimate the factors which determine the rates of rising prices of land in limited residential districts of the two metropolitan areas where no new supply of land can be expected. Such a situation is prevailing not only in the districts of our observation, but in the entire inner Metropolitan city areas and the well developed suburbs. The areas where there is no new supply of land are denoted as $Z = \bar{Z}$, where Z means square km of residential area divided by the number of population in each district.

The factors which have an effect on rising rates of land prices in these areas are:

i. the net increase (decrease) in population, ii. the annual income of inhabitants, iii. the distance from CBD, iv. the time for commuting between the householders' home and their place of work (or usually CBD), v. the level of lagged land prices, vi. the property tax per head of population as the cost for holding such residential sites, vii. the level of CPI, and viii. the amenity factors in each residential area, such as physical and/or social environmental factors.

In this paper we select districts which are located within a circle of 30km from CBD, so that we can neglect the distance factor iii. Hence in these areas where $Z = \bar{Z}$, we can also neglect the factor which affects the rising rate of prices due to the supply factor.

For our 12 districts with a net decrease of population together with rising land prices, we set the following equation for rising land prices:

$$\Delta P/P = \phi (\Delta N, Y, \tau, P_{-1}, Tf/N, Pc, A)$$

where P is land price, ΔP is net increase (decrease), N is population⁹⁾, ΔN is net increase (decrease) of N , Y is householders' annual income, τ is time for commuting¹⁰⁾, P_{-1} is the level of lagged land price, Tf/N is property tax paid in the district divided by the number of inhabitants¹¹⁾, Pc is CPI¹²⁾ and A is a symbol for

9) Source: Tokyo Statistical Association, *Tokyo-to Statistical Yearbook*, vols. 27-36, II. Osaka Prefecture Statistical Association, *Osaka Prefecture Statistical Yearbook*, 1976-1985 editions, ch.3. Osaka City Planning Bureau, *Annual Report of Statistics in Osaka*, 1975-1985 editions, 14.

10) Source: Bureau of Statistics, Office of the Prime Minister, *Housing Survey, 1978 and 1983*, vol.3, Pts., 13 and 27. Table 12 ('78 Survey), Table 14 ('83 Survey).

11) Source: Property Tax for the Tokyo Metropolitan Area, Data compiled by the Bureau of Taxation, T.M.G.

For the Osaka Metropolitan Area, Data compiled by Osaka Prefecture. The figures of Property tax are divided by the registered population in corresponding districts. The Registered population are derived from the Yearbooks and Annual Reports cited in note 8.

12) See note 5.

denoting amenity variables¹³⁾. Our effort goes toward estimating the above equation in an operational way.

We intend, in the second place, to show the idea of constructing a regional reconciliation account as an instrument to analyse, the hyperinflation of land prices. Even in our pure analysis ($Z=\bar{Z}$), the usefulness of the account for providing the series of P , $\Delta P/P$ and of CPI , and for measuring the series of capital gains and relative capital gains in metropolitan areas becomes clear. Moreover, in order to analyse the factors affecting the rapid rising prices and to devise an urban policy, it is necessary to obtain a well filed series of data of these related factors together with a land price data series.

Some of the factors are to be found in the common national accounts but other factors such as time and distance from CBD, population, and amenity variables must be taken from corresponding socio-economic accounts and/or SSDS. This gives the possibility to widen the use of the regional reconciliation account for the analysis of the well-being of people in metropolitan areas especially regarding the housing problem. The hyperinflation of land prices for residential use in metropolitan areas is a typical example.

3. Estimation of the Least Squares Estimates

The equation shown in the previous section has, by the reason of present data availabilities, to be modified in two points: First, we must use local tax paid in the area divided by population N as a proxy variable for personal income earned per head in the districts. The local tax burden per head is denoted as T_y/N where T_y is local tax in the district and N is population in the district¹⁴⁾. Second, at present, we can not estimate the amenity variables A , because such data over this period are not

13) Amenity variables consist of environmental (i.e. dean air and water, etc.), social (i.e. well equipped infrastucture, facilities for commuting to CBD, public order and safety, etc.) and cultural (i.e. accessibility to good schools, museums and hospitals, etc.) factors. Measuring amenity variables such as MEW and NNW have been tried on by regional base, however, the series of such indicators by our districts during the period is not available. W. Nordhans and J. Tobin, "Is Growth Obsolete?", *Economic Growth*, 1972. NNW Measurement Committee, *Measuring Net National Welfare of Japan*, 1974.

14) Sources of local tax per head of population in the Tokyo Metropolitan area; Bureau of Taxation, T.M.G., *Tax Revenue Annual Report: Tokyo Metropolitan Council 1975-1986* editions. For these local tax in Osaka are *Osaka Prefecture Statistical Yearbook*, *ibid.*, 344. *Annual Report for Statistics in Osaka*, *ibid.* For deriving figure of local tax burden per head of population in the Osaka Metropolitan area, data of the registered population (see note 10) is used.

available for the two Metropolitan areas¹⁵⁾.

The regression equation for the rising rate of land prices in the period 1976-1984 for the four sub-areas, i.e. TU, TS, OU, OS has to be estimated. The total number of samples is 108, i.e. 36 for TU, 18 for TS, 36 OU, and 18 for OS. Our equation, in a more operational way than the former equation, is the following

$$\Delta P/P = \phi (\Delta N, Ty/N, \tau, P_{-1}, Tf/N, Pc,) \quad (1)$$

where Ty/N is the local tax burden per head of population. The other symbols are the same as those in the former equation, though A , the amenity variables is dropped. We call equation (1) as Model I.

In estimating Model I, we intend to measure the equation (1) for TU_1 separately, since in TU_1 (the Minato area) the level of prices is the highest and the rise of prices is the most rapid, as shown in Figure 1 above, because the residential district is next to the foremost commercial district of Japan¹⁶⁾.

Table 1 shows the estimates of regression coefficients of the variables in Model I by each of the four blocks (TU, TS, OU, OS) and TU_1 .

Table 1 The Least squares estimates for Model I

		const.	ΔN	Ty/N	τ	P_{-1}	Tf/N	Pc	R	d	F
T	TU	-52.781 (-2.143)	-0.011 (-1.950)	0.449 (1.476)	0.197 (0.392)	-0.953 (-3.361)	-0.027 (-0.301)	0.436 (0.846)	0.742	1.782	5.931
	TU_1	-227.201 (-0.233)	-0.038 (-1.563)	0.238 (0.494)	3.917 (0.132)	-2.482 (-7.198)	1.639 (2.898)	-0.520 (-0.548)	0.993	1.807	21.915
M	TS	37.126 (0.145)	-0.040 (-1.108)	0.689 (0.521)	-2.889 (-0.614)	-2.751 (-2.368)	-0.681 (-0.388)	1.473 (1.003)	0.881	1.690	6.364
O	OU	-141.944 (-2.486)	-0.037 (-2.628)	0.423 (0.641)	3.128 (1.850)	-2.290 (-2.487)	2.235 (1.704)	0.017 (3.780)	0.635	2.080	3.264
M	OS	-50.378 (-0.764)	-0.011 (-1.474)	2.308 (2.055)	1.576 (0.897)	-4.439 (-2.755)	-1.668 (-0.687)	-0.491 (-0.548)	0.871	1.806	5.772

15) As for the data on amenity variables in our Metropolitan areas over the period, statistics on natural environment are only available. Institute of Pollution, T.M.G., *Pollution Statistics in T.M.G.*, 1984. Bureau of Environment, Osaka Prefecture, *Environment Statistics in Osaka*, 1976-1986 editions.

16) Rise of the land price for commercial use in Minato ward spurted in later 1970's and the annual rate of rising in the 1981-1987 is 55.8% and that in the 1984-1987 is 136.7% respectively, while the level of the price in 1980 is ¥1,1,094,000 per m² and that in 1987 is ¥16,474,000 per m². Such a high land price and its annual rate of increase are a result of rapid growth of demand for central commercial district in the centre of the Tokyo inner city (Minato and other such commercial area, Chuo and Chiyoda), which have still lasted, and such a sharp rise of land price has induced the price of its adjacent land for residential use. TU_1 , therefore, records both its high level of land price and its annual rate of increase. The annual rate of the price of TU_1 rising in the same period 1981-1987 is 51.7% and in the 1984-1987 is 84.2% respectively. Incidentally the annual rate of the CPI rising in 1981-1986 is 1.9% and in 1984-87 (F.H.) is 0.7%.

After a stepwise estimation, Rs for the five districts, TU, TU₁, TS, OU and OS show 0.742, 0.993, 0.881, 0.635 and 0.871 respectively in the right column of Table 1.

It is remarkable that one regression coefficient τ in Model I shown in column 4 is positive. The only one exception is TS' τ -2.889, though before estimation we expected all to be negative.

Now we draw a Table from Table 1, where the figures in each row show the estimates from left to right according to their order in absolute value and the nature and effects of each variables in Model 1 can be compared. The results is shown on Table 2.

Table 2 Comparing the coefficients of the variables of Table 1.

ΔN	TS -0.040	TU ₁ -0.038	OU -0.037	OS -0.011	TU -0.011
Ty/N	OS 2.308	TS 0.689	TS 0.449	OU 0.423	TU ₁ 0.238
τ	TU ₁ 3.917	OU 3.128	TS -2.889	OS 1.576	TU 0.197
P ₋₁	OS -4.439	TS -2.751	TU ₁ -2.482	OU -2.290	TU -0.953
Tf/N	OU 2.235	OS -1.668	TU ₁ 1.639	TS -0.681	TU -0.027
Pc	TS 1.437	TU ₁ -0.520	OS -0.491	TU 0.436	OU 0.017

From Table 2, we can find the following.

First, for ΔN , i.e. population variables, all regression coefficients show negative signs. This means that the net decrease (increase) of population has taken place related to the rising (falling) land prices in each area.

Second, for Ty/N, i.e. local tax per head variables, the regression coefficients shows all positive signs though their absolute values are not of the same extent.

Third, for τ , i.e. commuting time variables, the regression coefficients show positive signs in all districts except only one—that in TS.

Fourth, as for P₋₁, i.e. lagged land prices, the regression coefficients show negative signs in all districts and their absolute values are large, which means the level of land prices has a depressing effect on the rate of price rises.

Fifth, for Tf/N, i.e. property tax per head in each district, their signs of effects vary according to districts.

Sixth, for Pc, i.e. consumer price index, the signs of regression coefficients vary also according to districts.

Table 2 explains more, as it makes clear that the pattern of the regression coefficients in each district shows quite different directions.

Here, TU_1 attracts special attention; i. the population net decrease effect is big and the Tf/N effect, too, ii. the P_c effect has a negative sign though its absolute value is not small, iii. Ty/N effect, a proxy for income per head in TU_1 , is the smallest, iv. by stepwise estimation, at the step II where P_c , τ and Ty/N are omitted, we obtain a high rate of R for the Model, i.e. 0.993, and v. the P_{-1} coefficients in the Model are bigger than those of TU . The role of P_{-1} as a depressing factor on the rising rate of land prices in TU_1 is, however, limited. We find this by the stepwise estimation and the fact that its single correlation coefficient is small (0.407). As the P_c effect has a negative sign and the Ty/N effect is smallest though it has a positive sign, we notice that in TU_1 , during the period, there appeared an indication of speculative demand expectation for hyperinflation. Hence, the regression coefficient of the net decrease of population high, and we understand that in TU_1 there is a tendency to accelerate the decrease of the population and a rapid rise in land prices.

On the other hand, it is remarkable that the two suburbs TS and OS have some common characters—the population net decrease effect on the rising rate of land prices is strong especially in TS . Despite the figure for OS shown in Table 2, this effect is considerable, because of its high single correlation coefficient (-0.719) to $\Delta P/P$ and at the step where only the population is considered as a variable, R is 0.718.

As for P_{-1} and Ty/N , the estimates of the coefficients in two suburbs are large, too, though the sign of the former is negative while that of the latter is positive. From the above we conclude that the land prices are rising due to the population effects, and that, in turn, rising prices bring big decreases in population. And when the population in the districts is getting wealthier, the inflation in the districts goes on. Since the early 1950's people has moved to TM , people who intended to migrate to suburban districts have had to seek new areas farther away to settle and as a result, the whole area of TM has widened.

In the suburbs, P_{-1} and the declining income are depressing factors for the rise of land prices, while a decreasing population and a shortening of commuting time in TS , as mentioned above, are accelerating factors.

There are some differences between TS and OS . One concerns the estimates of the P_c coefficient and the other concerns the estimates of the Tf/N coefficients. As for the latter factor, we can neglect it because in the two districts by stepwise estimation the Tf/N effects are quite few. As for the former, however, the P_c effects in the two suburbs are big. In TS , the coefficient is big and has positive signs. So, in TS we consider P_c as an accelerating factor for land price rises, while in OS

the P_c effect is smaller than that in TS and its sign is adverse. We think this situation is caused by different patterns of the two suburban districts, say, the changes of land prices in TS are more sensitive to P_c than those in OS.

Third, if we compare the two metropolitan city districts TU and OU, the former is still flourishing while the latter has been stagnant and its population decrease has begun far earlier than in the former. Observing both city districts, however, we find some characteristic features for the inner city districts. As for P_{-1} , P_c , Ty/N as a proxy of income per head, and τ , these estimates are small figures. In TU Tf/N is small too. This suggests that i. not a single factor but many factors are at work together, ii. other factors to attract population to the inner city are working and they can not be specified in our Model I. Finally, in Table 2, we notice that the net decrease of the population coefficient is smaller in TU than that in OU. This reflects the fact above mentioned and suggests that the net population decrease in TU may be going on and the TM circle itself is extending farther.

4. Hyperinflation in TM Reconsidered

Due to the delay of the presentation of data by the taxation office, the estimates in the previous section cannot be extended to the most recent years. However, by using the official land prices which have been published for the two metropolitan areas after 1985¹⁷⁾, it seems worth while noting the specific feature of land prices by

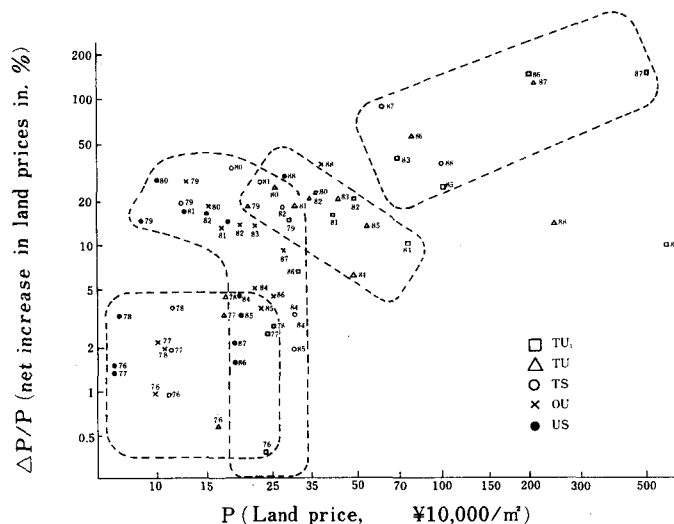


Figure 2 Scatter diagram of the net increase in land prices on the land price, 1976 - 1988

17) Source: *Official Land Price*, *ibid.*, 1986-1988 editions.

drawing a scatter diagram, which explores the relation between land prices and its rising rates. Particularly it makes clearer the present hyperinflation of land prices whose foreshadow was already seen in TU_1 in the previous section. In Figure 2 are thus shown the net increase in land prices in relation to the land price itself.

Note that all figures are shown in logarithmic numbers.

From Figure 2, we can clearly recognise three phases during the observed period. In the first phase of 1976-78, the rising rate of land prices was slow in each district while almost maintaining the level of the land price itself. Their patterns were almost identical except for the difference in the level with the highest in TU_1 . In the second phase until mid-80's, we clearly identify that there exists a barrier of the level of land prices to oppress the rising rate of its price. It is seen in every district that the higher the land price the lower the rising rate of land price. It may well be that there is a constraint of this sort in the normal condition of the land market. This situation still holds in the district of Osaka (OU and OS) after 1979. But the constraint has lost its effect in the three Tokyo areas: TU_1 was the first which lost the land price barrier after 1985, followed by TU in 1986 and TS in 1987. They are then in the third phase, where both land price and its rising rate increase together almost proportionately. This is nothing more than the specific character of the hyperinflation in the Tokyo Metropolitan area. We must, however note the P and $\Delta P/P$ in each districts in 1988, the end year of the Figure 2 TU and TU_1 move to right and both go out from phase III. The 1988 the position of TU_1 in the figure which shows a right most but low situation is notable. In both TU_1 and TU a tremendous falling in $\Delta P/P$ has happened. While TS in 1988, due to the lagged effect of land prices in TM, still stays in the phase III which shows highest P and $\Delta P/P$ too. On the other hand, in 1988 OU is going out from phase II and OS is getting into phase III.

From the above observation, we obtain the conclusion that the land price inflation seems to have ceased temporarily in the Tokyo area in 1988, while in the Osaka area we find continued mild price rising and in the end of the period prices spurt to rise¹⁸⁾. Hyperinflation of land prices which started in TU_1 and transferred to TU and TS appears to be transmitted to Osaka now. This might have a possibility to be again be transmitted to not only the whole Osaka area but to other metropolitan areas i.e. Nagoya, Fukuoka, etc. The position of each districts in 1988 seems to forshadow land prices in Japan.

18) Such a movement of price has continued in 1989. The rates of land price increase in each districts are: TU; -3%, TU_1 ; -7.1%, TS; -5.9%, OU; 38.1%, OS; 43.5% (the figures are those of base points in maps of land prices respectively.)

Source: Nippon Keizai Shinbun, 1st of April, 1989.

5. Regional Reconciliation Account as an Instrument to Analyse Hyperinflation in Metropolitan Areas of Japan

As the amounts of capital gains have been growing in the recent three years, the people's attention has been directed towards the reconciliation account¹⁹⁾. The rate of rising land prices is, however, quite different according to region even in the metropolitan areas as stated in the previous section. It is, then, needed to construct a reconciliation account for measuring capital gains and rising prices according to region, because a different policy by area is urgently required.

The virtue of a reconciliation account for a selected region is even greater, and the reason is the following.

We denote the value of land for residential use in a densely populated region as PZN where P is the price in such a region, Z is land per head of population in such a given area and N is the number of inhabitants. In this paper we assume $Z = \bar{Z}$.

As shown in §3, Models for explaining the rise of the land prices in metropolitan areas depend on population increase (decrease), local tax per head of population, lagged price, property tax per head of population, CPI and commuting time. Among these, some factors such as P_c , property tax and local tax must be derived from the usual national accounts, but population and commuting time can only be derived from the demographic account and the time-use account on the regional level. In the case where we can estimate and compare the amenity variables according to regions during any given period, we also get the figures, not from the national accounts but from the socio-economic accounts according to region. Then, we consider that the construction of a reconciliation account offers the possibility to extend the use of the reconciliation account beyond its proper use, as the concentration of the Japanese population in the metropolitan areas is still continuing especially in TM and the level of prices of land in TM remains enormously high though its rising rate is a little falling, while the price rise in OM is now going on. For the analysis of the well-being of the inhabitants, therefore, the construction of a regional reconciliation account, which records proper items and those socio-economic items (below the line items), is the first but most important step indeed.

When we observe the metropolitan area in a wider sense, we must of course relax our assumption $Z = \bar{Z}$. The items in the account explaining variables are identical, though in this case we must introduce 'distance from CBD' factor and the price of

19) Nipponkeizai Shinbun, 1st of April, 1987. The editorial mentioned that capital gains accrued in Japan by land price inflation amounted to 2/3 of GNP in 1986.

agricultural land for development into residential land, as in these areas the land use maintains a hybrid character.

6. Summary and Conclusion

From the analysis in the previous sections we obtain the following conclusions:

- i. Observing the rising land prices for residential use in both metropolitan areas under the condition of $Z = \bar{Z}$, during the period 1976-1987, there has been a high growth of land prices. In the Tokyo Metropolitan area the annual rate of price rises amounted over 20%, double of that in the Osaka area, while the acceleration of the land price rise was faster than in the Osaka area. During the 1970's the rising trend of land prices was parallel in both areas but after 1980 the land prices in the Tokyo area showed a tremendous rise and in 1985-1987, the last three years of the period, the annual rate of price rise was amounting to 45% while in the Osaka area it was less than 5%²⁰⁾. A tremendous rising tendency in Osaka has appeared since 1988.
- ii. Having obtained the least squares estimates of the regression coefficients which determine the rate of price rises in the period 1976-1984 for which all related data are available, we find that the factor P_{-1} was related to P . As for τ , Tf/N , and P_c , their signs and magnitude of effect on the rate of the land price rise depend on the character of the district, and in the case of common depressing factors (accelerating factors) the effects vary. The causes for such differences lie mostly in the character of the district, i.e. whether the district belongs to the Tokyo Metropolitan or the Osaka Metropolitan area and whether it is an inner city district or a suburb.
- iii. The district showing the clearest distinct situation is TU_1 where the level of and the rate of land price rises is the highest. There we find that the signs of P_c coefficient and ΔN coefficient are negative, the sign of Ty/N coefficient is positive but its magnitude is negligible, and the sign of P_{-1} coefficient is negative but its magnitude is small. After 1984 the foreshadow of a hyperinflation emerged, the land prices of TU_1 doubled in one year and it spread to TU and then to TS .
- iv. Under these circumstances, the role of the reconciliation account by region is obviously important; it measures the magnitude of capital gains (both absolute and relative) by regions. When the rise of land prices begins to show a vicious circle like in the Tokyo Metropolitan area, its role becomes more important as a warning of the situation. Another role of the reconciliation account by the region is to provide regularly the data of $\Delta P/P$ and of capital gains over a certain period. If these data are combined

20) Source: *Official Land Price*, *ibid*.

with the data derived from socio-economic accounts such as population, commuting time, etc. by regions, they offer a base for the analysis of land price inflation by areas though this has never been tried by national accountants.

Our object, the rising land prices and the causes in metropolitan areas, is limited to the short period of 1975-1988. But of course the great rise of land prices did not happen overnight, but was the result of the past 40 years of economic policy in Japan, including its agricultural policy and taxation policy²¹⁾ added to the natural scarcity of land with a dense population. These structural elements are likely to remain²²⁾. Then if does inflation of land prices occur and is expected to continue due to the inelasticity of land supply, speculation for land emerges, and reduces investment in other tangible assets.

Therefore, the next step is to construct a reconciliation account for the other assets, and development should be directed towards housing on the land of metropolitan regions. Also, the relaxation of our assumption $Z = \bar{Z}$ requires the measurement of the other items of account, say, agricultural land and investment in the infrastructure. The construction of a reconciliation account by regions, as our simple experience suggests, is able to afford the analysis of the well-being of the people in urban areas, where the majority of the Japanese population now lives²³⁾.

21) Taxes on capital gains have hardly been charged on the landholders, because by the Japanese tax law, capital gains realized by selling land for residential use are exempted when the seller buys another land of the same amounts within one year. This tax device has helped to spread land price inflation in the Metropolitan areas.

22) As for a tax system, for improving this notorious system on capital gains, the Japanese government considered to abolish the system in *principle* and the government, instead to introduce capital gain tax, decided to charge present income tax rate on such gain acquired by transaction of capital assets in 1988. The rate itself is very low (10% and 15% for over ¥70 million) compared to enormous amounts of capital gains, so the effect of this is rather negligible. Source: *Nippon-no-zaizei*, 1988 edition, pp.158-159.

23) The population of Japan is 121 million in 1985. In TM it is 11.83 million while in OM 8.67 million, and population of TM in broader sense (our TM plus surrounding three prefectures) is 30.27 million while that of OM in broader sense (our OM plus surrounding three prefectures) is 17.84 million. Source: Statistics Bureau Management and Coordination Agency, Tokyo, *1985 Population Census of Japan*, vol. 2. 1987.

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LITTLE BASICS AND EMPLOYEEISM

JAPANESE MANAGEMENT IN INTERNATIONAL PERSPECTIVE

Hideki YOSHIHARA

1. Manufacturing Basics

“5S” Campaign

What impressed Prof. R.H. Hayes of the Harvard Business School when he visited Japanese factories was that they were extremely quiet and well ordered.¹⁾ In general, Japanese factories are clean and workshop discipline is strict.

Why are Japanese factories clean? Some say Japanese culture. The Japanese like cleanliness and for this reason they keep their factories clean. Is this cultural explanation correct?

I have visited many American factories but not many were as clean and well ordered as the Japanese factories. Can this lack of order also be explained by similar arguments relating to American culture?

In December 1970, I went to the United States with my wife for a year and a half, when we were invited many times to the homes of Americans and had opportunities to see the inside of their homes. I still remember well how impressed we were at the cleanliness and order we found there. If you ask me about my own home, I can say that, certainly, the guest room is properly in order. But guests stay only in that room and are not allowed to go elsewhere such as the kitchen, the children's rooms, or the living room, because these rooms are untidy, and we (especially my wife) would feel embarrassed.

In America I also had the opportunity to see the offices of professors at Harvard, Stanford, M.I.T., and other universities, and they were cleaner and more orderly than the offices of university professors in Japan. I expect that government offices are likewise clean and in order. Generally speaking, however, American factories are not

1) R.H. Hayes, “Why Japanese Factories Work,” *Harvard Business Review*, July-August, 1981, p. 59.

as clean in comparison to U.S. offices and houses. The opposite situation occurs in Japan, where if one visits a plant after seeing a Japanese home or office, one finds the plant exceptionally clean.

What could be the reasons for such a state of affairs?

The “5S” campaign is practiced in many Japanese plants. It centers people’s attention on putting into order (Seiri), good order (Seiton), cleaning (Seisoh), cleanliness (Seiketsu), and training and discipline (Shitsuke).²⁾

Japanese factories are clean and in good order largely because of this “5S” movement. Everybody from the top executive or manager at the factory all the way down to the machine operators exerts himself or herself, incessantly and for long periods of time, in order to keep factories clean and in good order.

Improvements of the Production System Using Inventories as a Lever

When for some reason or other the supply of parts from vendors is behind schedule and there is not enough inventory in the factory, production has to be stopped. For this reason, the existence of an inventory is indispensable to ensure smooth production. But, if the inventory is excessive, inventory maintenance costs rise. Thus, in order to determine the optimum level of inventory, consideration is given to both the inventory maintenance cost and the cost arising from interrupting production.

Japanese companies’ approach to managing inventories is different from the approach taken by American companies. The optimum level of inventory at American companies is in general determined by specialists. Moreover, once they determine the optimum inventory level, it remains fixed for relatively long periods. In contrast to this, the inventory level at Japanese companies is not considered fixed, but is regarded as something that should decrease over time in conjunction with improvement in the efficiency of the production system.

This Japanese view, which assumes a reversed direction of causality, maintains that the level of efficiency of the production system is gradually improved by gradually lowering the inventory level. Inventories act as a buffer in the production system. If inventory levels are high, maintaining smooth production is a relatively easy task. However, when inventory levels decrease, problems and weaknesses in the production system, which previously had been hidden by the buffer, come to the surface. When this occurs, workers, technicians, and supervisors pay close attention to the problem and work towards a solution. When they find a solution, the efficiency of the production

2) Proper translation of these five words is not easy. Even in Japanese, the difference between Seiri and Seiton is not necessarily clear.

system is improved, and production is carried out smoothly on the basis of a reduced inventory level.

If the inventory remains at the new level, the efficiency of the production systems does not improve any more. However, if the inventory level is reduced again and new problems and weaknesses hidden by the buffer come to the surface, attention is directed towards these problems, and efforts are made to correct them. When the new problems are solved, efficiency further improves by another degree.

The efficiency of the production system thus improves step by step according to the following cycle: inventory is reduced --> latent problems surface --> efforts are made to solve the new problems --> problems are solved and the level of the production system is improved. The assiduous repetition of this cycle is one of the distinctive characteristics of Japanese production management.³⁾

In-house Design and Fabrication of Production Equipment

Matsushita, Toyota, and Canon are primarily assembly manufacturers. Matsushita assembles electrical products such as color TV sets; Toyota's business is assembling automobiles; and Canon assembles cameras, office machines and other precision equipment. However, these three companies design and manufacture production equipment to be used for assembly operations.

In the U.S., manufacturers who assemble such items as electrical appliances and automobiles, order and purchase production equipment from external equipment manufacturers.⁴⁾ Why, then, do Japanese assembly manufacturers design and manufacture equipment rather than purchase it?

The first reason is that they want to have production equipment that perfectly meets their company's production needs. Equipment manufacturers are very good at manufacturing general-purpose machinery. However, it is not that easy to acquire from external manufacturers special purpose equipment that meets exactly the special production requirements specific to each company.

The second reason is that designing and manufacturing production equipment in-house results in developing high-level human resources capable of building that equipment. Since some employees (technicians, foremen and skilled workers) will be assigned to design and manufacture production equipment, they acquire know-how, specialized knowledge, and technical knowledge about their production equipment.

3) R.J. Schonberger, *Japanese Manufacturing Techniques*, Free Press, 1982, p. 15.

4) Hayes, "Why Japanese Factories Work," p. 64.

The third reason is that people become attached to equipment designed and built in their own company. Whereas machines bought from outside manufacturers are “their equipment,” those built in-house become “our own equipment.” Due to this attachment to production machines built with their own hands, workers and engineers usually feel affection for their machines, handle them with care, and provide adequate and timely maintenance.

