

No. 227

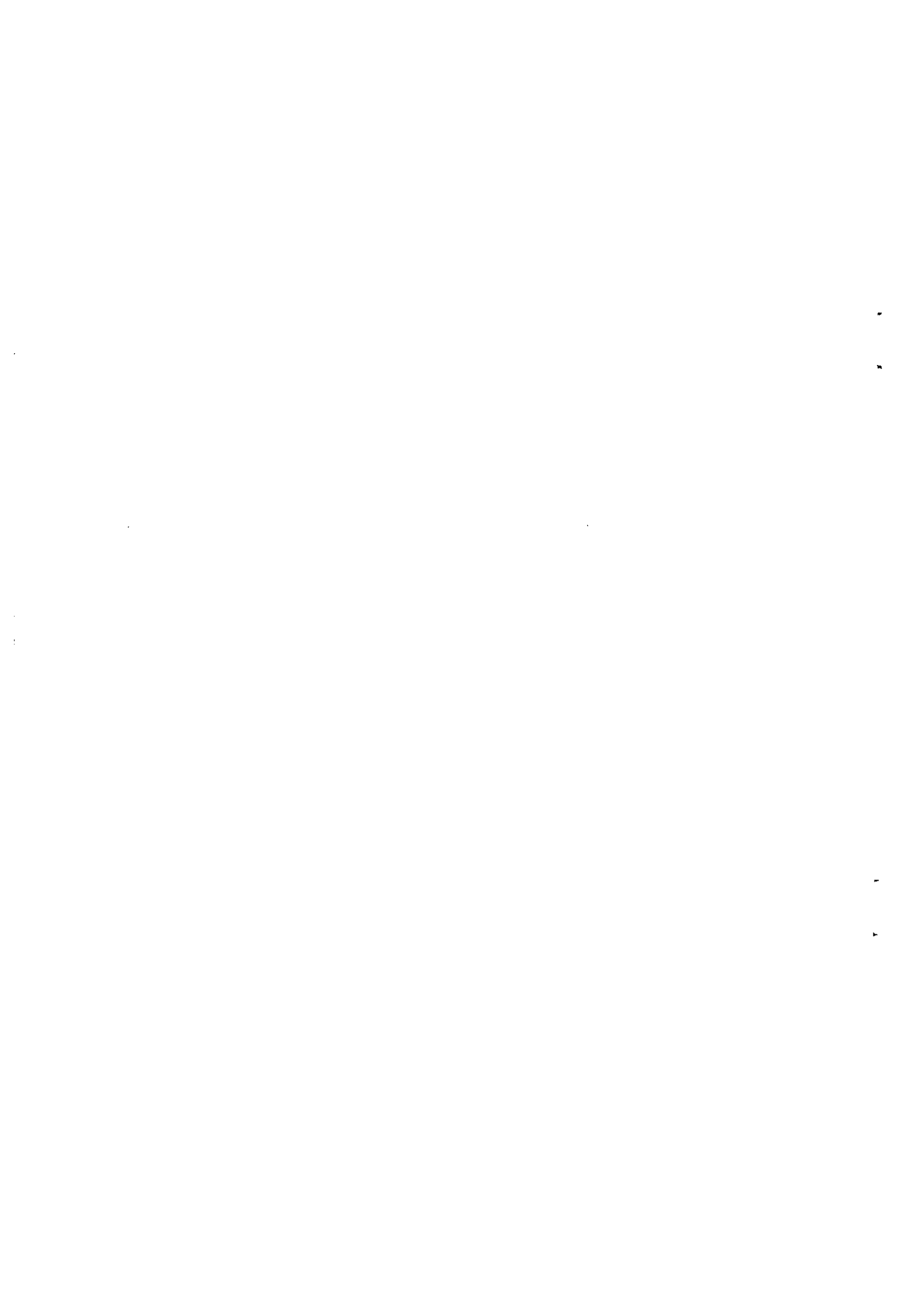
TOWARDS A THEORY OF REGIONAL ECONOMIC
POLICY IN POSTWAR JAPAN

by

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This paper is a contribution to the project of POLITICAL
MANAGEMENT OF ECONOMIC CHANGE IN POSTWAR JAPAN AND THE
FEDERAL REPUBLIC OF GERMANY, and it was also read at a
seminar of Nissan Institute of Japanese Studies, Oxford
University on 2nd March, 1984 and at the 1984 Conference
of the British Association for Japanese Studies, University
College of Wales, Aberystwyth, on 16th - 18th April, 1984.



Towards a Theory of Regional Economic
Policy in Postwar Japan

By Noboru Sakashita

1. Introduction: Regional Economic Growth in Postwar Japan

As a starting point of our discussion concerning theorization or theoretical rationalization of regional economic policy in postwar Japan, I wish to present a very brief overview of regional economic growth of Japan for the period 1951 to 1980 mainly referring to a book written by Tahara and Suzuki in 1977. Let me begin with a time-series of national growth rates of Japan in the above period. As it is seen in Table 1, Japan had a long period of steady economic growth from 1950 to 1970 immediately after the chaotic reconstruction period of late forties. The gap between nominal growth rates and real growth rates had been reasonable small, and this means that we had a rather mild inflationary trend in this long period. However, we observe a much wider gap between nominal and real growth rates in the period 1970-1975 mainly because of hyperinflation in this period which was triggered by the so-called Nixon shock and by the first oil crisis. However, Japan was able to manage the second oil crisis rather handsomely so we observe a stable relationship between nominal and real rates again in a recent period 1975-1980.

How would the growth pattern of the national economy mentioned above be disaggregated into that of different regions of Japan? We often meet an intuitive argument saying that regional disparity is widened in periods of rapid national growth. Is this true in the case of postwar

Japan? Let us discuss this point briefly using forty seven "Prefectures" (To-Do-Fu-Ken) as regional units of Japan. In each sub-period of national growth, we can identify a group of rapidly growing prefectures and a group of slowly growing prefectures but the members of each group do not remain the same as time passes. For instance, growth rates of prefectures which were located in Kanto area were extremely high for the period 1955-1973, but growth rates of Tokyo and Kanagawa, two most industrialized prefectures in this area, were markedly slowed down in the period 1965 to 1975. Other industrialized areas which had the advantage of abundant land availability like Aichi or Hiroshima maintained high growth rates for the first half of the 1970s. On the other hand, in the Kinki area we observe a sharp contrast between Osaka and Shiga in the same period, a slowing down of the growth rate in the former and an accelerated growth in the latter. In the same period of 1965 to 1975, prefectures with low growth rates were concentrated in Tohoku, Sanin, and Kyushu areas. In the first half of 1970s, the growth rates of these areas were increased substantially, but still there remained a considerable gap between the growth rates of these areas and those of some rapidly growing prefectures in Kanto, e.g. Chiba.¹

In spite of the above rather sporadic observations on regional growth differentials, a remarkable fact concerning the interregional growth in postwar Japan is a steady narrowing of the growth rate gap among regions, as is clearly seen in Table 2. The second row of this table shows an unweighted cross-sectional average of growth rates in each period for forty-seven prefectures of Japan, the third row shows a cross-sectional standard deviation of growth rates, and the fourth row shows the coefficient of variation of growth rates for the same set of prefectures. Constant decline in the values of the coefficient of variation implies a narrowing growth rate differentials. Even the standard deviation itself declined

sharply in the third period in Table 2. Although the evidence is limited to the periods up to 1973 so far, it clearly implies the invalidity of the aforementioned intuitive argument concerning the relation between national growth and regional disparity. I will come back to this point again in the later sections.

