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**Growth, Human Development, and Economic
Policies in Japan: 1955-1993**

by

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1. Introduction

The Japanese society is well-known internationally for accomplishing astounding economic growth in the post-war era and at the same time realizing a commendable degree of equality in the distribution of income. Sustaining low rates of unemployment in the presence of business cycles poses a real wonder for macroeconomists. Overall achievement in human development measures reported in the existing issues of the Human Development Report is also very high. Yet there seem to be many problems that remain to be resolved. Clearly there is a need for a well-balanced evaluation of the achievements of the four decades.

The organization of this report is as follows. Sections 2, 3 and 4 review concisely the basic accomplishments in the arena of economic growth, income distribution, poverty abatement, and conditions of human development, respectively, during the period 1955-1993. Since most researchers agree that the postwar Japanese economic development started from 1955, in which year the economy restored the pre-war peak level of production, we shall take 1955 to be the beginning year of this study.

Section 5 then focuses on the rapid growth period of 1955-73, in which income equalization, poverty reduction and improvement in human development

conditions occurred simultaneously with growth. It also explains why rapid growth and income equalization went hand in hand and in what way the latter might have caused the former.

Section 6 characterizes the development in the size and composition of the government expenditure during the rapid growth era and the post-rapid growth era while also explains the mechanism by which the government might have promoted growth and equalization together. It also shows using a regression analysis that the government expenditure on hygiene has had a positive effect on reducing the infant and child mortality rates which was independent of the effect of the growth of per capita household income. That is, there were indeed some areas in which the government made a direct contribution in improving the human development conditions.

Section 7 concludes by leaving qualifications to the economic policies with regard to growth, income distribution and human development and by indicating the problems that still lie ahead to be resolved in this country from the perspective of human development.

2. The Basic Indicators of Economic Growth

The characteristics of the Japanese economic growth path during 1955-1993 can be summarized by Figure 1, in which the growth rate of real per capita GDP and that of real per capita household disposable income are shown. There is a clear demarcation in the growth trend before and after the year 1973. The former interval is known as the rapid growth era with real GDP per capita rising at 8% annually on average, while the latter can be designated as the slow growth era with real GDP per capita rising at 3% annually.

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Figure 1
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Figure 2 shows the accompanying accumulation of wealth in both as a nation and as within the household sector, in particular. For the nation as a whole the ratio of (end-of-year) net national worth (which is the sum of real assets and the net financial claims on foreign countries) over GDP is taken, while for the household the ratio of net worth over disposable income is shown. The two series have naturally proceeded in a parallel manner. The curves are not monotone, however, as there are three humps along the rising trend (the first one being a relatively mild one). The first hump occurs in the beginning of the 1960's, the second one in 1973-4, and the third one at the end of the 1980's. As the accompanying curves representing the non-land component of wealth show they originate largely from the periodical upward spurts in land values. The ratio of net financial wealth of the household over disposable income rose from 0.57 in 1955 to 2.18 in 1993.

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Figure 2
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Japan underwent a major structural transformation from a semi-industrialized agrarian country in the late 1950's towards a leading member of the world's top industrialized nations. Nothing is more telling than the fact that this country returned to the international trade scene after World War II in the late 1950's by exporting the so-called "one dollar blouse" to the low-end American market whereas now it has become one of the two greatest exporting countries of the advanced machine tools in the world. Its financial market has been almost completely integrated with the global capital market since the mid 1980's, and moreover it has started to play a large financial intermediary role in the world.

One significant characteristic of the economy that has well been kept throughout the period, however, is that the majority of the population work in small firms or under small proprietorship.

The nature of the employment structure by industry and by firm size and its change over time are summarized in Figure 3. It shows the proportion of each category of workers in the total working population. The agricultural working population declined steadily from 40% in 1956 to mere 5% in 1992. The workers in the manufacturing sector rose from 18% in 1956 to 28% in 1974 and then turned to a gradual decline, reaching 24% in 1992.

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Figure 3
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The prevalence of small firms can be confirmed by the fact that individuals who belong to firms or proprietorship with less than one hundred workers have continued to constitute a sizeable majority of the working population; confined to the non-agricultural sector its proportion stayed almost constant around 55-60%. On the other hand, workers who belong to firms with more than one thousand employees have remarkably kept a constant share of a little less than a quarter, implying the existence of constant replenishing and net births of small firms.

3. The Basic Indicators of Human Development

Significant improvement in various spheres of human development occurred simultaneously. The movement of components related with the human development index is exhibited by a series of figures which follow.

Public Hygiene

First, the decrease of the rates of infant mortality, under five mortality and maternal mortality is shown in Figure 4. The infant mortality

rate hovered around 40 per thousand births during the latter 1950's and ever since declined to reach 4.3 per thousand births in 1993, which is among the lowest rate in the world. The decline during 1958-1965 was particularly rapid and was almost linear in shape. Since then the rate of decline has gradually tapered off. Under five mortality and maternal mortality rates show quite similar patterns of development over time, declining towards 120 per one hundred thousand individuals for the former and 7.4 per one hundred thousand births for the latter in the early 1990's, which are 1/9 and 1/21, respectively, to those in the late 1950's.

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Figure 4
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Second, improvement of the life expectancy at birth is shown in Figure 5 for male and female separately. Since 1958 until the early 1980's it rose almost linearly for both sexes, from whence the rate of increase started to taper off. The levels achieved in 1993, 76.2 for male, 82.5 for female (79.4 as a simple weighted average between male and female), are among the highest in the world.

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Figure 5
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Third, related to the condition of public health and hygiene is the development of the tap water and public sewage system, which are charted in Figure 6. Tap water was available only among one third of the entire population in 1955. It expanded very quickly during the latter 1950's and the 1960's, reaching 80% already in 1970. On the other hand, expansion of the sewage system was relatively delayed. Its availability was almost nil to start with (2.6% in 1958), and while it expanded steadily, still only 49% of the entire population is covered by the system in 1993.

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Figure 6
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Education

Several indicators are presented concerning school education. In order to understand where we started from the pre-World War II development in the sphere of school education is reviewed first.

Spreading of elementary education and the establishment of university education were vehemently pursued by the modern Meiji government from its very beginning (with the Ministry of Education established in 1871 and the promulgation of school law in 1872) and since 1886 has primary education been made compulsory. Apart from its practical worthiness to individuals school education was then considered as a major instrument to strengthen the nation politically, economically and militarily.

Table 1 suggests that already by 1895 most young men had completed primary school (which was a four years curriculum), and then gradually to be caught up by women. By 1930 90% of men and 77% of women between the age 15-64 had attained primary school education. The same table also shows that the spread of secondary and university education was very limited before World War II. The school enrollment ratio continued to rise during the war and that by 1955 practically every one (99.3% of men and 98.9% of women between the age 15-64) had completed primary education.

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Table 1
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The movement of high (secondary) school enrollment ratio and that of four-year college during the period 1955-93 are shown in Figure 7. The former, which was 53% in 1955, increased in steep line from the late 1950's on until the early 1970's, reaching 90% in 1973. Since then it has flat-

tened out and became 96% in 1993. The latter, on the other hand, exhibits a somewhat more complicated movement. It hovers around 8% until 1960 and then makes a sharp increase until the mid 1970's, reaching the peak of 27% in 1976. There exists, however, a hump in the mid 1960's and it may be regarded as the effect of the recession of 1965. Since the mid-1970's the ratio declined a little until it rose again, reaching 28% in 1993. Figure 7 also shows the college enrollment ratio specifically in the field of science, agriculture and technology.

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Figure 7
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Such an expansion of school enrollment raised the level of educational attainment of the population significantly as shown by Table 2. Whereas in 1960 less than a third of the working age population (aged 15-64) had completed secondary or higher education, in 1990 the corresponding figure increased to two thirds. Moreover, during the same period individuals without any form of schooling have decreased from 0.7% to 0.1% among the working age population.

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Table 2
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The conditions of school classroom also improved during the period. The movement in the average classroom size as well the number of teachers per pupil in primary schools are exhibited here as Figure 8. The "elementary school" refers to the first six years of primary education, while the "middle school" refers to the latter three years. The two sets of humps in the figure, one in the late 1950's and the other in the late 1970's and the early 1980's (for elementary schools), reflect the impact of the first and second baby-booms. There is a slight increase in the ratio of teachers per

classroom, suggesting an expansion of the room for special and extra-curricular activities in schools.

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Figure 8
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4. Basic Indicators of Income Distribution and Poverty

Income Distribution

The nature of the change in the distribution of household income during the period from the 1950's throughout the early 1990's can be summarized by two figures.

Figure 9(a),(b) represents the movement of the shares of annual gross income received by (two or more persons) households in the top and the bottom income quintile groups. Figure 9(a) refers to the non-agricultural employee households, whereas Figure 9(b) refers to all non-agricultural households, including, in addition to employees, the self-employed, corporate managers, and non-working households. There occurs a discontinuity in the curves representing the income shares in Figure 9(a) where the data until 1962 were limited to urban households whereas since 1963 the data were expanded to cover the entire nation.

Three characteristics can be read from these figures. (i) For both employee and all households the gap between the shares of top and bottom quintiles narrowed down significantly from both directions during the rapid growth era. (ii) Since the latter 1970's, the income shares among employee households have remained standstill, with the top quintile receiving 34% and the bottom quintile receiving just about 10%. (iii) Among all households, however, the income shares between the top and the bottom quintiles have continued to part again towards opposite directions.

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Figure 9
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Table 3, on the other hand, shows the movement of income distribution from a different statistical source. This data is aimed at collecting the background information for social security policies and is known to represent the low income households more adequately than the previous data. The data covers the entire population, i.e., single person households as well as farm households. The "primary income" refers to the sum of all private incomes while "redistributed income" includes the net benefits of social insurance, transfers net of taxes, and in-kind income of medical benefits.