The fourth reason is that employees take an increasing interest in the production equipment and are motivated to try to improve it. When we talk about designing and building production equipment, we also include partial improvements and modifications to machines that are already in place. Successive improvements and reforms on production equipment are part of the realities of the Japanese factory. In many instances these small improvements to the production machinery are based on ideas and suggestions made by workers and first-line supervisors.

Finally, production equipment manufactured in-house becomes a powerful competitive weapon. When a new product is launched, competitors can easily buy it and study it. In countries such as Japan where competition is extremely severe, competitors usually launch very similar products within one year of the time a new product is introduced, and in some cases after a mere two or three months. While competitors have ready access to a firm’s new products, the production equipment itself can be concealed from competitors because people are not allowed to see competitors’ factories. Therefore, protecting the secrets of production technology is far easier than keeping product technology away from competitors.

Quality as a Key Success Factor

In Japanese factories, quality is important to the president and average employees alike. All of them are fully convinced that, by paying attention to quality, their products’ competitive strength will increase, and consequently so will profits. In fact, the competitive strength displayed so far by Japanese companies in world markets, as well as the spectacular growth achieved by these firms, provides evidence of the validity of this belief.

Quality means the following. First, it means having few claims or complaints made by customers regarding products sold in the market. Next, it means that defective products occur with minimum frequency during the company’s production process. Furthermore, outstanding quality means offering products that adequately meet customers’ requirements.

In order to insure quality, careful inspections during the production process

have to be carried out, and only high-quality raw materials are to be used. A service organization has to be enlarged to provide better and quicker service in regard to customers' claims. Since all of these measures result in an increase in costs, enhancing quality is generally associated with cost increases. This view is widely held in American companies.

At Japanese companies, however, cost and quality are not considered to be in direct proportion to each other, but in inverse proportion. In other words, it is believed that by enhancing quality, costs go down. At first glance, this way of thinking looks strange, but its validity is corroborated by the results achieved to date by Japanese firms.

Why does quality improvement reduce, rather than increase, costs? The answer lies in the following reasons.

Since only high-quality products are sold in the market, there are virtually no requests for repairs from customers and costs associated with providing repair services are practically nil. There is not much need to provide human resources and equipment for repair services and, as a result, related costs can be kept to a minimum and the cost of a poor reputation is avoided.

When the percentage of defects during the manufacturing process is low, costs of remanufacturing are also low. Furthermore, the number of partially finished products that have to be discarded grows less. If finished goods (which have incurred the use of raw materials, parts, electricity, labor and other input) end up being scrapped because of poor quality, the costs incurred have an impact on the price of all the articles of good quality. The cost goes up. When the percentage of defects in the production process is low, then the need to compensate for such related costs goes down.

Furthermore, the amount of effort put into quality control in order to improve the quality of products also results in improvements in the efficiency of the production system as a whole, and in the long term produces overall cost reductions.

Let's look at another feature concerning the endeavors that Japanese companies make in order to improve quality. In American and European companies quality is generally maintained and improved by means of inspections. In Japanese companies inspections also play an important role, but they do not occupy a central position among the various efforts made to enhance quality.

In order to improve quality, the production process itself has to be improved. The concept that quality is created by the production process is widely spread throughout Japanese companies. The quality of products improves with better production processes rather than with more inspections of the kind I have just mentioned.

Production process improvements alone are not sufficient to reduce the number of defective items manufactured in that process. Rather a thorough analysis has to be made as to the design of the product. In order to improve quality, careful thought is required at different stages of the design process to ensure that the resulting product can be made by means of a manufacturing process that will not be likely to produce defective articles, and, at the same time, will be easy to operate. Thus we can talk about quality improvements through the design process.

Not only workers, but first-line supervisors and design engineers are responsible for quality improvements. In fact, such responsibility has to be assumed by all company employees, including the president and other top executives, plant superintendents, people in charge of purchasing, etc. The basic condition for the realization of long-term quality improvements is the quality-consciousness displayed by all company employees while doing their jobs.

2. Mass Mobilization

QC Circle Activities and Suggestion Activities

QC circle activities and suggestion systems are by now well-known all over the world. In what follows, let us use the case of Sanyo Electric as a concrete example of such activities (as of 1979, 1 US\$ = 220 yen).⁵⁾

At Sanyo Electric's Color TV Factory located in Osaka, there was a QC circle activities group called the Nishio Group that achieved cost reductions amounting to US\$7,273 in one year. Considering the achievements of all the QC circle activities at the Osaka Color TV Factory, cost reductions reached close to US\$2.3 million, and if the overall company is considered, cost reductions totalling the considerable amount of US\$ 16 million were achieved through QC circle activities.

Now let's turn our attention to the suggestion system. Ms. Chiiko Mitsukoshi of the Osaka Color TV Factory contributed in one year 112 suggestions that resulted in cost savings of US\$8,491. Cost savings resulting from the suggestion activities at the Osaka Color TV Factory as a whole amounted to US\$16.2 million, and at the company level cost savings for Sanyo Electric reached the surprising amount of US\$56 million.

By adding up cost savings due to both QC circle activities and suggestion activities, we obtain for Sanyo Electric the staggering amount of US\$72 million. The meaning of this figure becomes clear when we realize that current profits for that year at Sanyo Electric were US\$130 million. The cost reductions resulting from Sanyo Electric's QC circle and suggestion activities are indeed impressive, especially when we notice

5) Based on the author's case study. H. Yoshihara, *Sanyo Electric* (in Japanese), Nomura Management School, 1976.

that they are achieved year after year. Every year important cost reductions amounting to approximately US\$72 million are realized.

Such results of QC circle activities and suggestion activities are by no means limited to Sanyo Electric. Matsushita, Toyota, Nippon Steel, as well as many other manufacturing companies, are obtaining similar cost reductions, year in and year out, from their QC circle and suggestion activities.

Until now, in order to make calculations easier, we have been looking at the results of QC circle activities and suggestion activities as cost reductions. However, various kinds of suggestions for improvement are proposed, whose results are not exclusively cost savings. There are many suggestions that produce improvements in quality in a broad sense, for example, improvement of the appearance of products. Also, the motivating effect that small-group activities has on workers cannot be disregarded.

The main promoters of QC circle activities and suggestion activities are plant workers. Plant workers do not simply perform the operations assigned to them, but also make proposals to improve the way they do their job. They think about product design, the use of raw materials and parts, production equipment, jigs, tools, operation instruction forms, inspection tools, inspection methods, and make appropriate proposals whenever they see room for improvement.

If we think of the company as a society, managers and engineers can be considered as the elite. On the other hand, plant workers can be likened to masses. The excellent fruits rendered by the QC circle activities and suggestion activities are really products of the masses' endeavors. One can say that QC circle activities and suggestion activities are organizational devices of mass mobilization that motivate plant workers in such a way that they can exercise their capabilities. At Japanese companies various organizational devices and systems have been developed, apart from QC circle and suggestion activities, which motivate workers not only to do their assigned jobs but also to take part in innovative activities.

Information is Fed back to the Worker

Computers are being widely used in the factory for production activities. In regard to the production information system, there are important differences between Japanese companies and American companies.

At American factories, the computer is used to store, analyze and output production data, such as production volume, percentage of defects, and inventory condition. This data is used exclusively by managers, engineers and specialists, and there is almost no feedback to the factory workers.

On the other hand, at Japanese factories, production data, quality data and the like are fed back to the workshop operators, who also use the information.

While visiting a plant that assembles color TV sets I saw a data board similar to that in Figure. 1 placed in front of the assembly line. The board displayed planned production level, actual production level, and whether or not defective articles had been produced. At that plant, information on the board was updated every two hours. According to production schedule, the quantity that should have been produced up to that point was 280 sets, and the actual quantity assembled was 283 (the numbers are fictitious). If during a given interval not a single defective set is produced, a green circular marker is displayed at the bottom of the board. If even one defective set is produced, a red marker is displayed. In this way, production and quality data are fed back to the worker at fairly frequent intervals, and the worker, by looking at that data, can learn for himself or herself the status of production.

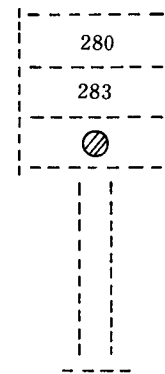


Figure. 1

At large factories, such as those assembling automobiles, a similar board hangs from the ceiling so that every worker can see the situation regarding production and quality levels.

The production information system at Japanese factories is a device that both brings out plant workers capabilities and stimulates eagerness.

MBA VS. MWA

MBA stands for Master of Business Administration and is a degree awarded to business school graduates. In the U.S., business schools are well established and their graduates occupy central positions in firms. In general, people holding an MBA degree have individual offices, a secretary and do their job using computers. Rarely do they go to the factory shopfloor. From their individual offices separated from the plant they manage operations by remote control.

At Japanese factories, there are almost no holders of master's degrees in business administration among managers and engineers. Japanese managers and engineers display a pattern of behavior different from that of American MBAs. This pattern of behavior is well described by the expression MWA.

MWA stands for Management by Walking Around, and is the behavioral pattern adopted by most Japanese factory superintendents, first-line supervisors, and production engineers.⁶⁾

6) For the word MWA, I am indebted to T.J. Peters and N.K. Austin, *A Passion for Excellence*, Harper and Row, 1982.

Factory superintendents, first-line supervisors, and production engineers can be found in administrative offices located in the middle of the factory. They can often be seen on the factory shopfloor, where, should a problem arise that cannot be solved by a worker, they personally look for a solution on the spot. At Japanese factories, managers' and engineers' offices are usually located in the plant. Moreover, frequently, the place where first-line plant supervisors and technicians do their job is not an office, but the factory floor, where it is not rare to find only ordinary desks and chairs without any separation wall.

In the case of the administrative style developed by the American MBA, a communication barrier is built between the managers and specialists, on the one hand, and the operators, on the other. This barrier makes it difficult for the feeling to emerge that both managers and operators belong to the same group. On the contrary, in the case of the Japanese management style, managers serve as an example to their workers: they supervise their subordinates while walking around the factory floor (MWA), and wear the same kind of working clothes used by operators. This behavior facilitates mutual understanding and promotes a feeling of belonging to the same group. From the standpoint of motivating the factory employees and bringing out the worker's ability and eagerness to perform well, the Japanese MWA method appears to be far superior.

3. Japanese-style Human Resource Management

Some Features

As we have seen by now, one important characteristics of Japanese-style management is that it motivates the employees, specially those at the factory floor, and encourages them to display their ability to the fullest. One basic condition for this mass-mobilization management to be effective in practice is that the company must show concern for its employees and strive to satisfy their wants.

The main features of human resource management at Japanese companies are as follows:

- cautious recruitment
- in-house training
- job rotations and reshuffling of personnel within companies
- long-term competition among employees
- emphasis on group-orientation rather than individual performance
- egalitarianism
- employment security
- company unions and cooperative labor-management relations

The personnel department is directly responsible for carrying out the management of human resources at Japanese firms. At American companies, the personnel department does not have a particularly important position, but its importance in Japanese companies is far greater, and it ranks as one of the key department alongside production, marketing, engineering, and finance.

Employees as Intangible Company Assets

Japanese-style human resource management has the general features explained above. At Japanese companies the employee is the focus of attention, and executives, managers, personnel specialists, among others, invest much time and energy taking care of personnel issues. Why is the employee the center of such special consideration?

It is often asserted that one of the features of Japanese-style management is "family-ism." The firm is regarded as a family. The president and other top executives play the father's role, and plant employees, salesmen, office workers and the like are members of a big family, and, as such, have to be supported. Japanese company workers are treated with great consideration and care, in the same manner that children in a family receive tender consideration from their father.

Perhaps the family analogy is useful to some extent to explain the Japanese management style. However, family-ism is not by itself sufficient to explain Japanese-style human resource management.

"Before producing products we must build people" is the philosophy of Mr. Konosuke Matsushita, the founder of Matsushita Electric Industrial. And not only Mr. Matsushita, but many other Japanese executives as well strive to build people. They think that "people are the essence of management."

At the firm there are many intangible resources, such as technology, various kinds of know-how, organizational climate, and management ideology. These intangible resources shape the individual characteristics of every company, and are, moreover, the basic source of competitive strength. Many of these managerial resources are embodied in engineers, salesmen, plant operators and other employees.

The special consideration given to the employee is probably due in part to paternalism, but basically it is due to the fact that the employee is the one who embodies the company's intangible assets. Keeping the worker employed in the firm and developing his capabilities is in reality behavior designed to accumulate managerial resources in the company and then develop them further.

4. Employeeism vs. Stockholderism

Among the important characteristics of Japanese-style management the following are often pointed out: the “5 S” movement, improvements of the production system using stock as a lever, the use of production equipment manufactured in-house, and the attachment of great importance to quality. QC circle activities and suggestion systems, feedback of information to the workers, and the MWA method have also been mentioned. To these factors we could add the importance attached to team-work, attention to detail, accumulation of small improvements, etc. These characteristics, when studied individually, are nothing particularly out of the ordinary, and they do not require advanced methodologies or techniques. They are very basic things, obvious prerequisites to carrying out —reliably and properly— production activities at the factory floor. In carrying out production activities, the entire staff of a Japanese production plant puts into practice what can be called “little basics,” that is, fundamental and ordinary principles. At American factories, plant workers are no more than mere implementors; they simply execute decisions, exactly as they are told by their superiors and specialists. On the contrary, at the factory level of Japanese companies, workers not only do their jobs, but also think about ways of improving operations. In contrast with the elitism of American companies, Japanese factory workers are mass-mobilized.

In order to accomplish this mass-mobilization, Japanese human resource management takes concrete actions, such as trying to achieve employment stability at the company. Based on the idea that “people are the essence of management,” the central theme for the executive becomes the administration of human resources, which starts with developing people. In reality, this theme is based on the idea that the company belongs to its employees. In the U.S., the most likely answer to the question of whom the company belongs to is: “The company belongs to the stockholders.” But, in Japan, if the question is asked to the employees, who are doing their best for the company’s success, the likely response would be: “The company belongs to us.” In contrast to the American company’s “stockholder-ism,” it is possible to talk about the “employee-ism” that pervades the Japanese company.⁷⁾

7) For the argument of employeeism vs. stockholderism, I am indebted to Professor Hiroyuki Itami. See H. Itami, *Jinponshugi-kigyo* (in Japanese), Chikuma Shobo, 1987.

BANK'S LOANS TO DEVELOPING COUNTRIES:

A NORMATIVE APPROACH

Kazuhiro IGAWA

Optimal conditions of bank loans are shown in the environment of uncertainty and asymmetric information. These normative conditions make clear how to make new bank loans of international commercial banks to firms (or projects) in developing countries. The conditions also make clear some roles of an international organization, which supervises or assists bank loans for developing countries.

1

How to make contract of bank loans is an important issue, when uncertainty and asymmetry of information exist. In the case that credit applicants have more information than lenders, the latter must take into account of an incentive of the former to make favourable contracts. Bester (1985) shows an incentive compatible contract using loan interest rates and collaterals. A similar but more rigorous and explicit analysis, especially for an incentive compatibility and an optimality, is found in Igawa & Kanatas (1985). In an uncertain world, banks must calculate costs and benefits to accept credit, considering risks of bankruptcy or default. In this field Krugman (1985) applied a rigorous theory of bank loans to international debt problems.

This paper addresses to the problems of optimal contrasts for bank loans to developing countries, especially in the case that uncertainty of long-term loans and incentive problems of asymmetric information exist. This analysis partially sheds light on international debt problems of developing countries, though the problems are wide and complicated. The debt problems have two aspects, one is real and the other is monetary. The real aspect mainly concerns to strategic investments for economic development to increase a capacity of repayments. The monetary aspect concerns to decrease a debt burden and stimulate a new credit. It is true that these aspects are mutually related and total analysis of them is required to set practical policies to the debt problems. However, for analytical purpose, it is convenient to separate

the problem into real and monetary aspects, and we can make clear the issue in each aspect.

The real aspect is substantially investigated by development economists and we have nothing to add in this paper. Our interest is in the monetary aspect, especially in the problem how to stimulate new credits to debt countries. Of course, it is important in practice to seek the way to decrease a debt burden of the past for developing countries. But this is rather political matter and economically more interesting issue might be new credits in the present or future.

In the followings, a model of bank's loans to developing countries is shown in section 2. In section 3, optimal conditions for bank loans are investigated and section 4 makes clear the economic meanings of those conditions. In the last section, we consider an applicability of our analysis to international debt problems of developing countries, and there, some roles of an international organization are referred to.

2. A Model of Bank's Loans

To set up a model for bank loans of international commercial banks to the firms or the projects in developing countries, three types of economic subjects or agents are introduced. One is private or government firms of a developing country which apply for bank credits. Second is international commercial banks in developed countries which make loans. The other is an international organization. This is not a necessary one for the bank loan contract between firms and banks, but is introduced for the later discussion of possible roles of the international organization for international debt problems.

Clauses or covenants of loan contract of commercial bank are not qualitatively different depending on credit applicants, firms of developing countries or those of developed countries. The difference might be quantitative degree of conditions for loan rates, collaterals, and others. Therefore, the following analysis is not specific for bank's loans for developing countries, but we will introduce some features which are typical to the loan projects of developing countries. Risks of long term project and available information for the quality of firms or projects of developing countries are explicitly introduced.

Usually, contract terms of bank loans concern to loan rates and collaterals. The latter belongs to debtor if interests and principals are repayed, and belongs to lender if not repayed. Therefore, larger collaterals push the debtor to try harder for success of his project. If the collaterals are not enough, debtor may consume funds lent. Besides this type of incentive effect of collaterals, there is another type of incentive problems of collaterals related to asymmetric information. As we explain it

in detail later, collaterals also play a role to overcome moral hazard of incentive to misrepresent.

When banks and firms have the same information about probability of success of firms' projects, loan rates will be lower for projects with higher probability of success. Therefore, if the same contract conditions are used in the case of firms have more information than banks, risky firms will have an incentive to misrepresent the probability to ask for lower loan rates. When excess supply of bank credits is large, a bank would lend to lower quality (lower probability of success) firms, and the incentive of misrepresent will increase possibilities of default, as a result. In the case of excess demand for bank credits, banks may spend money for collecting information about firms and still can set high enough loan rates. However, if the cost of collecting the information is high, it will be difficult to get rid of an incentive to misrepresent.

Although existence of enough collateral is useful for the incentive not to consume projects, an appropriate combination of collaterals and loan rates is necessary for the incentive not to misrepresent. The model in this section focuses only on the incentive problem of the latter and we assume that quality of firms or projects, which is expressed by q , is informationally asymmetric. A firm has perfect information for his own q , but banks do have only a probability distribution of q .

The q of a firm is not an only factor of uncertainty for banks. Economic environments of the project in future also affect the probability of success of the project. Some project would be succeeded just because of good macro economic conditions, and some would be failed because of stagnations. Of course micro economic conditions in future are also important factors for success. It is true that subjective expectations for economic environment in future might be different between agents, but to focus on the asymmetry of q , we assume the same probability distribution for the future economic environment.

Now, bank loans for developing countries are usually used for long term projects for economic development. Because of this time horizon, uncertainty of economic environment at the time of the end of project is very large. Therefore some projects are started for the time being and the decision to continue or not is postponed to the intermediate time, when the economic environment become certain. In the following model, we take the case of a long term contract, which include two periods, from present to the intermediate, and from the intermediate to the end.

The explicit behaviors of economic agents are assumed as follows. A firm invests one unit of bank credit for the first of two periods of a long term project. At the beginning of the second period, the firm applies for additional one unit of bank credit to complete the project. A revenue of success of the project after two periods

is X , and a part of which is used for repaying of interests and principals. Here we assume the same X is expected by banks and firms. In the case of failure of the project, we assume, a firm loses only a collateral or a equivalence. There are many possible types of the equivalence, but here we only consider one type of guaranty money or insurance, which is submitted to international organization and is not refunded to a firm but is paid to a bank in the case of default or repudiation. This means that we neglect the incentive not to consume projects because of a collateral, in this paper.

At the beginning of the first period, an international commercial bank shows a schedule of loan rates and guaranty money to firms, depending on reported q by firms, and bank loans are made if they are agreed. At the beginning of the second period, an additional loan of one unit is made depending on the outcome of economic environment and quality q . This decision of an additional fund depends on the gain in the case to continue the project and on the remained value in the case to stop the project.

To make explicit the conditions of this decision, we assume the following probability structure for success. That is, an environmental uncertainty exist only for the first period and there are two outcomes, good and bad. The probability of a good condition is p and the one of a bad condition is $(1 - p)$. A probability of success depends not only on p but q , a quality of a firm. Higher q means higher probability of success of the same project and we assume the probability of success in good condition is aq , therefore the one of failure is $(1 - aq)$. In the bad condition, a probability of success is bq and the one of failure is $(1 - bq)$, where $a > b > 0$.

When a project is succeeded, the lending bank will get interests and principals of its loans for two periods. One unit of the first period's fund becomes I after two periods and additional one unit becomes r at the end of second period. If the project fails, inspite of the additional loan, the bank can get guaranty money from the international organization. As assuming no uncertainty of economic environment in the second period, the loan rate for the additional fund is risk free rate $(r - 1)$. We also assume the international organization makes use of money of guaranty at the same rate. Now, we can find explicit conditions for the decision of additional funds. In the bad outcome, a present value of bank's net revenue, R_s , is

$$R_s = bq(I + r)/r^2 + (1 - bq)K - (1 + 1/r)$$

, when additional loans are made and where r is also a discount rate. In the case of the project is stopped, present value of bank revenue (remaining value) is c and net revenue R_f is

$$R_f = c - 1.$$

Therefore, if $R_s > R_f$ then the additional fund is lent and this condition is

$$q > (1/r + c - K)/b \{ (I + r)/r^2 - K \} \equiv \tilde{q}$$

, explicitly using q . That is, for the firms of $q \leq \tilde{q}$, additional fund is not lent in the bad outcome of economic environment. Of course, in the good outcome, additional funds are always lent.

3. Optimal Conditions for Bank Loans

We are now in the position to derive an optimal schedule of bank loan contracts. That is, the conditions of a bank loan is accepted and of loan rates and guranty money are determined, at the begining of the first period. The conditions depend on reported q of the firm and constraints of incentive compatibility of truth telling.

For analytical purposes, firms are devided into two groups, one is the firms of $q > \tilde{q}$ which could get additional fund in all outcomes of economic environment, and the other is those of $q \leq \tilde{q}$ which cannot get the fund in a bad outcome. To each group, we can develop similar arguments and thus we will mainly concern to the firms of $q > \tilde{q}$. The firms of $q \leq \tilde{q}$ will be treated in the simplest way.

The firm of $q > \tilde{q}$, getting credits, expects a revenue of project after success, and the present value the net revenue is V , which is

$$(1) \quad V = \{paq + (1-p)bq\} (X-r-I)/r^2 - K.$$

V of a firm of $q \leq \tilde{q}$ is

$$(1)' \quad V = paq (X-r-I)/r^2 - K.$$

On the other hand, we assume that banks give credit in competitive credit market and that banks are risk neutral. Therefore, expected profits of banks are zero in equilibrium, and the following relations should hold for bank loans,

$$(2) \quad \{paq + (1-p)bq\} (I+r)/r^2 + \{p(1-aq) + (1-p)(1-bq)\} K = 1 + 1/r.$$

The first term of the left hand side of (2) is a discounted bank revenue when a firm succeeds in the project and the second term is a discounted revenue of guranty money when the project fails. The right hand side is a discounted value of bank loans. The Similar relations hold for a firm of $q \leq \tilde{q}$,

$$(2)' \quad paq (I+r)/r^2 + p(1-aq) K + (1-p)c = 1.$$

It is also uncertain for credit applicants whether they can get bank credits or not. A probability of acceptance z will depend on reported q by the applicants, and expected net revenue u is

$$(3) \quad u = zV.$$

As already mentioned above, a decision of acceptance and conditions of loan (I and K) depend on reported q by firms. If a firm can misrepresent q and report

as q' , incentive compatibility condition of truth telling can be expressed as

$$u(q'; q) < u(q; q),$$

, where the first argument in u is a reported quality of a firm and the second argument is its true quality. If this condition is satisfied, a firm does not have incentive to misrepresent for q , because expected net revenue is larger in the case of reporting truth for its quality. We can rewrite this incentive compatibility condition with a local representation as follows. For a firm of $q > \tilde{q}$

$$(4) \quad u'(q) = z(q) \{pa + (1-p)b\} \{X-r-I(q)\}/r^2$$

$$(5) \quad u''(q) > 0$$

, where $u' = \partial u / \partial q$ and $u'' = \partial u' / \partial q$. Similar conditions for a firm of $q \leq \tilde{q}$ are

$$(4)' \quad u'(q) = z(q)pa \{X-r-I(q)\}/r^2$$

and (5).

A bank can choose a combination of I and K of zero expected profit and expected profit of a firm, in turn, depends on the combination of I and K . Therefore competition among banks push them to offer the combination of I and K which maximizes expected profit of firms. That is, a bank offer the conditions of

$$(7) \quad \max \int u(q) dF(q)$$

, where $F(q)$ is accumulated density of $f(q)$. It is assumed that banks know function of $f(q)$ but do not know the value q of each firm.

We can formalize optimal loan conditions as those of (7) with constraints of (1) ~ (5) for $q > \tilde{q}$ ((1)' (2)' (3)(4)' (5) for $q \leq \tilde{q}$). From (1) ~ (4), we can get the following relations of u , for a firm q , $q > \tilde{q}$, without using K and I . That is

$$(6)' \quad u' = -\{1-paq-(1-p)bq\}u/\{pa+(1-p)b\}q^2 \\ + zX/qr^2 - z(1+1/r)/\{pa+(1-p)b\}q^2 \equiv \nu.$$

Therefore, the above optimization problem can be reduced to (7) under (6), with condition (5).

The Hamiltonian H of this problem is

$$H = fu + \lambda \nu$$

, when state variable is u and λ is the costate variable. The necessary condition (which are also sufficient in this case) are

$$(9) \quad -\lambda' = \partial H / \partial u = f - \lambda \{1-paq-(1-p)bq\}/\{pa+(1-p)b\}q^2$$

$$(10) \quad \partial H / \partial z = \lambda [X/r^2 q - (1+1/r)/\{pa+(1-p)b\}q^2] \equiv 0$$

and (6). From these relations, we can get optimal solution for λ , z , u . As λ is positive, $z=1$ and bank credits are accepted for a firm of

$$(11) \quad q > (1+1/r)r^2 / \{pa+(1-p)b\}X \equiv \underline{q}$$

, but $z=0$ and no bank credits are accepted for a firm of $q \leq \underline{q}$. The solution of u can get from (6) with $z=1$, but an arbitrary constant (initial condition) will be explained later. For the firm of $q \leq \tilde{q}$, the relation corresponding to (6) is

$$(6)' \quad u' = -p(1-aq)u/(1-p+paq)q + zpaX/(1-p+paq)r^2 \\ - z\{1-(1-p)c\}/(1-p+paq)q \equiv \nu$$

and necessary conditions of maximization are

$$(9)' \quad -\lambda' = \partial H/\partial u = f-\lambda p(1-aq)/(1-p+paq)q$$

$$(10)' \quad \partial H/\partial Z = [paX/(1-p+paq)r^2 - \{1-(1-p)c\}/(1-p+paq)q] \equiv 0$$

and (6)'. The condition of bank credits are accepted is

$$(11)' \quad q > \{1-(1-p)c\}r^2/paX \equiv \underline{q}$$

and a firm of $q \leq \underline{q}$ can not get bank loans.

4. Loan Interest Rate and Guaranty Money

Using the solution of u , the solution of K for the firms of $q > \tilde{q}$ and $z=1$ can be get from the following relations

$$(12) \quad u = \{paq+(1-p)bq\}X/r^2 - \{paq+(1-p)bq\}K-1/r$$

, which is derived from (2) for the given solution of K . This is similar for the firm of $q \leq \tilde{q}$ and we get

$$(12)' \quad u = paqX/r^2 - (1-p+pbq)K + (1-p)c-1$$

, which determines K for given u . "I" can be get from (2) or (2)'. In this way, a bank can derive optimal z , I , K schedules for reported q . A firm report q , looking at these schedules, and conditions for bank loan contract are determined.

Here we briefly sketch a behaviour of contract for a bank. For a good project, which the firm of $q \leq \tilde{q}$ could use a bank loan, the firm of $q > \tilde{q}$ can get bank credits and additional loans, regardless of outcome of economic environment. The bank determine I and K , using optimal schedules for $q > \tilde{q}$. For the firm reporting $q \leq \tilde{q}$, a bank will accept credit only for the firm of $q > \underline{q}$ with a condition to stop additional loan in case of a bad outcome. The bank determine I and K , using optimal schedule for $q \leq \tilde{q}$. For a bad project, which the firms of $q \leq \tilde{q}$ cannot

get bank loans, only some of the firms of $q > \tilde{q}$, that is $q > \underline{q}$, could get loans. I and K are determined using optimal schedules for $q > \tilde{q}$, and in the case of a bad outcome, the bank may not admit additional loans.

So far, the incentive compatibility condition (5) of $u'' > 0$ is not used explicitly. We investigate the relation of the condition to the optimal schedules of I and K . This clear the properties of I and K schedules. First we take the case of $q > \tilde{q}$. Putting $z=1$ in equation (4), and differentiate it with respect to q , we get

$$(13) \quad u'' = -\{pa+(1-p)b\} I'/r^2$$

where $I' = \partial I / \partial q$. The condition of $u' > 0$ implies $I' < 0$, that is, a loan rate should be lower for a better quality firm.