Although there was a strong tendency towards narrowing of growth rate differentials among regions, some prefectures experienced frequent ups and downs in their growth rates but others had rather stabilized growth rates in the period 1955-1972. Using the data contained in Table 3, Tahara and Suzuki discussed this point as follows in their book: Prefectures which experienced unstable changes of annual growth rates generally have a high degree of concentration in secondary industries, particularly in heavy-chemical industries, and can be categorized as advanced regions. Chiba, Kanagawa etc, are included in this group. On the other hand, prefectures which had stable performances in growth rates are usually have low degree of concentration in secondary industries. Therefore we can say that there is some trade-off relation between growth stability and degree of industrialization over regions.

As for the relation between the industrial structure in terms of not product shares and the degree of development of each region, Tahara and Suzuki provided Table 4. In this table, top five prefectures which have concentration in each of the primary secondary, and tertiary industries are listed with relevant shares in percentage in its upper half, and bottom five prefectures for the same performance are listed in its lower half. Thus, the whole table is divided into six boxes, i.e. A to F. From our knowledge concerning the characteristic of each prefecture we can say as follows: Boxes B and C consist of "advanced" prefectures with high per capita income, and lots A and D consist of "backward" prefectures with

low per capita income indicating importance of secondary industries in this respect. On the other hand, prefectures contained in boxes E and F have various characteristics. Box E especially indicates that tertiary industry is dominant in such a prosperous region as Tokyo as well as in such less developed regions as Aomori or Okinawa, perhaps for different reasons.

The relation between the industrial structure and the per capita income level is more directly shown in Table 5. The second to sixth columns in this table shows cross-sectional correlation coefficients between each industry's shares and per capita income levels over the forty-seven prefectures in Japan in five different years. In the final column, a similar correlation coefficient between employment structure and per capita income levels is shown for 1970. We see a clear negative correlation and a little less clear positive correlation for the primary and secondary industries, but there is almost no ^{discernible} correlation for tertiary industry. It is also important to observe that clarity of correlation is diminishing over time even for the primary and secondary industries. This might be another evidence that per capita income differentials as well as difference in the industrial structures had been decreasing in these periods.

A one point comparison of absolute per capita incomes is given in Table 6 for 1973. Even in this year when the interprefectural income differentials were already small, the gap between the richest region, Tokyo, and the poorest region, Kagoshima, was remarkable as $1,418 \times 10^3$ yen vs 586×10^3 (100.0 :: 41.4). However, we observe a much smaller gap for per capita personal incomes among regions. Table 7 shows figures of this ^{adjustment} for 1973 calculated by the following formula which implies an adjustment policy for the purpose of interregional income redistribution:

$$\left(\frac{(\text{personal income}) - (\text{prefectural income})}{\text{prefectural income}} \right) \times 100$$

By these figures we know that further effort was made by the fiscal measures in order to make regional incomes more equal than it was shown by the basic per capita income statistics. By this adjustment, comparison of per capita personal income between Tokyo and Kagoshima becomes $1,188 \times 10^3$ yen vs 619×10^3 (100.0:52.1) in 1973. As will be shown in section 4, the inter-regional income disparity in Japan was narrowed down further by 1978. But on the other hand, that meant, widening a reciprocal inequality of financial burdens between metropolitan areas and rural areas in Japan as will be also discussed in section 4.

2. Industrial Location Policy and Regional Economic Development

After presenting a glimpse of interregional growth patterns in postwar Japan, now we proceed to a study of the role of economic policies in regional development of Japan in that period. First of all, I should point out that Japan is a very centralized country as far as the formation and implementation of economic policies are concerned. Even the three major regional development plans we have had so far took the form of "nation-wide comprehensive" plans, and almost all regional plans formed by local governments (prefectures and municipalities) must be authorized with some implicit consent of the central government in one way or another. This centralism can be said as a reflection of the weak position of local governments in the institutional structure of public finance.

In 1980 the total revenue of central governments was 44.0 thousand-billion-yen (29.4 in 1977)², but the sum of total revenues of all local governments was 49.3 thousand-billion-yen (35.8 in 1977) including three big items of transfer from the central government, i.e. *chiho-joyozei* (local concession taxes), *chiho-kofuzei-kofukin* (local revenue sharing),

and kokko-shishutsukin (expenditures from national budget), which consists of 38.7% (38.8% in 1977) of the sum. This means that the "autonomous" revenue of all local governments was less than 30.2 thousand-billion-yen compared to 44.0 of the central government.

On the other hand, according to Ishi's analysis (H. Ishi and others (1982)), in 1977 all local communities received the benefit in sum of 29.6 thousand-billion-yen from the central government in various forms but only 16.3% of it fell in the category of local governments' financial fund (mainly consisting of local revenue sharing mentioned before) only for which each of local governments has a free hand over how to dispose of it. Other items of the benefit must be expended in accordance with their specific purposes decided by the central government.

However, I am by no means saying that the Japanese economy is a centrally planned economy. In all senses of the word, it is a real free-market economy. Nevertheless the management of economic policies by the government is very strongly centralized in Japan so that I would argue that we do not have real local autonomy in the political scheme of Japan.

In this setting, the regional development of Japan has been most strongly brought about through the industrial location policies which were planned and implemented by the central government, particularly by the Ministry of International Trade and Industry (MITI). In a previous paper of mine (Sakashita (1972)), I analyzed this aspect of regional development and I divided the postwar period of Japan's industrial location policy into the following four sub-periods up to the early 1970s except for the chaotic period of overall reconstruction just after Japan's surrender in 1945:

- I. 1952-1957, Reconstruction Period of Industrial Infrastructures
- II. 1960-1963, Industrial Location Policy Considered for Regional Development

III. 1963-1968, Reconsideration Period

IV. 1969-1972, Big Projects Period.

As a quick general view, we can characterize each of the four sub-periods as follows: In the first period, there was almost no conflict between the so-called industrial efficiency policy and development of specific regions because there was overall shortage of infrastructure everywhere in the nation.

In the second period, however, a policy of promoting growth centres was introduced in the MITI industrial location policy. But this policy was not fully realized because of the rapid concentration of industrial activities in the Pacific Coast areas. In other words, the working of market forces predominated over the policy objectives of regional development in this period.

In period III, conflicts between environmental issues and industrial efficiency policy became apparent in many areas, and it became necessary for the government to reconsider the whole framework of industrial location policy in its harmonization with the living environment of the people. This reconsideration led to an idea of "Big Industrial Base Projects in Remote Areas" by MITI which formed a kernel of the industrial location policy in the short period of No.IV until a turmoil of the first oil crisis in 1973.

Because of the first oil crisis, some of the big industrial base projects have been practically abandoned or have been transformed into mere bases for stock-piling of the basic materials (e.g. Mutsu-Ogawara base in Aomori Prefecture), and the grandiose plan of this type was changed into ^{the} more steady "Industrial Relocation Promoting Plan". The implementation and follow-up activities (but "Minaoshi" in Japanese) of this plan formed the "fifth" period of industrial location policy in

postwar Japan from 1974 to early 1980s.

As a whole, my evaluation of industrial location policy mainly led by MITI in postwar Japan is that we can appreciate it only as an industrial efficiency policy aimed at strengthening so-called international competitiveness of the Japanese industries and also that the policy lacked a viewpoint of developing specific backward regions in the economy. In this sense, it cannot be taken as a real regional development policy and this characteristic of the industrial location policy reflects the centralism in policy formation in postwar Japan to a certain extent.