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Table 3
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While the Gini coefficient of primary income is somewhat unstable during the 1970's, there is a definite decline (equalization) during the 1960's and the early 1970's and a relatively acute increase during the 1980's. The basic message is therefore similar to the one from Figure 9(b). This story is again corroborated by the shares of primary income going to the bottom and top quintiles, except that worsening of the bottom quintile share proves to be greatly accentuated in this data. Thus while it was more than 5% during the 1970's it declined to mere 1.8% in 1989. While the redistributed income somewhat ameliorated the declining share of the bottom quintile as well as the rising share of the top quintile, the distribution of income, both primary and redistributed, has become definitely more unequal in 1989 than at the start of the rapid growth era.

The prime suspect behind the steep rise in the inequality index observed above seems to be an increase in the number of non-working and unattached elderly persons, a circumstance that is associated with the rapid

aging of the population. Quite unlike the United States or the United Kingdom where inequality of income was similarly aggravated during the 1980's this country did not raise inequality among the non-agricultural or non-single person households, as seen by Figure 9, nor among wage earners. The increase in the Gini coefficient of individual wage earnings (among the regularly, non-part time workers in private firms) during the decade of 1980's has been only on the order of .01 or .02 no matter how they were measured.

Wealth Distribution

Still scanty data on household wealth distribution precludes a precise discussion of its time trend. The years for which we have comprehensive data on the distribution of real as well as financial wealth are limited to 1984 and 1989. Because of the steep speculative land price rises that occurred in the metropolitan areas of this country during the late 1980's (shown in Figure 2) and because of the accompanying rise in the stock prices the distribution of wealth has become abnormally dispersed. The Gini coefficient of total household net worth among all non-single person households actually increased from 0.52 in 1984 to 0.64 in 1989. After the burst of a "bubble" in the early 1990's the circumstance has been cooling off, the extent of which awaits examination with a new data (collected in 1994).

Apart from the capital gains in land, which from time to time aggravated wealth inequality, the distribution of net financial wealth, or more specifically, the holding of net financial wealth among different income classes equalized dramatically for employee households during the rapid growth era (which then became standstill after the mid-1970's) and also for all non-agricultural non-single person households for which equalization continued throughout the period until the 1990's. (See Figure 9(a) and

9(b).) Such a tendency is in accord with the process of wealth equalization envisaged by Stiglitz [1969]'s model of wealth distribution in a single class neo-classical growth model (with a proviso that the savings function is not too convex with respect to income). The applicability of the single class assumption in Japan seems to have been enhanced by a series of post-war reforms, including the agrarian reform (to be discussed later), dissolution of the zaibatsu (holding company) families, and wealth levies.

Poverty Reduction

The only official statistic on the extent of poverty is the number of households and individuals under public living assistance. The current system of living assistance was enacted in 1950 to implement the idea of fundamental right to live as recognized in the constitution (Article 25). It provides subsidies on basic living needs, supplementary aids on housing and children's education, and medical benefits. Since the mid-1970's more than two thirds (and 78% in 1992) of the cases in which living assistance was initiated resulted from an injury or sickness of the household head, while those cases due to pure economic losses such as the loss or decrease of employment earnings, pension or family stipends, or savings sum up to only one tenth of the cases.

After initial adoption of the "market basket" method (until 1960), followed by the "Engel coefficient" method (1961-65) and the "income gap diminution" method (1965-83) to decide the level of the poverty income line (i.e., the level of income under which households can apply for living assistance), the government, since 1984, has adopted the "level balancing method" to keep pace with the increase in the consumption level of the general public. The implicit policy goal pursued during the income gap diminution method was to render the per capita consumption level of those

assisted by the program around 60% of that of an average employee household. A detailed study by Mizoguchi and Takayama [1984] estimates that this ratio (as compared with average employee households in Tokyo) actually rose from 38% in 1960 to 50% in 1965, 54% in 1970 and 61% in 1975; and by the mid-1970's the policy goal was already fulfilled.

The movement in the ratio of the number of individuals in the assisted households over the total population is shown in Figure 10. It also shows the movement in the average size of households under assistance. Because of expansion in other social security programs specifically addressed to the elderly (such as improvement in public pension benefits, and the old age medical care program) the number of the elderly assisted by the program has diminished relatively since 1975 to be replaced in greater proportion by people injured or ill, with physical disabilities or single mothers with dependent children.

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Figure 10
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Still the absolute size of the ratio in Figure 10, which was 2.2% in 1955 and 0.7% in 1992, is believed to be greatly under-representing the number of individuals actually below the poverty income line. Complicated examination procedures required on application, official intervention into details of private life, and the social stigma attached to the status of being assisted all contribute to hamper the application itself. A government study (quoted in Mizoguchi and Takayama [1984]) reports that the ratio of the number of individuals actually under assistance to those who were eligible for assistance was estimated to be 16.2% for 1955, 19.6% for 1960 and 25.1% for 1965.

The poverty head count ratio using the official poverty income line explained above and the assumed coverage ratio of 15% (to take the lower side of the above three figures) and using an equivalence scale to adjust for the household size, as estimated by Mizoguchi and Takayama, is 10% for 1960. The ratio in question declined during the 1960's until it reached below 7% in the mid-1970's. (Mizoguchi and Takayama [1984, pp. 123-4, Table 3-6].)

5. The Rapid Economic Growth Era and Income Equalization

We now turn to the explanation of the mechanism which brought about rapid economic growth together with equalization of income during the period of 1955-1973.

One now standard exercise analyzing the sources of economic growth is that of growth accounting from the supply side. The computation offered by Jorgenson [1988, Table 1] shows that during the period 1960-79, which includes the rapid growth era, the contribution of the growth of capital input weighed more than 60 per cent of the picture. The study also shows sizeable effects of improvement in the quality of capital input as well as that of labor input. Nearly a quarter of the growth is accounted for by the residual technical progress term.

While this decomposition hints at the importance of capital accumulation and new technological knowledge, it in itself does not provide explanation of what has caused such a rapid pace of capital deepening and implementation of new technological knowledge.

A detailed industrial cross-section and time-series analysis of the manufacturing sector during the period of 1950's through 1980's by Yoshikawa [1992, Chapter 2] suggests that fluctuations in outputs during the rapid

growth era were predominantly led by real shocks rather than monetary shocks, and moreover, that the real shocks consisted of demand shocks rather than productivity or supply side shocks. Demand shocks were dominated by those of domestic fixed investment, in particular, those derived from construction works. Indeed, during the rapid growth era, investment activities in various subsectors of the manufacturing industry were highly correlated with each other, suggesting the presence of intensive backward and forward industrial linkages.²⁾

Such a finding is consistent with a popularized and yet intuitive argument to the effect that the strength of the domestic fixed investment has pulled the process of rapid growth. But the finding yet falls short of explaining what the underlying forces were which motivated such high investment rates. Several conceivable explanations are in order.

(i) A mixture of expectation and fear existed among industrialists that the country was soon opening up the domestic market to international trade, which meant that both at home and abroad their products must compete with foreign products which embody new advances in science and technology.

(ii) Unlimited supplies of inexpensive labor were available from the rural economy, providing the operating ground for the Lewis-type model. Cheap labor could ceteris paribus raise the marginal efficiency of capital in the modern sector. This explanation, however valid for pre-war years, does not seem to apply even for the initial stage of the rapid growth era. The reasons are two-fold. While in the pre-war years the real wage rates were virtually kept constant, in the post-war years the real wage kept rising as early as the start of the 1950's. Second, while there was actually a decrease in the labor's income share during the latter 1950's, it was confined to the corporate sector rather than the self-employed's sector as

the case might be under the Lewis model.

(iii) Large scale movement of the population from the rural area to the urban center, especially of young working age, brought about massive generation of new households. Creation of new households boosted the demand for consumer durables, which generated optimism and through the forces of backward industrial linkages generated demand for new equipment in all fronts. This is a hypothesis advanced by Yoshikawa [1992] as a sequel to his finding above.

(iv) (In contrary to (ii)) the continued rise in wage earnings and total farm income (supplemented by wage earnings) and the decreasing dispersion of household income during the 1960's enlarged the size of the domestic consumer durables market to a national level, thus enticing optimism. This can be regarded as a reverse of the Keynesian underconsumption hypothesis. It is also complementary with hypothesis (iii).

(v) The government maintained a macro policy of low interest rates, allowing some mild inflation (on average 5% for the period of 1956 to 1973) to occur, except when the reserve of foreign exchanges became short (i.e., the Stop-Go policy), and at the same time maintained a disciplined surplus budget policy, which was conducive to foster private sector growth. The time paths of the rate of inflation (in terms of the household consumption deflator) and the government surplus (as measured by its saving-investment balance) are charted in Figure 11.

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Figure 11
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(vi) The government efforts at collecting and analyzing information both on the economy as a whole and on private industry behavior and at disseminating them as public information were instrumental in reducing uncertainties faced

by individual entrepreneurs.

In what follows hypothesis (iv) will be elaborated as it concerns the relationship between equality and growth, or more specifically, the favorable effect of equality on growth.

One notable feature of the post-war economic development in Japan is that the informal sector of the Todaro-type did not emerge widely in the urban centers as people moved in from the rural area. Table 4 reveals that during the initial phase of the rapid growth era the number of casual or very low income workers dissipated quite rapidly even in absolute terms.

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Table 4
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Two main reasons can be adduced to this. First, there was vigorous job creation both in the urban sector and the rural sector to which, as noted earlier, net births of small firms contributed a great deal¹⁾. Second, the population flow out of agriculture, albeit very large in absolute size, was a relatively gradual and orderly one.

It might be added that both of these features were grounded and even prepared by the massive wealth transfer that occurred as a result of the post-war agrarian reform. Recall that the agrarian reform in Japan (in 1947) was conducted with genuine rigor. The land of absentee landlords was ordered to be sold away completely while only one hectare of the owner cultivator's land was allowed to be kept by them. The extent of the reshuffle of land that this reform generated was enormous. Moreover, the price of land at which it was transferred to the former tenants was very low and because of the hyperinflation that followed suit it came to essentially nil. Thus the reform was effectively a confiscation of land.