Next putting $z=1$ in equation (6), and differentiating it with respect to q , we get

$$(14) \quad \{1-paq-(1-p)bq\} \{pa+(1-p)b\} q^2 u'' = \{pa+(1-p)b\} \{X/r^2 - (1-1/r)\} - u'.$$

Therefore, the condition of $u'' > 0$ implies

$$(15) \quad \{pa+(1-p)b\} (X/r^2 - 1-1/r) > u'.$$

Differentiating (12) with respect to q , we get the following relations

$$(16) \quad u' = \{pa+(1-p)b\} X/r^2 - \{pa+(1-p)b\} K - \{pa+(1-p)b\} qK'$$

, where $K' = \partial K / \partial q$. Using equations (2) and (4), this can be rewritten as

$$u' - \{pa+(1-p)b\} (X/r^2 - 1-1/r) = -\{pa+(1-p)b\} \{p(1-aq)+(1-p)(1-bq)\} qK'.$$

From the relation (15), the left hand side of this equation is negative and thus K' must be positive. This is, $K' > 0$, and guaranty money should be higher for a good quality firm. As $I' < 0$, this is reasonable, because if $K' < 0$ every firm misrepresents and reports the highest q . Differentiating (16) with respect to q , we get

$$(17) \quad u'' + 2 \{pa+(1-p)b\} K' = -\{pa+(1-p)b\} qK''$$

where, $K'' = \partial K' / \partial q$. As $u'' > 0$ and $K' > 0$, it is implied $K'' < 0$ from equation (17). That is, a rate of increase of K becomes smaller as q increases. About $I'' (= \partial I' / \partial q)$ we get the relation as follows,

$$(18) \quad 2 \{pa+(1-p)b\} (I'/r^2 - K') + \{p(1-ap) + (1-p)(1-bq)\} K'' \\ = -\{pa+(1-p)b\} qI''.$$

This implies $I'' > 0$, because of $I' < 0$, $K' > 0$, and $K'' < 0$. This is reasonable again, because, if a rate of decrease of I is more than proportional, then a firm might misrepresent higher q for lower loan rates. Therefore, a decrease of I must be less than proportional. We now find that incentive compatibility conditions imply not only $I' < 0$, $K' > 0$, but also $I'' > 0$, $K'' < 0$.

Formally similar analyses can be applied for the case of $q \leq \tilde{q}$. Putting $z=1$ in (6)' and differentiating it with respect to q , the condition of $u'' > 0$ becomes as follows,

$$(15)' \quad paX/r^2 - a\{1-(1-p)c\} > u'.$$

putting $z=1$ in (14)' and differentiating it with respect to q , we get

$$(13)' \quad u'' = -pa I'/r^2$$

and thus, $u'' > 0$ implies $I' < 0$. Differentiating (12)' with respect to q , and using (2)' and (4)', we get

$$u' - paX/r^2 - a\{1-(1-p)c\} = -(1-p+paq)(1-aq)K',$$

and (15)' implies $K' > 0$. Twice differentiation of (12)' gives us

$$(17)' \quad u'' + 2paK' = -(1-p+paq)K''$$

and this implies $K'' < 0$, because $U'' > 0$ and $K' > 0$.

Twice differentiation of (2)' with respect to q gives us

$$(18)' \quad 2pa(I'/r^2 - K') + p(1-aq)K'' = -paq I''/r^2$$

and thus, $I'' > 0$.

Besides these properties of the I and K schedules, we must decide the exact levels of I and K with respect to q . This is the determination of an arbitrary constant (or initial condition) of optimal solution of u , as mentioned. That is, once the arbitrary constant is fixed, the optimal u function is determined, and thus the I and K functions are determined. Now, as the guaranty money K is necessary only for incentive compatibility conditions, a firm prefer to minimize K if possible, however a bank does not care about a level of K , so long as K works as incentive mechanism. Therefore, $K' > 0$ means K is zero for $q = \underline{q}$, where $\underline{q}$ is minimum q of getting bank credits, for $q > \tilde{q}$ and a bad project. The value of u of $K=0$ and $q = \underline{q}$ is determined by equation (12) and thus arbitrary constant for u is determined.

For a good project, where some firms of $q \leq \tilde{q}$ could use bank credits, K is set zero at $q = \underline{q}$. In this case, the arbitrary constant is determined by (12)' with $K=0$, and $q = \underline{q}$. For the continuity of K schedule, we can set K for $q > \tilde{q}$ and q close to $\tilde{q}$, at the value of $K(\tilde{q})$ of K schedule for $q \leq \tilde{q}$. Thus, we can get one continuous function of K for all q . Once K schedule is determined, the corresponding I schedule can be determined.

5. Some Remarks and Extensions

From the above optimizing analysis for bank loans to developing countries, we can point out the following two. One is, a collateral or some equivalence (guaranty money or insurance in our case) is necessary to cope with incentive compatibility of misrepresent the quality, in which credit applicants have advantage. Sovereign guaranty is not enough for an incentive problem when there exist political risks for the government. In this paper, following the idea of deposit insurance fee of banking system, we have used guaranty money, which is maintained in an international organization. A bank could get guaranteed money when the firm's project failes. We could use a collateral if possible, but the collateral should be perfectly controlled by the lending banks.

The other is a lending procedure to cope with environmental uncertainty of long term projects. A condition to stop projects should be included in contracts, depending on outcome of economic environment. Otherwise, a possibility of bank loans is limited only for higher quality firms, and lower quality firms cannot use bank credits. However, some lower quality firms can use bank credits if the loan contract include the case to stop projects when the outcome of economic environment is bad. It is true in many cases, that the costs to stop projects in a middle are not low, but costs to continue the projects in bad environment would be much higher. This is important for the bank loans to developing countries, where firms do not have enough ability to adjust for environmental changes.

In our model, it is assumed that all agents have a same probability for future economic environment. However in practice, this is not true especially for long term expectations. Even after the time point of the outcome, the judgement may differ among agents. This make bank loan contract difficult, especially including conditionality of stopping project. Furthermore, if we introduce an uncertainty of a revenue X , a problem of how to evaluate X would produces another difficulty of contracts, between banks and firms. Uncertainty makes it difficult to agree between them, especially if agent are risk averse. We have negrected these problems in above model.

We can discuss some possible roles of international organization, once we introduce risk averse banks and different expectations among agents. The organization can collect data for analyzing and forecasting firm's projects and economic environments, and can open some information, which can be used for bank loan contracts. Even an evaluation of projects, the organization could help to negotiate between banks and firms, with its own data and information. Information has a property of public goods, and information by the international organization might give benefits to economy as a whole. More active and useful roles of a international organization might be loans by

the organization to developing countries. These loans are complement of commercial bank loans. If commercial banks are risk averse then they will ask higher loan rate and larger guaranty money. This is a rational behaviour but if the risk aversion is excessive, economic efficiency as a whole is decreased. The project of a firm, which can use bank loans in the risk neutral case, may not be put into practice if banks are risk averse. Especially in the case of a bad outcome of economic environments, banks might become very pessimistic and thus even a good project might be stopped. In this case, it is better to pool risks and one possible way to cope with this is a use of funds of an international organization. Those projects, which are stopped because of risk aversion of commercial banks, could continue with loan assistance of a international organization. If the available funds of the organization are limited, assistance of only the risk premium is enough in practice. Of course it is not necessary to assist the projects which risk neutral banks stop loans. This role of the organization also can be extended for the initial bank credit.

In general, there are two types of difficulties for firms to repay their debts, one is a liquidity shortage and the other is a default. The illiquidity problem because of risk averse behaviours of commercial banks should be sloved, for instance, using risk neutral international organization. If the organization intervene the project, a confidence of banks about the project will increase and cooperative loans of banks and the organization might increase. However it is not necessary to assist the projects with high default risk. If these projects are necessary in some reasons, we should search for other funds than bank credits.

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JAPAN'S TRADE DIPLOMACY: YESTERDAY, TODAY, TOMORROW

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Japan's Trade Diplomacy: Yesterday, Today, Tomorrow¹⁾

The establishment of a liberal multilateral trading system in the postwar period presented opportunities for rapid economic growth for Japan, and for other countries in East Asia and the Pacific, including Australia. The strength of the American economy and American political leadership ensured, for almost a generation, economic and trade growth that provided the substantial underpinning for the Western economic and security alliance.²⁾ The success of the liberal international economic system, the rise of Japan and Europe as major centres of economic power and its converse, the declining relative importance of North America in the world economy, bring new challenges to international trade and economic diplomacy.

These challenges focus heavily upon Japan.

Challenge for Japan's Trade Diplomacy

While the United States remains the dominant global and strategic power, the relative decline of its economic power, and its own growing vulnerability to a more inter-linked international system, have meant an erosion of its 'rule making' authority and capacity in the international economy and a period of rivalry and confusion among

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- 1) This paper was prepared while I was visiting professor at the Research Institute for Economics and Business Administration, Kobe University, and it was completed at the Australia-Japan Research Centre, Australian National University, Canberra. I am grateful to colleagues and staff at both institutions for comments on the ideas in the paper and support in its preparation and completion.
- 2) Peter Drysdale, *International Economic Pluralism: Economic Policy in East Asia and the Pacific*, Allen and Unwin, Sydney, and Columbia University Press, New York, 1988, Chapter 10.

its Western allies about sharing the responsibilities for management of the international economic system.³⁾

Japan is emerging as a new power with global reach. The world's second largest economy, the world's third largest trader, the world's largest capital exporter; Japan's role is pivotal in the restructuring of the regional and international economic system, as well as the political and strategic system of Asia and the Pacific.

But there are genuine questions about whether Japan is up to the task of trade and economic policy leadership and able to serve the role of protector and exemplar of a liberal and open international economic system.

These questions are motivated by two concerns. The first relates to the nature of the international economic system itself, in a stage of significant change in the structure of world economic power. The second relates to the nature of Japan, its society, polity, institutional foundations, and driving policy motivations.

This paper addresses the latter concern, albeit in the context of asking whether domestic processes would encourage or permit Japan to play an important role in protecting and developing the international economic system and how that role may realistically be played. Inevitably these questions prompt comment upon the same processes in the United States and their impact upon the international trade and economic system, not least because the conception of Japan's role in world economic affairs as being entirely alien to support for an open and liberal international economic system is currently deeply rooted in American political thinking.⁴⁾ That has to be explained; and I shall attempt to do so briefly. The respective roles of the United States and Japan also require comment. A specific interest, in the development of the argument, is how Japan has responded to the various proposals from the United States for free trade area solutions to trade policy problems, particularly to the proposal for a United States-Japan Free Trade Area.⁵⁾

Hegemonic Dominance ?

Before turning to these questions, has Japan's emergence as the world's second largest economic power, of its nature, been destabilising to the structure of the postwar

3) Peter Drysdale, Nancy Viviani, Ippei Yamazawa and Akio Watanabe, *The Australia-Japan Relationship: Towards the Year 2000*, Australia-Japan Research Centre, Canberra, and Japan Center for Economic Research, Tokyo, August 1989, para.3.

4) The most recent example of this thinking is exposed in James Fallows, 'Containing Japan', *The Atlantic Monthly*, May 1989, pp.40-54.

5) United States International Trade Commission, *Pros and Cons of Initiating Negotiations with Japan to Explore the Possibility of a U.S.-Japan Free Trade Area Agreement*, Investigation No. TA-332-255, USITC Pub. 20, 2120, Washington, September 1989.

international economic system?

Clearly, in one key respect, the answer is no. The decoupling of economic from military power has made Japan's re-integration into the international community in the postwar period much less threatening than would have otherwise been the case. As Inoguchi and Okimoto point out, "Japan's ... conversion from military power to commercial state has not only neutralised the danger of Japan's own military recrudescence; it has also contributed to the stabilisation of East Asia, a region of chronic instability from the nineteenth through to the mid twentieth century."⁶⁾

Now, let me dispatch the first concern: the question of hegemonic dominance as a requirement for system stability.

As the economic power of the United States has begun to wane, and that of Japan and Easy Asia has grown, much of the commentary on the transfer of the responsibilities of international economic leadership around the decline of America's hegemonic power has been cast in terms of their transfer from one dominant hegemon to another. Nowhere is this perspective more entrenched in thinking that it is in discussion of the changing status of the United States and Japan. This is not the place to enquire into the political or, indeed, the psychological wellsprings of this view of the transfer to hegemonic power, but rather to note simply the limitations of intellectual analysis along these lines.⁷⁾

Obviously adjustment to economic change brings with it dislocation, conflict and uncertainties, all of which have accompanied Japan's rapid rise as a world economic power. From the perspective of the international economic system, an automatic, but inadvertent, side-effect of Japan's rise has been the relative decline of American economic power and hegemonic status. Orthodox theories of hegemonic stability, in the literature of international relations, suggest that Japan's economic ascendance is inevitably altering the distribution of economic power in a way that destabilises the international system, weakening the ability of the United States to maintain rules and

6) Takashi Inoguchi and Daniel I. Okimoto, *The Political Economy of Japan: The Changing International Context*. Vol 2, Stanford University Press, Stanford, 1988, p.10.

7) Ole R. Holsti, Randolph M. Simpson, and Alexander L. George, (eds), *Changes in the International System*, Westview, Boulder, 1980; Robert O. Keohane, 'The Theory of Hegemonic Stability and Changes in International Economic Regimes; 1967-1977', in Holsti (eds), *Changes in the International System*; Robert O. Keohane, 'The Demand for International Regimes', *International Organization*, Vol. 36, No.2, 1982; Stephen D. Krasner, 'Structural Causes and Regime Consequences: Regimes as Intervening Variables', *International Organization*, Vol. 36, No. 2, 1982; Charles P. Kindleberger, 'Dominance and Leadership in the International Economy', *International Studies Quarterly*, Vol. 25, 1981; Charles P. Kindleberger, 'International Goods without International Government', *American Economic Review*, Vol. 71, No. 1, March 1986; and Drysdale, *International Pluralism*, Chapter 10.

policy behaviour consistent with open trade and capital flows and an orderly international monetary and financial system. In this view, a fundamental requirement for system stability is hegemonic dominance.

Suffice it to say that analysis which predicates system stability on the persistence of hegemonic dominance is built upon a very simple model. It neglects the complex relationship between economic power and the capacity to use it in determining policy outcomes;⁸⁾ it neglects the incentive to coalition or alliance formation among principal or minor economic powers to preserve critical interests in the system; and, paradoxically, it neglects the rich complication of economic matters by political and security matters in the development of approaches to system maintenance, or the regime, as an object of international policy.

This is not to say that hegemonic stability theorists may not, in the event, turn out to be right in their forecasts. They may; but if they are so, they will not be so because of the predictive power of orthodox theory. The point is that the emergence of Japan as a contending (or challenging) economic power implies nothing, in the nature of things, about system collapse. On the facts of this matter, the jury should still be out and concerned about more fundamental issues, to which I shall later turn.

Precept and Practice

Trade policy leadership responsibilities obviously represent a political as well as an economic burden for which the recompense is only very indirect. They involve the effort of addressing the tough political problems at home (associated in Japan with freeing up agricultural trade, reducing support for small scale manufacturing industry, and national procurement arrangements in the service sector)⁹⁾ and of building up the credibility in the international community necessary to make it manageable.¹⁰⁾

Certainly, in respect of this last point, Japan's trade diplomacy cannot be said yet to enjoy a good international press.¹¹⁾ This is partly a product of where Japan's trade policies have come from, both in terms of precept and practice, and partly a product of where the international press comes from. What is reflected in the public

8) Bruce Russett, 'U.S. Hegemony: Gone or Merely Diminished, and How Does It Matter?', in Inoguchi and Okimoto (eds), *Political Economy of Japan*, pp. 83-107.

9) Peter Drysdale, 'Japan as a Pacific and World Economic Power', *Australian Economic Papers*, Vol. 27, No. 51, December 1988, p. 166.

10) Russett, 'U.S. Hegemony', pp. 103-107.

11) Drysdale, 'Japan as a World Economic Power', p. 167.

press is also a prominent theme in the academic press, especially at its more popular end.¹²⁾

In the April issue of *Harvard Business Review*, Taggart Murphy¹³⁾ bluntly states a view widely held in the United States:

The world cannot confidently look to Japan as an impartial guarantor of an open trading system (p.143) ... more likely is that Japan will continue to use its financial strength to further Japanese interests, which are not necessarily the same as the world's — especially given Japan's seeming compulsion to dominate every important value-added industry. The uncoupling of financial power and global vision could lead to a series of political, economic and financial crises like the run on Continental (Bank) or the stock market crash of October 1987 (p.144) ... Japan is reluctant to import manufactured goods from abroad, but more important, its compensation patterns and wealth distribution make it difficult for the country to take over as an engine of global demand (p.146).

In the May issue of *The Atlantic Monthly*, James Fallows¹⁴⁾ concludes:

Unless Japan is contained, therefore, several things that matter to America will be jeopardised; America's own authority to carry out its foreign policy and advance its ideals, American citizens' future prospects within the world's most powerful business firms, and also the very system of free trade that America has helped to sustain since the Second World War. The major threat to the free trade system does not come from American protectionists. It comes from the example set by Japan. Japan and its acolytes, such as Taiwan and Korea, have demonstrated that in head-on industrial competition between free-trading societies and 'capitalist development states', the free traders will eventually lose. The drive to break up the world into trading blocs — united Europe, North America, East Asia — is largely fueled by other countries' desire to protect themselves against Japan. Even in their own inroads into the Japanese market, foreigners are tempted to settle for a small place in the *dango* ... rather than pulling for truly open competition in Japan. The ideal of free trade retreats, as the states that do (not) really believe in it expand (p.54).

These are hardly glowing testimonials for the pretender champion of the liberal international economic system!

A principal text, for these and other publicists and politicians in the United States and elsewhere, is Chalmers Johnson's, *MITI and the Japanese Miracle*.¹⁵⁾ More recently Karel van Wolferen's piece 'The Japan Problem' in *Foreign Affairs*¹⁶⁾ and his

12) For example, Chalmers Johnson, 'The Problem of Japan in an Era of Structural Change', *CEDA Conference*, Sydney, 25 May 1989, and see Ross Garnaut, 'Comment' for a fullsome critique.

13) R. Taggart Murphy, 'Power Without Purpose: The Crisis of Japan's Global Financial Dominance', *Harvard Business Review*, March-April 1989.

14) Fallows, 'Containing Japan'.

15) Chalmers Johnson, *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975*, Stanford University Press, Stanford, 1982.

16) Karel van Wolferen, 'The Japan Problem', *Foreign Affairs*, Vol. 65, No. 2, Winter, 1986/87, pp. 288-303.

book, *The Enigma of Japanese Power*,¹⁷⁾ have been embraced for their revelations about what van Wolferen himself unashamedly calls 'the Japanese System'.¹⁸⁾

Van Wolferen builds on Johnson's earlier analysis of the partnership between central bureaucrats and business in the 'interventionist' promotion of the 'development state'.¹⁹⁾ While Johnson would now concede that various forms of governmental guidance carry less weight with the private sector than once they did (the sub-title of his book is *The Growth of Industrial Policy, 1925-1975*), van Wolferen asserts that the partnership between state and private enterprise has an industrial policy and trade strategy which is directed towards 'industrial expansion not freedom of the market' (p.293) and that this flourishing partnership is not likely to break up.²⁰⁾

Another stream in thinking is reflected in Drucker's²¹⁾ notion that Japan engages in 'adversarial trade', characterised by targeted attacks on established industries abroad (especially in the high technology area) and dogged resistance to imports of high-value manufactured goods. This argument draws sustenance from theorising in the literature of international economics on the strategic trade policy implications of the presence of monopoly elements and economies of scale in international markets²²⁾ and is used to give credence to 'results-oriented, managed trade' policy over GATT-focused negotiations about trade and trade-related barriers and trade rules.²³⁾

The most disturbing manifestation of this is the approach to trade policy embodied in Section 301 (of the 1974 United States Trade Act).²⁴⁾ Now turned into Super 301,

17) Karel van Wolferen, *The Enigma of Japanese Power*, Macmillan, London, 1989.

18) van Wolferen, 'Japan Problem', p. 302.

19) *Ibid*, pp. 292-3.

20) *Ibid*, p. 293.

21) Peter F. Drucker, 'Japan's Choices' *Foreign Affairs*, Vol. 65, No. 5, Summer 1987, pp. 923-41.

22) Gene M. Grossman and J. David Richardson, 'Strategic Trade Policy: A Survey of Issues and Early Analysis', *Special Papers in International Economics*, No. 15, Princeton, April 1985, pp. 1-34 provides a review of the early literature in this stream.

23) Peter Passell, 'Economic Scene: Managed Trade or Open Trade?', *The New York Times*, April 5, 1989.

24) James D. Robinson and James K. Houghton, *Analysis of the U.S.-Japan Trade Problem*, Report of the Advisory Committee for Trade Policy and Negotiations, Washington, February 1989. The issue of Japan's behaviour in the import of manufactured goods has been traversed in the academic literature. Recent contributions include: Robert Z. Lawrence, 'Imports in Japan: Closed Markets or Minds?', *Brookings Papers on Economic Activity*, No. 2, 1987, pp. 517-54; Gary R. Saxonhouse and Robert M. Stern, 'An Analytical Survey of Formal and Informal Barriers to International Trade and Investment in the United States, Canada and Japan', University of Michigan Research Seminar in International Economics, Discussion Paper, No. 215, January 1988, forthcoming in Robert M. Stern (ed.), *U.S.-Canadian Trade and Investment Relations with Japan*, University of Chicago Press, 1988; and for a good review of the discussion, see Kenji Takeuchi, 'Does Japan Import Less Than It Should?', *Working Papers*, International Economics Development, The World Bank, July 1988. Gary B. Saxonhouse, 'Comparative Advantage, Structural Adaptation, and Japanese Performance', in Inoguchi and Okimoto, *Political Economy of Japan*, pp. 99 & 225-48, provides a thorough rebuttal of Lawrence's arguments.

under 1988 legislation, the Act requires the United States Special Trade Representative to designate by 30 May foreign countries whose 'unfair' trading practices make them candidates for unilaterally imposed retaliation. Numerical targets would be set, sector by sector, for the volume of American goods that foreign nations would be expected to buy. If they failed to reach that volume, the United States would retaliate.²⁵⁾ Although Trade Representative Hills declares she does not want to use her 'results-oriented, managed trade' powers,²⁶⁾ last month's report by James D. Robinson (American Express) and James R. Houghton (Corning Glass), co-chairmen of the United States Advisory Committee for Trade Policy and Negotiations, advocated import targeting and managed trade.²⁷⁾

Contrary to these perceptions, the reality is that Japan has the cleanest import system for manufactured goods among all OECD countries; official non-tariff barriers have almost no effect on trade at all. The relatively low proportion of manufactured goods in Japanese imports, and low import penetration ratios in manufactured commodities of which other developed countries are major exporters, have led protectionist interests in North America, Europe and Australasia, and sometimes officials and independent commentators in those same countries, to postulate a major role for non-official barriers, perhaps with official sanction.²⁸⁾ Of course, Japan still has an agricultural sector which is among the most highly protected in the world, and Japanese agricultural protection increased rapidly (around the quantitative restrictions on trade) over the last two decades when Japanese commercial policy ostensibly pointed towards liberalisation. In this respect, Japan is only a front-runner among the industrial country pack.

The evidence provided by careful studies of Japan's trade dependence and trade structure, such as those of Stern and Saxonhouse (1987)²⁹⁾ and Saxonhouse (1988),³⁰⁾ suggests that there is no significant difference between Japan's trade structure and those of other industrial countries, when account is taken of cross-national differences in factor endowments, including capital, labour and a variety of natural resources. The contention that Japanese institutions, or reliance on a variety of informal barriers (or the 'Japanese System'), significantly influence the structure of trade cannot be supported on this evidence, nor can 'a convincing case be made that Japan's

25) Passell, 'Managed Trade'.

26) *Ibid.*

27) Robinson and Houghton, *U.S.-Japan Trade Problem*.

28) Saxonhouse, 'Japanese Performance'.

29) Saxonhouse and Stern, 'Informal Barriers'.

30) Saxonhouse, 'Japanese Performance', p. 240.

trade and domestic policies are the root causes of the existing bilateral trade imbalances'.³¹⁾

In his most recent study, Saxonhouse undertakes the illuminating simulation of examining what might happen to Japanese and United States trade structure if the United States were to give Alaska to Japan.³²⁾ The peculiar lack of change in Japan's non-energy imports between the early 1970s and early 1980s vanishes and Japanese performance is virtually identical with the character of changes taking place in most European countries and in the United States. The ratio of manufactured goods imports to GNP for Japan rises above the United States ratio. He further assumes that East Asia (other than Japan) has the same economic size as Europe. The ratio of manufactured imports to Japanese GNP rises to 6.7 per cent, not significantly below European levels.³³⁾

As Saxonhouse suggests,³⁴⁾ for many Japanese citizens, foreign complaints about lack of access to the Japanese market over the past decade must be little short of totally incomprehensible. They can patronise McDonald's or Kentucky Fried Chicken even at remote stops around the country. They may work at a company that uses an IBM mainframe computer and on weekends may drink Scotch Whiskey or Coca-Cola, lounge in US designer jeans, and take their children to Tokyo Disneyland. In all these cases, domestic substitutes are available, but they will choose a foreign product or foreign-licensed product. If they are a bit younger, an excursion to get geared up at Vivre 21 in downtown Kyoto will produce an entirely Korean, Chinese or European designer-made ensemble. Of course, at the same time, on the basis of a foreign trip, they will grumble at the high price of beef and other foodstuffs in Japan.³⁵⁾

How does this Japan-side perception and the hard analytic evidence stack up against all the anecdotal evidence of street-wise American journalists, businessmen and politicians?

As Saxonhouse³⁶⁾ acknowledges, the best-known and most influential anecdote is that told by Lionel Olmer, former United States under-secretary of commerce for international trade. While employed by Motorola, Olmer attempted to sell high-quality, inexpensive pager phones to Nihon Telephone and Telegraphic (NTT). Despite offering a phone that was qualitatively identical to that supplied by NTT's affiliate NEC, at a very competitive price, it took years for Olmer's company to conclude a sale.

31) Saxonhouse and Stern, 'Informal Barriers'.

32) Saxonhouse, 'Japanese Performance', p. 240.

33) *Ibid*, p. 241.

34) *Ibid*, p. 233.

35) *Idem*.

36) *Ibid*, pp. 233-4.

This, Saxonhouse concedes, is a good story. There are others in Prestowitz's book *Trading Places*³⁷⁾. But it is not a uniquely Japanese phenomenon.³⁸⁾ It similarly took many years for German and Japanese steel producers to sell their cheaper steel to General Motors in the United States. As Cooper's study of North American metals markets in the 1970s shows, the lagged response to relative price change is widespread.³⁹⁾

It is true that Japanese corporate and distribution systems contain powerful conservative bias, delaying the emergence of large scale imports beyond the time when they appear to have become competitive. Such biases are not unique in Japan.⁴⁰⁾ Moreover, the evidence since the appreciation of the yen in 1985 suggests that, despite the lags, the normal competitive pressures operate for Japan. Japan's imports of manufactured goods from Asian developing countries have been increasing at more than 50 per cent per annum since 1985. The share of manufactures in Japanese total imports has also been increasing rapidly over this period, although not so strongly from the United States.⁴¹⁾

The moral of this story is, perhaps, that if you spend too much time reading dated scholarly tracts and writing books, you end up in Ripp van Wolferen-Land!

But what has produced this perception gap between the United States, other countries and Japan and where is it leading?

United States-Japan Problem

Heightened tension in the management of the United States and Japan relationship in the first half of the 1980s resulted mainly from the impact of macroeconomic policies in both countries and the lack of effective macroeconomic policy coordination. This was a recurrent problem from the late 1960s but extreme imbalance, focused on rising United States current account deficits and Japanese surpluses, emerged very rapidly between 1980 and 1985. An American current account surplus of US\$6 billion in 1981 had been transformed into a deficit of US\$141 billion by 1986, a deficit amounting to

37) Clyde V. Prestowitz, *Trading Places: How We Allowed Japan to Take the Lead*, Boni Books, New York, 1988.

38) Saxonhouse, 'Japanese Performance', p.234.

39) Richard N. Cooper, 'Natural Resources and National Security', *Resources Policy*, Vol. 1, No. 4, June 1975.

40) Peter Drysdale and Ross Garnaut, 'A Pacific Free Trade Area?', Paper for Institute of International Economics Conference on 'More Free Trade Areas?', Washington, 31 October-1 November 1988, p. 16.

41) Drysdale, 'Japan as a World Economic Power', p. 170.

3.3 per cent of American GNP. A Japanese current account surplus of US\$4 billion in 1981 had grown to US\$86 billion in 1986, running at 4.2 per cent of Japanese GNP.⁴²⁾ The dramatic turnaround in international payments coincided with Japan's arrival at great economic power status.