3. Objectives and Instruments of Regional Economic Policy

As a public manifestation of regional development policy of Japan, we already have three Nation-wide Comprehensive Regional Development Plans (Zenkoku Sogo Kaihatsu Keikaku): the First Plan was determined by the Cabinet in October 1962, the Second Plan in May 1969, and the Third Plan in November 1977. Henceforth we call them NCRDP 1, 2, and 3. The adjectives attached to these plans, "nation-wide and comprehensive", again reflect the centralism in Japanese policy formation. Even a regional development policy must have nation-wide perspectives as well as comprehensiveness in its framework.

On the other hand, none of these plans is a compulsory economic plan in any sense and they have not been even taken as really implementable plans. The NCRDPs or any other economic plans in Japan are a mixture of forecast and guidance given to the private sectors by the government. Sometimes they are called "indicative" plans.

Keeping these characteristics of the NCRDPs in mind, we proceed to the examination of objectives and policy instruments to be utilized to achieve the objectives, which were stated in each of three plans.

NCRDP 1 was an interregional counterpart of the famous

National Income Doubling Plan launched by the prime minister Ikeda in December 1960 as a ten-year economic plan until 1970. Two main catchphrases of NCRDP 1 were the prevention of excessive enlargement of major metropolitan areas (Tokyo, Osaka, and to lesser extent Nagoya Metropolitan Areas), and the diminution of regional disparity. As a result, it aimed to achieve a balanced development of all regions in the nation through the optimal regional allocation of productive resources (capital, labour, and technology) and the efficient utilization of natural resources. As the main policy instruments of the Plan, the following items were considered: (1) Regional allocation of public investment of industry-base type in order to induce private capital formation in industrial activities, as well as ^{allocation of} public investment of living-environment type and of land-disaster-prevention type, (2) Regional allocation of public subsidies and public loans, and (3) Smoothing of the labour force movement, and public investment in human capital. The plan roughly divided the whole nation into three categories of regions, excess-density regions, coordinating regions, and development regions, and indicated different development strategies for the different categories of regions. The basic philosophy of the Plan was, however, a strategy of growth poles (or growth centres) formation and of diffusion of their activities to the surrounding areas which corresponded to the second period of the industrial location policy discussed in the previous section.

The achievement of NCRDP 1 is roughly summarized in Tables 8 and 9. As is easily seen in these tables, the performance of NCRDP 1 was rather poor as far as the aspect of dispersion was concerned. Both industrial activities and population were further concentrated in the three regions, Kanto, Tokai, and Kinki, which is an area sometimes called the Pacific Ocean Belt

Region as a whole, and particularly in Kanto where Tokyo is located. However, owing to the extraordinary and steady high growth rate of the national economy,³ all regions of Japan enjoyed improvement in their industrial performance and living standard. Ironically, such regions as Tohoku, Hokuriku, Chugoku, and Shikoku were able to improve their positions in regional income disparity by reducing their population shares more rapidly than their industrial output shares in this period.⁴

After observing the strength of market forces which brought about further concentration of population and economic activities in the Pacific Coast regions, the government was forced to produce NCRDP 2 in 1969 just one year before the target year of NCRDP 1. In NCRDP 2, the government was more prudent in stating its policy objectives and quantitative targets. The catchphrase of the Plan was also not so clear-cut this time, but the following two concepts could be taken as crucial although neither of them were stated explicitly: (1) simultaneous resolution of excessive concentration and excessive sparseness in different areas of the country, and (2) formation of a nation-wide network of central management functions through advanced technologies of traffic and communication.

The formally stated objectives of the Plan can be summarized as follows: (a) permanent conservation of the natural environment, (b) balanced use of the national land to prevent the inefficiency of unbalanced development, (c) respect for the autonomous planning and development of each region, and (d) provision for safe and pleasant living environment in both urban and rural areas of the country.

As more concrete considerations of the difficulties encountered, the Plan discussed the following three points: (A) In order to resolve the problem of excessive concentration, not only the provision of additional

infra-structure in big metropolitan areas, but also a drastic dispersion of industrial activities and the implementation of fundamental urban redevelopment strategies were needed, (B) In order to prevent further out-migration of people in the under-populated areas, dependence on the favoured allocation of public investment must be reconsidered. Some area-specific measures must be taken additionally. (C) Regional disparity in the net product per employee should not be the real concern of regional policy. Disparity in living standard and living quality should be the real problem.

A section of the Plan (Part III) was devoted to the description of policy instruments to be utilized. But it does not necessarily mean that the description was very clear. On the contrary, the instruments were too widely defined and it is not easy to understand their actual shape. Roughly speaking, there were four major instruments: (1) implementation of large-scale development projects, (2) promotion of a wide-area development administration, (3) resolution of the land use problem by the improvement of relevant institutional setting, and (4) reexamination of current regional allocation system of public subsidies and public loans.

The target year of the Plan was 1985, and the predicted GNP in that year was between 130 thousand-billion-yen and 150 thousand-billion-yen by the fixed prices of 1965 (270-310 thousand billion-yen by the fixed prices of 1975), compared to 33 thousand-billion-yen in 1965. For NCRDP 2, it is difficult to show the regional breakdown of target values because the definition of regions was different from that of NCRDP 1 and several prefectures were grouped in a duplicated manner (e.g. Mie was grouped in Chubu region as well as in Kinki region). As unambiguous ^{figures,} however, the relative shares of the following regions in the national population in 1985 were forecasted in the plan as: Hokkaido - 5.25%, Tohoku - 9.17%, [Chugoku + Shikoku] - 9.17%, and Kyushu -

10.00%. Corresponding actual figures in 1980 were: Hokkaido - 4.8%, Tohoku - 10.3%, [Chugoku + Shikoku] - 10.1%, and Kyushu - 11.1%. Again the planned targets were not so promising in various ways.

Needless to say, from 1973 there was the first oil crisis so that NCRDP 2 had to be quickly reconsidered under the pressure of rising energy prices. This reconsideration resulted in NCRDP 3 in November, 1977. The government was again very prudent in stating its policy objective explicitly in NCRDP 3. The fundamental target formally stated in the Plan is very difficult to understand even in its original Japanese text. But the intention of the government in this Plan was rather clear. It can be expressed by two catchphrases: a balanced development of national land use, and the "teiju - koso" in Japanese, a straight-forward translation of which could be the "concept of stable domiciliation" that makes little sense as English.

First we must notice the change of words from "a balanced development of all regions" in NCRDP 1 to "a balanced development of national land use" in NCRDP 3. If the former words mean the disappearance of regional disparity in per capita terms, it had been almost achieved in the second half of 1970s mainly owing to the working of market forces. A thing which had not been realized was the dispersion of population and resultant convergence of population density throughout the country. An emphasis was, therefore, placed on the equalization of land use intensity in NCRDP 3.

Teiju - koso was not only a fundamental concept^{of NCRDP 3} but also the main policy instrument to promote the balanced development of national land use for the Plan. It can be interpreted as an attempt to create many self-contained residential zones for which we do not observe unidirectional net inflow or net outflow of the residents and therefore which are stable in their population sizes. Such a zone was called "teiju - ken" in

NCRDP 3, and two or three hundred teiju - ken were planned in it. Additional provision of infrastructures and their adequate regional allocation were once again considered as main tools to realize this teiju - koso. For that purpose, the public investment in amount of 240 thousand-billion-yen (1975 constant prices) in the years was projected in the plan. This amount corresponds to 162% of the 1975 GNP.

The target year of NCRDP 3 was stated as 1985 or 1990 with some prospects up to 2000. This is another deliberate ambiguity of the Plan. Japan, however, experienced drastic changes in its socio-economic structure as well as the second oil crisis soon after the launching of NCRDP 3. This time, the National Land Agency (Kokudo-cho) which is responsible for the formation and implementation of NCRDPs was very quick to start a "follow-up" ("Minaoshi" in Japanese) survey of the Plan.