The circumstances that led to the gradual outflow of population from

agriculture were as follows. In the first place, farmers were in a sense tied to their own land because the strict stipulations of Agricultural Land Law of 1952 (though somewhat relaxed later in 1962) hampered the transfer of ownership of land as well as land leasing (which was to secure the effect of the agrarian reform intact).

In the second place, introduction of part-time farming that began in the early 1950's assured moderate sum of income to farm households. Figure 12 based on a table compiled by Umemura [1961, p. 144, Table 16] is quite telling in this regard. It shows that (on average) per capita income of farmers with large land holding and that of those with very small land holding differed, at most, only by one-third, and the difference was much smaller for per capita expenditure. The trick lied in the significance of non-agricultural income for households with small land holding. Needless to say, part-time farming was made possible by increased labor as well as land productivities. In particular, introduction of new and strong seed varieties and new rice planting methods (development and dissemination of which owed greatly to the agrarian experimental stations and technical assistance personnels from the government) and that of small-scale mechanization of the farming process were quite instrumental in achieving them.

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Figure 12
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In the third place, introduction of an incomes policy for farmers since the 1960's, which took the form of the "Production Cost and Income Compensation Formula" in determining the producer's price of rice, also contributed to raise the farmers' income. Figure 13 shows that the prices of rice and agricultural output in general which had been kept constant throughout the 1950's started to rise rapidly since 1960 throughout 1970's. Figure 14, in

turn, shows that together with further expansion of part-time farming the per capita farm household income (on average) has reached and even exceeded that of urban worker households since the early 1970's.

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Figures 13 & 14
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The foregoing can be summed up by saying that the income disparity between urban and rural households as well as those among rural households were kept at a moderate size. It is quite conceivable that had the income distribution not been so equal there might have developed a huge informal sector in the urban centers.

We have already seen in Figure 9(a) that income distribution among employees was significantly equalized during the 1960's. In fact, tightening of the labor market that proceeded since the early 1960's rendered various indicators of wage disparity, between age groups, blue-collar and white-collar jobs, education groups and firm size groups, to decrease, as Tables 5 and 6 show.

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Tables 5 & 6
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The equalization of income has had at least three favorable effects on fixed investment demand.

First, it provided a nation-wide mass market for consumer durables. This is the route stated in hypothesis (iv). In fact, the spread of consumer durables among households was quite rapid and also only a little lag was involved between the urban and rural areas. This is shown by Figure 15 (which is reproduced from Kosai [1986, Table 7-1]).

Second, it facilitated the spread of secondary (and even higher) educa-

tion nationwide, providing trainable young workers who can adapt to new technology relatively easily. It is precisely here that one can point out the favorable effect of human development on economic growth.

Third, it facilitated the redrawing of new employer-employee relations in the leading large firms, eradicating the radical political elements of the early post-war years and founding a principle of cooperation. Such a practice strengthened the internal training system of workers and provided well-trained and highly motivated workers. It also fermented a social environment in which to incorporate new technology easily.

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Figure 15
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It is to be pointed out that the foregoing stories seem perfectly consistent with the Jorgenson's growth accounting result referred to earlier.

I should also like to leave a remark here that the exporting capability of the machinery industry that Japan is currently famous for (in particular, electronic products, transportation equipments, and precision instruments) was established only after the mid-1970's. It is, however, an outcome of a long process of preparation, assimilating the new technologies imported from the West and improving them by way of developing new marketable products. The pressures of emulating other firms in introducing new technology (from abroad initially and by developing their own later) and building new plants, thus trying to remain competitive in the internationally opening markets, were very strong among the Japanese manufacturing firms in the 1960's (to the extent that they often ignored the advice of the government to curtail the level of investment). Indeed it is the rapid growth of employment demand originating from the installation of new plants and equipments that

tightened the labor market in the 1960's, bringing about equalization of income and reduction of poverty.

Government policy makers and business leaders foresaw the development of the nation's own innovative capability to be an essential prerequisite for exporting capability, which led them to draw plans to improve secondary and tertiary education as early as in the beginning of the 1960's³⁾.

6. The Role of Government Policies

While the major engine of economic growth and the forces that brought about equality in income distribution resided in the working of the private market economy itself, the government has had an active supporting role on both. Moreover, the government may justifiably be said to have played a major role in improving the human development conditions as reviewed in Section 3.

The role of government in supporting economic growth in the post-war period, especially where under the name of industrial policy, has been widely discussed with both pros and cons. It should therefore suffice to describe its role very briefly here.

The industrial policy of the government began in the form of a stringent direct control of energy (i.e., coal) and foreign exchange allotment in the early reconstruction period. It then turned into indirect means such as protective tariffs, preferential allotment of government bank credits and interest subsidies, and advantageous scheduling of depreciation allowances to selected industries. Since the early 1960's, however, the government has come to be obliged by the international commitment to liberalize trade and capital controls, which led to continual reduction of tariff rates and lifting up of other trade barriers. The government then shifted to structural

policies, relaxing the application of the anti-trust law (which is an outcome of the post-war democratic reform) in encouraging mergers of major firms to resist the potential entry of foreign giants and allowing formation of cartels under various specified circumstances to encourage reorganization of the industry. While diversity of opinions exist with regard to the effectiveness of the later policies most researchers seem to agree in hailing the wisdom of the policies during the reconstruction period and the early phase of the rapid growth era.

One particular arena of government policy that has been instrumental in supporting continuous births of small firms, which was pointed out earlier as a source of vigorous job creation, is the credit policy on small firms. Founded on the spirit of Basic Law on Small and Medium Size Firms (promulgated in 1963) to modernize the technology and the organization of small firms and thus to strengthen the basis of their profitable operation the government has established an extensive set of credit support measures.

The first type of support is the preferential treatment such as tax grants and relaxed application of the regulations on deposit interest rates towards credit unions and mutual banks, which are the private financial institutions specialized in the finance of small firms⁴⁾.

The second type is the operation of public financial agencies for small and medium firms. These public institutions have employed the funds of fiscal investment and loan programs (which, in turn, are financed largely through postal savings of households) to support business start-ups by offering long-term interest subsidized loans.

An important policy measure also supportive of the credit environment for small firms has been the enforcement of the law entitled Prevention of Delayed Payment on Subcontracting Firms (originally introduced in 1956).

As the title suggests this law helped to prevent the parent firms from exercising their superior power in not paying their smaller subcontractors on the promised dates.

Simultaneously to the encouragement of growth-oriented industries the government was also active in making the exit of declining industries a less painful one, such as the coal industry in the early 1960's and the synthetic fiber industry in the mid-1970's. It was not always successful in its handling of the matter, however, the extreme case of which being the rice production in agriculture, to which we come back again later.

Development of Government Expenditure

Before going into the discussion of the role of government in income distribution and human development it is necessary to review the development of government expenditure during the period of our study.

The movement in the composition of major categories of expenditures in the total government expenditure, with the central and local governments combined, is charted as Figure 16. Table 7, on the other hand, shows selected items of government expenditures as ratios of GDP. The content of each item is explained in the notes to the figure and the table.

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Figure 16 & Table 7
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The ratio of total spending over GDP remained roughly constant during the late 1950's to the beginning of the 1970's at a little above 20% and then started to climb up during the 1970's to reach the peak in the beginning of the 1980's at 33%.

As shown in Figure 11 the government maintained budget surplus for most of the years during the latter 1950's up till 1974. In effect, the government limited the increase of total spending by the amount that could

be financed through the fruit of economic growth. Since the mid-1970's, however, the government committed to increase both the social welfare payments and the pension benefits (which is a part of social insurance) whereas the sudden shrinkage of economic growth forced the decline of tax revenues. The outcome was the going into debt from 1975, which continued until 1986. The size of the budget deficit relative to GDP amounted to 3% to 5% for most part of the decade with a peak of 5.5% in 1978. Such a prolonged deficit forced the government into an austere fiscal reconstruction plan since the early 1980's, imposing an absolute ceiling on most expenditure items (except for defence and ODA spending). This effort is reflected in the decrease of total spending/GDP ratio since 1984 (Figure 16) and the going into budget surplus from 1987 again (Figure 11). By 1990 the total spending/GDP ratio has gone down to a little above 30%, but in the wake of both a long recession since 1991 and a severe trade friction with the U. S. resulting in a demand that this country increases domestic demand, the government again turned into deficit in 1993.

Apart from the administrative costs of the government, the four biggest chunks of expenditure are civil engineering works, education, social security, each amounting to more than 5% of GDP recently, and industrial promotion, at around 3% of GDP and whose largest component is the support of agriculture (more about which is below). The defence expenditure has been kept below 1% of GDP throughout the entire period since 1960.

Some notable characteristics of the transition in the composition of the government expenditure are the followings.

First, until the mid-1960's the biggest single item of the government expenditure was education, until it was taken over by civil engineering works during the latter 1960's and the early 1970's. The expenditure on

education increased again relatively during the latter 1970's, reaching the peak of 6.7% (of GDP), but then since 1983 it has become subject to the absolute ceiling constraint described above and its ratio over GDP has declined to a little above 5%. The effect of such constraints is shown vividly in Figure 17 where the ratios of public expenditure per student for each school type normalized by GDP per capita are drawn. (The expenditure in question includes subsidies to private schools.) Except for the subsidies to officially approved occupational schools that began in the latter 1970's (for which the ratio continued to rise) and to schools for the handicapped (for which the ratio almost stood still) the ratios continued to decline until the end of the 1980's⁵⁾.