While the basic causes of each country's problem were separate and domestic, Japan's current account surplus became a symbol to many Americans of the foreign source of America's trade imbalance problem. Japan's surplus and the American deficit were not significantly a consequence of either Japan's 'closed economy' (as many American commentators insisted) or America's 'lack of competitiveness' (a popular view in Japan). They were mainly the products of extremely high savings and low government spending in Japan and high government expenditure and a strong dollar in the United States in the first half of the 1980s. The sharp contraction of Japanese government expenditure in the early 1980s and capital market liberalisation saw Japan emerge as the world's largest capital exporter, and coincidentally, a primary funder of America's high expenditure (and dissaving) in the first half of this decade. Japanese capital market liberalisation provided the avenue for Japan to finance the growth of American debt.⁴³⁾ As the range of American financial and other assets acquired by Japanese institutions, corporations and individuals has broadened, American anxieties about Japan's economic power have multiplied.

Liberalisation of Japan's trade barriers is an important objective in itself (for Japan and now for the health of the liberal trading system), but it would have made little difference to Japan's bilateral surplus on current account with the United States at this time if all Japan's trade barriers had been removed immediately. During the period of rising current account surpluses, Japan's protection was falling. Elimination of Japan's trade barriers would have led, it has been estimated, to a US\$5-8 billion expansion of American exports at most.⁴⁴⁾ The main adjustments for both Japan and the United States had therefore to be on the macroeconomic front, and these adjustments, set in train rather belatedly after the Plaza Agreement of September 1985, forced the pace through the large exchange rate shift. The macroeconomic adjustment in the United States still has a long way to go. Furthermore, the adjustment in Japan will not eliminate Japan's current account surpluses. The

42) Ibid, p. 163; Hugh T. Patrick, 'The Management of the United States-Japan Trade Relationship and Its Implications for Pacific Basin Economies', Background Paper for Project on the Impact of Japan-U.S. Relations on Other Pacific Basin Nations, U.S. National Committee for Pacific Economic Cooperation, 1987.

43) Drysdale, *International Pluralism*, Chapter 7.

44) Fred C. Bergsten and William C. Cline, *The United States-Japan Problem*, Institute for International Economics, Washington, January 1987.

circumstance of large Japanese savings (current account surpluses and capital outflow) will persist for at least a decade or more. Hence, while the direction of adjustment in the structure of trans-Pacific payments imbalances should relieve some of the pressures, considerable dangers remain along the path of adjustment.

Elsewhere⁴⁵⁾ I have suggested that the main danger arises because both countries are diverted into attempts to resolve their global trade imbalances by action directed at each other (both negative and positive action: specific restrictions or surcharges and bilateral market access arrangements). In the conduct of the United States-Japan relationship, specific trade issues come to dominate the policy approach. Resolving these issues one by one has the cumulative effect of aggravating American perceptions of Japanese intransigence and unreasonableness and Japanese perception of American scape-goating. The pattern involves Japanese procrastination on specific issues. American pressure (*gaiatsu*), mobilisation of American pressure to shift positions in Japan,⁴⁶⁾ heightened American frustration, politicisation of the problem in America, and the lesson that Japan will respond if hit hard.

A related and important danger, for Japan's other trading partners, is that Japan-targeting by the United States and the American obsession in Japan leads both parties into negotiating bilateral deals damaging to third parties as well as the whole trading system.

Bigemonic Solution

The idea, with which former United States Ambassador to Japan, Mike Mansfield, has been associated, of a United States-Japan free trade area, is in part directed at providing a safety valve to head off the continuing pressures in the United States-Japan relationship.⁴⁷⁾ It also falls, however, within a class of proposals which the United States floated in the lead-up to launching the new GATT Round, when the United States shifted towards a trade diplomacy based on the conditional *most-favoured-nation* approach, seeking 'free trade area solutions' to its trade policy problems. The agreement with Israel and the negotiation of a free trade arrangement with Canada were important targets in this policy approach (as well as the much-heralded Caribbean free trade arrangement). There were also suggestions at this time for some sort of 'free trade area' association between the United States and Western Pacific countries (ASEAN, Australia and others).⁴⁸⁾ On the face of it, it seems

45) Drysdale, 'Japan as a World Economic Power'.

46) Drysdale, *International Pluralism*, Chapter 7; Kent E. Calder, 'Japanese Foreign Economic Policy Formation: Explaining the Reactive State', *World Politics*, Vol. XL, No. 4, July 1988, pp. 517-41.

47) U.S. Trade Commission, *Negotiations with Japan*, Submission from Mike Mansfield, pp. A2-A4.

48) Drysdale and Garnaut, 'Pacific Free Trade Area?', pp.33-47.

that not all these United States suggestions were aimed at setting up 'free trade areas' as such; rather they were aimed at establishing a dealing mechanism between the United States and certain Western Pacific countries, separately from or together with Japan.

Similarly, Mansfield declares that his proposal has as a primary interest giving impetus to a successful GATT Round.⁴⁹⁾ Its major motivation, however, is bilateral and political; stemming from '... the belief that the (United States) should switch from approaches which politicize trade issues, exacerbate friction, raise emotional stakes, erode public support (in Japan) for American objectives and risk undermining both countries' commitment to the alliance.⁵⁰⁾

While Mansfield's conception of a United States-Japan agreement is potentially consistent with the nature of a joint commitment by both economic powers to the establishment of a core area for free trade and global policy interests, exploration of the idea explicitly involves consideration of the effects of exclusion on third parties in Asia and Europe,⁵¹⁾ and the American politics of the idea make little sense except in terms of Japan's yielding specific concessions to the United States. Significantly, Mansfield's bold attempt to capture the American protectionists for the free trade cause through his 'free trade area' proposal engaged the early support of Senators Gephardt, Baucus and Byrd, as well as the interest and attention of Brzezinski and Kissinger.

Mansfield's objectives may be laudable, but the limitations of his proposal in dealing with the trade and other dimensions of tensions in the United States-Japan relationship are serious. While large gains would certainly flow from genuine and comprehensive freeing of trade and service transactions – including removal of pervasive Voluntary Export Restrictions (VER) in the United States and service trade barriers in Japan – between the world's two largest economies, the chances of negotiating such an exchange of concessions on a non-exclusive (or most-favoured-nation) basis, so that the benefits would be open to all third parties, are minimal. This is readily acknowledged in the United States International Trade Commission's review of the proposal.⁵²⁾ Moreover, the likelihood of an exclusive traditional-style free trade arrangement's being subject to important exemptions, thus limiting gains to Japan, the United States and the world, is extremely high.

The reality of free trade areas and customs unions in practice is that exceptions are important to the politics of their establishment, especially in the critical early years.

49) U.S. Trade Commission, *Negotiations with Japan*, Mansfield Submission, p. A2.

50) *Ibid*, p. A2.

51) *Ibid*, p. A4 and passim.

52) *Ibid*.

Where they have not been, the establishment of the free trade area has been associated with increased barriers to trade with the rest of the world.⁵³⁾ This outcome is driven by an important asymmetry in the political economy of protection policy, between the highly focused opposition to trade creation by established interests in protected industries, together with the highly focused support of established interests in trade diversion, on the one hand, and the diffuse beneficiaries from trade creation on the other.⁵⁴⁾

One would be blind to the realities of the political economy of protection to ignore the likelihood that, in a United States-Japan free trade area, the process of negotiation and compromise would favour trade diversion over trade creation. It is precisely such realities that invest in the proposal its political appeal in the United States.

Yet, as many who gave evidence to the International Trade Commission investigation in the United States saw clearly, there would also be no guarantee of its relieving tension in the politics of managing the bilateral relationship.⁵⁵⁾ Rather, such an initiative is likely to generate false expectations in America, raising the political stakes in the Japan relationship and compelling negotiators to reach a deal in neither the United States' nor anybody else's best interest.⁵⁶⁾ Nor would it eliminate the need to resort to pressure tactics, since it is impossible, in any polity, to resolve thorny trade issues, such as agriculture and construction in the case of Japan, without raising them to the highest political levels.⁵⁷⁾

The policy approaches adopted here are of systemic importance because the most important game-play in international trade diplomacy revolves around the management of the economic relationship between the United States and Japan. This is the most important relationship in the Pacific economy and among the most important in the world.

Their policy approaches are crucial as they are the maintainers or underminers of the GATT-based open international trading system, because of the impact of the resolution of their trade policy problems upon the rules of the trading system and upon trade policy behaviour more broadly.

Certainly Japan's role in trade liberalisation and the negotiation of international settlements on other commercial policy, exchange rate and macroeconomic policy issues is a central element in international economic diplomacy, but it will only be supportive

53) Drysdale and Garnaut, 'Pacific Free Trade Area?' p. 41.

54) *Idem*, p. 41.

55) U.S. Trade Commission, *Negotiations with Japan*, pp. 20-7.

56) *Ibid*, pp. v-vi.

57) *Ibid*, p. v.

of broader Pacific and global objectives if it finally eschews the 'specific reciprocity' implied in the United States-Japan free trade area proposal and does not neglect third country interests. Japan's interests are broader. The importance of the East Asian and Western Pacific relationship, the growing significance of the relationship with Europe, the delicate development of interdependence with China, the emergence of the Soviet bloc and the opportunity for the emergence of Vietnam and the DPRK from their past isolation are only some of the factors which extend Japan's 'third country' interests and commitments to the multilateral trade and economic system.

It is instructive to observe how the Japanese policy process dealt with the United States-Japan free trade area proposal.

The first result was a massive diversion of policy resources into consideration of the Mansfield-Byrd idea. The Ministry of International Trade and Industry (MITI), the Ministry of Foreign Affairs (MOFA), the Economic Planning Agency (EPA), and the Ministry of Finance (MOF) all set up task forces or study groups to evaluate the initiative.⁵⁸⁾ Much policy energy, not only in Japan but throughout the East Asian and Pacific region, was engaged in the assessment of Japan's policy interests. Because of inter-agency jurisdictional interests, much of this effort was duplicative; its external effect was confusing in policy direction and draining of policy resources right around the region.

Nevertheless, Japan's fundamental interest in a GATT-based, non-discriminatory approach to trade diplomacy emerged clearly and relatively soon, in response to the expression of third country concerns and, for example, the Hawke-Takeshita initiative in establishing a joint study group of Japanese and Australian officials to review this and other policy proposals. It was also clear in the steady institutional and substantial commitment of the Ministry of Foreign Affairs to multilateralist perspectives. Initially, MITI's stance was less certain, but the rhetoric soon shifted towards commitment to multilateral interests and 'open regionalism', albeit with a particular emphasis on East Asian newly industrialising economies' and ASEAN's trade and investment relationships with Japan as a counterpoint to North American influence.⁵⁹⁾

Two other elements deserve note. Keidanren (the Federation of Economic Organisations) made clear its priority in putting more effort into making the Uruguay

58) *Ibid*, p. A-Z; a review of the issues in the United States-Japan free trade area proposal from a Japanese perspective is contained in *Boeki to Kanzei*, [Trade and Tariffs], Vol. 37, No. 1, Japan Tariff Association, Tokyo, January 1989, in the following articles: Masamitsu Muto, 'Nichibei Jiyu Boeki Kyotei Chukanhokoku no Gaiyo', [The Summary of the Interim Report of the Japan-U.S. Free Trade Agreement] and Masao Satake, 'Nichibei Jiyu Boeki Kyotei Chukan-hokoku wo Yomu', [The Reading of the Interim Report of the Japan-U.S. Free Trade Agreement].

59) Personal communications, May 1988-May 1989.

Round successful and to merchandise and service trade liberalisation on a global basis.⁶⁰ The brief from which business leaders spoke called for total rejection of bigemonism (*nikokushugi*) on the grounds that it would reinforce regionalist and managed-trade tendencies in international economic policy. Press and academic commentary was also overwhelmingly skeptical of this direction for Japan's trade diplomacy. Kojima (of the *Nikkei*) and Funabashi (of the *Asahi*) in the press and the majority of influential academic commentators stressed the multilateralist, non-discriminatory interest in Japan's foreign trade diplomacy.

In short, the image of Japan's trade policy philosophy that is revealed in this experience is not that which could be recognised easily from the descriptions in Murphy, Fallows or van Wolferen. Rather, there is considerable evidence here to support the conclusion of Komiya and Itoh that 'the dominant philosophy among Japan's economic policy authorities and the Japanese public has changed considerably' in the last two decades (post-Chalmers Johnson) and certainly since the earlier postwar period. 'The philosophy that free trade is basically the most desirable policy for the Japanese economy has gained acceptance among policymakers, leading businessmen and knowledgeable people.'⁶¹ At its institutional roots, MITI may well be full of interventionist/coordinator recidivists, but in its top policy councils, mercantilist thinking is in retreat, if not entirely routed. At the same time, Japan's regulation-oriented economic policy philosophy has been steadily evolving towards a free-competitive, market-oriented philosophy.

Reactive State Diplomacy

Yet Japan's foreign trade diplomacy may seem to some a weak reed on which to rely in managing these important international economic policy problems.

There are two reasons for this anxiety; one external to Japan and one internal to the nature of Japan's policy process, which has just been outlined through example.

On the first front, clearly the problem for Japan and other countries in managing challenges to the liberal trading system is that large scale trade liberalisation in Japan, East Asia, or for that matter Europe, is incapable of contributing in a major way to curing United States imbalance problems. There is no reliable prospect for addressing

60) Personal communications, February 1989.

61) Ryutaro Komiya and Motoshige Itoh, 'Japan's International Trade and Trade Policy, 1955-1984', in Inoguchi and Okimoto, *Political Economy of Japan*, p. 205.

current international tensions independently of United States progress in moderating domestic demand, in the pursuit of more balance in current external payments. A broader dialogue on macroeconomic adjustment issues, not only between Japan and the United States, but also including their other partners in the Pacific, might be helpful to progress on that front.⁶²⁾

On the second, let me finally turn directly to Japan's policy process and trade policy motivations.

As Japan's centrality to the international economy has come to be more widely understood, Calder and Okimoto⁶³⁾ emphasise the point that both foreign and Japanese analysts have developed quite divergent conceptions of what Japanese foreign economic policies are and how they have come to be what they are. Some see Japanese policies as remarkably liberal in view of Japan's pervasive resource vulnerabilities; others see the same policies as rapaciously mercantilist.

These divergent perceptions are clearly partly in the eye of the beholder. It is also true, as Calder suggests, that views are limited by lack of serious Western and Japanese scholarship on the character of the Japanese state in its complex relationship with the global economic system. (I should say that much good work in this area has been done by the new generation of Australian scholars – George, Rix, Horne, Sheard, Lesbirel and Miller – but the impact of their work and that of Calder and Okimoto in the United States is only now beginning to be felt on American scholarship).⁶⁴⁾ A key to reconciliation of many of these divergences of view has to be found in the rapidity with which Japan has been transformed from the status of small-to-middle ranking economic power to that of economic superpower. In the language of international economics, all the assumptions of the small country model have to be replaced by all the assumptions of the big country model, and that has significant implications for trade policy strategy. Japan has been catapulted into a position of particular influence and responsibility in an extremely short time. Policy attitudes and institutions have had to adjust equally rapidly to this new circumstance.

It will be clear already that this transformation in policy philosophy has indeed taken place remarkably swiftly. But there are institutional lags. It will also be clear that very often the distortions of time and space make today's perceptions more a

62) Drysdale, Viviani, Yamagawa and Watanabe, *Towards 2000*.

63) Calder, 'Policy Formation', p. 517; Daniel I. Okimoto, 'Political Inclusivity: The Domestic Structure of Trade', in Inoguchi and Okimoto, *Political Economy of Japan*, pp. 305-44.

64) Calder, *Crisis and Compensation*, Princeton University Press, Princeton, 1988; Okimoto, 'Political Inclusivity'; see also J. A. A. Stockwin (et al.), *Dynamic and Immobilitist Politics in Japan*, Macmillan, London, 1988.

product of yesterday's than today's reality.

Yesterday, in the first two decades or so after the Second World War, Japan was a relatively small element in the world economy and trade. Under the umbrella of American political and economic power, paradoxically, it enjoyed a measure of foreign economic policy independence. The trade regime and other countries trade systems were immutable in the formulation of its own approach to trade policy,⁶⁵⁾ and its own approach to trade policy was powerfully motivated by the need to promote exports in the face of an initially vastly overvalued yen.⁶⁶⁾ The policy nuance, if not the reality, was mercantilist. The transformation of Japan's economy and trade structure in the 1960s and the 1970s was accompanied by rapid trade and economic liberalisation, in pragmatic response largely, but not entirely, to United States pressuring and related international commitments. On many objective measures, Japan's liberalisation in this period was more rapid than that of Germany.⁶⁷⁾ In all of this, Japan played a role unambiguously supportive of American trade and broader diplomatic interests.

Today, Japan can no longer take the actions and policies of its partners as immutable to its own behaviour. Its scale and influence within world markets assign to it a prominent role in setting the parameters for stability in the global system.⁶⁸⁾ Policy philosophy is attuned to this. In an historic development in July 1988, Japan delivered reform of its beef trade system consistently with the important GATT principles of 'transparency' and 'non-discrimination'.⁶⁹⁾ Japan is now committed to a staged reduction of protection on beef imports based on the removal of quantitative controls and the provision of global access under reducing tariffs. The systemic importance of this development is difficult to overestimate. It signals the extent to which broader strategic objectives are coming to discipline the pursuit of narrow sectional interests in the formulation of Japan's trade diplomacy (even in highly sensitive areas such as are involved in Japan's beef trade). The signs, in Japanese policy circles, are of vastly increased awareness of the need for this. Yet this discipline was obviously not generated entirely from within the Japanese policymaking process. Indeed, Japan-targeting by the United States, coupled with active third-country Australian economic

65) Drysdale, *International Pluralism*, Chapters 2 and 9. This overstates the case, in the sense that, with American patronage, Japan was able to negotiate significant modifications to the trade regime in this period through entry to GATT and the gradual extension of *most-favoured-nation* treatment. See Tatsuo Akaneya, *Japan's Accession to GATT* (ANU Ph.D thesis; forthcoming).

66) Komiya and Itoh, 'Japan's Trade', pp. 173-224.

67) Henrik Schmiegelow, 'Japan's Exchange Rate Policy: Policy Targets, Nonpolicy Variables, and Discriminatory Adjustment', in Michele Schmiegelow (ed.) *Japan's Response to Crisis and Change in the World Economy*, Sharpe, New York, 1986, pp. 28-43.

68) Calder, 'Policy Formation', p. 535.

69) Drysdale, 'Japan as a World Economic Power', p. 167.

diplomacy, clearly helped Japanese policymakers deliver a policy outcome in this case which will be greatly system-strengthening. Ominously, in February 1989, Japan negotiated its first VER around the threat of dumping action against rapidly growing imports of Korean knitwear. Against this action there was no cross-diplomatic buffer.⁷⁰⁾ Japan struggles with the problem of delivering real leadership in trade and economic diplomacy.

Tomorrow, the assumption of trade and international economic policy leadership gives rise to expectations of a purposeful and pro-active role for Japan in keeping the international trade and economic system together and open.

While the economic basis for a more pro-active Japanese global trade policy role is gradually being established, the reactive character of Japanese foreign trade diplomacy remains remarkably pronounced.

In 1986, in an essay for the Japanese journal *Economics Today*,⁷¹⁾ I suggested that the Japanese political economy was best depicted as a reactive system for two important reasons.

First, in response to the conflicts and pressures of rapid change in trade, industrial and social structure, there was a clear tendency in Japan to compensate for the costs of change in a mode not untypical of other industrial economies. In this conception, the picture of an interest-group-dominated reactive political economy is rather different from the image projected by Johnson's idea of a strategically oriented 'development state'.⁷²⁾ The most notable example of compensating protection of tightly organised interests, of course, is in agriculture.⁷³⁾ Each conception may be relevant to a different era. Yet Miller⁷⁴⁾ has shown in devastating detail that, in the hey-day of 'industrial policy', the same was true for manufacturing. In this period too, protection was delivered to declining industries (as in other industrial countries), not importantly to the fast growers.

Second, Japanese policymakers were heavily influenced by foreign pressure, focused strongly on the American partnership and highly sensitised to American

70) On 3 February 1989, Korea acquiesced in imposing voluntary restraint on the export of knitwear to Japan and the Japanese Federation of Knitwear Manufacturers decided to withdraw its dumping appeal to the Japanese Government, *Nihon Keizai Shimbun*, 3 February 1989.

71) Peter Drysdale, 'Osutoraria kara mita Nihon no "taibei izon shokogun"' [Japan's dependence on the United States: an Australian perspective], translation of an English manuscript 'Japan's Trade Diplomacy: A View from the Western Pacific', *Economics Today*, Vol. 1, Spring 1986, pp. 96-102.

72) Johnson, *MITI*.

73) Drysdale, 'Japan as a World Economic Power', p. 166.

74) B. L. Miller, *The Political Economy of Japan's Tariff Policy: A Quantative Analysis* (ANU Ph. D Thesis), July 1987.

diplomatic, political and economic pressures.⁷⁵⁾ These two circumstances – the powerful interest group and bureaucratic inertia in Japanese policymaking processes that inhibits trade policy leadership, and the American satellite syndrome – are critical in judging Japan's capacity to assume a proper trade policy leadership role.

Calder has recently undertaken a much more thorough-going and insightful analysis of Japan as a reactive state in the context of foreign economic policy formation.⁷⁶⁾ He observes correctly, in my view, that the reactive aspects of Japanese foreign economic policy behaviour are strongly entrenched, particularly 'considering the country's economic strength, the strategic inclinations of its technocracy, and the turbulent circumstance' it faces in the international economic system.⁷⁷⁾ In his analysis, the reactive state also has two essential characteristics. The state fails to undertake major independent foreign economic policy initiatives when it has the power and national incentive to do so and it responds to outside pressures for change, although erratically, unsystematically and often incompletely.

Calder identifies two principal causes of the reactive nature of Japanese foreign economic policy: heavy dependence on the United States for capital, markets and diplomatic support, rendered specially acute by Japan's resource vulnerabilities and diplomatic isolation; and the fragmented character of state authority in Japan, making decisive action more difficult than in countries with strong chief executives, such as the United States or France. Calder notes that the problem of domestic coordination is compounded in Japan by the lack of both a functionally-oriented administrative corps and authoritative codification of ministerial responsibilities to dampen bureaucratic disputes over jurisdiction.⁷⁸⁾ Japan has, as van Wolferen puts it, 'a hierarchy, or a complex of overlapping hierarchies without a top',⁷⁹⁾ the intermittent attempts of figures such as former Prime Minister Nakasone to play a transcendent leadership role notwithstanding.⁸⁰⁾

This feature of Japanese political process I call 'the headless chook syndrome'. This is a vivid but apt metaphor, as any of rural origin will readily understand. It is starkly evident in the current political crisis in Japan. It was less evident under the Nakasone administration, as Calder implies, with its more decisive resolution of conflict over foreign economic policy in the Cabinet room.

75) Drysdale, 'Japan as a World Economic Power', pp. 166-7.

76) Calder, 'Policy Formation' and *Crisis and Compensation*.

77) Calder, 'Policy Formation', p. 526.

78) *Ibid*, pp. 526-30.

79) Van Wolferen, 'Japan Problem', p. 289.

80) Calder, 'Policy Formation', p. 529.

This brief synopsis does not do justice to Calder's richly illustrated and sophisticated analysis. But the main points are clear.

Calder draws the important conclusion that foreign pressuring must continue to play an instrumental role in the formulation of Japan's foreign economic diplomacy. A corollary conclusion is that, in the near term, the reactive character of the Japanese state in dealings with the United States helps to prolong the period of United States hegemony in international trade and economic diplomacy.⁸¹⁾ A number of authoritative Japanese commentators share the same view.⁸²⁾ He cautions, however, that 'reactive Japanese economic diplomacy and the intensifying foreign pressures that motivate it, have potentially fateful long-run consequences within Japan. They are stimulating nationalism, as Japanese people become increasingly sure of their country's relatively high economic efficiency and global prominence, just as the barrage of global criticism against Japan intensifies. The Japanese government continues to respond to most demands, while popular support for such action is growing thinner'.⁸³⁾

Shared Leadership

Economic changes in the last decade have dramatically increased the capacity of Japan to interact with the international system and play a more decisive leadership role. The massive Japanese capital outflows in this period are one such change. In 1980, only 2 per cent of the production of Japanese corporations took place offshore, compared with 10 per cent for United States firms. Last year the proportion for Japan was over 5 per cent.⁸⁴⁾ The international reach and capacity of Japan's corporate community and Japanese society is making rapid strides.

Yet Calder's analysis of foreign economic policy immobilism seems essentially correct and the condition is set to persist. Japan is no different from other modern industrial states in this respect. But, ironically, in view of many prevalent views of the authority of the Japanese state, there is a peculiar weakness in the constraining presence of government, in Japan, in resolving the inevitable domestic conflicts around the determination of foreign economic and trade policy approaches, precisely at a time when it is called for in large measure.⁸⁵⁾ Like other countries, even more so, Japan

81) Ibid, p. 539; see also Russett, 'U.S. Hegemony'.

82) Kenneth B. Pyle, 'Japan, the World and the Twenty First Century', in Inoguchi and Okimoto (eds.), *Political Economy of Japan*, pp. 446-86.

83) Calder, 'Policy Formation', p. 538.

84) Embassy of Japan, Canberra, May 1989.

85) Calder, 'Policy Formation', pp. 539-40.

is porous to jostling on policy position, but the nature and American source of jostling will rapidly diminish its capacity to produce desired outcomes.

The external 'frame of reference' is an important element in policy formulation in any society, and perhaps especially so, it seems, in Japan. A constructive approach is to recognise this characteristic in Japan's political circumstance and leadership style and to work purposefully to make a virtue of its necessity. Indeed, in the sharing of international economic leadership responsibilities, such as will be required as hegemonic dominance is no longer sustainable, such reticence could be a distinct advantage.

My conclusion is not pessimistic.

A key requirement, then, is redefinition of the framework within which foreign demands on Japan, and Japan's representation to its partners, can both be focused and qualified so as to make them more reasonable and digestible to both the Japanese and international polities alike. This interest has long been an important rationale behind efforts to develop broader dialogue on policy matters among the countries of the Pacific with which Japan has close relationships and to re-orient the United States-Japan partnership within that framework.

If Japan's adjustment to its leadership role in trade and economic diplomacy is difficult, American adjustment to the sharing of economic power and leadership responsibilities (not simply the bills and the burden) is no less so.

Two generations of Americans have ingrained perceptions founded on the United States' centrality to the international economy and its primacy in determining the major shifts in international capital and commodity markets. This is no longer the situation. The change is hard to adjust to, psychologically, institutionally and in terms of the domestic political debates. Acceptance of the diminution of economic power and the small country rules in ordering economic policy is new in America, even to the knowledgeable. And it is complicated by a political debate coloured with the perception that the adjustments required of Americans are, to complete the ironic circle, required solely at the dictates of Japan.

A LABOUR UNION IN EVERY COUNTRY *

— A GAME-THEORETIC APPROACH —

Kazuo SHIMOMURA

1. Introduction

In Kemp and Shimomura (1984, 1985, 1989) and Shimomura (1984) we examined some of the implications of the formation of labour union for the general equilibrium in the trading world consisting of two countries. It was assumed commonly in those papers that only one of the countries is of union-ridden type in the sense that workers in the country can form a nation-wide labour union; in the other country the labour market is perfectly competitive.

However, if workers can organize themselves in one country they can organize themselves in all countries. Accordingly, we now allow for the possibility that there is such a union in each of the two countries. The unions will recognize that they stand in a strategic relationship, rather like that of tariff-imposing national governments. Since both unions are supposed to be rational and well-informed, it seems appropriate that we *confine* attention to Nash equilibria.

In the present paper we shall concentrate on the construction of the basic framework for our subsequent analysis to come after the present paper. Thus, the scope of our analysis here is restricted to questions of existence and uniqueness of equilibrium and to the properties of equilibria: Detailed comparative statical calculations are omitted.

2. Assumptions

To make way for the complication of a strategic relationship between unions, we concentrate on a special case. Thus, throughout the present paper it is assumed that there are two countries called the home country and the foreign country in the

* This paper can be regarded as a by-product of the joint research with Professors, M.C. Kemp and N.V. Long, concerning the economic behaviour of rational labour unions. I would like to show here my deep acknowledgement to, particularly, Professor Kemp for permitting me to publish this paper under my own name. Needless to say, no one but myself should take the responsibility for any part in this paper.

trading world and that there are two produced and tradeable consumption goods, with one commodity produced in each country. The assignment of commodities of countries is not an outcome of the analysis; it is simply imposed. Specifically, it is assumed that the home country produces only the first commodity and the foreign country only the second commodity. The technology of each country is described by a production function which is homogeneous of degree one in capital and labour; thus

$$Y_i = F^i(K_i, N_i) \equiv K_i f_i(x_i) \quad i = 1, 2$$

Let

$$\theta_i(x_i) \equiv \frac{x_i f_i'(x_i)}{f_i(x_i)}$$

and

$$\sigma_i(x_i) \equiv \frac{-f_i'(x_i) [f_i(x_i) - x_i f_i'(x_i)]}{x_i f_i(x_i) f_i''(x_i)}, \quad i = 1, 2$$

As well-known, $\sigma_i(x_i)$ is the elasticity of factor substitution with regard to the i th commodity. In what follows, it is assumed that $\theta_i(x_i) + \sigma_i(x_i)$ is a decreasing function and that the equation

$$\theta_i(x_i) + \sigma_i(x_i) - 1 = 0$$

has a solution $x_i = \tilde{x}_i$. Of course, $\sigma_i(\tilde{x}_i) < 1$.