In May 1981, a group of five committees of experts was formed in NPA to carry out this survey, and after two years, one of committees which was called the Economic and Social Frame Committee published its report entitled "Teiju Koso and Autonomous Development of Regions"⁵. In the following I wish to introduce the major socio-economic changes and related reconsiderations of NCRDP 3 discussed in this report, very briefly.

The first remarkable change in the Japanese society is the stagnation of population increase. An index of the fertility rate, so-called "total specific fertility rate" which roughly corresponds to the average number of children to whom a woman will give birth in her life, decreased to 1.74 in 1981 from approximately 2.1 in the period 1965 - 1975. The former figure is by no means comparable to 2.26 assumed in NCRDP 3. At the present, the predicted population of Japan will be 120 millions in 1985, 122 millions in 1990, and 126 millions in 2000⁶, in contrast with the

prediction in NCRDP 3, 123.7 millions in 1985, 128.3 in 1990, and 136.9 in 2000. The difference of eleven millions in 2000 in the two predictions is quite a sizable gap. Also the speed of "aging" of the total population has been much faster than predicted.

Secondly, expansion of the size of national economy is slowing down sharply. The forecasts of GNP growth rates in real term in NCRDP 3 were 6.0% for 1975 - 1985 and 4.7% for 1985 - 1990, but ^{the} actual performance of the economy was 5.1% for 1975 - 1980 and the current forecast is 3 - 4% for 1980 - 1990. Owing to such ^a rapid decline of the growth rate, GNP in 1990 will be lower than the forecast by 15 - 25 %. The forecasted values of GNP by NCRDP 3 were 260 thousand-billion-yen for 1985 and 330 thousand-billion-yen for 1990 by 1975 fixed prices. The actual GNP in 1981 was 197 thousand-billion yen by the same fixed prices so that it is needed for Japan to have an average real growth rate of 7.2 % for 1981 - 1985 in order to realize the forecast and this is almost impossible under current conditions of her economy. In addition, the industrial structure in terms of relative employment shares is also changing rapidly, particularly in the shape of the rising relative share of the tertiary industry. It was 55.4 % in 1980 contrasted to the forecasts of NCRDP 3, 53 % in 1980 and 56 % in 1990.

Finally the value consciousness of people is substantially changing from concern with income type to concern with quality-of-life type. Together with other socio-economic factors, this change of value judgement contributed to the slowing down of interregional population movement and was helpful in promoting the teiju-koso of NCRDP 3. At this moment, it is predicted that regional relative shares of population, say in 1990, will be contrary to the NCRDP 3 predictions not in respect of urban-rural population shares but in respect of region-specific bias. For instance, the region consisting of Hokkaido plus Tohoku will have only 14.6 % of the national population against 15.2 % in the NCRDP 3 prediction, on the other hand the region of Kyushu plus Okinawa will have 11.8 % which is very close to 11.7 % of the same prediction.

In view of these drastic demographic and economic changes, the Committee

Report recommended the following modification of regional policies. First, since functions of the central government in redistributing national income among regions is weakening owing to a low economic growth rate, each regional economy must be activated on its own foot in order to produce an autonomous and sustained economic development. Secondly, in accordance to the change in values criteria, the emphasis of regional policy must be switched to the improvement of environmental quality from the simple promotion of industrial development. Thirdly and finally, the institutional framework of local administration must be changed in order to initiate autonomous development of each region. Some part of administrative competency which is now monopolized by the central government should be transferred to the local governments, and this transfer must include the authority of permission-giving and licensing as well as a reform to strengthen the financial foundation of local governments.

We must notice that, almost for the first time in this sort of recommendation, decentralization of the administrative power was specifically claimed. We should, however, wait and see to confirm whether this is a reflection of changes in the Japanese people's way of thinking.

In this section, we very quickly surveyed the policy objectives and policy instruments formally stated in ^{the} three NCRDPs formulated by the central government of Japan. In spite of ^a gradual change of emphasis in these consecutive Plans, we can infer that the basic philosophy of the regional economic policy in postwar Japan has been a combination of two supreme objectives, (1) achievement of regional equality, and (2) balanced development of national land use.

Are these two objectives mutually consistent? Have the policy instruments adopted to achieve these objectives been appropriate so far? I shall take up these questions in section ^{and 6} 5, but before that, a positive analysis of regional disparity in postwar Japan will be made in the next

section.

4. Effectiveness of Regional Economic Policy: Distributional Aspect

If we define an index of regional income disparity by the (population) weighted or unweighted coefficient of variation among per capita regional incomes of all prefectures, we have Table 10 as a time series data of the index. The weighted coefficients were calculated in Sakashita (1976) up to 1972, and the unweighted coefficients were calculated in Keizai Shingikai (1981) up to 1978. The ratios between two types of coefficients were rather stable for 1956-1972 as^{are} seen in the last column of Table 10 so that we can use them interchangeably.

In this table, we can see a strong and steady tendency of convergence in per capita income levels of different regions of postwar Japan. The first oil crisis and resultant economic depression rather accelerated this convergence. If we take per capita personal income as an alternative index base of regional disparity, we observe more rapid convergence.⁷ In addition, the gap between the relative position of per capita personal income and that of per capita regional income for each prefecture was negatively associated with the relative position of per capita regional income of the same prefecture which means that some additional redistributive measures were working in transforming regional incomes to personal incomes.⁸

On the other hand, regional net product per employee which can be taken as an index base of regional disparity in average productivities did not show remarkable convergence in the same period.⁹ The difference in behaviour of regional income and regional net product is sometimes explained as another aspect of^{the} interregional redistribution mechanism.¹⁰ But this conjecture is not well founded.

It is easy to show theoretically that as a consequence of free interregional movements of production factors, we can expect equalization of wages and rates of return for capital among regions but no equalization of average labour productivities among them provided that there are differences in technology and/or in endowment of immobile resources among regions (see Sakashita (1980), p.604). Therefore, the figures which we have just discussed

concerning the regional income disparity in postwar Japan should be taken as simple evidence of an effective performance of ^{the} market mechanism and not as a successful result of the alleged redistributinal policies. Of course, the redistributinal policies contributed to accelerating the process of regional income equalization to some extent, but the equalization itself was brought about by the fundamental forces of a free market economy. We should not confuse the main force with the minor one.

Another aspect of regional redistribution policy was recently studied by Ishi and others (Ishi and others (1982)). The subject was the inter-regional incidence of benefit and burden through the channel of public finance. Their main conclusions are as follows: (1) The regional structure of benefit incidence has been very much biased to the local (non-metropolitan) areas. This was an outcome of the policy of regional equalization of public services as well as the policy of national minimum satisfaction in the past. However, such regional disparity in benefit incidence has been gradually reduced in the period 1970 - 1977, (2) Regional disparity in the public burden has been steadily reducing in the same period. This is a consequence of the tendency observed in item (1) in the sense that now there is no strong need for additional redistributinal policy among regions, and (3) Weakened functioning of public finance in regional income redistribution was observed in recent years.

These findings by Ishi and others, particularly the second conclusion,

conform with our hypothesis that the process of regional income equalization reached its final stage in the latter half of ^{the} 1970s. Therefore, now equalization of regional income or regional living standards ceased to be a main objective of Japanese regional policy.

5. Effectiveness of Regional Economic Policy: Allocative Aspect

In the previous section, we have observed that one of the main objectives of regional policy in postwar Japan, equalization of regional income, was sufficiently realized before 1980 perhaps by the working of market forces rather than by the effectiveness of regional income redistribution policy. Our next task is to examine the achievement of another objective, balanced development of national land use, or in more understandable words, to equalize the density of population and economic activities as far as possible among different regions of Japan.