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Figure 17
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Second, the social security expenditure started from a little above 2% in the late 1950's with the greater part of the expenditure going into poverty abeyance (such as public living assistance and unemployment relief works) and small payments on social welfare and social insurance (amounting to only 0.5%). With the start of the national pension system and the national health insurance system (both in 1961), which accomplished to cover virtually every citizen of the country, the government expenditure on social insurance (i.e., the subsidy on benefits) immediately doubled to 0.6%⁶⁾. Since then this item has been on the increase, with another major jump occurring in 1974. 1974 is often called the "first year of pension" in this country as a major revision in the public pension system made in 1973 provided a significant increase in the level of public pension benefits, and moreover, automatic adjustment of the level of benefits to cost of living increase was assured⁷⁾. Expenditure on poverty relief, on the other hand,

has declined steadily until it occupied only 0.6% in the 1990's.

Third, although expenditure on public hygiene never occupied more than 1% of GDP, there was a significant increase in the early 1960's, doubling in terms of the ratio over GDP.

The Redistributive Role of the Government

Concerning the distributional effects of the government expenditure it is worthwhile to distinguish those that have direct redistributive effects such as social welfare and poverty relief measures, and those that have indirect effects, that is, to improve the productive capacity of some particular group of individuals.

The magnitude of the former type of activities has been already explained. An example of the latter is the promotion of agriculture. Together with the price support measures it amounts to roughly 2% of GDP, and it constitutes more than a half of the total expenditure on promoting industries. In terms of public finance, providing for physical social overheads, public health measures, and education facilities and programs have been conducted on the basis of nationally determined standards, and the local governments can ask for central government subsidies to fill up the lacking funds. Such a transfer of central government resources to local government bodies have been called the "local allocation tax grants", which has constituted 18.9 per cent (on average throughout the period 1955-1993) of the general budget of the central government.

Figure 18 drawn on the basis of Mochida [1990, p.89, Supplementary Table 1] shows the disparity (Gini coefficient) of per capita prefectural income together with those of per capita local allocation tax grants allotted to each prefecture and the total sum of general funds secured by each prefecture. Per capita prefectural income can be construed as a proxy for

the size of a local tax base. The table makes it clear that during the period of 1955 to 1972 the disparity in the allotment of local allocation tax grants to each prefecture contributed greatly in ameliorizing the effect of regional disparity in income on local government budget.

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Figure 18
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Despite the various conceivable drawbacks of the high degree of centralization in the government policy⁸⁾ such activities seem certainly to have contributed to the reduction of regional disparity in the production capacities, including human resources.

The Human Development Role of the Government

Concerning the positive role of government on human development conditions, we take up the case of infant and under five mortality rates. Recall that these mortality rates decreased rapidly during the 1960's (Figure 4). As noted earlier this was also the period during which expenditure on public hygiene relative to GDP increased sharply, and we can quite naturally suppose that the latter has caused the former⁹⁾. It should, however, be reminded that this was also the period of rapid growth in household income so that the decrease in mortality rates might merely reflect the general rise in the living condition. Therefore it is desirable to see whether the government effort on hygiene had positive effects on the reduction of the mortality rates that were independent of the increase in household income.

A standard regression test is performed on this point. The dependent variables are the rates of decrease in the infant mortality rate (GINF) and the under five mortality rate (GUDF), while the independent variables are the real rate of growth in per capita household disposable income (WY), the real rate of increase in government expenditure on hygiene (WHG) (the

deflator being that for government final consumption), and the single year lagged variables of WY and WHG. Since there is a widely known abnormal behavior on the child birth rate due to a superstition (by the name of Hinoe-uma) in 1966¹⁰⁾ we have taken out the years 1966 and 1967 from our observations. The rate of change variable is taken as a dependent variable because of the possibility of saturation in the decline of mortality rates.

The result of the regression analysis is shown in Table 8. It shows that an added one percent in the rate of increase in real public hygiene expenditure results in 0.1 percent addition in the rate of decrease in the under five mortality rate (GUDF) and 0.16 percent addition in the rate of decrease in the infant mortality rate (GINF) even when the growth of per capita household disposable income (WY) is accounted for. In fact, addition of WY variable does not affect the coefficient on WHG. The coefficient on GINF is strongly statistically significant (at 1%) while that on GUDF is weakly significant (at 5 or 10%). In any case, this result provides a statistical evidence for the effectiveness of the government policies on mortality rates.

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Table 8
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7. The Problems for the Future

Despite vast accomplishments that this country made so far with respect to growth, distribution and human development there remain several issues in which this country must seek ways for further improvement. The government policies should also be examined critically.

Pollution and Environment

The first issue is the prevention of pollution. The rapid growth era was accompanied by numerous serious incidences of air, water and road pollution symbolically represented by the Minamata organic mercury poisoning case, whereby the brain nerve system of thousands of people were gravely paralyzed and many were killed by the discharged factory water of a chemical company. (The cause and the pollutant was officially identified in 1956.) Furthermore, with the spread of highway construction in the midst of the densely populated metropolitan areas street pollution of noxious gas, noise, and vibration became serious. The burden of pollution was generally concentrated on poor people, which suggests that one cannot be content with equality in the distribution of pecuniary income alone. The government was rather reluctant and slow to intervene with the above cases, electing priority on the promotion of industry and economic growth. The health of the victims were regarded as subordinate to the "interest of the general public".

Mounting popular awareness and concern on pollution and filing of suits by the victims against the pollutant firms led the parliament to enact various anti-pollution laws culminating in Pollution Crime Act which was put into effect in 1971. This act imposed criminal penalty against discharge of harmful materials relating to business activity, regardless of whether willful or accidental. Moreover, the burden of proof rested in effect on the pollutant side. The Environmental Protection Agency was simultaneously instituted to oversee the matter.

The earlier half of the 1970's marked the highest moment in the environment protection movement in Japan. The courts made a series of clear-cut rulings on civil court pollution cases in favor of victims, thus confirming

the citizens' fundamental environmental rights. The managers of pollutant firms were criminally prosecuted. Teaching of environment and pollution problems were put into primary and secondary school curriculum. The OECD report published in 1977 (The Environmental Policy of Japan) hailed this country to have already solved the environment problem.

There has, however, been a significant retreat in the government environmental policy since the latter half of the 1970's, especially with respect to the criteria for the enforcement of the environmental laws. For instance, in 1978 the Environment Protection Agency significantly curtailed the standard for controlling air pollution from not more than 0.02 ppm of NO₂ density in the air (on average per day) to that of not more than 0.04-0.06 ppm, which immediately opened the way for constructing further network of major roads inside the densely populated areas. It appears that confronted with the heavier constraints on growth in the slow growth era the government has returned to the policy of favoring the industrial interests.

Duality of the Labor Market and Unequal Opportunities between Men and Women

Despite the overall moderateness in the inequality of income distribution there are at least two problems that must be discussed. The first concerns the dual labor market or labor market segmentation, while the second concerns the inequality in the labor market opportunities between men and women. The latter is already taken into account by the abrupt decline in the human development index when inequality between men and women are taken into account. Figure 19 (based on a table compiled by Osawa [1993, p. 70, Table 3-2] shows the movement of the wage disparity between men and women for each age group. While the disparity has been on the decrease for young workers (which is partly explained by the catch up of the education

level of women), it has even increased since the mid 1970's for women above age forty.

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Figure 19
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The author's own study (Ishikawa and Dejima [1994]) using a micro-wage data of 1980 and 1990 and applying the methodology of switching regressions confirms the presence of dual wage structure, one standing for the primary labor market with high returns on education, duration of service in the current firm (hereafter referred to as tenure) and external experience, and another standing for the secondary labor market with little return on education and external experience. The secondary market does pay a moderate return (roughly a half that of the primary market) on tenure so that wages do rise as workers continue to stay in the same firm. In this sense the secondary market differs from that in the United States where the presence of similar duality has previously been shown¹¹).

Such features are clearly seen by the wage manifolds depicted on the basis of estimation results in Figure 20, drawn separately for men and women. The figure underlines the difference in the labor market opportunities that exist between men and women.

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Figure 20
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The proportion of workers in the primary sector is estimated to be roughly 35-40%, leaving the majority of workers to the secondary sector. The simultaneously estimated switch equation (which assigns the probability of belonging to the primary sector for each worker) indicates that the distribution of secondary sector jobs are far more frequently found in small firms than in large firms. Noting that there are frequent turnover of jobs

in the small firm sector, this means that the disparity of life-time earnings between workers in the primary labor market of large firms and workers in the secondary market of small firms is far greater than the disparity of oneshot contemporaneous wages. An important point is that such duality is not a phenomenon of the past, but may expand in the future. In fact, the current labor force in Japan is increasingly replaced by part-time employees, especially women, whose job content, pay and job stability have much room to be improved.

The Education System

What cannot be dissociated from the structure of the labor market discussed above is the structure of education. Whereas this country has succeeded in raising the school enrollment ratios and improving the educational standards in various respects, it does not yet seem to have succeeded in establishing a well diversified school system, in particular at the secondary level. Figure 21 shows that the occupationally oriented high schools are becoming increasingly unpopular, rendering everyone to compete on the same ground. This competition in the sphere of education obviously corresponds to the competition to enter the primary segment of the labor market. Such a circumstance is far from an ideal where multifarious human capabilities are mutually respected and rewarded accordingly¹²⁾.

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Figure 21
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Agriculture and Small Firms

We turn now to the failure of this country in generating a sustainable agricultural sector despite the continued huge doses of government subsidies directed towards the sector. This suggests the importance of a delicate timing control problem. While the redistributive role of the government, in

particular, boosting the income of the agricultural households during the 1960's has earlier been evaluated positively in bringing a balanced expansion of consumption which, in turn, induced a spurt in fixed investment activities, it was not withdrawn even when it was no longer needed. Ultimately the policy has not fostered an environment in which full-time and willing farmers can make the best of their efforts. The country now seems to be paying a high cost on account of the distortionary effects. Incomes policies, in particular, are inclined to generate vested interests and invite mounting lobbying activities by the groups concerned.

There are other spheres such as the protection of small firms where a similar verdict seems to apply. In fact, too many small firms seem to remain that are not sustainable once policy assistance (which may be in the form of exemption from the regulations) is lifted. The examples are the leeways in the areas of work safety regulation and the restriction of working hours. This suggests that the redistributive policies of the direct type should incorporate a self-ending mechanism when they are initiated.