Moreover it is now assumed that the same preferences prevail everywhere, at home and abroad and among capitalists and workers; specifically, it is assumed that the preferences of each household can be described by a strictly quasi-concave and constant-returns-to-scale utility function. It follows that, if y is a household's income (in terms of the first commodity) and if $p = p_2/p_1$, we can write the unit expenditure function $e(p)$ and the household's demand for the second commodity $ye'(p)/e(p)$.

In each country the workers form a single all-embracing labour union. Following Shimomura (1989), under the assumption on preferences stated in the previous paragraph the objective function of the home union is

$$U = \frac{Nw}{Ne(p)} = \frac{xw}{ze(p)}$$

and, distinguishing foreign variables by asterisks, the objective function of the foreign union is

$$U^* = \frac{N^* w^*}{\bar{N}^* e(p)} = \frac{x^* w^*}{z^* e(p)}$$

Both labour and capital are internationally immobile. Formally, then, our model of a world trading economy is equivalent to that of a closed economy with two industries, with four specific factors (two for each industry), and with our factor organized in each industry.

3. Analysis

Since capital is internationally immobile, the stock of capital owned by a country is employed wholly in that country. Hence the home union solves the problem

$$(P) \quad \max_{x \leq z} \quad U = \frac{x}{z} \frac{f_1'(x)}{e(p)} \quad (1)$$

$$\text{s. t.} \quad \frac{e'(p)}{e(p)} [f_1(x) + phf_2(x^*)] = hf_2(x^*) \quad (2)$$

and the foreign union solves the problem

$$(P^*) \quad \max_{x^* \leq z^*} \quad U^* = \frac{x^*}{z^*} \frac{pf_2'(x^*)}{e(p)} \quad (3)$$

$$\text{s. t.} \quad \frac{e'(p)}{e(p)} [f_1(x) + phf_2(x^*)] = hf_2(x^*) \quad (2)$$

where $h \equiv K^*/K$ and (2) expresses the requirement that world demand for the second commodity equal world supply.

From (P) we see that any adjustment to x directly affects $xf_1'(x)$ and therefore U . We see also that x influences p through the world equilibrium condition (2) and thus exercises an indirect influence on e and U ; specifically, an increase in x gives rise to an increase in the output of the first commodity and, in view of the homotheticity of preferences, to a reduction of its relative price. If the home union should fail to recognize the indirect link between x and U through p , it would choose $x = \tilde{x}_1$. See Figure 1. A similarly myopic foreign union would choose $x^* = \tilde{x}_2$.

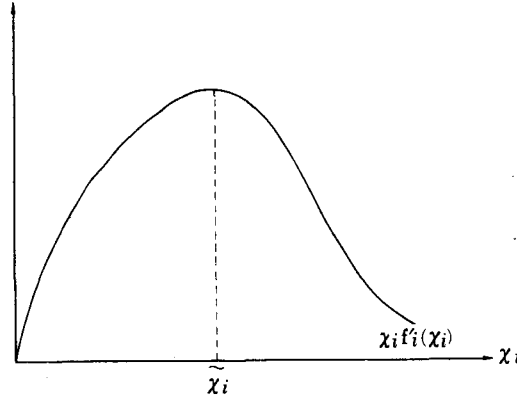


Figure 1

We seek the Nash equilibrium of the game $[(P), (P^*)]$, with each union making full allowance for the indirect link between x and U or between x^* and U^* . Until further notice we neglect the inequality constraints $x \leq z$ and $x^* \leq z^*$, that is, we neglect questions of feasibility.

From the common constraint (2),

$$\frac{f_1(x)}{hf_2(x^*)} = \frac{e(p)}{e'(p)} - p \equiv \phi(p) \quad (4)$$

Hence, differentiating totally,

$$\hat{p} = \sigma_e(p) [\theta_1(x)\hat{x} - \theta_2(x^*)\hat{x}^*] \quad (5)$$

where

$$\hat{Y} \equiv dY/Y, \quad Y = p, x, x^*, \text{ and}$$

$$\sigma_e(p) \equiv - \frac{e'(p)[e(p) - pe'(p)]}{pe(p)e''(p)} > 0$$

From the objective functions (1) and (3), on the other hand,

$$\hat{U} = [1 - \frac{1 - \theta_1(x)}{\sigma_1(x)}] \hat{x} - \theta_e(p) \hat{p} \quad (6)$$

and

$$\hat{U}^* = [1 - \frac{1 - \theta_2(x^*)}{\sigma_2(x^*)}] \hat{x}^* + [1 - \theta_e(p)] \hat{p} \quad (7)$$

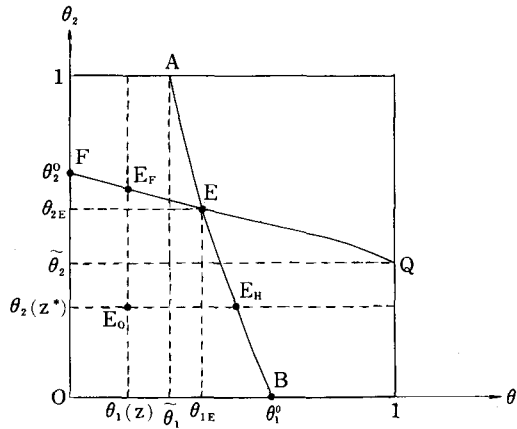
Let θ_2 take on some given value between zero and one. Then the relationship between p and θ_1 defined by (12) can be depicted in Figure 2(a) by the dashed curve MEJ. Evidently MEJ intersects FEG at E. If θ_2 increases in value, the dashed curve pivots on J in an anti-clockwise direction, taking the new position M'E'J and intersecting FEG at E'; when $\theta_2 = 0$, $\theta_1 = \theta_1^0$, where θ_1^0 is the solution to the equation

$$\frac{\theta_1 \theta_e}{h} (1 - \theta_1)^{\sigma_1 \sigma_e / (1 - \sigma_1)} = \frac{1}{\sigma_e} [1 - (1 - \theta_1) / \sigma_1];$$

and, as θ_2 approaches one, θ_1 goes to $\tilde{\theta}_1 = 1 - \sigma_1$, the solution to

$$1 - (1 - \theta_1) / \sigma_1 = 0$$

Thus we obtain the relationship $\theta_1 = \gamma_2(\theta_2)$ defined by (10) and (12); it is depicted in Figure 3 by the curve AB. In similar manner we obtain the relationship $\theta_2 = \gamma_1(\theta_1)$ defined by (11) and (12) and depicted in Figure 3 by FQ.¹⁾



$$\tilde{\theta}_i : 1 - (1 - \tilde{\theta}_i) / \sigma_i = 0 \quad (i = 1, 2)$$

$$\theta_1^0 : 1 - \frac{1}{\sigma_1} (1 - \theta_1^0) = \sigma_e \theta_1^0 \theta_e \left[\frac{1}{h} (1 - \theta_1^0)^{\sigma_1 \sigma_e / (1 - \sigma_1)} \right]$$

$$\theta_2^0 : 1 - \frac{1}{\sigma_2} (1 - \theta_2^0) = \sigma_e \theta_2^0 \left\{ 1 - \theta_e \left[h (1 - \theta_2^0)^{\sigma_2 \sigma_e / (1 - \sigma_2)} \right]^{-1} \right\}$$

$$\theta_1(Z) \equiv Z f_1'(Z) / f_1(Z), \quad \theta_2(Z^*) \equiv Z^* f_2'(Z^*) / f_2(Z^*)$$

Figure 3 : $\sigma_e < 1$

- 1) Thus if θ_2 takes some given value between zero and one then the relationship between P and θ_2 defined by (12) can be depicted in Figure 2(b) by the dashed curve MEJ. Evidently MEJ and FEG intersect once, at E. As θ_1 increases, the dashed curve takes the new position M'E'J', intersecting FEG at E'. When $\theta_1 = 0$, $\theta_2 = \theta_2^0$, where θ_2^0 is the solution to

$$1 - \frac{1 - \theta_2}{\sigma_2} - \{ 1 - \theta_e [h (1 - \theta_2)^{\sigma_2 \sigma_e / (1 - \sigma_2)}]^{-1} \} \sigma_e \sigma_2 = 0;$$

and, as θ_1 approaches one, θ_2 goes to $\tilde{\theta}_2 = 1 - \sigma_2$, the solution to

$$1 - (1 - \theta_2) / \sigma_2 = 0$$

Thus we obtain the required relationship $\theta_2 = \gamma_1(\theta_1)$, depicted in Figure 3 by FQ.

As Figure 3 makes clear, there exists a pair $(\theta_{1E}, \theta_{2E})$ such that $\theta_{1E} = \theta_1(x_E)$ and $\theta_{2E} = \theta_2(x_E^*)$, where

$$x_E = \arg [\max_X U = \frac{\chi f_1'(\chi)}{ze(p)} \text{ s.t. (2)}] \quad (13a)$$

and

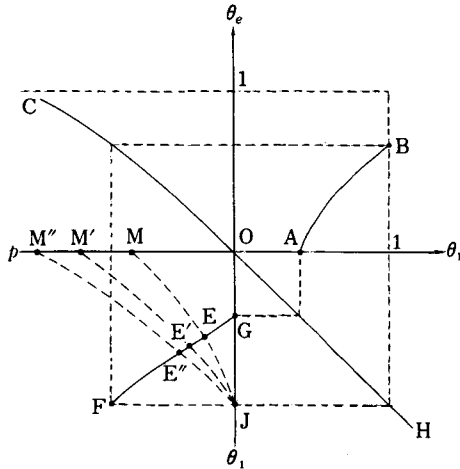
$$x_E^* = \arg [\max_{X^*} U^* = \frac{px^* f_2'(x^*)}{z^* e(p)} \text{ s.t. (2)}] \quad (13b)$$

Case 2 : $\sigma_e > 1$ We begin again by studying the relationship between θ_1 and p .

From (10),

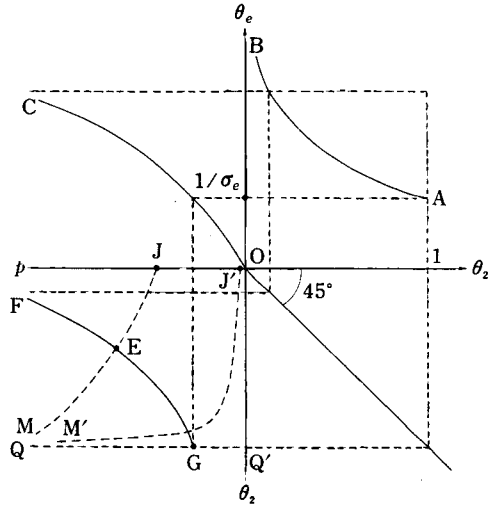
$$\theta_e = \frac{1}{\sigma_e} \left[\frac{1}{\sigma_1} - \frac{1}{\theta_1} \left(\frac{1}{\sigma_1} - 1 \right) \right],$$

represented by curve AB of Figure 4(a). In the same figure, the curve OC represents the function $\theta_e(p)$, now increasing since $\sigma_e < 1$. From AB and OC one then obtains the required graph FEG. The dashed curve MEJ, on the other hand, is obtained from (12) by holding θ_2 constant at a value between zero and one. The two curves intersect at E. As θ_2 increases, the dashed curve takes the position of M'E'J, then of M'E''J etc. As θ_2 approaches one, the point of intersection of the two curves approaches F, which implies that θ_1 approaches one. Thus we obtain the required relationship between θ_2 and θ_1 , depicted by the curve AEB of Figure 5(a).



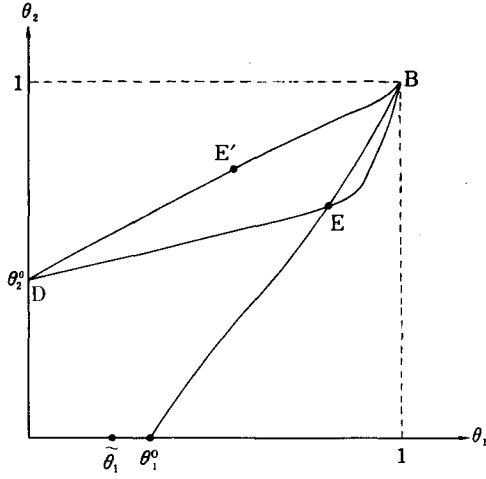
FG: the graph of (p, θ_1) satisfying
 $1 - (1 - \theta_1)/\sigma_1 - \sigma_e \theta_1 \theta_e(p) = 0$

Figure 4 (a): $\sigma_e > 1$



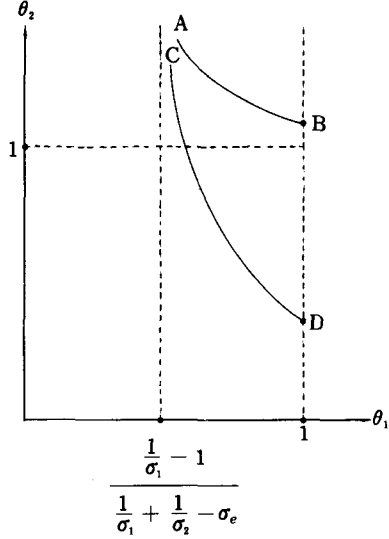
FG: the graph of (p, θ_2) satisfying
 $1 - (1 - \theta_2)/\sigma_2 - (1 - \theta_e(p)) \sigma_e \theta_2 = 0$

Figure 4(b) > 1



$\tilde{\theta}_1$ and θ_1^0 defined in Figure 3

Figure 5(a)



CD : $1 < \sigma_e < 2$

AB : $\sigma_e > 2$

Figure 5(b)

A further relationship between θ_2 and θ_1 is obtained from (11) and (12). From (11),

$$\theta_e = \left(1 - \frac{1}{\sigma_e \sigma_2}\right) + \frac{1}{\sigma_e \theta_2} \left(\frac{1}{\sigma_2} - 1\right) \quad (14)$$

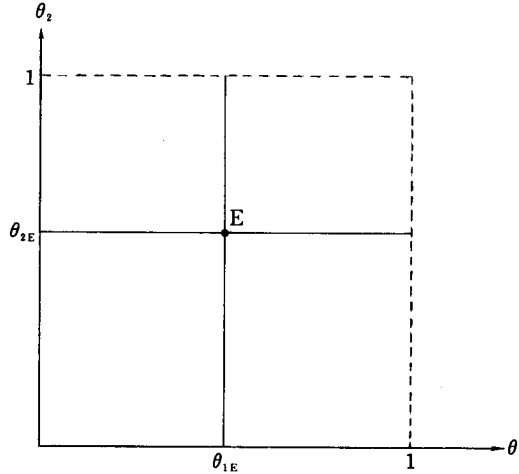
which is represented by the curve AB of Figure 4(b). From AB and OC we obtain FEG, the curve MEJ, on the other hand, is derived from (12) by holding θ_1 constant at a value between zero and one. The two curves intersect at E. As θ_1 approaches one, the dashed curve approaches QGQ'O; thus, for θ_1 close to but less than one, the curve coincides with M'E'J'. It follows that the locus (θ_1, θ_2) corresponding to the intersection of MEJ and FEG in Figure 4(b) can be depicted in Figure 5(a) by DEB θ_2 possibly, by DE'B.

It remains to determine which of the curves DEB and DE'B of Figure 5(a) prevails. If DEB prevails, the point of intersection E of AEB and DEB is determined by (10)–(12). Alternatively, from (10) and (11),

$$\theta_2 = \frac{-\theta_1(1-1/\sigma_2)}{\theta_1[(1/\sigma_1) + (1/\sigma_2) - \sigma_e] + (1-1/\sigma_1)} \quad (15)$$

Evidently (10)-(12) and (15) are not independent equations. The graph of DEB or DE'B must pass through any point of intersection of AEB and the graph of (15); and the graph of (15) must pass through any point of intersection of AEB and DEB (or DE'B). The graph of (15) is like AB or CD of Figure 5(b). From Figure 5(a) it is clear that if $\sigma_e < 2$ then the graph of (15) must intersect AEB and DEB (or DE'B). This implies that DE'B is impossible; that is, there is a point like E in figure 5(a).

Case 3 : $\sigma_e = 1$ It remains to consider the singular case in which $\sigma_e = 1$. Then θ_e is constant and we can add Figure 6 to Figures 3 and 5. Obviously $(\theta_1(x_E), \theta_2(x_E^*))$ and (x_E, x_E^*) are unique.



$$\theta_{1E} = \frac{1 - \sigma_1}{1 - \sigma_1 \theta_e}, \quad \theta_{2E} = \frac{1 - \sigma_2}{1 - \sigma_2 (1 - \theta_e)}$$

Figure 6 : $\sigma_e = 1$ (θ_e constant)

Thus we arrive at the following summarizing proposition.

PROPOSITION: If the expenditure function and the production functions are of CES type and if the elasticities of factor substitution are less than one in magnitude then (x_E, x_E^*) exists if and only if $\sigma_e < 2$ and is unique if σ_e is sufficiently close to unity.

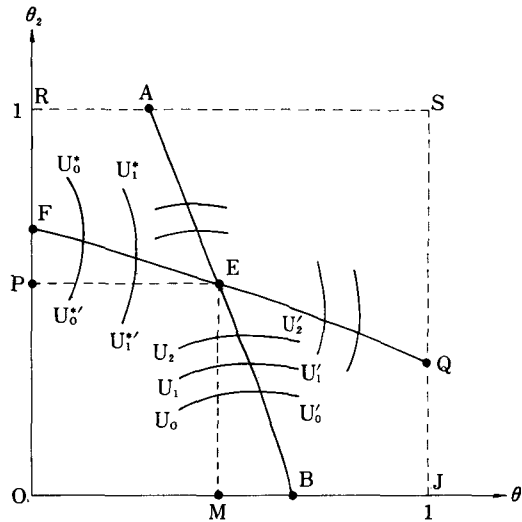
If (x_E, x_E^*) is feasible, it is a Nash equilibrium of $[(P), (P^*)]$. We now examine the circumstances under which (x_E, x_E^*) is and is not feasible; moreover we determine whether there exists a Nash equilibrium when (x_E, x_E^*) is infeasible and, if there is an equilibrium, we characterize it.

Let us suppose until further notice that $\sigma_e < 1$. Then in Figure 3 we may distinguish

- (i) Point E , at which both labour forces are unionized;
- (ii) Point E_o , at which neither labour force is unionized;
- (iii) Point E_H , at which only home workers are unionized; and
- (iv) Point E_F , at which only foreign workers are unionized.

Which of these four points are feasible depends on the position of E_o ($\theta_1(z)$, $\theta_2(z^*)$). Consider Figure 7.

- (a) If E_o lies in the region OPEM, all of (i)–(iv) are feasible.
- (b) If E_o lies in MEB or in FEQ, (ii)–(iv) are feasible but (i) is infeasible (because θ_1 is less than $\theta_1(z)$ in MEB and θ_2 is less than $\theta_2(z^*)$ in FEQ).
- (c) If E_o is in BEQJ, (ii) and (iv) are feasible, (i) and (iii) infeasible.
- (d) If E_o is in EFRA, (ii) and (iii) are feasible, (i) and (iv) infeasible.
- (e) If E_o lies in AEQS, only (ii) is feasible.



$U_i U_i'$: indifference curves of U ($u_o > u_1 > \dots$)

$U_i^* U_i^{*'} : indifference curves of U^* ($u_o^* > u_1^* > \dots$)$

Figure 7

We proceed to examine cases (a)–(e) in turn.

Case (a) If E_o lies in region OPEM of Figure 7 then E is feasible and therefore constitutes a Nash equilibrium. With the aid of the two union indifference curves through E , labelled uEu' and u^*Eu^{*} , we can divide OPEM into the disjoint sub-regions uEu^* and (OPEM minus uEu^*); see Figure 8. If E_o lies in uEu^* (like E_o^1 of

Figure 8) then the pay-offs associated with the several possible stages of unionization satisfy the inequalities

$$U(E^{*1}) < U(E) < U(E_0^1) < U(E^1)$$

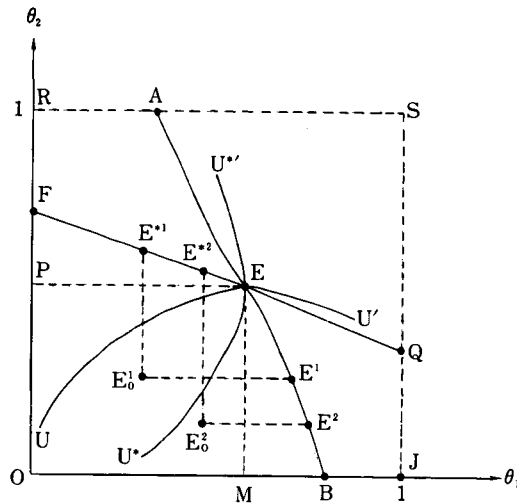
and

$$U^*(E_1) < U^*(E) < U(E_0^1) < U^*(E^{*1})$$

In particular, in the non-cooperative situation assumed, the pair $(U(E), U^*(E))$ is chosen even though

$$(U(E_0^1), U^*(E_0^1)) \gg (U(E), U^*(E))$$

Home workers know that if they do not organize themselves then foreign workers will do so, thereby forcing home workers to accept the lowest level of wellbeing; and similarly for foreign workers. Thus workers in each country find themselves in the "prisoner's dilemma."



uEu' : an indifference curve of U

u^*Eu'' : an indifference curve of U^*

Figure 8

If, on the other hand, E_0 lies in $(OPEM \text{ minus } uEu^*)$ then the workers of one country are released from the dilemma. For example, if E_0 coincides with E_0^2 of Figure 8 then

$$U^*(E^{*2}) < U^*(E_0^2) < U^*(E) < U^*(E^{*1})$$

and foreign workers prefer to unionize whatever the decision of home workers.

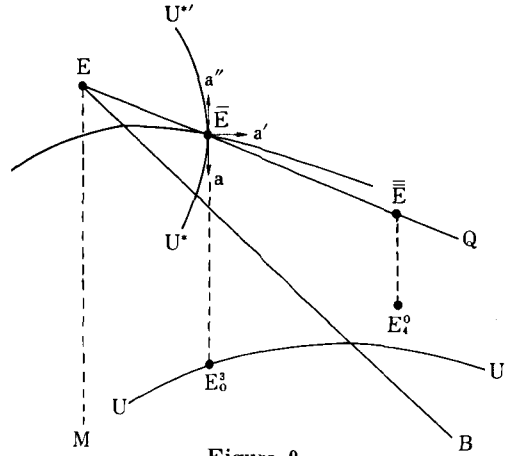


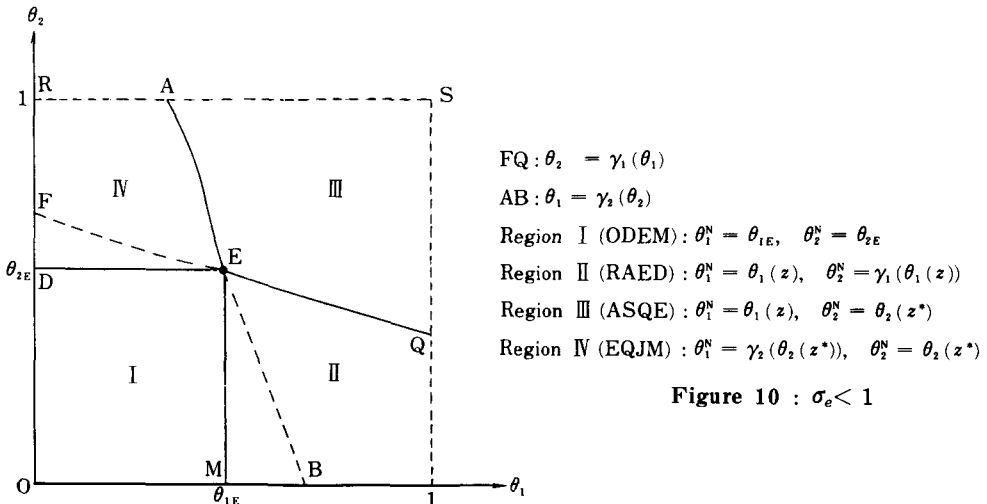
Figure 9

Case (b) If E_0 belongs to MEB or PEF of Figure 7 then either $x_E > z$ or $x_E^* > z^*$; thus E is infeasible and cannot be a Nash equilibrium. Suppose that E_0 belongs to MEB and consider Figure 9. One can verify that $\bar{E}$ is a Nash equilibrium. Thus home workers can move in the direction of the arrow from $\bar{E}$ to a' ; however, if x^* is unchanged, such a move will reduce U . Similarly, unless home workers change x , foreign workers cannot raise U^* by moving in the feasible direction of a (Or of a'').

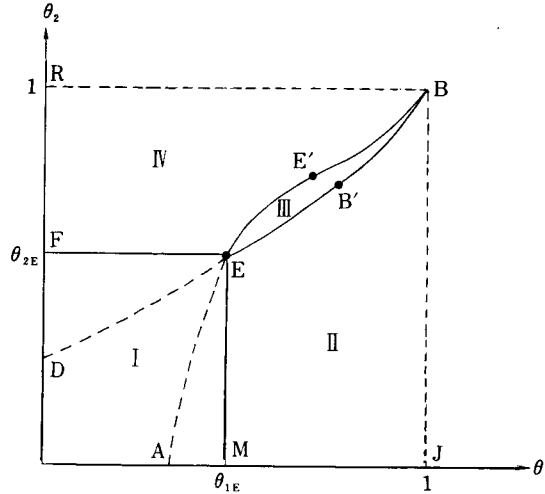
Cases (c) and (d) If E_0 belongs to BEQJ or EFRA of Figure 7 then, as in case (b), E is infeasible. However a Nash equilibrium exists. For example, if E_0 coincides with E_0^4 of Figure 9 then $\bar{E}$ is a Nash equilibrium.

Case (e) Finally, if E_0 belongs to ASQE of Figure 7 then E_0 (not E) is a Nash equilibrium.

Our findings to this point are summarized by Figure 10.



A similar analysis can be undertaken when $\sigma_e > 1$. Omitting the calculations, we simply display the results in Figure 11.



$$DEB: \theta_2 = \gamma_1(\theta_1)$$

$$AEB: \theta_1 = \gamma_2(\theta_2)$$

$$\text{Region I (OFEM)} : \theta_1^N = \theta_{1E} \quad \theta_2^N = \theta_{2E}$$

$$\text{Region II (EMJBB')} : \theta_1^N = \theta_1(z), \quad \theta_2^N = \gamma_1(\theta_1(z))$$

$$\text{Region III (EB'BE')} : \theta_1^N = \theta_1(z), \quad \theta_2^N = \theta_2(z^*)$$

$$\text{Region IV (FEE'BR)} : \theta_1^N = \gamma_2(\theta_2(z^*)), \quad \theta_2^N = \theta_2(z^*)$$

Figure 11: $\sigma_e > 1$

4. Concluding Remarks

From our dissection of Case (a)–(b) there emerge two broad conclusions, valid for all $\sigma_e < 2$. First, a Nash equilibrium exists. Second, universal unionization always leaves some workers worse off than in the absence of unionization, and it may reduce the wellbeing of all workers.

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THE COSTS AND BENEFITS FOR FIRMS OF ACCOUNTING INFORMATION DISCLOSURE

Hidetoshi YAMAJI

This paper demonstrates that there is an information disclosure equilibrium point where the net benefit of firm from the disclosure is maximized. The possibility that the point of the equilibrium would not be evaluated as any specified goals is also referred to.

Key word: accounting information disclosure, stock market, labor market, collective bargaining, product market, mass democratic society

1. Introduction

In traditional accounting theory, information is usually treated from the viewpoint of the information receiver. Typically, for example, information is defined in terms of the reduction of the information receiver's uncertainty about business activities. But such a treatment seems to be based on methodological individualism which is inclined to overlook the surrounding social affairs of accounting. If the analysis of accounting information disclosure should be done from a social viewpoint, it is very important to treat information from the viewpoint of information suppliers, that is, the corporations. This means that the analysis should be done by using the concept of equilibrium of information disclosure. In other words, the concrete problem is why a firm currently discloses a certain extent of accounting information with a certain quality. It should be resolved by taking the profit maximization of firms into account. But we must recognize that there can be various kinds of theories depending upon the levels of current accounting practice which these theories select as a subject. In this paper, we will explain the qualitative and quantitative extent to which contemporary firms disclose accounting information although such a problem must appear extensive and vague.

As a next step, we must choose those factors which affect the extent of current accounting information disclosure for the purpose of making an explanatory model.

Stock Market The functions of accounting information in securities markets have been analyzed by many researchers and are being analyzed by using modern finance theories. There are lots of empirical data which demonstrate the relationship between accounting information disclosure and the behaviors of stock prices (see Beaver, 1981 and Watts and Zimmerman, 1986). So it can be conversely said that the conditions of securities markets have effects on the accounting information disclosure carried out by firms.

Labor Market Some researchers have already pointed out that accounting information functions in collective bargainings between labor and firms (see Forey and Maunders, 1977 and Palmer 1977). Empirical researches show that there is a correlation between the level of accounting information disclosure and the level of wages so that information disclosure has very important significance for both employers and labor for pursuing their own benefits. Therefore the conditions of the labor market or of collective bargaining have some impacts on accounting information disclosure done by firms.