By an extensive Hoover Index (an index of population concentration) Analysis made in Sakashita (1979),¹¹ it was discovered that there had been a strong tendency for concentration of urban population in big cities from 1955 to 1975 in addition to tendency of similar concentration from rural to urban areas. This tendency can be decomposed into two sub-tendencies, i.e. (1) strong tendency of interprefectural concentration, and ⁽²⁾ diversified behaviour of intraprefectural concentration among regions. As for the second sub-tendency, the forty-seven prefectures are clearly divided into three groups; (i) twenty-nine prefectures with ^a strong tendency ^{towards} intraprefectural concentration, (ii) four prefectures with ^a strong tendency ^{towards} intraprefectural dispersion, and (iii) fourteen prefectures without any remarkable tendency towards either intra-concentration or dispersion. The second group consists of major metropolitan areas: Tokyo, Kanagawa, Aichi and Osaka. The third group contains relatively industrialized regions with

some exceptions: Aomori, Miyagi, Tochigi, Gumma, Nagano, Gifu, Shizuoka, Shiga, Kyoto, Hyogo, Tottori, Hiroshima, Yamaguchi and Nagasaki. Other relatively backward prefectures are grouped in the first. This different behaviour of different groups offset each other and made the aggregative index of intraprefectural concentration almost unchanged in the aforementioned period.

Many people are talking about a U-turn or J-turn phenomenon in population movement during the first half of the 1970s in Japan. However, it is obvious that until 1975 at earliest we still had a strong tendency for concentration of urban population. Only in the 1980 Census can we find some symptoms of urban population dispersion. Therefore, the second main objective of regional economic policy in postwar Japan, balanced national land use, can hardly be said to have been effectively attained until very recently.

At the same time the regional distribution of population can be considered as regional allocation of a factor of production, i.e. the labour force, so the allocation of the labour force went on against the objectives of the regional economic policy. On the other hand, we observe a quite opposite pattern of regional allocation for public investment.

In fiscal year 1980, per capita amounts of public investment were highest in Niigata, Hokkaido, Shimane, Kochi, Iwate, and Tottori being 384, 376, 370, 350, 345 and 345 thousand-yens respectively. They were lowest in Osaka, Kanagawa, Aichi, Shizuoka, Tokyo, and Kyoto being 170, 181, 185, 186, 191 and 195 thousand-yens respectively.¹² Almost the same rankings were observed in 1978 and 1979.

A similar observation was made in Ishi and others (1982) particularly for the period 1970 - 1978.¹³ They observed that per capita amounts of public construction have been heavily biased towards rural areas

compared to the major metropolitan areas. They used a regression analysis to show that this bias was positively related to the required amount of fiscal expenditure (called "national minimum requirement") and negatively related to the per capita regional income.

The above observations imply that the central government, in cooperation with local governments, extensively utilized the biased allocation of public investment as an instrument to achieve the objectives of its regional economic policy, particularly that of population dispersion. Until quite recently, however, this instrument has not seemed sufficiently effective to achieve the given objective, and I think that there is a strong theoretical reason for such a situation.

Contrary to the case of regional income equalization, policy aimed at the dispersion of population must be implemented against the stream of market mechanism. Owing to the so-called economy of agglomeration, market forces have a natural tendency towards concentration so far as the mobility of production factors is assured, and this tendency also contributes to the efficient management of the national economy. In this context, we need a deliberately chosen combination of different regional policies in order to attain a given target of population dispersion with the least sacrifice of national economic efficiency.¹⁴

It is my opinion that the governments in Japan, central or local, have too heavily and too uniformly relied on the instrument of public investment allocation to achieve their not-well-defined target of population dispersion. I can accept the target of population dispersion as a supreme objective of the regional economic policy beyond the narrowly defined national economic efficiency, because it is very important at all events from the viewpoints of national security, easing of social and political conflicts among regions, nation-wide conservation of the natural

environment, and above all necessity of diversification in people's social life, in other words, the assurance of the freedom of choice, and its importance can by no means be measured in economic value terms nor be made transferable into commensurable with the economic value system.

At the same time, however, it is very important to recognize that there are many options regarding a possible set of economic policies usable in order to achieve a specified target. Exclusive reliance on public investment allocation seems to be one of the most inefficient policy instruments to attain the given target of population dispersion, probably next to the compulsory suppression of interregional migration which may exist in some countries with a planned economy.

It was theoretically shown in Sakashita (1983a) that a combination of appropriate regional allocation of public investment and a system of regional wage subsidies is the best method to achieve a given target of regional allocation of population if we neglect the possible administration cost of implementing wage subsidies.¹⁵ Here "the best" means the minimum sacrifice of national product in comparison to the non-intervention market solution (without a target of population allocation). The second best solution might be a combination of public investment allocation and a system of subsidies to regional private capital utilization. This is usually a more popular instrument because of the possibly smaller administration cost. The worst way to attain the same target is exclusive dependence on the public investment allocation. This sort of efficiency comparison was made in Table 11 using a numerical example of two-region economy under a specific setting of Sakashita (1983a). We do not see big difference of efficiency between policy (b) and policy (c), but policy (d) is clearly much inferior to both of the former.

Needless to say, the central government extensively utilized investment subsidies to encourage private investment in non-metropolitan areas in the postwar period. We can say, however, that such subsidizing policies were not well coordinated with the policies of public investment allocation, and more importantly they were not sufficient in their scale. Details of a combined policy of public investment allocation and subsidy to the private capital are given in Table 12 for the corresponding case (policy (c)) in Table 11 of the theoretical (numerical) model.

In this table, we observe the following results: (i) rather sensitive changes of the policy-mix corresponding to changes of target concerning population allocation, (ii) all or nothing type allocation of public investment except for the cases of "even" population allocation, and (iii) combination of a biased allocation of public investment to the one region and private capital subsidy to the other region. The third result indicates a compensatory use of private capital subsidy to offset the extremely biased allocation of public investment which is needed for the purpose of efficiency. As a matter of fact, the allocation of public investment shows a much more awkward movement as shown in Table 13 when it is used alone. The results of Tables 11, 12, and 13 can be taken as an apparent numerical example of the theory of policy assignment.¹⁶

Also the sizes of capital subsidies needed in this theoretical setting are by no means small in Table 12. In Table 14, the actual time series of "special" interest rates applied to the loans for local development by ^{the} Japan Development Bank is shown with the amount of subsidy element which corresponds to column (3) of Table 12. The sizes of subsidy element shown in this table are impressively small especially compared to the numerical examples in Table 12. The same element is much larger for loans

given to the project of substitute energy resource development for instance (40% approximately). We can conjecture that a subsidy element of this size is much less than enough to induce substantial interregional movements of capital and labour against the stream of market forces.

One may argue that in Japan the allocation of public investment and the private capital subsidy are synchronized to the same direction contrary to the examples of Table 12 so that they could have produced some desirable pattern of population allocation under certain conditions. However, since combined source of public fund to be utilized for both of two policies has always been limited, a uni-directional synchronization of them instead of a deliberate multi-directional coordination of them would have easily resulted in ineffective and unfinished consequences of regional population allocation. So-called "sōbana-shugi" all-round reward principle of the public finance in Japan has been, I think, much responsible in this respect. We need a drastic conversion of policy orientation if we really wish to see a balanced development of national land use or population dispersion in Japan.