Urban Congestion Problems

Finally, we may briefly mention that this country has generated excessive population congestion in the Tokyo metropolitan area. The housing conditions, transportation for commuting to the workplace, and greens and parks for recreation, all yet remain very poor.

Notes

- 1) As a matter of fact continuous births and rebirths of small firms which have been maintained in Japan throughout the entire period imply the presence of a highly competitive market environment and the existence of a financial infrastructure to support the generation of new firms. Furthermore, very frequently they imply trying out of new ideas. Thus they have doubtlessly been congenial to productive efficiency and economic growth. Creation of such a competitive environment was prompted by two facets of post-war democratic reform, the significant wealth transfer among the population (discussed in the text) and the establishment of strong anti-trust measures. Maintaining high employment (or low unemployment) has also been facilitated by continuous births and rebirths of small firms as separated workers could easily find an alternative workplace.

- 2) On the other hand, fluctuations in outputs during the period from the mid-1970's to 1980's were predominantly led by shocks in export demand.
It should also be pointed out here that the major engine of job creation during the rapid growth era resided in the manufacturing sector. Furthermore, introduction of new technology in large firms meant that small and medium-size subcontracting firms (whose prevalence has been another major characteristic of the Japanese manufacturing sector) had to cope with them also by improving their production facilities. Such a pattern of industrial growth encouraged the job creation especially among young workers, who were believed to be highly malleable and trainable.

- 3) This is seen in an influential government report entitled Problems of the Development of Human Capabilities prepared by the Economic Council of the Prime Minister in 1963. In fact, however, this report presents a viewpoint which is far wider than the usual report on human resources, and may be regarded as a first "human development" report in Japan.

- 4) These institutions are outgrowths of local and communal system of mutual credit (formerly called Tanomoshiko and Yui) that developed spontaneously in Japan since the Edo period. Tax grants to these institutions are wide ranging, from corporate income taxes, stamp taxes to local property taxes. These institutions are also allowed to offer higher set of deposit interest rates than regular commercial banks to attract depositors.

- 5) The path of the higher education should also be explained. Until the mid-1960's the ratio was about 1.8 times the per capita GDP. Since then until 1970 it decreased sharply towards 1.2, reflecting the expansion of private universities. While the ratio started to rise again in the 1970's (with the introduction of subsidies to private universities) it had to face the fiscal constraints during the 1980's. The stallment of the university enrollment ratio after mid-1970's that we saw in Figure 7 can partly be explained by the increased burden of tuition costs and other fees placed on students.

- 6) In the case of medical costs, the proportion of total medical costs borne by the government sums up to 30.6% in 1993, which increased from 15.9% in 1955 to the peak of 36.4% in 1983 and has declined since then. The ratio of total medical costs over GDP, on the other hand, increased from 2.8% in 1955 to 5.5% in 1993.

7) It was only after the major revision of the program in 1973 that individuals could start counting on pension benefits as a major income source after retirement. Previously individuals' own saving efforts plus possible supports by children (which, in turn, was not entirely costless as it was more rightly be regarded as a family insurance system) and a prolonged working life were the major means to make the ends meet for the elderly people. Various studies suggest that saving for old age seems to have played a primary role in generating high net financial saving on the part of Japanese households.

8) For an instance, it has frequently been pointed out by specialists on education that the setting and enforcement of a standardized and detailed national curriculum on primary schools under the direction of the Ministry of Education have narrowed the room for spontaneous activities and experiments of individual teachers and localities, thereby robbing of their incentives.

9) The human development report of the Economic Council referred to earlier in footnote 3) made a prediction (in p. 323) that, given the existing experiences in other developed countries, the infant mortality rate (33.7 in 1959) could be reduced to 20.2 (which is 60% of the previous figure) but that in order to achieve that goal by 1970 the country would require a major effort addressed to its reduction.

10) This superstition developed in Edo period says that a woman born in a hinoe-uma year (which happens once in sixty years in the old Chinese calendar) would kill her husband. Consequently, women born in this year would face difficulty in marriage. In fact, the birth rate of this year dropped to 13.7 per thousand while that of the neighboring years was around 18 per thousand.

11) It is due to rapidity of economic growth that the wages of the primary and secondary sectors as reflected in the wage disparity of different education groups and different sized firms converged (as seen in Table 6). In the slow growth era there is no theoretical necessity that those wage disparities would converge, which was actually the case in Japan. The relationship between wage disparities and the economic growth rates are discussed in Ishikawa [1981] within the framework of a growth model with dual labor markets.

12) It should be noted that the Japanese government once actually drew a picture very close to such an ideal. (Cf. The Economic Council report of 1963 referred to earlier.) It recognized the need to transform the labor market into a one in which individuals could move between firms each having distinguished and objectively assessed occupational skills. Such a market may be identified as what is sometimes called the occupational labor market. The reason why Japan has not succeeded in achieving such a goal is, first, that the existing structure of the labor market (both at the time of the early 1960's and contemporary) has more universal grounds than merely reflecting the particular historical experience of this country, and second, the stated goal requires establishment of extensive public or semi-public skill training institutions. This is perceptively discussed in Marsden [1990]. The policy formers did not have the appropriate perception at the time.

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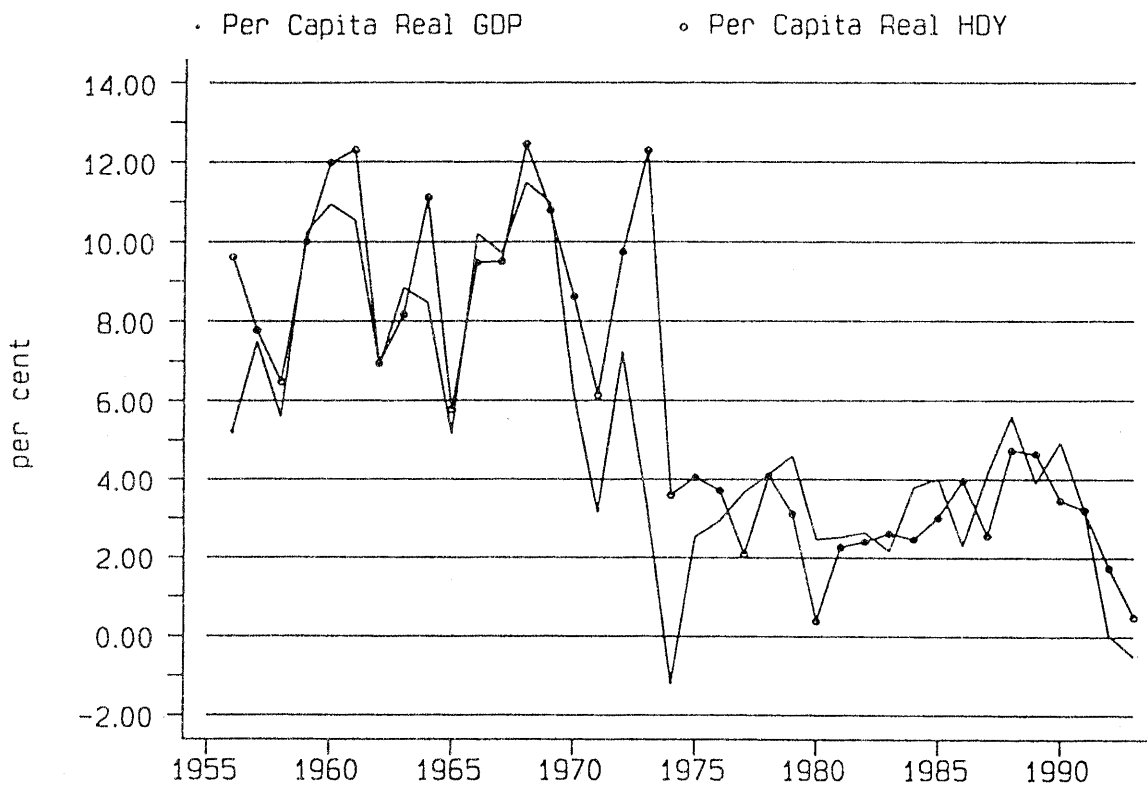


Figure 1

Growth Rates of Real GDP per Capita and Real Household Disposable Income per Capita

Source:

Economic Planning Agency, Annual Report on National Economic Accounts and Retrospective Report on National Accounts.

• National Wealth/GDP + Hshd. Wealth/HDY
 • National Net Fixed Asset/GDP • Hshd. Non-Land Wealth/HDY

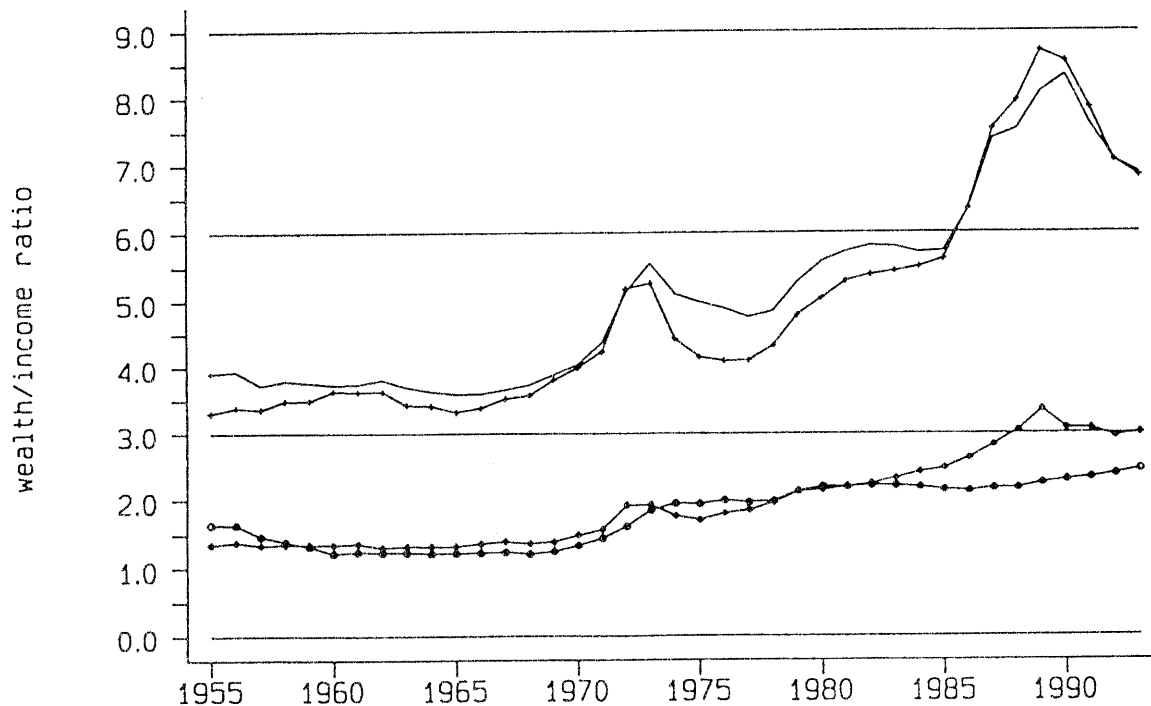


Figure 2

Accumulation of National and Household Wealth

Definitions:

National Wealth = Real Wealth (Non-reproducible Assets + Net Fixed Asset + Inventories) + Net Financial Claims on Foreign Countries

National Net Fixed Asset = Fixtures and Capital Equipment, both Private and Public.

Household Wealth = Household Real Wealth + Net Financial Assets of the Household

Household Non-Land Wealth = Household Wealth - Household Non-reproducible Assets (i.e., land + Forests + Fishing Beds)

Note: There is a discontinuity in the "Household Wealth" and "Household Non-Land Wealth" figures at 1969/1970 as the value of corporate shares prior to 1970 is given by the face value of the shares while that after 1970 is the market value of shares. The discrepancy for earlier years is believed to be relatively minor so that the above curves are drawn by disregarding this fact.

Source:

Economic Planning Agency, Annual Report on National Economic Accounts and Retrospective Report on National Accounts.
 (Japanese Title: "Kokumin Keizai Keisan Nenpo" and "Sokyu Kokumin Keizai Keisan Nenpo")

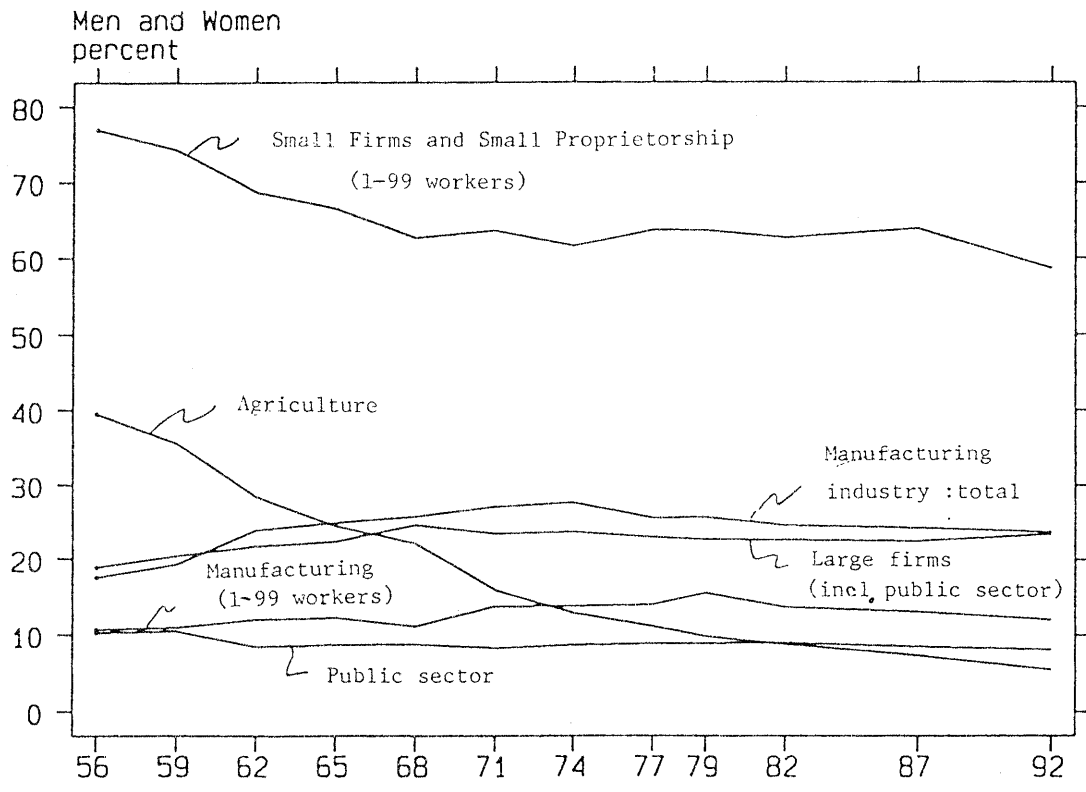


Figure 3

Components of the Work Force by Industry and Firm Size,
as Ratio over the Total Working Population

Source:

Bureau of Statistics, Employment Status Survey.
(Japanese Title: "Shugyo Kozo Kihon Chosa")

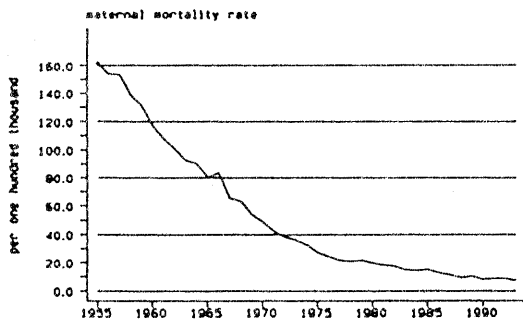
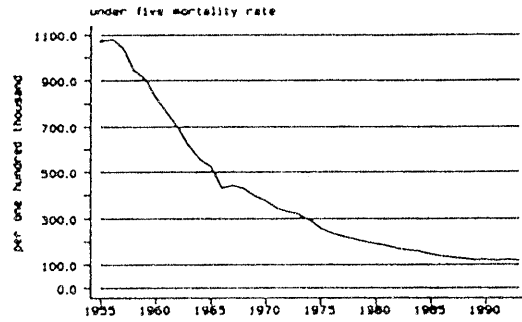
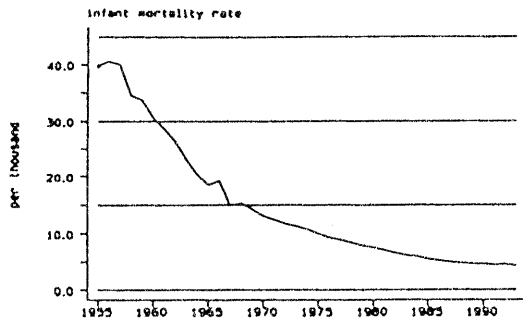


Figure 4

Infant, Under Five, and Maternal Mortality Rates

Source:

Ministry of Health and Welfare, Statistics on Population Dynamics
 (Japanese Title: "Jinko Dotai Tokei")

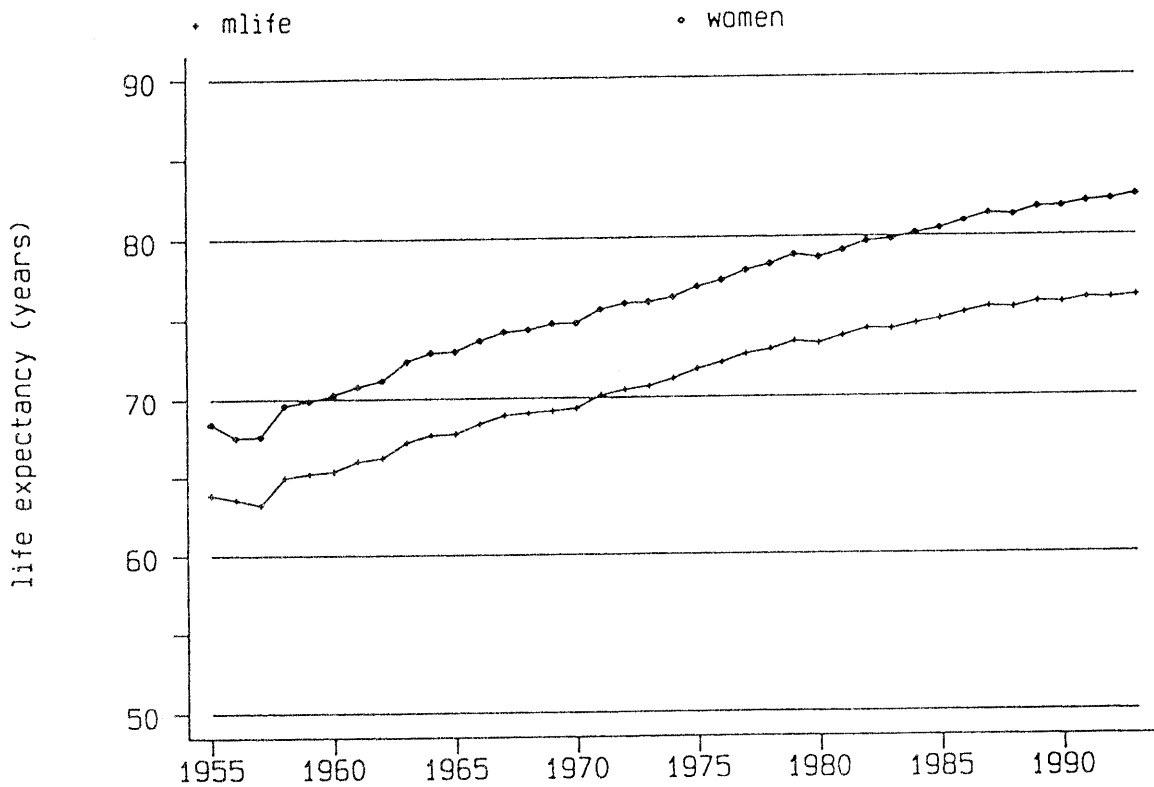


Figure 5

Life Expectancy at Birth

Source:

Ministry of Health and Welfare, Simplified Life Tables.
 (Japanese Title: "Kanyi Seimei Hyo")

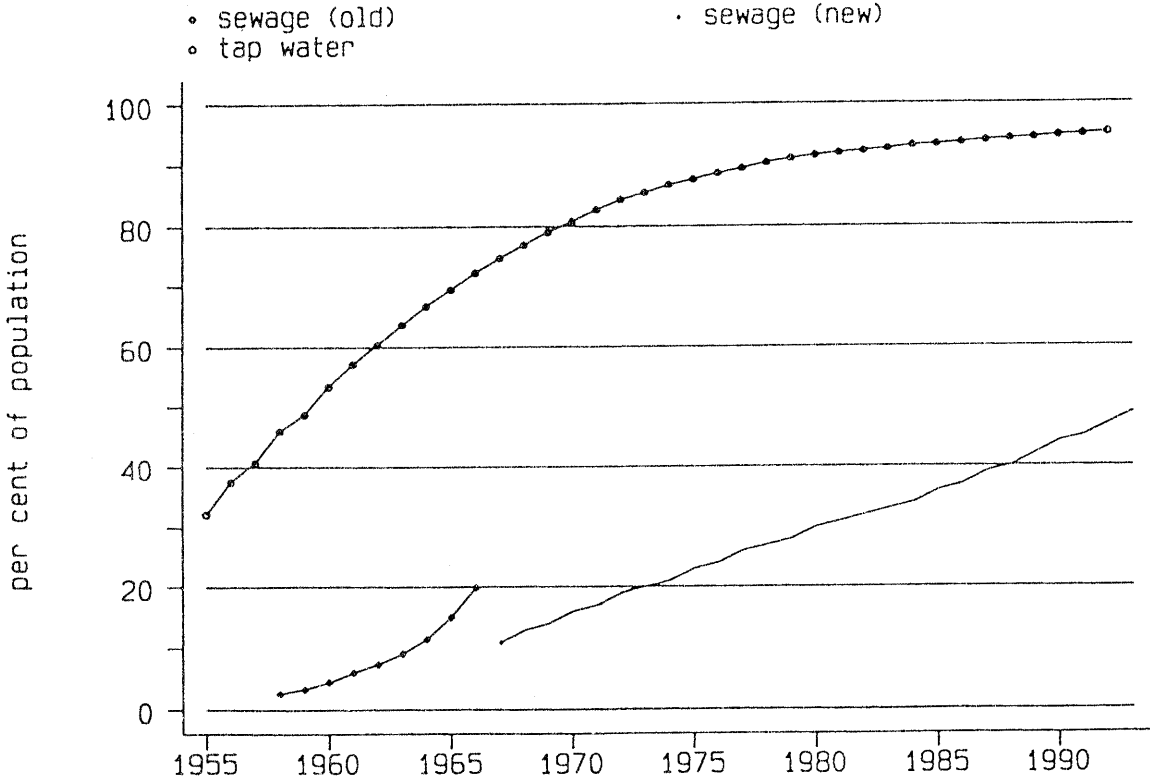


Figure 6

Availability of Tap Water and Sewage

Note: The discontinuity in the figures of the sewage coverage ratio reflects the shift in the administrative responsibility of the sewage system from the Ministry of Health and Welfare to the Ministry of Construction. The source of the discrepancy in the old and new series is difficult to ascertain, as no record of how the old series are calculated remains in the Ministry of Health and Welfare.

Sources: For tap water: Ministry of Health and Welfare, Statistics on Tap Water and A Centennial History of Tap Water System (Japanese title: "Suido Tokei", "Suido Seido Hyaku Nen Shi".)

For sewage (old): Association of Health and Welfare Statistics, Indicators of Health and Welfare: Trends on National Hygiene (Japanese title: "Kosei no Shihyo: Kokumin Eisei no Doko.")

For sewage (new): Japan Association of Sewage, Statistics on Sewage (Japanese title: "Gesuido Tokei")

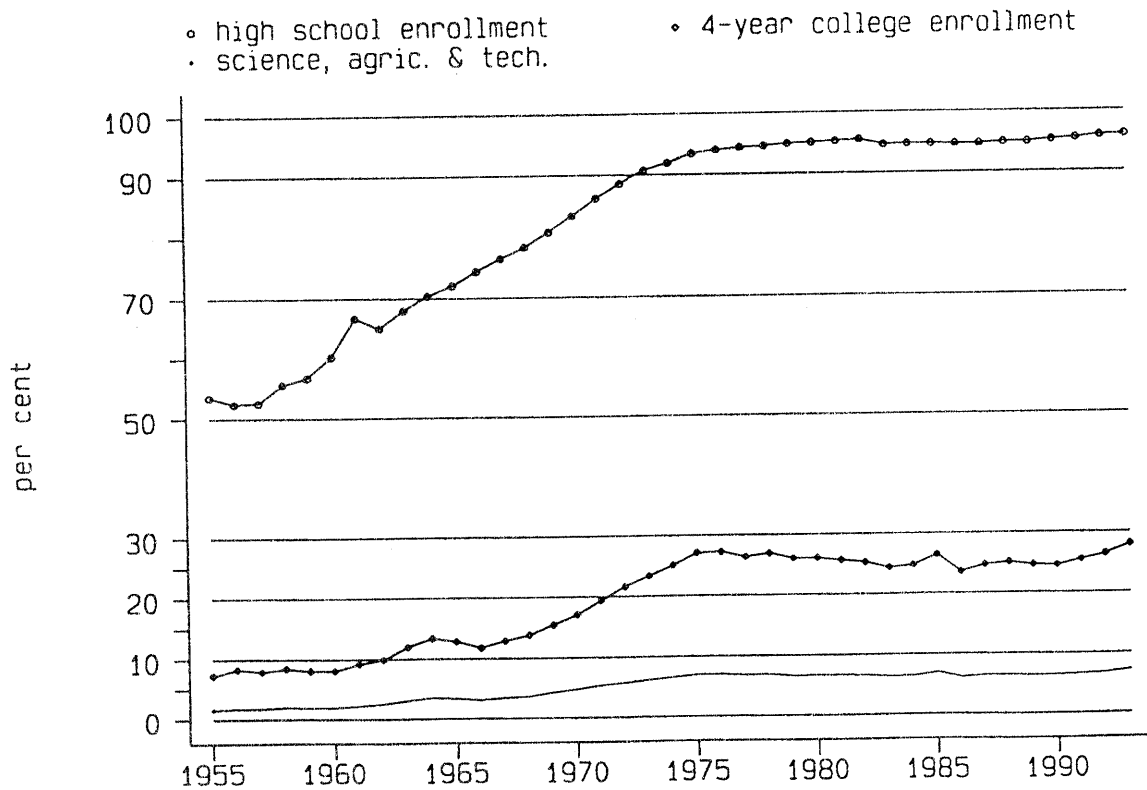


Figure 7

Secondary and Higher Education Enrollment Ratios

Source:

Calculated from Ministry of Education, The Basic Survey on Schools. (Japanese Title: "Gakko Kihon Chosa")