Product Market Managements are usually opposed to the extension of information disclosure because they were inclined to think that such extension could be related to the leakage of business secrets. But we have never seen any data for and against this proposition. We do not know exactly to what extent business secrets can come to light by using current financial statements. We do not deny the possibility of the leakage of business secrets, however. So the inclination of managements to keep business secrets influences accounting information disclosure done by firms.

Mass Society There can exist interest groups surrounding big businesses which do not directly contribute money, economic goods and service to firms. For example, the public watch the business activities of big businesses in order to maximize their own utilities. They may demand, for example, the regulation of big business by means of lobbying activities for getting back clean air. Big businesses should meet the public's demands for regulating their economic behaviors in a mass society. Under such conditions big businesses can adopt accounting information disclosure as business policy for appeasing the public. So the relationship between the public and businesses can affect accounting information disclosure done by firms (see Yamaji, 1983).

Many factors have been pointed out which influence the extent of information disclosure carried out by firms and moreover the fact that the ways of influence are different from each other has also been pointed out. In the subsections of Section 2 each of those factors will be discussed in more detail and an equilibrium model of

a firm concerning accounting information disclosure will be presented. Last, some accounting problems will be analyzed by adopting our model.

The following assumptions will be valid throughout this paper.

- i) The costs and benefits of accounting information disclosure can be measured in a certain value unit.
- ii) To avoid the problem of transforming quality into quantity, the extent of information disclosure can be measured like the amount of products.

2. Partial Equilibrium of Firm's Accounting Information Disclosure

2-1. Stock Market

In this subsection the problem of why a firm disclose its accounting information in securities markets or communicate it to stock investors will be discussed. How we can imagine the equilibrium point at which a firm maximizes its net benefit accruing from information disclosure in the stock market will also be addressed.

First of all we discuss the kinds of benefit for a firm accruing from accounting information disclosure in the stock market. The firms can earn a largest benefit from information disclosure in relation to their capital fund raising activities. If firms constantly disclose accounting information concerning their business results and financial positions regardless of whether they are in a good business cycle or a bad one, security investors can trade the stocks of these firms with relatively less uncertainty. The reputation of such 'less uncertainty' is very useful for the firms in raising the capital funds by issuing new stocks. In a certain economy firms can borrow sufficient funds at a certain constant interest rate. But in a real economy, risky firms must pay higher interest rates than riskless firms for raising necessary money. Theoretically firms with the same risk can borrow money at the same interest rate. So firms can suppress their interest costs by keeping their investors' risk evaluation in favorable conditions. Such a policy can be undertaken by means of accounting information disclosure. This is the first benefit.

The second benefit is related to the persuasion function of information disclosure. Managements can be easily supported by stockholders when making their capital stock investment decisions or general management decisions if they keep the relationship between firms and stockholders in the good health by constant information disclosure. This is the second benefit.

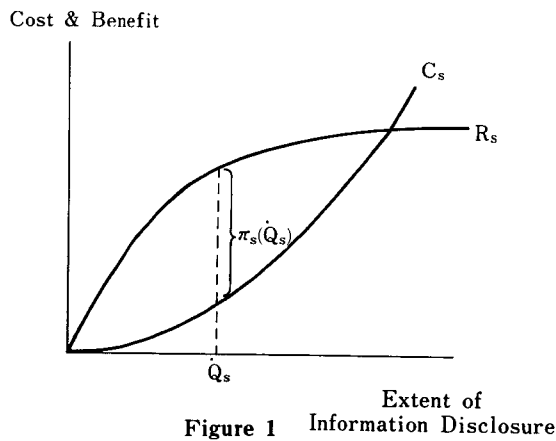
Next, the kinds of cost accrued from information disclosure in the stock market

must be listed. Although contrary to the above, it is possible that the more detailed the information disclosed the rigider the risk evaluation of the firm by stockholders becomes. This means that information disclosure is not always related to the reduction of interest costs. Moreover, the stockholders may become critical of management decisions as a result of having more detailed information. This is also a kind of cost accrued from information disclosure for managements.

Figure I depicts the relationship between the costs and benefits for a firm from accounting information disclosure in securities markets. The benefit will degressively increase as the extent of information disclosure increases because in the beginning a drastic reduction of interest cost will be expected but later such a reduction will not occur proportionately. On the other hand, the cost will progressively increase as the extent of information disclosure increases because a strong dividend demand and a criticism of management resulting from more information will often occur. The equilibrium point of cost and benefit accruing from accounting information disclosure must necessarily meet the following condition (1);

$$\begin{aligned}\pi_s(Q_s) &= R_s(Q_s) - C_s(Q_s) \\ R_s'(\dot{Q}_s) &= C_s'(\dot{Q}_s)\end{aligned}\quad (1)$$

in which $\pi_s(Q_s)$ is the net benefit accruing from information disclosure, $R_s(Q_s)$ is the gross benefit from it and $C_s(Q_s)$ is the gross cost from it. The dash indicates the first deviation of the function. Of course the point $\dot{Q}_s$ represents equilibrium point.



2-2. Labor Market

In this subsection the equilibrium of information disclosure carried out by a firm in the labor market will be discussed. The costs and benefits for a firm of accounting information disclosure in the labor market (or labor negotiations) are detected in the same way as those in stock market.

The main benefit in the labor market consists of the reduction of strike costs or conflict costs, because managements can persuade labor by the strategic use of accounting information disclosure. As often pointed out, managements used to neglect the demand of workers who wanted to fully understand business conditions. This inclination sometimes caused over long wage negotiations and unnecessary strikes which became extra labor costs for firms. Recent researchs show that strikes involve enormous costs which do not necessarily bring about direct cash expenditure (see Nelson, 1973 and Geyal and Geyal, 1978). So managements can suppress labor costs if they keep themselves in good relationship with the workers by disclosing full information. But this cost-down effect of information disclosure does not proportionately increase with the extent of information disclosure.

The second benefit is recognized in the long-term. If firms continue to disclose their business information including accounting information, they will become able to employ capable and efficient workers. This personnel effect also degressively increases with the extent of accounting information disclosure.

The next step is listing the cost of information disclosure in the labor market. A.G.Hines reported that the long tendency of the wage level in the United Kingdom could be regressed to the rate of change of labor unionization (see Hines, 1964). This empirical research concerning the Philips Curve substantially demonstrated that the rising of the bargaining power of labor unions has an effect on raising the wage level. In particular, continuous information disclosure will give the factual basis on which labor unions can criticize management's wage policy so that it raises the bargaining power of labor unions (see Yamaji, 1986). This fact means that it will cost a firm extra labor expense. This effect will progressively increase with the extent of information disclosure. The relationship of the costs and benefits in the labor market may be similar to the one shown in Figure 1. The necessary condition of equilibrium is represented by the equation (2).

$$\begin{aligned}\pi_L(Q_L) &= R_L(Q_L) - C_L(Q_L) \\ R_L'(\dot{Q}_L) &= C_L'(\dot{Q}_L)\end{aligned}\tag{2}$$

in which $\pi_L(Q_L)$ is the net benefit accruing from information disclosure in labor market,

$R_L(Q_L)$ is the gross benefit from it and $C_L(Q_L)$ is the gross cost from it. The dash indicates the first deviation of the function. Of course the point $\dot{Q}_L$ represents equilibrium point.

2-3. Product Market

In this subsection the costs and benefits for firms in product markets will be analyzed. What is the benefit for firms in product markets when firms disclose their information? Generally firms must establish a good relationship with consumers or fellow firms in the same industry. Some firms have been confronted with civil movements demanding the disclosure of product costs. If they neglect such public opinion, they could possibly suffer from boycotts activities of their products. These are, of course, costs for firms. Turning our attention to fellow firms, the firms which may take price leadership in a product market must establish a good relationship with other firms within the industrial firms group. If firms can establish the above-mentioned good relationship by adopting strategic accounting information disclosure, that means a benefit for firms in a product market.

Subsequently the cost of information disclosure for firms in product markets must be detected. It involves the most notorious and vaguest cost. Usually managements are afraid of leaking business secrets if they disclose their accounting information. As we already know, the conservatism of firms has prevented the development of accounting information disclosure. Managements have an inclination to think that more information disclosure weakens their competitive powers. Low competitive power is related to lower sales which is of course a kind of cost for firms. Recently an empirical study indicates the possibility that the productivity of a firm can be estimated based on the research and development (R & D) cost (see Sveikauskas). Taking such things into account, managements' care about leakage of business secrets can not be brushed off. Such costs can progressively increase with the extent of information disclosure. In the same way as in the previous subsections, the equilibrium of information disclosure in product markets can be conceptually shown as in Figure I and the necessary condition of equilibrium can be written as the equation (3)

$$\begin{aligned}\pi_p(Q_p) &= R_p(Q_p) - C_p(Q_p) \\ R_p'(\dot{Q}_p) &= C_p'(\dot{Q}_p)\end{aligned}\tag{3}$$

in which $\pi_p(Q_p)$ is the net benefit accruing from information disclosure in product markets, $R_p(Q_p)$ is the gross benefit from it and $C_p(Q_p)$ is the gross cost from it. The dash indicates the first deviation of the function. Of course the point $\dot{Q}_p$

represents equilibrium point which corresponds to $\dot{Q}_s$ as shown in Figure 1.

2-4. Mass Society

In this subsection our attention will be paid to the fact that there can exist accounting information disclosure of which the purpose is not to communicate something to a certain market but to appease the public. The reason why such information disclosure should be considered was clarified in my previous book (see Yamaji, 1983, Part 3). It can be conjectured from the boycott activities in product markets. Moreover we can imagine as an example the anti-monopoly movements which, by lobbying activities, require legal regulations of firms. They may develop as far as to impose taxes on the extra profits of monopolistic firms, which are costs for the firms. So big businesses are forced to take measures against the anti-monopolistic movements. One of the measures is accounting information disclosure.

The public is likely to suspect if big businesses earn huge profits, divide them among stockholders, and accumulate a portion of them to become much bigger. This suspicion is not based on exact data but on slight but unusual emotion. But it can be a cause enough for political regulations over big business. Consequently big businesses must disclose their accounting information for communicating their efficiencies and profitabilities in order to assuage the public.

The firm's costs and benefits in mass society of information disclosure can also be imagined like those in Figure 1. That is, the benefit degressively increases but the cost progressively increases with the extent of information disclosure. In the same way as the previous subsections, the equilibrium of information disclosure in a mass society can be conceptually shown as in Figure 1 and the necessary condition of equilibrium can be written as the equation (4).

$$\begin{aligned}\pi_m(Q_m) &= R_m(Q_m) - C_m(Q_m) \\ R_m'(\dot{Q}_m) &= C_m'(\dot{Q}_m)\end{aligned}\tag{4}$$

in which $\pi_m(Q_m)$ is the net benefit accruing from information disclosure in a mass society. $R_m(Q_m)$ is the gross benefit from it and $C_m(Q_m)$ is the gross cost from it. The dash indicates the first deviation of the function. Of course the point $\dot{Q}_m$ represents equilibrium point which corresponds to $\dot{Q}_s$ as shown in Figure 1.

3. Total Equilibrium of Firm's Accounting Information Disclosure

We have clarified the costs and benefits of accounting information disclosure in each of four situations (markets) and drawn four net benefit functions and four equilibrium conditions.

But there remains one problem. We separately treated the four partial equilibriums of information disclosure in four situations (markets) though the real firms simultaneously consider the four market factors and decide on the absolute extent of information disclosure ($\dot{Q}_t$). This extent is not always equal to each of four equilibrium points of disclosure ($\dot{Q}_s, \dot{Q}_L, \dot{Q}_p, \dot{Q}_m$) and also not equal to the total extent of four points ($((\dot{Q}_s + \dot{Q}_L + \dot{Q}_p + \dot{Q}_m)$). Thus we must think of the total equilibrium of information disclosure carried by a firm as follows. First of all, total net benefit of information disclosure ($\pi(Q_t)$) can be represented as

$$\begin{aligned}\pi(Q_t) &= \{R_s(Q_t) + R_L(Q_t) + R_p(Q_t) + R_m(Q_t)\} \\ &\quad - \{C_s(Q_t) + C_L(Q_t) + C_p(Q_t) + C_m(Q_t)\} \\ &= R(Q_t) - C(Q_t)\end{aligned}$$

So the total equilibrium is conditioned by

$$R'(\dot{Q}_t) = C'(\dot{Q}_t) \quad (5)$$

What does it mean, the fact that the total equilibrium point $\dot{Q}_t$ derived from (5) is generally different from the four partial equilibrium points? In the next section the meanings will be presented as our conclusion.

4. Conclusions

Interest groups demand different fixed extents of accounting information disclosure from a firm, depending on their own interests. But the firm decides the extent of information disclosure in order to maximize its own net benefit. So the real extent of disclosure is not characterized as the optimal level of disclosure from the viewpoints of the specific interest groups which are involved in the four situations (markets). For example, both firms and investors may be simultaneously able to maximize their own

benefits in the stock market by extending the extent of information disclosure. But it is possible that true extension of information disclosure can not really occur because such extension may bring about a huge cost to firms in other markets. So legal regulations concerning accounting information disclosure in securities markets may not be supported by business firms even if they bring about benefits to both firms and investors in the stock market.

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INCREASING RETURNS TO SCALE AND OPTIMAL INVESTMENT POLICY OF THE REGULATED FIRM*

Seiichi KATAYAMA and Fumio ABE**

Abstract

This paper investigates the optimal investment behavior of the regulated profit-maximizing monopoly that exhibits increasing returns to scale. The Averch-Johnson effect of overcapitalization is reconsidered in a dynamic adjustment cost model with non-concave revenue function. We show that there may be three cases of undercapitalization, overcapitalization and neutrality. In particular, we make clear the role of the assumption of increasing returns to scale or the non-concave revenue function and show that the crucial point in the Averch-Johnson argument is not the economies of scale but the level of the regulated rate of return.

1. Introduction

In the economics of regulation, studies on the 'fair-rate-of-return' constraint have been extensively made since the seminar work by Averch and Johnson (1962). One of the results which is known as the Averch-Johnson (A-J) effect is that the constraint induces the profit maximizing firm to have the larger stock of capital than under no constraint. Among many studies concerning the behavior of the firm subject to the fair rate of return constraint, the discussions in the early stage are mostly concerned with the static case in which considerations over the investment behavior through time are ignored. The present paper is to examine the behavior of the firm facing a regulatory constraint and the economic implications of the regulation in the dynamic setting.

The dynamic version of the A-J original static model has been developed by Peterson and vander Weide (1976), El-Hodiri and Takayama (1981) and Dechert (1984) and others. Peterson and vander Weide (1976) show that the regulated firm under the

* We are grateful to Takao Fujimoto and Takateru Inoue for valuable comments and suggestions.

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binding constraint may invest at a rate which is less than the one by the unregulated firm at each instant of time. Hence they suggest that the A-J hypothesis does not necessarily hold. El-Hodiri and Takayama (1981) criticize the conclusion in Peterson and vander Weide and assert that the A-J thesis holds in the dynamic as well as in the static context. These arguments are made on the basis of the assumption of a concave revenue function. On the other hand, Dechert (1984) emphasizes the importance of increasing returns to scale phenomena in the regulated industry and incorporates it into a dynamic model. And he shows that the A-J effect does not necessarily occur under the increasing returns to scale condition, and states that the concavity assumption of the revenue function plays an important role to support the A-J thesis. Katayama and Abe (1987) show that the A-J thesis does not necessarily hold even under the concave revenue function, and assert that it depends specifically on the level of the regulated rate of return.

Considering the significance of increasing returns to scale, we incorporate the non-concave revenue function assumption into a dynamic model of the regulated firm and see its economic implications. This is the purpose of our present paper.

Besides these theoretical works, empirical studies on the A-J effect have been made. Among them, Spann (1974), Petersen (1975) and Courville (1974) found statistical supports for the A-J hypothesis. On the other hand, Boyes (1976) and Cowing (1978) concluded the regulation to be ineffective. Moreover, the recent analysis of Nelson and Wohar (1983) partly supported the existence of a regulatory bias of the A-J type. The variety of these results reveals the lack of consensus about the topics. This suggests that further studies from the theoretical as well as empirical stand points are necessary.

We show that increasing returns to scale are not essential concerning the above problem, and that it can be a factor to determine the level of the capital stock at which the firm has to operate under regulation. As a result we see that the validity of the A-J thesis is crucially dependent not on the shape of the revenue function but rather on the relative level of the regulated rate of return itself.

This paper is divided into six sections. In section 2, the model and a set of necessary conditions for optimality are explained. In section 3, we shall discuss the optimal employment and investment policies of the regulated firm. Section 4 is devoted to the discussion of the optimal paths and the A-J thesis. In section 5, we present the comparative dynamic analysis concerning the impact of change in the regulated rate of return on the steady state of capital and the investment policy of the firm. In section 6, some concluding remarks are given.

2. Model and Necessary Conditions

The optimal control problem is formulated as follows:

$$\text{Maximize}_{Q, L, I} \int_0^{\infty} [R(Q) - wL - C(I)] e^{-rt} dt \quad (1)$$

subject to

$$R(Q) = P(Q)Q, \quad (2)$$

$$\dot{K} = I - \delta K, K(0) = K_0 (> 0), \quad (3)$$

$$Q \leq F(K, L), \quad (4)$$

$$sK - R(Q) + wL \geq 0, \quad (5)$$

were K and L are two factor inputs, i.e., the stock of capital and labour respectively. We also assume that $K(t) \geq 0$ and $L(t) \geq 0$ are satisfied. Q denotes the amount of output which is a control variable and $P(Q)$ is the inverse demand function. The constraint (4) which is introduced in Dechert (1984) means that the firm is allowed to carry out inefficient production¹⁾. The symbol I stands for the level of gross investment. $C(I)$ denotes the total cost of investment including adjustment costs. It is assumed that $C(I) \geq 0$, $C'(I) > 0$ and $C(0) = 0$ ²⁾. $F(K, L)$ denotes the production function of the firm which is assumed to have local convexity with respect to K and L . Although any type of increasing returns to scale is possible, it seems plausible to assume a typical form of local convexity shown in fig. 1-3 of Dechert (1984)³⁾. Parameters s , w , r , and δ are the regulated rate of return, the wage rate, the discount rate, and the rate of depreciation respectively. They are assumed to be positive constants.

If there exists an optimal solution in the problem, the necessary conditions for optimality are derived as follows⁴⁾.

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- 1) Dechert states that the constraint (4) is assumed in order to eliminate an indeterminacy in the problem. Without that constraint (4), however, there exist two different optimal levels of employment. See Peterson and vander Weide (1976, p.53).
 - 2) It should be noted that, following Dechert (1984), $I \geq 0$ is not assumed in the present paper. See Dechert (1984, p.3).
 - 3) See also Dechert (1984, Fig.1 and Fig.2). In addition he assumes that for each level of the capital stock, the production function is convex for small values of L and concave for large values of L . And he also assume that the revenue function has the same type of non-concavity as the production function.
 - 4) It is obvious, for example, by applying Lemma(iv) in Takayama (1985, p.648) that the constraint qualification in this model is satisfied if $R'(Q)F_L - w = 0$ when the constraints (4) and (5) are binding.

The Lagrangian W is defined as

$$W = R(Q) - wL - C(I) + q(I - \delta K) + \theta [F(K, L) - Q] + \mu [sK - R(Q) + wL]. \quad (6)$$

Assuming an interior solution, there exist functions $q(t)$, $\theta(t)$ and $\mu(t)$ which satisfy

$$\dot{K} = I - \delta K, \quad K(0) = K_0 (> 0), \quad (3)$$

$$\dot{q} = (r + \delta) q - \mu s - \theta F_K(K, L), \quad (7)$$

$$(1 - \mu) R'(Q) - \theta = 0, \quad (8)$$

$$(1 - \mu) w - \theta F_L(K, L) = 0, \quad (9)$$

$$q = C'(I), \quad (10)$$

$$\theta \geq 0, \quad \theta [F(K, L) - Q] = 0, \quad Q \leq F(K, L), \quad (11)$$

$$\mu \geq 0, \quad \mu [sK - R(Q) + wL] = 0, \quad sK - R(Q) + wL \geq 0. \quad (12)$$

In addition, since we consider the infinite horizon case, the following transversality condition is assumed,

$$\lim_{t \rightarrow \infty} e^{-rt} q(t) \geq 0, \quad \lim_{t \rightarrow \infty} e^{-rt} q(t) K(t) = 0, \quad (13)$$

In the above necessary conditions (3) and (7)-(12), $q(t)$ is a costate variable. $\theta(t)$ and $\mu(t)$ are the multipliers associated with the constraints (4) and (5) respectively. Since both the constraints (4) and (5) do not contain a control variable $I(t)$ in the model under consideration, we should take account of the possibility that the costate variable $q(t)$ jumps at the junction points between unregulated and regulated intervals. Therefore, in general, we should consider the following jump condition [see, for example, Seierstad and Sydsaeter (1977)],

$$q(\tau^+) = q(\tau^-) - b [s - R_K(K(\tau), L(\tau))], \quad b \geq 0, \quad (14)$$

where τ is the time when $q(t)$ is discontinuous. In what follows, however, we treat only no jump case for simplicity as Dechert (1984).

3. Optimal Investment and Employment Policies of the Firm

We now consider the optimal investment and employment policies of the firm. As is easily seen from (8) and (9), there are the following three possible cases with respect to the signs of θ and $\mu^{(5)}$:

- (a) $\theta = R'(Q) > 0$ and $\mu = 0$,
- (b) $\theta > 0$ and $0 < \mu < 1$ [$\theta/(1 - \mu) = R'(Q)$],
- (c) $\theta = 0$ and $\mu = 1$,

It is obvious that one of the above three cases is observed at each point of time along an optimal path. Let us examine each case in turn.

Case 3- (a) $\theta > 0$ and $\mu = 0$

In this case the regulated constraint (5) is not binding and the constraint (4) is effective. Therefore the optimal path must satisfy the following equations⁶⁾:

$$\dot{K}^{\circ} = I^{\circ} - \delta K^{\circ}, \quad (15)$$

$$\dot{q}^{\circ} = (r + \delta) q^{\circ} - R'(Q^{\circ}) F_K(K^{\circ}, L^{\circ}), \quad (16)$$

$$R'(Q^{\circ}) F_L(K^{\circ}, L^{\circ}) = w, \quad (17)$$

$$q^{\circ} = C'(I^{\circ}), \quad (18)$$

$$F(K^{\circ}, L^{\circ}) = Q^{\circ}. \quad (19)$$

It should be clear from (17) and (19) that the employment level is determined so as to satisfy the following well-known efficiency criteria of monopoly: the marginal revenue product of labour is equal to the wage rate. If this is the case for the whole planning period, the optimal path has the same properties as those depicted in fig.1 of Dechert (1984, p.6). In other words, this case turns out to be the unregulated monopoly firm with increasing returns to scale. There may be two steady states where one is a saddle point and another is an unstable focus. Therefore there may exist an optimal path which goes to some point on the $K=0$ line. In what follows, we simply focus our analysis on the path converging to E° in fig.2 as the optimal unregulated path. We shall compare it with the optimal regulated path later.

5) See Takayama (1969, p.257, footnote 9) about the assumption that the marginal revenue is positive, i.e., $R'(Q) > 0$.

6) The superscript $^{(*)}$ on variables and functions denotes paths where the regulatory constraint (5) is binding (not binding).

Case 3- (b) $\theta > 0$ and $0 < \mu < 1$

Since both constraints (4) and (5) are effective in this case, the following three equations must hold: $R'(Q)F_L = w$, $Q = F(K, L)$ and $sK - R(Q) + wL = 0$. The two junction points, $\underline{K}$ and $\bar{K}$, are determined for a given fair rate of return as depicted in fig.1.⁷⁾ Fig.1 corresponds to the situation satisfying these equations simultaneously. This case is possible only in these two junction points $\underline{K}$ and $\bar{K}$ ($\underline{K} < \bar{K}$), where a set of junction points V for each given s is defined as follows:

$$V = \{(K, L, Q; s) : R'(Q)F_L = w, sK - R(Q) + wL = 0, Q = F(K, L)\}. \quad (20)$$

Thus it holds that

$$\frac{s}{r + \delta} = \frac{\pi(K)}{(r + \delta)K}, \quad (21)$$

where $\pi(K)$ is the maximum short-run profits after adjusting variable input L , and is defined as follows:

$$\pi(K) = \max_L [R(F(K, L)) - wL]. \quad (22)$$

The left hand side of (21) indicates a horizontal line at $q = s/(r + \delta)$ and the right hand side is obtained by multiplying the average rate of returns on capital by $1/(r + \delta)$. We refer to the curve $q = \pi(K)/(r + \delta)K$ as a switching curve. When increasing returns to scale are introduced in the same way as in Dechert (1984), there is a possibility for two intersections between a horizontal line $q = s/(r + \delta)$ and the switching curve $q = \pi(K)/(r + \delta)K$. The range of the capital stock between

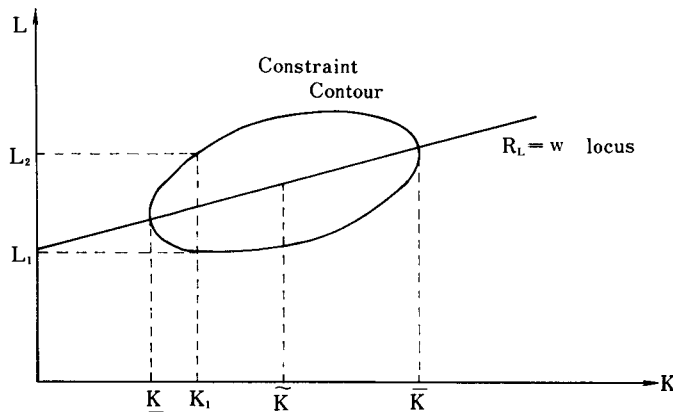


Fig. 1

7) Here a constraint contour is defined as the projection onto a (K, L) -plane of the intersection of the surface of the rate of return function $q = [R(F(K, L)) - wL]/K$ and the plane $q = s$ for a sufficiently small s . See also Katayama and Abe (1987).

these two points, $[\underline{K}, \bar{K}]$, is called the regulated region of the capital stock, or simply the regulated region.

Case 3- (c) $\theta = 0$ and $\mu = 1$

We first consider the employment policy of the firm in this case. Suppose that the level of the capital stock is at $K = K_1$ in fig.1. Since the constraint (5) is binding, K_1 lies in the regulated region $[\underline{K}, \bar{K}]$. Then it is optimal for the firm to choose any point in the range of employment level $[L_1, L_2]$ in fig.1, if he determines the combinations of output Q and labour L satisfying $sK - R(Q) + wL = 0$ for the given s and K_1 .

This is the case that the capital stock is in the interior points of the regulated region $[\underline{K}, \bar{K}]$. Then the optimal path is described by the following equations:

$$\dot{K}^* = I^* - \delta K^*, \quad (23)$$

$$\dot{q}^* = (r + \delta)q^* - s, \quad (24)$$

$$\dot{q}^* = C'(I^*), \quad (25)$$

$$Q^* \leq F(K^*, L^*) \quad (26)$$

$$sK^* - R(Q^*) + wL^* = 0. \quad (27)$$

This system has a unique steady state of capital $\hat{K}^*$ which is a saddle point. Thus if this case occurs throughout the whole planning period or for the final period, the optimal path goes along the horizontal line $q = s/(r + \delta)$, since only such path can satisfy the transversality condition (13). Furthermore it should be noted that the steady state of capital $\hat{K}^*$ decreases as the regulated rate of return decreases. As will be seen below, this is an important point when considering the possibility of the A-J effect of overcapitalization.

4. Optimal Path and the A-J Thesis

Now we turn to the analysis of the optimal path and the discussion of the A-J thesis in such a general case that includes the possibility of changing regulatory phases.

First we have to notice that the following $\dot{q}^c = 0$ locus is derived from the switching curve and the different levels of s ,

$$q^c = \begin{cases} \frac{R'(Q)F_K(K, L)}{r + \delta} & \text{for } K_L < K < \underline{K} \text{ or } \bar{K} < K \\ \frac{\mu s + (1 - \mu) R'(Q)F_K(K, L)}{r + \delta}, \quad 0 < \mu < 1 & \text{for } K = \underline{K} \text{ or } \bar{K} \\ \frac{s}{r + \delta} & \text{for } \underline{K} < K < \bar{K} \end{cases}$$

where superscript c denotes the optimal path in this general case and K_L is the level of capital under which the maximum revenues net of wages is zero.

Then there are the following six ranges of the regulated rate of return each of which determines the relative magnitudes of $\hat{K}^0$, $\hat{K}^*$, $\bar{K}$ and $\underline{K}$,

$$\begin{aligned} S_1 &= \{ s : \hat{K}^* < \underline{K} \leq \hat{K}^0 < \bar{K} \}, \\ S_2 &= \{ s : \hat{K}^* < \hat{K}^0 < \underline{K} \leq \bar{K} \}, \\ S_3 &= \{ s : \underline{K} \leq \hat{K}^* < \hat{K}^0 < \bar{K} \}, \\ S_4 &= \{ s : \underline{K} < \hat{K}^0 < \hat{K}^* \leq \bar{K} \}, \\ S_5 &= \{ s : \underline{K} < \hat{K}^0 \leq \bar{K} < \hat{K}^* \}, \\ S_6 &= \{ s : \underline{K} \leq \bar{K} < \hat{K}^0 < \hat{K}^* \}. \end{aligned}$$

It should be noticed that the $\dot{K} = 0$ locus and the switching curve $q = \pi(K)/(r + \delta)K$ on the K - q plane determine the sets S_i ($i=1, \dots, 6$). When the $\dot{K} = 0$ locus does not intersect with the switching curve, the possible cases are only $s \in S_1$ and $s \in S_2$. In the situation that the $\dot{K} = 0$ locus intersects the switching curve at two points in the region of $K < \tilde{K}$, S_1 , S_2 and S_3 are non-empty. Here $\tilde{K}$ denotes the value of the capital stock which attains the maximum of average profit $\pi(K)/K$. Finally when the $\dot{K} = 0$ locus and the switching curve intersects at two points, i.e., one in the region $K < \tilde{K}$, and the other in the region $\tilde{K} < K$ respectively, all cases $S_i \neq \emptyset$ for $i=1, 3, \dots, 6$ are possible except for $i=2$.