6. Conclusion

In the present paper, we have traced the evolution of regional economic policy in postwar Japan, and then have attempted to discover a theoretical framework in order to understand its formation and implementation consistently. If we wipe out verbal and sometimes intentional vagueness in the statements made by the central government regarding the objectives of its regional economic policy, only two policy objectives have been persistent and substantial, and have deserved a theoretical consideration. Those are: (1) diminution of regional disparity, and (2) nation-

wide dispersion of population and economic activities.

First of all, I would argue that the two objectives are not mutually incompatible as far as regional disparity is defined in terms of per capita income or per capita welfare, but also that it is very difficult to attain the two objectives simultaneously in the course of ^ashort period. As for the first objective, its target had been practically fulfilled by the middle of the 1970s if we take the differences in living cost and environmental quality between metropolitan regions and rural regions into consideration.

We showed that this successful attainment of the first objective resulted mainly from the smooth working of the market mechanism on spatial movements of the factors of production, rather than from the regional income redistribution policy adopted by the central government. Of course we admitted that the government policy played a certain role in speeding up the convergence of the regional income gap but even that role has been weakened recently.¹⁷

In the future, we must rather worry about a contradiction between welfare equalization and nation-wide productive efficiency because people cease to move interregionally according to wage differentials but they do so according to welfare differentials in which the level of wage plays a limited role. A subtle scheme of urban or rural subsidies may become necessary to make ^afree market solution and productive efficiency compatible with each other in the regional economies of Japan¹⁸.

Turning to the second objective of regional policy, we observed that this objective had not been attained to any measurable extent at least until the final part of ^{the}1970s although we saw a reversal of the concentration tendency of population movements in the 1980 Census. Failure of regional policy in this respect is understandable because it has had to be implemented against the strong stream of market forces which tends towards concentration of economic activities. The size and

mixture of policy instruments have been far from adequate to attain this rather formidable target of interregional dispersion in such a setting of extraordinarily strong domestic mobility of people and capital as in the Japanese economy.

Nevertheless, the objective of interregional dispersion, I think, should be taken seriously as a supreme target of national policy beyond economic efficiency for various reasons. The requirement of national security alone could make it very sensible¹⁹. As an economist, however, I insist that this target of dispersion with its clear quantitative configuration must be pursued with the minimum degree of national economic inefficiency, taking the results of national economic management unrestricted by the dispersion target as a standard. By doing so, we can rediscover the role of economic theory and economic policy science in analyzing highly political and societal problems of regional development.

In this respect, we already have a theoretical framework and theoretical concepts to deal with, namely, the cost-effectiveness analysis of regional economic policies²⁰. Our next task should be to construct an empirical (econometric) model which can give precise forecasts of the regional configurations of population and economic activities as the results of different sets of policy-mix implemented, based on the theoretical concepts aforementioned. An initial step was attempted in the National Land Agency from a couple of years ago in relation to the formation of NCRDP 4, but undoubtedly much more amount of research resources must be poured into this important field of policy support system.

Finally I wish to discuss very briefly the question of the administrative setting in evaluation of regional economic policy in postwar Japan.

There is little doubt, I think, concerning the role of administrative centralism which accelerated the concentration of people and socio-economic activities to the major metropolitan areas of Japan particularly to the Tokyo Metropolitan Area in the postwar period. If it continues to exist for the future, it also continues to work as an artificial centripetal force, in addition to market forces, preventing effective performance of regional policy-mix aimed at the dispersion of people and activities. From this viewpoint, together with other justifications of it, drastic decentralization of administrative power from the central government to the local governments, not as faintly hinted in the recent Recommendation of the Administrative Reform Commission, is indispensable in the future management of national policies in Japan. In my opinion, the decentralization should be pursued even to the extent of some federalism. It was not without reason that the follow-up survey of NCRDP 3, cited in section 3 of the present paper, was concluded with an emphasis on this point.²¹

NOTE: Years in Tables 1-7 mean "fiscal" years, i.e. 19XX = April, 19XX to March 19XX + 1

Table 1. Economic Growth Rates in Postwar Japan, GNP - Base* Unit: %

	1951-55	1955-60	1960-65	1965-70	1970-75	1975-80 ⁽³⁾
Nominal Growth Rates (1)	12.4	12.1	15.0	17.4	16.4	9.7
Real Growth Rates (2)	7.6	8.5	9.8	11.8	5.3	5.1

* Reconstructed from Table 1-1, p.4, Tahara & Suzuki (1977) except for 1975-80.

(1)(2) Calculated by the least squares method applying a growth curve to the GNP data of each period except for 1975-80.

(3) Calculated as a simple arithmetical average of GNP annual growth rates for this period. Source: Economic Planning Agency, Japan, Economic Almanac (Keizai Yōran) 1983.

Table 2. Interregional Growth Differentials for 1965 - 1973*

	1955-60	1960-65	1965-73	Unit: %
Average Growth Rates (1)	9.7	14.6	17.3	
Standard Deviations of Growth Rates (2)	2.05	2.22	1.66	
Coefficient of Variation (3)	21.1	15.2	9.6	

* Reconstructed from Table 1-2, p.7, Tahara & Suzuki (1977).

(1) Double averages in the following sense: Cross-sectional averages of average annual growth rates of prefectural incomes of 47 prefecture in each period.

(2) Cross-sectional standard deviation of average annual growth rates of prefectural incomes of 47 prefectures in each period.

(3) Coefficient of Variation = $((2)/(1)) \times 100$.

Table 3. Stability of Growth Rates of Domestic Net Products for Typical Prefectures in 1955 - 72*.

Unit: %

Unstable Group				Stable Group					
Pref.	S.D. (1)	C.V. (2)	Degree of (3) Industry.	Pref.	S.D. (1)	C.V. (2)	Degree of (3) Industry		
			Heavy-Chemical Industry.				Heavy-Chemical Industry		
			(4)				(4)		
Chiba	8.0	42.5	32.5	72.3	Shimane	3.6	29.7	17.1	41.2
Kanagawa	8.0	41.5	44.7	79.0	Aomori	3.7	26.3	9.5	30.4
Saitama	7.1	38.5	39.6	65.1	Ishikawa	3.8	26.5	27.5	55.5
Mie	7.1	50.3	33.3	64.1	Fukui	3.9	29.5	29.5	38.7
Aichi	7.0	41.8	39.6	66.2	Kochi	4.1	31.2	11.6	37.2
Ibaragi	6.6	44.0	33.0	75.4	Miyagi	4.2	29.5	14.1	41.7
Yamaguchi	6.6	50.4	31.5	69.8	Kyoto	4.2	28.8	32.5	54.1
Wakayama	6.5	48.3	33.2	72.5	Yamagata	4.3	32.9	18.1	51.2
Okayama	6.3	42.4	32.4	67.4	Nagano	4.4	29.9	31.0	65.8
Hiroshima	6.2	37.8	28.8	75.9	Yamanashi	4.5	31.5	21.5	57.9

* Translated from Table 1-5, p.14, Tahara & Suzuki (1977).

(1) Time-series standard deviation of annual growth rates of domestic net products in the period of 1955-1972 for each prefecture listed.

(2) Coefficients of variation corresponding to the standard deviations in the previous column.

(3) Shares of the manufacturing industries in domestic net products of each prefecture: time-series averages of values for 1971, 72, and 73.

(4) Shares of the heavy-chemical industries in commodity-shipment values of each prefecture: time-series averages of values for 1971, 72, and 73.