Case 4.1: $s \in S_1$ ($\hat{K}^* < \underline{K} \leq \hat{K}^0 < \bar{K}$)

See fig.2. Since the $\dot{K} = 0$ locus intersects the $\dot{q}^c = 0$ locus on the vertical segment at $\underline{K}$, the steady state of capital K^c is $\underline{K}$. Therefore $K^c(\infty) = \underline{K} < \hat{K}^0 = K^0(\infty)$. Thus undercapitalization is resulted in this case.

We now investigate how the optimal path is determined to the various levels of the initial stock of capital K_0 . In this case, as seen from fig. 2, the level of $q^c(t)$ is lower than the one under no regulation throughout the whole planning period, i.e., $q^0(t) > q^c(t)$ and hence it holds that $I^0(t) > I^c(t)$.

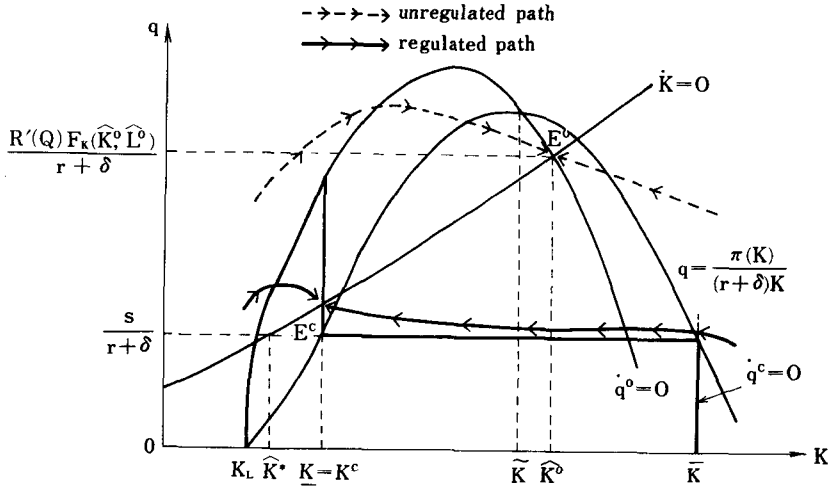


Fig. 2 Case 4.1 $s \in S_1 (\hat{K}^* < \underline{K} \leq \hat{K}^0 < \bar{K})$

Case 4.2: $s \in S_2 (\hat{K}^* < \hat{K}^0 < \underline{K} \leq \bar{K})$

See fig.3. Since the $\dot{K} = 0$ locus intersects the $\dot{q}^c = 0$ locus outside the regulated region $[\underline{K}, \bar{K}]$, the steady state of capital K^c is $\hat{K}^0$. If $K_0 < \underline{K}$, it is optimal for the firm to go along the unregulated path converging to E^c throughout the whole planning period. If $K_0 \in [\underline{K}, \bar{K}]$, the optimal path goes along one of the paths satisfying (23)–(27) for the initial period. And after arriving at $\underline{K}$, the optimal path enters the unregulated region and hereafter follows along the unregulated path converging to E^c . If $\bar{K} < K_0$, the optimal path passes through three regions, i.e., the unregulated region $(\bar{K}, K_0]$, the regulated region $[\underline{K}, \bar{K}]$ and the unregulated region $[\hat{K}^0, \bar{K})$.

In all cases mentioned above, each optimal path converges to E^c . Thus it holds that $K^c(\infty) = \hat{K}^0$ concerning the steady state of capital. We call it the neutral case. In other words, the A-J effect of overcapitalization does not occur in a strict sense.

As for the investment policy of the firm, there are a few types according to various levels of the initial stock of capital. If $K_0 < \underline{K}$, the optimal investment rate is not affected at all by the regulatory constraint throughout the whole planning period. On the other hand, if $K_0 \in [\underline{K}, \bar{K}]$ or $\bar{K} < K_0$, the optimal regulated investment rate is larger than the case with no regulation as seen in fig.3.

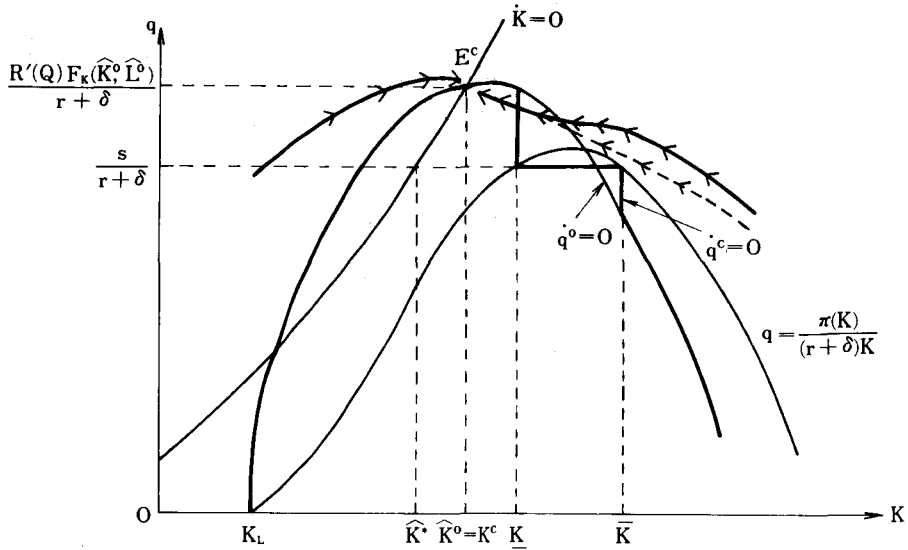


Fig. 3 Case 4.2 $s \in S_2 (\hat{K}^* < \hat{K}^0 < \underline{K} \leq \bar{K})$

Case 4.3: $s \in S_3 (\underline{K} \leq \hat{K}^* < \hat{K}^0 < \bar{K})$

See fig.4. In this case, since the $\dot{K} = 0$ locus intersects the horizontal segment of the $\dot{q}^c = 0$ locus in the regulated region $[\underline{K}, \bar{K}]$, the steady state of capital K^c is $\hat{K}^*$. It should be noticed that $s < R'(Q^0)F_K(\hat{K}^0, L^0)$ and hence $K^c = \hat{K}^* < \hat{K}^0$ hold. If $K_0 \in [\underline{K}, \bar{K}]$, the optimal path goes along the $\dot{q}^c = 0$ locus throughout the whole planning period and converges to E^c . On the other hand, if $K_0 < \underline{K}$ or $\bar{K} < K_0$, the optimal path goes along one of paths satisfying (15)-(19) until it arrives at $\underline{K}$ or $\bar{K}$ and hereafter goes along the $\dot{q}^c = 0$ locus and converges to E^c . In both cases, the optimal path converges to E^c and hence it holds that $K^c(\infty) = \hat{K}^* < \hat{K}^0$. Therefore the A-J thesis does not hold and undercapitalization is realized. We can see that this result depends on $\hat{K}^* < \hat{K}^0$.

Next turn to the investment rate of the firm. In this case, we can observe the impact of the regulatory constraint on the optimal investment rate. As seen in fig.4, the optimal investment level under regulation is lower than under no regulation, although it is not necessarily obvious in the region of $\hat{K}^* < \bar{K}$.

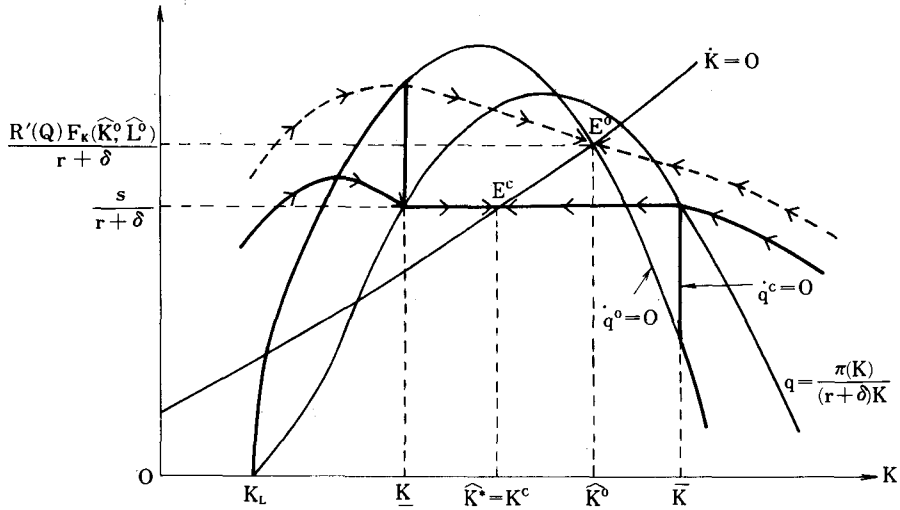


Fig. 4 Case 4.3 $s \in S_3$ ($\underline{K} \leq \hat{K}^* < \hat{K}^0 < \bar{K}$)

Case 4.4: $s \in S_4$ ($\underline{K} < \hat{K}^0 < \hat{K}^* \leq \bar{K}$)

See fig.5. Since the $\dot{K} = 0$ locus intersects the horizontal segment of the $\dot{q}^c = 0$ locus in the regulated region $[\underline{K}, \bar{K}]$, the steady state of capital K^c is $\hat{K}^*$. It should be noticed, however, that $s > R'(Q^0)F_K(\hat{K}^0, L^0)$ and hence $\hat{K}^0 < \hat{K}^* = K^c$ hold. Therefore, the A-J effect of overcapitalization occurs.

As for the investment policy of the firm, we can show some interesting properties. As seen in fig.5, it seems that the optimal regulated path intersects

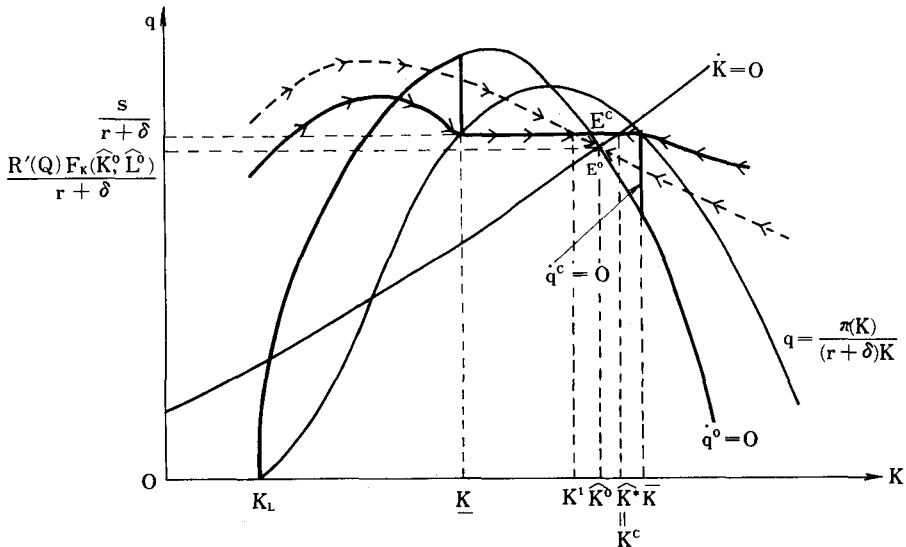


Fig. 5 Case 4.4 $s \in S_4$ ($\underline{K} < \hat{K}^0 < \hat{K}^* \leq \bar{K}$)

Case 4.5: $s \in S_5$ ($\underline{K} < \hat{K}^0 \leq \bar{K} < \hat{K}^*$)

As for the optimal investment rate of the firm, we can observe the similar properties to the one in case 4.4

See fig.7. In this case, since the $\dot{K}=0$ locus intersects the $\dot{q}^c=0$ locus outside the regulated region $[\underline{K}, \bar{K}]$, the steady state of capital K^c is $\hat{K}^0$. Then the optimal path has the same properties as in the case of $s \in S_2$. That is, if $\bar{K} < K_0$, the optimal path goes along the unregulated path converging to E^c . If $K_0 \in [\underline{K}, \bar{K}]$, the optimal path goes along one of the paths satisfying (23)–(27). Furthermore, if $K_0 < \underline{K}$, the optimal path may pass through three regions, i.e., the unregulated

region $[K_0, \underline{K})$, the regulated region $[\underline{K}, \bar{K}]$ and the unregulated region $(\bar{K} < \hat{K}^0]$ by turns. In all cases, the optimal path converges to the steady state of capital $\hat{K}^0$. Thus the A-J effect of overcapitalization does not appear. We summarize the results in table 1.

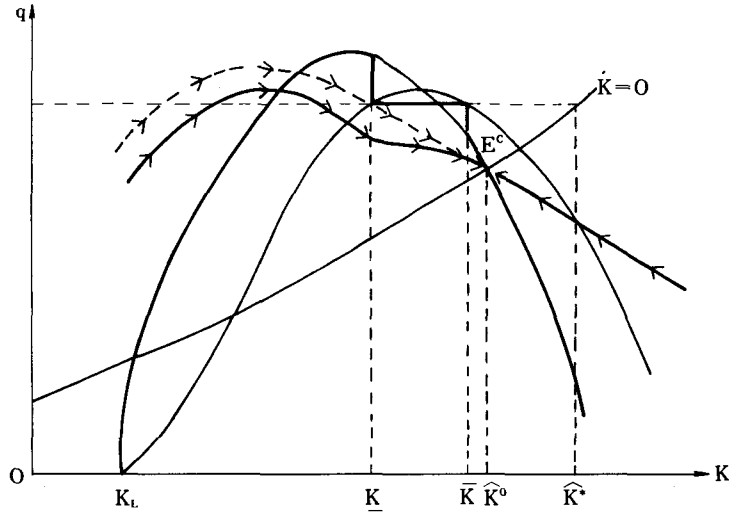


Fig. 7 Case 4.6 $s \in S_6 (\underline{K} \leq \bar{K} < \hat{K}^0 < \hat{K}^*)$

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆
range of s	$s < R'(Q^0)F_K(\hat{K}^0, L^0)$			$s < R'(Q^0)F_K(\hat{K}^0, L^0)$		
steady state	$\underline{K}$	$\hat{K}^0$	$\hat{K}^*$	$\hat{K}^*$	$\bar{K}$	$\hat{K}^0$
A-J thesis	under	neutral	under	over	over	neutral
investment	$I^c < I^0$	$I^c \geq I^0$	$I^c < I^0$	$I^c \leq I^0 \rightarrow I^c > I^0$		$I^c \leq I^0$

note: over denotes overcapitalization, under undercapitalization, respectively, where neutral means that $K^c(\infty) = \hat{K}^0$.

Table 1

5. Comparative Dynamics

In this section, we present some results of comparative dynamics regarding the impact of change in the regulated rate of return on the steady state of capital and the optimal investment path. Table 2 summarizes the results.

First of all, it should be noted that when the regulated rate of return changes, the $\dot{q}^c = 0$ locus changes partly and other curves such as the $\dot{K} = 0$ locus and the switching curve $q = \pi(K)/(r + \delta)K$ are kept unchanged. We first consider the effect of change in the regulated rate of return in the cases of $s \in S_2$ and $s \in S_6$. As seen in section 4, the optimal path essentially has the similar properties in these two cases. That is, although it may pass through the regulated region of the capital stock, it finally converges to the unregulated steady state of capital $\bar{K}^0$ which is in the unregulated region. Therefore the optimal path is affected by change in the regulated rate of return only when it stays in the region of $K \leq \bar{K}$ for the case $s \in S_2$ and in the region of $K \leq \bar{K}$ for the case $s \in S_6$, respectively. Then, as seen in fig.3 and fig.6, we can obtain the results shown in table 2.

We next investigate the cases of $s \in S_3$ and $s \in S_4$. The optimal investment path has also the same characteristics in these two cases. That is, although it may pass through the unregulated range of the capital stock, it finally converges to the regulated steady state of capital $\bar{K}^*$ which is in the regulated region. Then we have the results in table 2.

Finally consider the cases $s \in S_1$ and $s \in S_5$. In these cases, the optimal path converges to the lower limit of the regulated region of the capital stock in the case of $s \in S_1$ and the upper limit in the case of $s \in S_5$. Therefore we have to notice that the effect of change in the regulated rate to the steady state of capital is opposit in $s \in S_1$ and $s \in S_5$. Considering these we obtain the results in table 2.

	$K_0 < \underline{K}$	$K_0 \in [\underline{K}, \bar{K}]$	$\bar{K} < K_0$
S ₁	$I_s^c > 0$ $K_s^c(\infty) > 0$		
S ₂	$I_s^c(t) = 0$ $K_s^c(\infty) > 0$	$I_s^c(t) < 0$ $K_s^c(\infty) > 0$	
S ₃ and S ₄	$I_s^c(t) > 0$ $K_s^c(\infty) > 0$		
S ₅	$I_s^c(t) < 0$ $K_s^c(\infty) < 0$		
S ₆	$I_s^c(t) > 0$ $K_s^c(\infty) = 0$		$I_s^c(t) = 0$ $K_s^c(\infty) = 0$

Table 2

6. Concluding Remarks

In the preceding sections, we have considered the optimal investment and employment policies of the regulated firm under the assumption of increasing returns to scale. Here as concluding remarks we summarize the main results and refer to some differences between our analysis and the similar one by Dechert (1984).

First, our analysis shows that there are a few types of the optimal regulated paths corresponding to the various levels of regulated rate of return. There is the possibility of three cases of undercapitalization, overcapitalization and neutrality. The possible patterns of the optimal path are determined by the relative magnitudes among the four levels of capital stocks, i.e., $\hat{K}^0$, $\hat{K}^*$, $\underline{K}$ and $\bar{K}$. The six possible sets of the regulated rate of return is obtained by these four variables. It is clear that the pattern of the optimal path crucially depends on which set the regulated rate of return belongs to. In this sense the level of regulated rate of return is a key parameter to the solution.

Secondly, the A-J effect of overcapitalization may appear in the cases $s \in S_4$ and $s \in S_5$ in which $\hat{K}^0 < \hat{K}^*$ holds. However, even though $\hat{K}^0 < \hat{K}^*$ in the case $s \in S_6$, the A-J thesis does not hold because $\hat{K}^*$ is outside the regulated region of the capital stock. $\hat{K}^*$ cannot be the steady state unless it is in the regulated region. Dechert (1984) states that in the dynamic model formulated in E1-Hodiri and Takayama (1981), the falling marginal and average profits with respect to the stock of capital lead to their main result of the A-J effect of overcapitalization, and therefore the importance of the concave revenue function is emphasized. Katayama and Abe (1987) show that under the concave revenue function, the A-J hypothesis holds only when $\hat{K}^0 < \hat{K}^* \leq \bar{K}$. Here we have shown that under the non-concave revenue function, the A-J hypothesis holds only when $\underline{K} < \hat{K}^0 < \hat{K}^* \leq \bar{K}$. On this basis, the point in the A-J argument is the relation $\hat{K}^0 < \hat{K}^* (\leq \bar{K})$ and even under the non-concave revenue function, it holds only when $\hat{K}^0 < \hat{K}^* (\leq \bar{K})$. As the preceding analysis and Katayama and Abe (1987) show, the situation $\hat{K}^0 < \hat{K}^* (\leq \bar{K})$ and $\hat{K}^* < \hat{K}^0 (\leq \bar{K})$ are possible depending on the levels of the regulated rate of return under the non-concave and the concave revenue function. In this sense the form of the revenue function does not necessarily play a key role in the A-J argument. Then what determines the relative magnitude of $\hat{K}^0$ and $\hat{K}^*$? As easily seen from the figures, it depends on the relative magnitude of the regulated rates and the marginal revenue product of capital evaluated at the unregulated stationary states, $R'(Q^0)F_K(\hat{K}^0, L^0)$. If we could interpret $R'(Q^0)F_K(\hat{K}^0, L^0)/(r + \delta)$ as a suitable capital cost in the infinite horizon model, the crucial point in the A-J argument

is which is larger the capital cost or the discounted regulated rate. If the regulated rate is smaller than the capital cost, the shadow price of capital $q^c(t)$ becomes smaller and the terminal capital stock becomes less than the unregulated case. Undercapitalization is realized. This point is the same as the case of concave revenue function.

Finally, the presence of increasing returns to scale may set a certain positive lower limit to the regulated region of the capital stock $\underline{K}$, while we can regard $\underline{K}$ as zero under the assumption of the concave revenue function. This means that increasing returns to scale would make the regulated region for the firm smaller than otherwise.

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PROBLEMS AND METHOD OF ECONOMICS

Nobuo OKISHIO

1. Living Things and Human Beings

A human being is one of the variety of living things which appeared during the evolution of all living organisms which in itself was a part of the development process of nature on Earth. So, in order for human beings to continue to exist, they must do the same basic activities as all other kinds of living things to survive.

Any kind of living thing must be able to control, more or less, the surrounding environment to maintain homeostasis of its own system. Not only is it passively influenced by the surrounding environment but it must also actively control it. This active control is the very condition for the existence of living things.

Of course, a human being cannot continue to live without this active control over the surrounding environment. Human beings remarkably improve their ability to control the outside environment in distinctively different way from other kinds of living things. The typical characteristics of mankind's control over the surrounding environment are as follows: (1) Their activities are conscious (thinking animals). (2) They work on nature with not only their own hands and feet but also with their produced tools (tool-making animals). (3) They work on nature not isolatedly but in a socially cooperative way (a social animal).

These three characteristics are not separated but interrelated to each other. For human beings to be able to act consciously they must have a certain development of the cerebrum and of language. However, they could not have developed the cerebrum without having been extensively omnivorous, supported by the use of fire and their own hand-made tools. And there would have been no language without socially cooperative activities. For human beings to work on nature with their own tools, social cooperation and the capacity of foresight are indispensable. So we can say that the ultimate basis of human beings' remarkable control over external environment is that human beings have worked socially and cooperatively.

2. Productive Forces: Ability to Control Nature

We call human being's conscious control over nature 'productive activity' or labor. And we call human being's ability to control nature productive forces. It is important to note the following facts about productive forces.

(1) Human being, strictly speaking, cannot create matter at all and can only control the conditions of matter existing in nature. Humans' control over nature is not confined to local control such as producing portable, divisible and privately ownable goods but extends to global control, in time and space, which brings irreversible changes to nature. For example, local control could be the production of medicine that takes effect only within the takers' body, and global control could be hygienic measures to get rid of the germs of a disease from a wide area.

(2) Humans' controlling actions over nature are originally not an end in themselves. They are a means of stabilizing the human condition and assuring the human progress. In order to stabilize the human condition, service activities such as nutrition, sanitation, medical treatment, childcare and education are necessary. For human being to survive their controlling actions over external nature must be used to promote these activities.

(3) It is a mistake to measure human productive forces simply from the viewpoint of whether one can produce more products at less cost. As productive forces are the ability to control nature, this control ability cannot be said to be highly developed, unless we can not only produce a great amount of electric power and steel at a fixed cost but also recognize wide changes in nature caused by our productive activities and thus take proper measures to rectify them. As mankind's power to change nature increases, the recognition of the broad effects on nature of our productive activity and the necessity of measures to cope with them grow in importance.

(4) If our productive forces in the above sense could not develop further, human being's survival could not be guaranteed. Because nature, which is the object of our control, tends to change. It is not only that nature itself experiences irreversible historical movements, but also mankind's productive activities change nature radically and extensively. If mankind's mode of controlling nature remains fixed in spite of changes in the objects of control, it would become impossible to control them and human beings would cease to exist. We human beings can survive only if we study nature more

and make more effort to control it, accepting modestly that we still know almost nothing about nature.

3. Production Relations

Man can have a more sophisticated ability to control nature than other animals, because of his social cooperation and joint activities towards nature. We call social relations between man and man concerned with production as “production relations”.

Production relations consist of various kinds of relations. The main production relations are the following: (1) Cooperative relations in production (cooperation, division of labor), (2) Property relations of the means of production, (3) Relations between those who make decisions on production and those who are obliged to obey, (4) Relations between people who are free from labor and those who are compelled to work, (5) Relations concerned with the distribution of products.

Man must have these various kinds of relations concerning production in any society. In various social forms they appear differently. Among production relations which characterize any social form, property relations of the means of production play a most basic role in the sense that they determine other relations. At first sight, the property relations of the means of production look like the relations between men and the means of production. Rather than being the relations between objects and men, they are the relations between men and men in connection with the means of production. For example, the fact that A privately possesses a means of production X means that A excludes other people's (B, C, D, ...) intervention on decisions about the means of production and that he thus grasps the decision-making apparatus. So if it is once decided who possesses the means of production in a society, it determines mostly who makes the decisions about production, who cannot but take charge of the labor, and how the products are distributed.

Though the specific property relations of means of production, which we call basic production relations, determine the other production relations derivatively, the relations thus determined help this basic production relations to reproduce and survive for a certain historical period. For example, the means of production are possessed privately by capitalists in a capitalistic society. As a result, fundamental decisions about production are made by the capitalists, and those people who are excluded from the ownership of the means of production are obliged to be employed as wage-laborers. Capitalists exploit surplus products which exceed the level necessary for the reproduction of labor power. Consequently wage-laborers, again excluded from possession of the means of production, must reappear at the labor market to sell

their labor power, where capitalists reappear as monopolizer of the means of production. In this manner, any society possesses the mechanism to reproduce its own production relations.

Besides such a built-in mechanism to reproduce production relations, the society has an organ which is designed to maintain and strengthen its own production relations. This organ is called the "state", and it consists of three parts: an ideological device, a legal device and a violent device. Out of these three the ideological device is most fundamental, because if it does not work, the society cannot assure people's voluntary or reluctant consent and consequently the other devices have difficulties in working. Proper functioning of the ideological device depends on whether the productive activities function well under the production relations in question.

4. Productive Forces and Production Relations

It is not random and arbitrary what kinds of production relations a society has in a certain specific historical phase. The main primary factor which determines what kinds of production relations take place and reproduce themselves in a certain specific historical phase are the level and character of control ability over nature i.e. the level of the productive forces which the human society has in that phase.

For capitalistic production relations to settle and work, what level of human capacity to control nature is needed?

Capitalistic production relations cannot settle, if human ability to control nature does not reach a certain lower limit.

(1) Labour productivity must be high enough to be able to produce enough surplus products, or else the exploiting class cannot exist and the society cannot afford the waste inevitably caused by commodity production.

(2) Social division of labor must prevail, or else commodity production cannot become general, and there will be no capitalistic society.

(3) Labor productivity must increase as the scale of enterprise increases, or else capitalistic firms cannot squeeze out small independent enterprises and compel them to become wage-laborers.

Capitalistic production relations cannot work effectively, if human ability to control nature exceeds a certain upper limit.

(1) As the productivity of labor climbs remarkably high, the unemployment problem becomes crucial. And as the scarcity of products disappears, capitalistic society, needing scarcity as one of the basic prerequisites for its very existence, cannot work well.

(2) If the minimum required fund to develop new production techniques and to control nature globally exceeds the limit privately financed, the mobilization of public funds by the state becomes indispensable. This contradicts the rules of capitalism which are based on investment of private capital, and bribery becomes the order of the day.

(3) If mankind's ability to control nature increases so noticeably that it becomes able to change nature globally, then human productive activities not only change the local environment within factories but also heavily influence the wider environment in general and human bodies in particular. This means influences on seawater, the atmosphere, weather conditions, the human gene and so on. At such a stage private profit seeking decisions on production will have serious ramifications for the very survival of the human race.

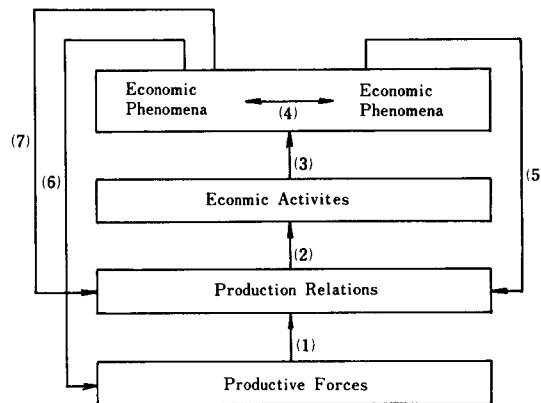
(4) As mankind's ability to control nature becomes global, the results of productive activity (products) become difficult to confine into the form of commodities. For example the results of medical and hygienic activities over a wide region are difficult to commercialize on the give and take principle and it would be a foolish thing to do so. Capitalism is a society which is based on dominant commodity production, so the spread of such global activities eventually tends to conflict with the existence of capitalism.