Table 4. Industrial Structure for Typical Prefectures showing Industrial Concentration in 1973 *(1)

Unit = %

	Primary Industries		Secondary Industries		Tertiary Industries	
	Prefecture	Share	Prefecture	Share	Prefecture	Share
Top Five	A.		C.		E.	
	Aomori	18.5	Kanagawa	53.9	Okinawa	73.7
	Iwate	18.1	Shiga	53.4	Tokyo	65.0
	Kochi	17.8	Saitama	50.6	Miyagi	61.4
	Akita	17.7	Tochigi	50.4	Nagasaki	61.3
	Yamagata	15.2	Chiba	49.2	Aomori	61.1
Bottom Five	B.		D.		F.	
	Tokyo	0.3	Okinawa	20.3	Shiga	39.3
	Osaka	0.3	Aomori	20.4	Tochigi	41.2
	Kanagawa	0.9	Kochi	22.4	Ibaraki	43.4
	Kyoto	1.8	Kumamoto	26.3	Kanagawa	45.1
	Aichi	2.3	Kagoshima	26.4	Chiba	45.3
Averages of All Prefectures		9.1		37.1		53.9

*Translated from Table 2-6, p.30, Tahara & Suzuki (1977).

(1) All shares are calculated on the basis of domestic net products.

Table 5. Correlation Coefficients between Per Capita Income and Industrial Structure *

Year	Per Capita Incomes vs. DNP Shares ⁽¹⁾					PCI vs Employment Shares ⁽²⁾
	1955	1960	1965	1970	1973	1970
Primary Industry	-0.843	-0.852	-0.821	-0.817	-0.798	-0.859
Secondary Industry	0.556	0.633	0.697	0.650	0.468	0.848
Tertiary Industry	0.238	0.072	-0.118	-0.221	-0.077	0.376

*Translated from Table 2-7, p.31, Tahara & Suzuki (1977).

(1) Correlation coefficients between per capita prefectural incomes and shares of each industry in domestic net products.

(2) Correlation coefficients between per capita prefectural incomes and shares of each industry in employment.

Table 6. Per capita Income Statistics for Twenty Typical Prefectures in 1973 *(1)(2)

Unit: Thousands-yen

Top Ten		Bottom Ten	
Prefecture	PCI	Prefecture	PCI
Tokyo	1,418 (173.6)	Kagoshima	586 (71.7)
Osaka	1,215 (148.7)	Aomori	606 (74.2)
Kanagawa	1,098 (134.4)	Kumamoto	631 (77.2)
Aichi	1,036 (126.8)	Okinawa	635 (77.7)
Hiroshima	981 (120.1)	Miyazaki	654 (80.0)
Kyoto	972 (119.0)	Iwate	662 (81.0)
Hyogo	925 (113.2)	Shimane	676 (82.7)
Shizuoka	922 (112.9)	Nagasaki	689 (84.3)
Saitama	914 (111.9)	Oita	695 (85.1)
Fukuoka	908 (111.1)	Saga	701 (85.8)
Average of All Prefectures		817 (100.0)	

*Translated from Table 3-2, p.35, Tahara & Suzuki (1977).

(1) Per capita prefectural income in 1973.

(2) Figures in parentheses are indices taking the national average as 100.

Table 7. Gap between Prefectural Income and Personal Income in 1973 for Typical Prefectures *(1)(2)

Unit: %

Top Five (Negative)		Top Five (Positive)	
Prefecture	Adjustment Rate	Prefecture	Adjustment Rate
Tokyo	-16.2 (3.6)	Aomori	11.5 (10.7)
Aichi	-12.9 (6.8)	Iwate	6.0 (9.2)
Osaka	-12.3 (4.6)	Kagoshima	5.7 (10.9)
Shizuoka	-11.0 (5.2)	Yamagata	5.3 (7.8)
Kanagawa	-9.6 (3.6)	Nagasaki	5.3 (10.3)

*Translated from Table 3-3, p.35, Tahara & Suzuki (1977).

(1) Adjustment rates are calculated by the following formula:

$$\left(\frac{(\text{personal income}) - (\text{prefectural income})}{\text{prefectural income}} \right) \times 100.$$

(2) Figures in parentheses are proportions of transfer income from public finance in personal income.

Table 8. Performances of NCRDP 1: Regional Relative Shares of Industrial Outputs *

Unit: %

Region	Base Year (1958)		Target Year (1970)	
	Actual		Planned	Actual
Hokkaido	2.9		3	2.2
Tohoku	4.9		6	4.6
Kanto	31.8		29	36.5
Tokai	15.8		19	16.6
Hokuriku	2.3		3	2.4
Kinki	25.2		20	22.7
Chugoku	6.9		9	7.4
Shikoku	2.5		3	2.6
Kyushu	7.7		8	5.0
Total	100.0		100	100.0

Definitions of Regions by Prefectures Grouped:

- Hokkaido - Hokkaido
- Tohoku - Aomori, Iwate, Miyagi, Akita, Yamagata, Fukushima, Niigata
- Kanto - Ibaraki, Tochigi, Gumma, Yamanashi, Nagano, Saitama, Chiba, Tokyo, Kanagawa
- Tokai - Gifu, Shizuoka, Aichi, Mie
- Hokuriku - Toyama, Ishikawa, Fukui
- Kinki - Shiga, Kyoto, Nara, Osaka, Hyogo, Wakayama
- Chugoku - Tottori, Shimane, Okayama, Hiroshima, Yamaguchi
- Shikoku - Tokushima, Kagawa, Ehime, Kochi
- Kyushu - Fukuoka, Saga, Nagasaki, Oita, Kumamoto, Miyazaki, Kagoshima

*Okinawa Prefecture is excluded.

Data Source: NCRDP 1, and Industrial Census (Kogyo Tokei Hyo) published by MITI.

Table 9. Performances of NCRDP 1: Regional Relative Shares of Population *

Unit: %

Region	Base Year (1958)	Target Year (1970)	
	Actual	Planned	Actual
Hokkaido	5.4	5.6	5.0
Tohoku	12.9	11.3	10.9
Kanto	27.0	28.5	31.1
Tokai	10.7	11.4	11.4
Hokuriku	3.0	2.8	2.7
Kinki	14.6	16.3	16.8
Chugoku	7.6	7.4	6.7
Shikoku	4.6	4.0	3.8
Kyushu	14.2	12.8	11.6
Total	100.0	100.0	100.0
(in 10 ³ persons)	(1960: 93,419)	(102,176)	(103,720)

*Okinawa Prefecture is excluded.

Data Source: NCRDP 1, and Population Census (kokusei Chosa), 1970 published by Bureau of Prime Minister.

Table 10. Regional Income Disparity in Terms of Per Capita
Regional Income for All Prefectures *
(Prefectural)

Fiscal Year	(1) Weighted national average (yen)**	(2) Weighted standard deviation (yen)**	(3) Weighted coefficient of variation**	(4) Unweighted coefficient of variation	(5) Ratio between (3) and (4)
1956	86,195	28,239	0.3276	0.237	1.382
1957	96,430	31,936	0.3312	0.245	1.352
1958	98,701	31,026	0.3143	0.230	1.367
1959	111,252	36,409	0.3273	0.232	1.411
1960	130,507	44,896	0.3440	0.250	1.376
1961	154,956	56,109	0.3621	0.262	1.382
1962	176,091	61,646	0.3501	0.250	1.400
1963	201,831	69,540	0.3445	0.250	1.378
1964	226,855	74,921	0.3303	0.235	1.406
1965	265,639	74,771	0.2815	0.217	1.297
1966	308,067	83,958	0.2725	0.213	1.279
1967	359,717	95,317	0.2650	0.211	1.256
1968	420,102	110,172	0.2623	0.211	1.243
1969	489,732	130,203	0.2659	0.216	1.231
1970	573,711	150,790	0.2628	0.219	1.200
1971	630,177	160,170	0.2542	0.208	1.213
1972	732,758	183,123	0.2499	0.203	1.231
1973				0.183	
1974				0.165	
1975				0.153	
1976				0.152	
1977				0.145	
1978				0.144	

*Okinawa Prefecture is excluded in "weighted" calculation, but is included in "unweighted" calculation.