(5) As the human ability to control nature increases, so too does the human ability to process information, because such control activity necessarily follows the activity of processing information. The ability to process information consists of material means (electronic computers, communication equipment etc.) and human factors. With the increase of productive forces, the ability to process information spreads among members of the society. However capitalists' ownership of the means of production and their monopoly of important economic and political decisions are the very basis of capitalistic society. In other words, this society can maintain itself only by the exclusion of the majority of society's members from decision making. At the stage where the ability to manage information belongs only to a few people and most people do not have it, such a society can be stale. But as this ability (which is also a decision making ability) becomes universal, it gets more and more difficult to cut out people who possess the decision making ability from the final decision.

Today, human beings have arrived at the stage where they are grasping the ability to control nature globally. It is the most important question whether this ability will lead to massacres, war and the large scale destruction of the natural environment caused by private profit seeking decisions or whether it will ensure the survival of humanity by global social decision making.

5. The Problems of Economics

Economics which studies economic phenomena in any society must theorize about the following problems with facts and logic. (Refer to the figure corresponding to the number)



(1) What is the necessary level of human ability to control nature for the society in question to become established and work? At such a stage what kind of production relations, especially property relations of the means of production, are efficiently workable and necessary?

(2) What other kinds of production relations are derived from the property relations of the means of production which characterize the society? How do people act in such production relations? Who grasp economic decision-making and how do they decide?

(3) What economic phenomenon appears as a result of people's actions? When treating capitalistic society, we must explain exchange, money, wages, profit, accumulation, crisis, business cycles, unemployment, technological innovation etc., from the basic characteristics of a capitalistic society.

(4) How are economic phenomena, caused by people's actions, mutually interrelated? The analysis of simultaneous and intertemporal relationships is important. And mathematical tools are helpful especially in this field.

(5) How do the thus caused economic phenomena function to maintain and reproduce production relations which characterize the society? In other words, we need to reveal the built-in reproduction mechanism of the society. For example in a capitalistic society even economic crisis, unemployment and low wages function to maintain capitalistic production relations.

(6) How do economic phenomena caused in the society change man's ability to control nature? What is the mechanism which increases the productive forces? What is the threshold value of the ability to control nature which leads to incompatibility with the society in question?

(7) How do the economic phenomena caused in the society mature the factors which sublate the production relationships in the society? For instance, a capitalistic society gives birth to the human capacity to control nature which contradicts with capitalistic production relations, and yet on the other hand, creates people which has the awareness and capability to produce new production relations.

Of the above-mentioned relations, (1) shows the basis and characteristics of the society, and (2), (3), (4) and (5) constitute the mechanism of social reproduction. (6) and (7) constitute the mechanism by which the social form is replaced with another social form sooner or later. It is necessary that we study the society not only from the viewpoint of reproduction, but also from the viewpoint of sublation and transformation; Dialectic.

Replacing the social form which has begun to endanger human survival with another new social form can be called a highly sophisticated feedback peculiar to human society. By this feedback mechanism the survival of human society is guaranteed.

6. Schools of Economics

Various schools of Economics are classified hereafter, depending on which problems they specialize in:

(A) A school which merely analyzes mutual relationships among economic phenomena. Problem (4)

(B) A school which only analyzes how economic phenomena are caused by human actions and how they interrelate with one another. Problems (3), (4)

(C) A school which only analyzes the reproduction mechanism of production relations. Problems (2), (3), (4) and (5)

(D) A school which only analyzes how economic phenomena function to sublate the production relations which cause these economic phenomena. Problems (2), (3), (4), and (7)

(E) A school which analyzes all the problems from (1) to (7) and reveals the necessity of sublation through affirmative comprehension of the society.

(A) and (B) are the type seen in so-called "Modern Economics". They are subjective in the sense that they see neither the objective bases of the economic phenomena nor the social bases of the motives of human actions. And they are unhistorical and conservative in the sense that, though they do see the dual effects of human actions and economic phenomena in the society itself, they ignore historical change in society.¹⁾

An example of (C) is found in the so-called Uno's theory. These schools study capitalistic society only as a permanently perpetuating system and do not theoretically analyze those moments of irreversible movement which eventually sublate capitalistic society. In this sense Uno's theory is unhistorical.²⁾

An example of (D) is Rosa Luxemburg's theory. And this school is apt to be a shallow radicalism. Ignoring the mechanism by which capitalistic society reproduces itself, they merely indulge unrealistically in finding moments to sublate capitalistic society.³⁾

(E) is what K. Marx pursued in his "Das Kapital".⁴⁾

1) J.A. Schumpeter, *Das Wesen und der Hauptinhalt der Theoretischen Nationalökonomie*, Duncker & Humblot, Leipzig, 1908.

J.R. Hicks, *Value and Capital: An Inquiry into Some Fundamental Principles of Economic Theory*, Oxford, Clarendon Press, 1939.

P.A. Samuelson, *Foundations of Economic Analysis*, Cambridge, Harvard University Press, 1947

2) Kozo, Uno., *The methodology of political economy*, Tokyo University press, 1962.

Ishisuke, Mita., *The Uno's theory and Marxian political economy*, Aoki shoten, 1968.

3) R. Luxemburg, *Die Akkumulation des Kapitals*

4) K. Marx, *Das Kapital*

K. Marx, *Zur Kritik der Politischen Ökonomie*.

В.И. Ленин, *Что такое "Друзья Народа" и как они борются против Социал-демократов?*

INDUSTRIAL ORGANIZATION AND INTERNATIONAL TRADE

– TEXTILE INDUSTRIES IN THE WESTERN PACIFIC REGION –

Katsuhiko IKEDA*

1. Introduction

The purpose of this paper is to study the textile industries in the Western Pacific region from the viewpoint of the industrial organization theory. Those industries are currently in different stages of development: the Japanese, South Korean, Taiwan, Thai and Australian textile industries are in the different stages of development. They will have different relationship between market structure and performance. The relationship of market structural element, such as export ratio as an index of industrial development, to market performance, such as profitability will be tested empirically. In conclusion, the characteristics of industrial organization of the textile industries in the Western Pacific region will be explained.

2. Theoretical Hypotheses and Review

Vernon¹⁾ and Akamatsu²⁾ formulate the pattern of the product cycle. According to this theory, an industry will develop from the import-substitution stage through the exporting and developed stages to the matured stage. The measure which characterizes these stages is export ratio. Export ratio will increase from the early stage of development, and reach the highest in the exporting stage and decrease in the matured stage.

At each stage of development, industrial organization theory assumes the structure-conduct-performance paradigm. Market structural elements are concentration ratio, degree of product differentiation, entry barrier, growth rate and international trade such as export ratio, import ratio and intra-industry trade. These influence market conduct and performance. We assume certain relationships between market structure and performance and test them empirically. This is shown in Table 1.

Among structural elements, it is important to consider the effect of export ratio on market performance, because all industries in an economy are different in their

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1) Vernon [13]

2) Akamatsu [1]

stages of development. We assume a hypothesis about relationship between export and profitability, and test it to know where the industry is. This will give a critical viewpoint to the industrial organization analysis which includes all industries in different stages of development. Because there are some matured industries with high concentration but low profitability and other developing ones with low concentration but high profitability. This will lead to some misleading results, unless we analyze industries classified by stages of development.

Thus, it would be necessary to assume some hypotheses on the export ratio and market performance and test them by the regression analysis based on the product cycle theory and the industrial organization theory.³⁾

Table 1. Industrial Organization in the Product Cycle

stages of development	introduction of industry	early development	development	mature	new stage
trade	import	import substitution	export	import	export
industrial organization	none	monopolistic competition	competition	oligopoly	competition
<u>Structure</u>					
number of firms		increasing	large	decreasing	increasing
concentration ratio		high	low	high	
entry barrier		high	low	high	
product differentiation		high	low	high	high
growth		low	high	very low	high
<u>Conduct</u>		competitive or cooperative	competitive	cooperative	competitive
<u>Performance</u>		bad	very good	very bad	good
<u>Policy</u>		anti-trust policy, protection	free competition, free trade	cartelization, protection	antitrust policy, reducing protection

3) Porter discusses market competition in the different stages of development. But, from the viewpoint of industrial organization, these hypotheses have not been fully developed to analyze the major problems of the industrial organization. Porter [11]

The hypotheses to be tested are as follows.

- (1) We assume as the main hypothesis on the relationship between export ratio and profitability that export ratio will be positively related to profitability in the developing stage. In the developing stage firms have international cost competitiveness. South Korea, Taiwan and Thailand will be profitable by exports. On the other hand, export ratio will be negatively associated with profitability in the matured stage of development. In this stage an industry has lost international cost competitiveness. Japanese textile industry will lose profit in exports. In the early stage of development, export will be negatively related to profitability, because the industry has not yet enough international competitiveness.
- (2) Growth rate will be positively related to profitability.
- (3) Concentration ratio will have a positive relationship to profitability because of market power or economies of scale or both. However, if firms export a large proportion of output, as in South Korea and Taiwan, the concentration ratio will not always have any significant relationship to profitability.
- (4) A high degree of product differentiation or product quality will have a positive relationship to profitability. Higher quality but more expensive products will produce more profit despite incurring more cost, as in the case of Japan.
- (5) Productivity and tariff will have a positive, but capital labor ratio a negative relationship to profitability. The textile industry is so labor-intensive that an increase in capital labour ratio will decrease profitability in the short run.
- (6) Intra-industry trade will have a positive relationship to profitability. Industries which have lost international price-competitiveness, as in Japan, will earn profits by exporting high quality products and importing products for ordinary use. Intra-industry trade due to product differentiation will increase profitability.

3. Research Design and Methodology

The above hypotheses are tested by the multiple regression equations, relating profitability to export ratios and other variables.

The model used here and the variables will be presented.

The Statistical Model

The general structure of the model used here is the following:

$$Y_{it} = \sum_{j=1}^n \beta_j X_{it} + \mu_{it}$$

Y_i : dependent variables : j variable (1 ~ n)

X_i : explanatory variables : t time (1 ~ l)

β_i : parameters to be estimated : i firm (or industry) ($1 \sim m$)
 μ : residual element

This equation is estimated by the OLS technique.

Dependent Variables: Profitability

Profitability is measured by return on equity before tax and return on sales before tax and return on assets before tax. The data sources are the annual reports of firms and publications of the textile industries and the statistics.

Explanatory Variables

Among the explanatory variables included are: export ratio (firm-level, industry-level, and world-level), sales growth rate (firm, industry and world), concentration ratio (the largest 4 sellers' concentration ratio), import-domestic demand ratio, degree of product differentiation (ratio of higher quality products), capital-labour ratio (fixed capital per employee), productivity (value added per employee and value added per capital), nominal tariff rate, and selling and general management cost-sales ratio, and effective rate of assistance.

4. Empirical Evidence

The estimated results are shown in Table 3. The signs of the significant parameters of the regression analysis are shown in Table 2 in order to explain the empirical results.

1. Japan

In the Japanese textile industry, the industry export ratio is found to be negatively associated with profitability. Therefore, the hypothesis concerning export and profitability is supported. But, firms make profits by raising the ratio of their higher quality products (cotton and chemical fiber), or promoting intra-industry trade (cotton fiber). We found that the firm growth rate (cotton and chemical fiber) contributed to profitability. The ratio of selling and general management cost to sales is positively related to profitability through sales and management effort.

Having lost their international cost competitiveness, the Japanese textile firms have pursued profits in their domestic markets by increasing the percentage of higher-quality products in sales.⁴⁾ They could not make profits by exporting goods with larger scale of economies. So they tend to export them during

4) In Japan, 20S, 30S, and 40S cotton yarns with large scale of economies can not compete internationally any more, but fine cotton yarn with high quality still can. Examples of high quality synthetic fiber are the modified crosssection fiber, non-sizing fiber, multi-color effect yarn, and triroval fiber. Ikeda [5]

a recession in the domestic market. Such exporting would cause profitability to fall. Therefore, the Japanese textile industry tends to reinforce its international non-price competitiveness by supplying products and services of higher quality, and thus to promote intra-industry trade by exporting products with higher quality and importing products with larger scale economies.⁵⁾

2. The Republic of Korea

We found that almost all export variables were negatively associated with profitability. The reason is that export or growth is chosen as the purpose of the macroeconomic policy of the Korean government. Therefore, firms choose export or growth as their goal rather than profits. The export ratio already has reached a high level so that increasing the export ratio must have caused profitability to fall. Profitability is decreased because the Korean textile industry has a lower international competitiveness in higher cost of labor and materials than other developing countries. Therefore, the hypothesis about the positive relationship between export and profits is rejected. On the other hand, according to the monopoly price regulation policy (under the Korean Fair Trade Act), the domestic price regulation of cotton fiber and local export price regulation of chemical fiber (the list price system) are to be noted as one of the reasons for decreased profitability in spite of increased exports though the Korean textile industry is in the developing stage.⁶⁾ We found, in addition, that industry growth, tariff and labor intensity contributed to the increase in profitability. These results supported the hypotheses. Concentration ratio has no significant effect.

3. Taiwan

We found that the economic performance in Taiwan followed the economic principle because Taiwan is organized according to a free economic system. The market structure is more competitive than that of Korea, although the productive

5) The Japanese textile industry is at a disadvantage in price competitiveness on world market. Therefore, Japan must export by strengthening non-price competitiveness. The main source of non-price competitiveness is technological development for higher-quality products, and a better sales service. Examples of the latter are world-wide sales networks, and trustworthiness of trade, such as prompt delivery and adequate treatment of consumers' claims, which are mainly due to the *Shosha*. But we could not get the measurements of these factors of non-price competitiveness. In addition, we must evaluate the efficiency of vertical organization in the chemical fiber textile industry in the domestic market. Ikeda [5], [6]

(6) The Korean government adopted a price regulation policy which controlled the price of cotton yarn for domestic demand and set the guide price or list price of chemical fibers for local export. The former is set to control inflation, and the latter to hold the stability of chemical fiber used for export. This tended to restrain the profitability of cotton and chemical textile firms. Ikeda [6]

capacity is the same size.⁷⁾ It is found that the Taiwan textile industry exports contributed to the increase of profitability because of their strong international competitiveness, and also a firm growth rate and labor productivity contributed to profitability. It is characteristic of a developing country such as Taiwan that labor intensity is positively related to profitability. These empirical results supported our hypotheses. Concentration ratio has no significant effect because of a large share of export.

4. Thailand

We found that, in the polyester cotton textile industry, both the export ratio and the protective tariff were positively associated with profitability. So this industry is in the developing stage. Thailand had adopted an import-substitution policy and an export-promoting policy. In the polyester cotton industry an increase in export caused the industry to grow and new firms to enter, so that the change into a competitive market structure decreased profitability. In the chemical fiber industry, which is still in the import-substitution phase, tariffs are negatively related to profitability, because the protective tariff rate was raised when an increase in imports caused the profitability to fall. It is found that growth contributed to profitability. These results provided support for the hypotheses.

5. Australia

The Australian textile industry is characteristic of a high import ratio, a low export ratio (except early processing), a limited market growth and a high protection. Because of scarcity of the data, we tested the hypotheses about the determinants of profitability based on the industry data. We found that a high and increasing level of protection maintained profitability to be positive in the textile industry. Export had no significant effects (Table 3-5-1). We can say that the Australian textile industry has never followed the product cycle. It has been staying in the early stage of development or might have fallen into the matured stage without experiencing the export stage. It is mainly because it has been highly protected since the 1920s. We found also that value added per employee has a negative relationship to profitability. It is because an increase of wage would be higher than that of productivity due to the strong bargaining power of the Australian trade unions.

7) The cotton textile industry in Taiwan has a more competitive market structure than that of Korea. In spite of the same size in productive capacity of 3 million spindles, the largest 4 firm concentration ratio is 14%, and 112 firms in Taiwan, but 43%, and 23 firms in Korea. Ikeda [6]

5. Concluding Remarks

The empirical evidence shows that different empirical results between the export ratio and profitability reflect the characteristics of different stages of industrial development. Indeed, we found a negative relationship between the export ratio and profitability in Japan and South Korea. The reason is that the Japanese textile industry has lost its international competitiveness so that exports could not be profitable in overseas markets. Therefore, it tends to sell goods mainly in the domestic market except some kinds of differentiated products, but sell them in overseas markets only during a recession.

The Korean textile industry has been in a developing stage with a high growth rate and a high export ratio. The reason is that the government has fostered an export-promoting policy, and the firms have pursued maximization of growth or export instead of profit maximization. This is characteristic of the behavior of firms in the developing stage of industry. Exports in a large scale resulted in a decrease of profitability because of the entry of rivals or of excessive supply.

On the other hand, the Taiwan textile industry in the same stage of development as the Korean industry showed a positive relationship between exports and profitability. Taiwan is managed in a free economic system so that active export efforts resulted in an increase of profits and growth. The Thai textile industry began to export in the latter half of the 1970's. The polyester cotton textile and garment industries contributed to profitability, but other textile industries are still now in the import-substitution stage of industrial development. They are protected by high tariffs or import regulations.

The Australian textile industry has had a long experience, but has been staying in the early import-substitution stage. We would like to say that a very high level of assistance is responsible for the performance of the industry.

The empirical results show the characteristics of the behavior and performance of firms in different stages of industrial development.

[Symbols (Tables 2 and 3)]

- CR3, CR4 : 3 and 4 largest firm concentration ratio
- EA : equity-asset ratio
- EN : rate of entry (number of firms)
- ET : effective rate of assistance (Australia)
- FF : filament fiber textile industry
- Gf : firm growth rate
- Gi : industry growth rate
- IM : import-domestic demand ratio
- IT : intra-industry trade, $1 - \frac{|X_i - M_i|}{|X_i + M_i|}$ (X_i ; export, M_i ; import)
- KL : capital-labor ratio
- PL : output-labor ratio
- NT : nominal tariff rate
- NT* : nominal tariff rate plus import surcharge
- PC : polyester cotton textile industry
- PD : degree of product differentiation, ratio of combed cotton yarn in total cotton yarn production, and ratio of specialized higher quality chemical fiber in total chemical fiber production
- PF : polyester fiber textile industry
- PR : polyester rayon textile industry
- RA : return on assets (pre-tax)
- RE : return of equity (pre-tax)
- RS : return on sales (pre-tax)
- RF : gross operating profit on funds employed (Australia) (= RA)
- MS : selling and management cost-sales ratio
- SL : sales-labor ratio
- VL : value added-labor ratio
- EXf : firm export-output ratio
- EXi : industry export-output ratio, export-turnover ratio (Australia)
- XG : export change rate
- EXw : world export ratio, industry export in the world import

Table 2. International Comparison of the Empirical Results

	Independent (explanatory) Variables																											
Dependent Variables	Industry	Japan									Industry	Korea						Taiwan					Thailand				Australia	
		EXi	PD	CR	IT	IM	Gf	VL	KL	MS		EXi	EXw	XG	NT	KL	Gi	EXw	Gf	KL	SL	EXf	Gi	NT	EN	ET	VL	
Return on Equity	cotton spinning	-			+	+	+				textile		-	-		-	+	+	+		+	+		+	-			
	chemical fiber	-	+	+			+			+	chemical fiber	-			+	-		+		-			+	-				
Return on Sales	cotton spinning						+	+	-		textile		-	-		-	+	+	+	-	+	n.a.						
	chemical fiber	-	+	+						+	chemical fiber	-			+	-		+				n.a.						
Return on Assets	cotton spinning	-				+	+	-			textile	n.a.						+	+	-	+	n.a.					+	-
	chemical fiber	-	+	+				+	+	+	chemical fiber	n.a.						+		-		n.a.						
Period of Analysis		1978-83 (cotton spinning) 1975-83 (chemical fiber)									1975-81 (textile) 1975-82 (chemical fiber)						1971-80					1976-82				1971-81		

* These are the signs of parameters of significant explanatory variables.
(t-values are significant at the 10% level.)

Table 3. Empirical Results**Table 3-1. Japan**

Table 3-1-1 Determinants of Profitability of the Japanese Cotton Textile Industry (1960-70)

	const.	IM	EXi	PL	PD	IT	$\bar{R}^2$	N
RE	74.027	2.269(a) (3.343)	-0.339(b) (-2.457)	-1.359(b) (-2.618)	-0.875 (-0.973)	0.431(a) (3.857)	0.318	106
RS	27.050	0.507(a) (2.985)	-0.124(a) (-3.611)	-0.503(a) (-3.876)	-0.294 (-1.306)	0.119(a) (4.265)	0.393	
RA	32.195	0.565(a) (3.017)	-0.141(a) (-3.705)	-0.509(a) (-3.557)	-0.539(b) (-2.173)	0.150(a) (4.861)	0.440	

Table 3-1-2 Determinants of Profitability of the Japanese Cotton Textile Industry (1978-83) (specialization ratio is larger than 65%)

	const.	VL	EXi	KL	EXi	PD	IT	$\bar{R}^2$	N
RE	-295.905	2.954 (0.691)	1.128(b) (2.283)	-1.462 (-1.298)	-7.140(a) (-3.567)	6.741 (1.447)	1.467(b) (2.622)	0.407	42
RS	1.278	2.085(a) (2.996)	0.251(a) (3.121)	-0.759(a) (-4.140)	-0.545 (-1.673)	-0.869 (-1.146)	0.104 (1.139)	0.481	
RA	-11.976	1.243(b) (2.287)	0.209(a) (3.312)	-0.470(a) (-3.266)	-0.555(b) (-2.172)	-0.231 (-0.386)	0.090 (1.259)	0.482	

Table 3-1-3 Determinants of Profitability of the Japanese Chemical Fiber Textile Industry (1978-83) (specialization ratio is larger than 65%)

	const.	VL	EXi	CR ₄	KL	$\bar{R}^2$	N
RE	-824.671	0.157(b) (2.155)	-1.092(a) (-3.417)	11.498(b) (2.132)		0.477	36
RS	-148.370		-0.335(a) (-5.916)	2.222(c) (1.931)		0.514	
RA	-170.757		-0.277(a) (-6.192)	2.433(a) (2.826)	0.267(b) (2.717)	0.594	

Table 3-1-4 Profitability and Product Differentiation of the Japanese Chemical Fiber Textile Industry (1975,80,81) (specialization ratio is larger than 65%)

	const.	PD	MS	$\bar{R}^2$	N
RE	-53.346	1.583(a) (3.934)	2.737(b) (2.509)	0.634	12
RS	-8.458	0.435(a) (2.426)	0.273(a) (4.125)	0.647	
RA	-7.186	0.481(b) (3.046)	0.268(a) (3.576)	0.637	

source, Annual Report of Textile Industry, Japan Textile Association, annual edition.

*significant level: (a)1%, (b)5%, (c)10%, Figures in parentheses are t-values.

*R: Revised determinant coefficients, N: Sample size

Table 3-2. The Republic of Korea

Table 3-2-1 Cotton Textile Industry (1975-81)

	const.	Gi	XG	EXw	$\bar{R}^2$	N
RE	130.121	4.662(a) (3.206)	-4.601(a) (-3.036)	-45.886(a) (-3.039)	0.103	67
RS	20.729	0.631(a) (3.573)	-0.618(a) (-3.359)	-6.573(a) (-3.587)	0.1509	

Table 3-2-2 Cotton Textile Industry (1975-81)

	const.	EXf	VL	KL	$\bar{R}^2$	N
RE	26.300	0.063 (0.326)	1.691 (0.838)	-3.559(b) (-2.117)	0.025	62
RS	5.931	0.017 (0.692)	0.133 (0.514)	-0.566(b) (-2.633)	0.074	

Table 3-2-3 Chemical Fiber Industry (1975-82)

	const.	EXi	VL	KL	$\bar{R}^2$	N
RE	24.930	-0.835(b) (-2.057)	0.190 (0.868)	-0.232(b) (-2.692)	0.240	42
RS	24.930	-0.275(b) (-2.665)	0.002 (0.030)	-0.046(b) (-2.117)	0.309	

Table 3-2-4 Chemical Fiber Industry (1975-82)

	const.	NT	EXi	KL	$\bar{R}^2$	N
RE	-2.688	0.292(c) (1.722)	-0.068 (-0.797)	-0.201(b) (-2.503)	0.275	37
RS	-3.795	0.135(a) (3.332)	0.022 (-1.090)	-0.047(b) (-2.490)	0.439	

source, Statistics of Korean Textile Industry, Korean Textile Association, annual edition.

* significant level: (a)1%, (b)5%, (c)10%, Figures in parentheses are t-values.

* $\bar{R}^2$: Revised determinant coefficients, N: Sample size

Table 3-3 Taiwan

Table 3-3-1 Textile Industry (1971-80)

	const.	Gi	SL	KL	EXw	$\bar{R}^2$	N
RE	-22.648	0.210(a) (5.202)	6.433(c) (1.809)		33.700(a) (6.549)	0.447	133
	-14.121	0.230(a) (5.798)		-2.818 (-1.155)	29.726(a) (5.757)	0.438	
RA	-9.151	0.057(a) (3.623)	5.604(a) (4.069)		11.597(a) (5.818)	0.379	
	-5.546	0.070 (0.703)		0.700 (0.703)	9.813(a) (4.662)	0.202	
RS	-11.121	0.071(a) (3.233)	3.789(c) (1.949)		16.624(a) (5.908)	0.334	
	-8.494	0.081(a) (3.682)		0.316 (0.235)	15.334(a) (5.394)	0.314	

Table 3-3-2 Chemical Textile Industry (1971-80)

	const.	KL	EXw	EXi	$\bar{R}^2$	N
RS	-22.718	-1.857 (-1.276)	22.266(a) (6.095)		0.450	66
	-22.948	-1.627 (-1.036)	22.909(a) (5.723)	-0.021 (-0.407)	0.443	
RE	-22.286	-6.788(c) (-1.865)	30.147(a) (3.299)		0.251	
	-22.084	-6.992(c) (-1.778)	29.578(a) (2.951)	0.019 (0.144)	0.240	
RA	-7.518	-1.824(b) (-2.319)	10.770(a) (5.453)		0.453	
	-7.784	-1.556(c) (-1.841)	11.518(a) (5.348)	-0.025 (-0.880)	0.451	

source, Annual Report of Taiwan Textile Industry, Taiwan Textile Association, annual edition.

* significant level: (a)1%, (b)5%, (c)10%, Figures in parentheses are t-values.

* $\bar{R}^2$: Revised determinant coefficients, N: Sample size

Table 3-4. Thailand

Table 3-4-1 Determinants of Profitability of the Thailand Polyester Cotton Textile Industry

		const.	NT	EXi	EN		$\bar{R}^2$	N	Period
PC (5 firms)	RE	-475.302	4.397(b) (2.062)	8.571 (-0.003)	-0.040 (1.509)		0.079	35	1976-82
	RE	-476.168	4.395(b) (2.197)	8.578 (1.669)			0.107	35	
(8 firms)	RE	-425.396	0.325 (0.417)	3.522(c) (1.759)	-23.086(a) (-3.146)		0.312	32	1979-82

Table 3-4-2 Polyester Fiber Industry

		const.	NT*	EN	Gi	CR3	$\bar{R}^2$	N	Period
PF (2 firms)	RE	80.348	-1.261(a) (-3.863)	-6.546 (-1.080)			0.616	14	1976-82
	RE	4.123	-0.997(a) (-5.048)		41.184(c) (1.896)		0.683	14	
	RE	-6.624	-1.215(a) (3.709)			0.650 (0.844)	0.604	14	

Table 3-4-3 Polyester Rayon Industry

		const.	NT	EXi	EN		$\bar{R}^2$	N	Period
PR (2 firms)	RE	1565.355	4.295(b) (2.735)	-38.431(b) (-2.394)	-198.713(c) (-2.099)		0.641	12	1977-82

Table 3-4-4 Polyester Filament Industry

		const.	NT	EA	CR3	EXi	$\bar{R}^2$	N	Period
FF (2 firms)	RE	-49.899	0.962(a) (3.174)	0.558(c) (2.088)			0.440	24	1971-82
	RE	-49.010			7.126(c) (2.060)	0.601 (1.251)	0.152	24	

source, TTMA, Statistics of Thai Textile Industry; Annual Reports of Financial Statement of the textile companies.

*significant level: (a)1%, (b)5%, (c)10%, Figures in parentheses are t-values.

* $\bar{R}^2$: Revised determinant coefficients, N: Sample size.

Table 3-5. Australia

Table 3-5-1 Textile (ASIC 234)

	const.	VL	EXi	IM	ET	$\bar{R}^2$	d - w	N	Period
RF (RA)	18.454 (1.529)	-1.846(c) (-2.097)	0.240 (0.837)	-0.371 (-1.089)	0.267(b) (2.820)	0.689	1.475	11	1971-81
	6.918 (1.179)	-1.816(c) (-2.034)	-0.019 (-0.115)		0.281(b) (2.948)	0.681	1.777		
	10.280 (1.480)	-1.775(c) (-2.070)		-0.135 (-0.722)	0.312(a) (4.054)	0.702	1.638		
	7.123	-1.826(c) (-2.204)			0.272(a) (5.239)	0.720	1.786		

source, ABS, Manufacturing Establishments, Australia; IAC, Australian Trade 1968-69 to 1981, working paper, Mar. 1985; IAC, Annual Report.

RF : gross operating profit/funds employed (= RA)

VL : value added/employee, deflated by index of wholesale price of manufacturing

EXi : export/turnover

IM : import/domestic demand

ET : effective rate of assistance

* significant level: (a)1%, (b)5%, (c)10%, Figures in parentheses are t-values.

* $\bar{R}^2$: Revised determinant coefficients, d-w: Durbin-Watson ratio, N: Sample size

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