**The weighting factor is the population of each prefecture.

Data Source: Economic Planning Agency, Prefectural Income Statistics.

Table 11. Comparison of Per Capita National Product Under Alternative Regional Policies to Attain Given Targets of Population Allocation: Results for A Theoretical Model *

(a) Target of Population Allocation to Regional (Share)	(b) ** Public Investment Allocation plus Wage Subsidy	(c) ** Public Investment Allocation plus Capital Subsidy	(d) ** Public Investment Allocation Alone
0.0	2.53877 (100.0)	2.53877 (100.0)	2.53877 (100.0)
0.1	2.51000 (100.0)	2.49613 (99.4)	2.34122 (93.3)
0.2	2.47800 (100.0)	2.44945 (98.8)	2.33109 (94.1)
0.3	2.44221 (100.0)	2.39875 (98.2)	2.32244 (95.1)
0.4	2.40187 (100.0)	2.34408 (97.6)	2.31563 (96.4)
0.5	2.35597 (100.0)	2.31121 (98.1)	2.31112 (98.1)
0.6	2.30956 (100.0)	2.30949 (100.0)	2.30949 (100.0)
0.7	2.36744 (100.0)	2.31295 (97.7)	2.31157 (97.6)
0.8	2.42807 (100.0)	2.37312 (97.7)	2.31842 (95.5)
0.9	2.48812 (100.0)	2.45915 (98.8)	2.33159 (93.7)
1.0	2.54747 (100.0)	2.54747 (100.0)	2.54747 (100.0)

*Constructed from Table 4, p.223, Sakashita (1983 a)

**Figures in parentheses are the ratios of per capita national product in columns (c) and (d) to that in column (b) in the same row (unit: %)

Table 12. Details of Combination of Public Investment Allocation and Private Capital Subsidy for A Theoretical Model *

(1) Target of Population Allocation (Shares)		(2) Allocation of Public Investment		(3) Amount of Capital Subsidy in Terms of % to the Market Rental	
Region 1	Region 2	Region 1	Region 2	Region 1	Region 2
\bar{n}_1	\bar{n}_2	s_1	s_2	r_1	r_2
0.1	0.9	0.000	1.000	38.4 %	0.0 %
0.2	0.8	0.000	1.000	39.2 %	0.0 %
0.3	0.7	0.000	1.000	40.0 %	0.0 %
0.4	0.6	0.000	1.000	40.7 %	0.0 %
0.5	0.5	0.151	0.849	30.1 %	0.0 %
0.6	0.4	0.500	0.500	0.0 %	0.7 %
0.7	0.3	0.880	0.120	0.0 %	32.1 %
0.8	0.2	1.000	0.000	0.0 %	37.1 %
0.9	0.1	1.000	0.000	0.0 %	32.6 %

* Constructed from Table 3, p.222, Sakashita (1983 a).

Table 13. Allocation of Public Investment When Used Alone for A Theoretical Model *

(1) Target of Population Allocation (Shares)		(2) Allocation of Public Investment	
Region 1	Region 2	Region 1	Region 2
\bar{n}_1	\bar{n}_2	s_1	s_2
0.1	0.9	0.363	0.637
0.2	0.8	0.385	0.615
0.3	0.7	0.410	0.590
0.4	0.6	0.436	0.564
0.5	0.5	0.463	0.537
0.6	0.4	0.494	0.506
0.7	0.3	0.526	0.474
0.8	0.2	0.562	0.438
0.9	0.1	0.602	0.398

* Constructed from Table 1, p.220, Sakashita (1983 a)

Table 14. Special Interest Rates for Local Development Loans by Japan Development Bank and Related Subsidy Elements

(1) Date	(2) Market Interest Rate (%)	(3) Special Interest Rate (%)	(4) Subsidy Element : $\left(\frac{(2) - (3)}{(2)} : \% \right)$
Sept. 1979	8.2	8.15	0.6
Apr. 1980	8.8	8.75	0.6
Nov. 1980	8.8	8.75	0.6
Apr. 1981	8.4	8.35	0.6
Nov. 1981	8.8	8.5	3.4
Mar. 1982	8.4	8.3	1.2
Oct. 1982	8.9	8.3	6.7
Oct. 1983	8.2	8.15	0.6

Data Source: Japan Development Bank, Almanac of Economic Statistics (Tokei-yoran), 1981 (p.531), 1982 (p.531), 1983 (p.527).

NOTES:

1. The growth rate of Akita in Tohoku for 1965 - 1975 was 14.1%, and that of Chiba for the same period was 22.8%.
 2. This amount is limited to the general budget (ippan kaikei) excluding the much bigger special budget (tokubetsu kaikei). "Net" total of the central government's revenue was 86.5 billion-yens in 1980 (57.1 in 1977).
 3. The average growth rate was 10.7% for the period of 1961 - 70 fiscal years compared to the planned value of 7.8%.
 4. The ratios of two groups of the relative shares $\left(= \frac{\text{output share}}{\text{population share}} \right)$ are as follows:

	Hokkaido	Tohoku	Kanto	Tokai	Hokuriku	Kinki	Chugoku
1958	0.537	0.379	1.178	1.477	0.767	1.726	0.908
1970	0.440	0.422	1.174	1.456	0.889	1.351	1.104
	Shikoku	Kyushu					
1958	0.543	0.542					
1970	0.684	0.431					
- Data Source: NCRDP 1 and Japan Development Bank, Almanac of Economic Statistics, 1982.
- By these figures, we can see another remarkable trend in this period, i.e., the decline of the Kinki region where Osaka is located.
5. Incidentally, the author himself was a member of this committee.
 6. This prediction was made by the Economic and Social Frame Committee in NLA itself.
 7. Sakashita (1976), p.23, and Keizai Shingikai (1981), p.11.
 8. Sakashita (1976), p.35.
 9. Sakashita (1976), p.31, and Keizai Shingikai (1981), pp.10-11. In the latter, however, net product per capita was calculated instead of net product per employee. The former procedure seems to be inadequate for our purpose.
 10. See Keizai Shingikai (1981) for example.
 11. Also see Sakashita and Osano (1979). The Hoover Index is a simple index of population concentration. See page 1105 of Sakashita (1979) or any textbook of demography for the definition.
 12. Economic Planning Agency, Economic Almanac, 1983, p.343.
 13. Ishi and others (1982), pp.87-93.
 14. This point is related to the fundamental theorem in a theory of economic policy, i.e. we need the same number of policy instruments as the number of targets, and also the appropriate assignment of a specific

instrument to the specific target is essential to the effective and efficient achievement of the objectives.

15. Sakashita (1983 b) dealt with the same problem but for a model without public investment.
16. See note 14.
17. See Ishi and others (1982), p.87.
18. See Boadway and Flatters (1981) as a discussion of such cases.
19. Even in 1982, 24.7% of the national population was concentrated in the Tokyo Metropolitan Region which consists of Tokyo, Kanagawa, Saitama, and Chiba prefectures, and 47.3% of private bank loans were concentrated in the same TM Region (37.9% for Tokyo alone) which reflected the concentration of central management functions. See Japan Development Bank, Almanac of Economic Statistics, 1983, p.220 and p.272.
20. Again see Sakashita (1983 a) and (1983 b).
21. National Land Agency, Bureau of Planning and Coordination, Teijukoso and Autonomous Development of Regions: A Follow-up Survey of NCRDP 3 (Sanzemso), 1983, pp.46-47.

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