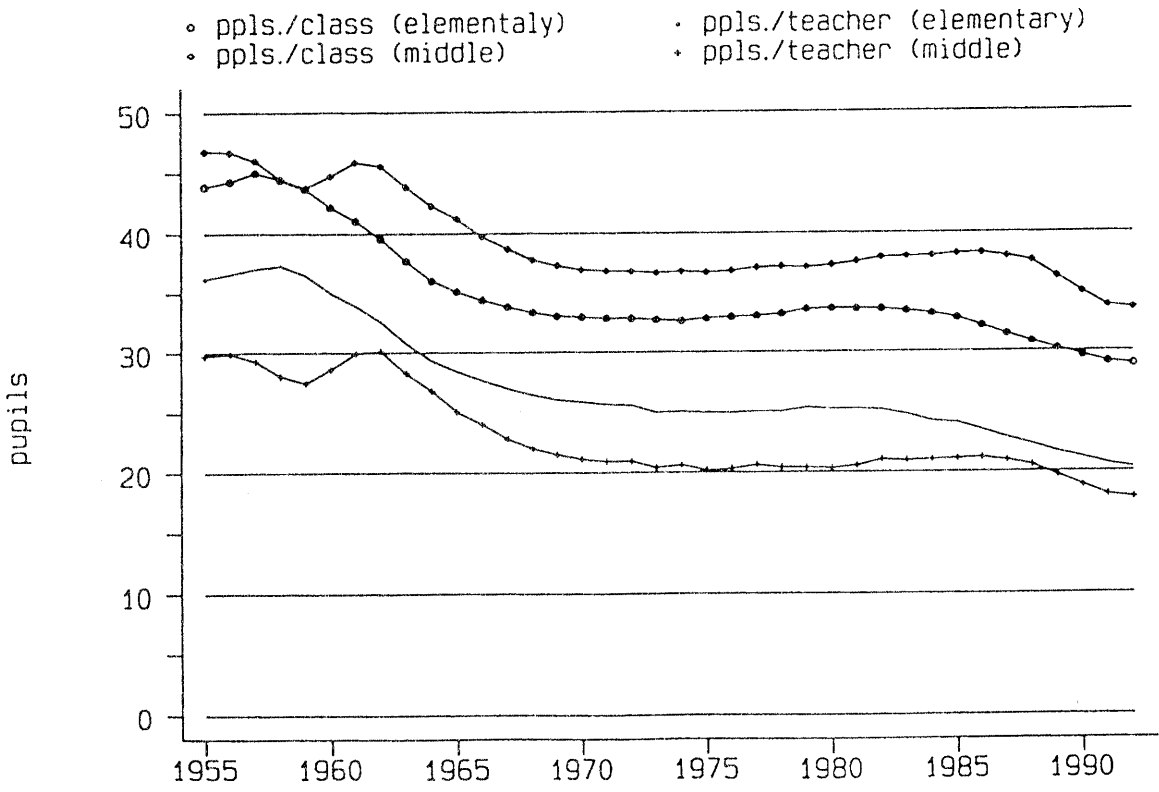
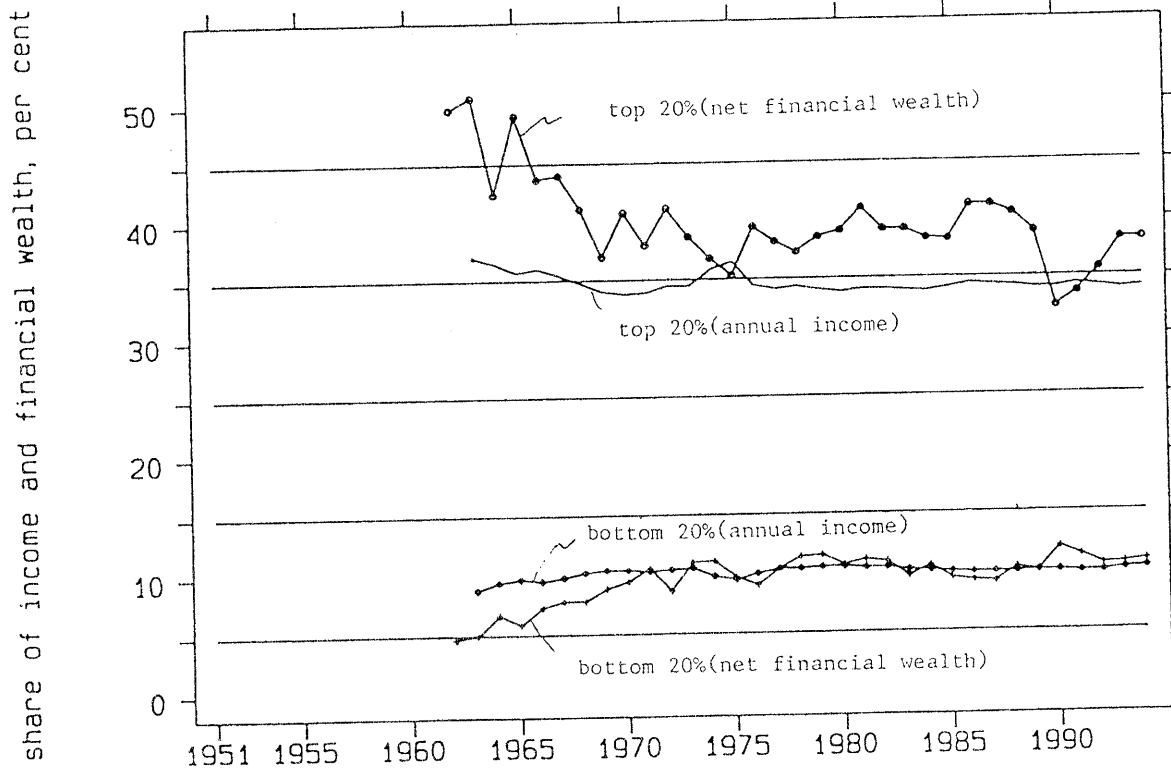


Figure 8

Class Room Size and Pupils/Teacher Ratio in Primary Education

Source:
 Ministry of Education, Survey on Local Education Costs
 (Japanese title: "Chiho Kyoiku-hi Chosa.")

employee households



all non-agric. households

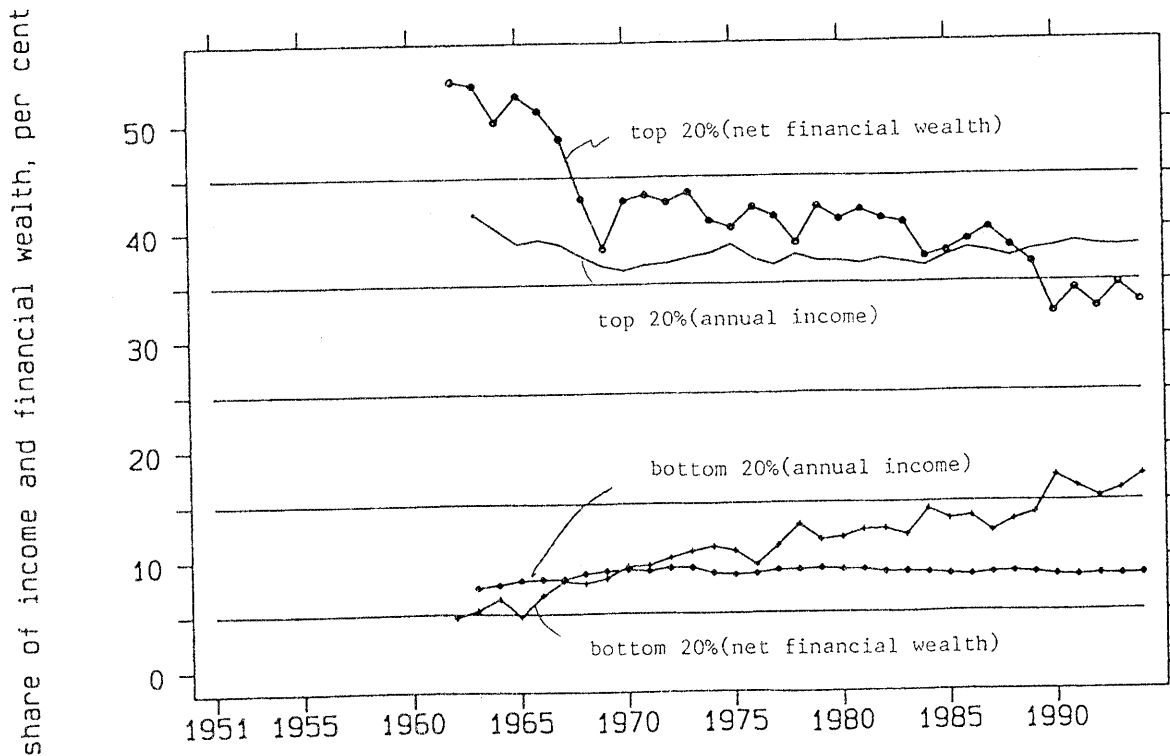


Figure 9

Shares of Income and Net Financial Wealth Held by Top and Bottom Income Quintile Groups

Sources: For shares in annual income: Bureau of Statistics,
Family Income and Expenditure Survey. (Japanese title:
"Kakei Chosa").

For shares in net financial wealth: Bureau of Statistics,
Family Savings Survey. (Japanese title: "Chochiku Doko
Chosa.")

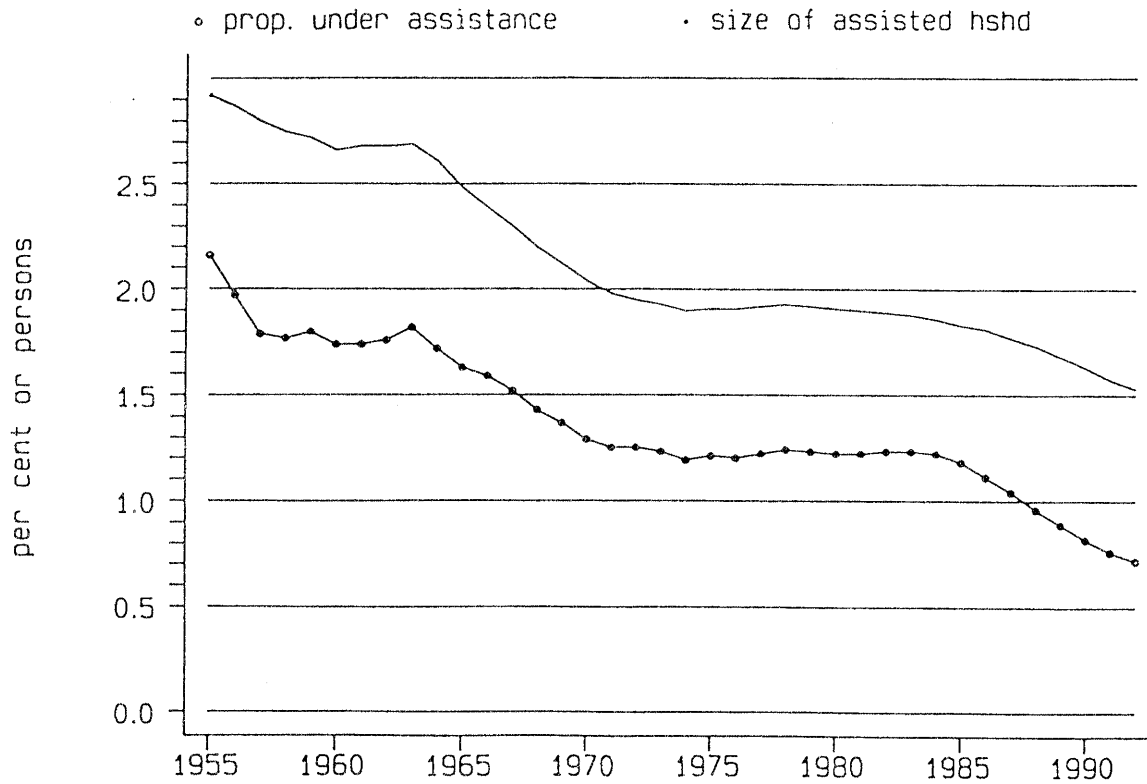


Figure 10

Population under Public Living Assistance Program

Note: The curves represent the ratio of the net total household members assisted by the program over the entire population, and the average member size of the household assisted by the program, respectively.

Source: Committee on the Social Security System, Office of the Prime Minister, Annual Report on Social Security (Japanese title: "Shakai Hoshō Tokei Nenpo.")

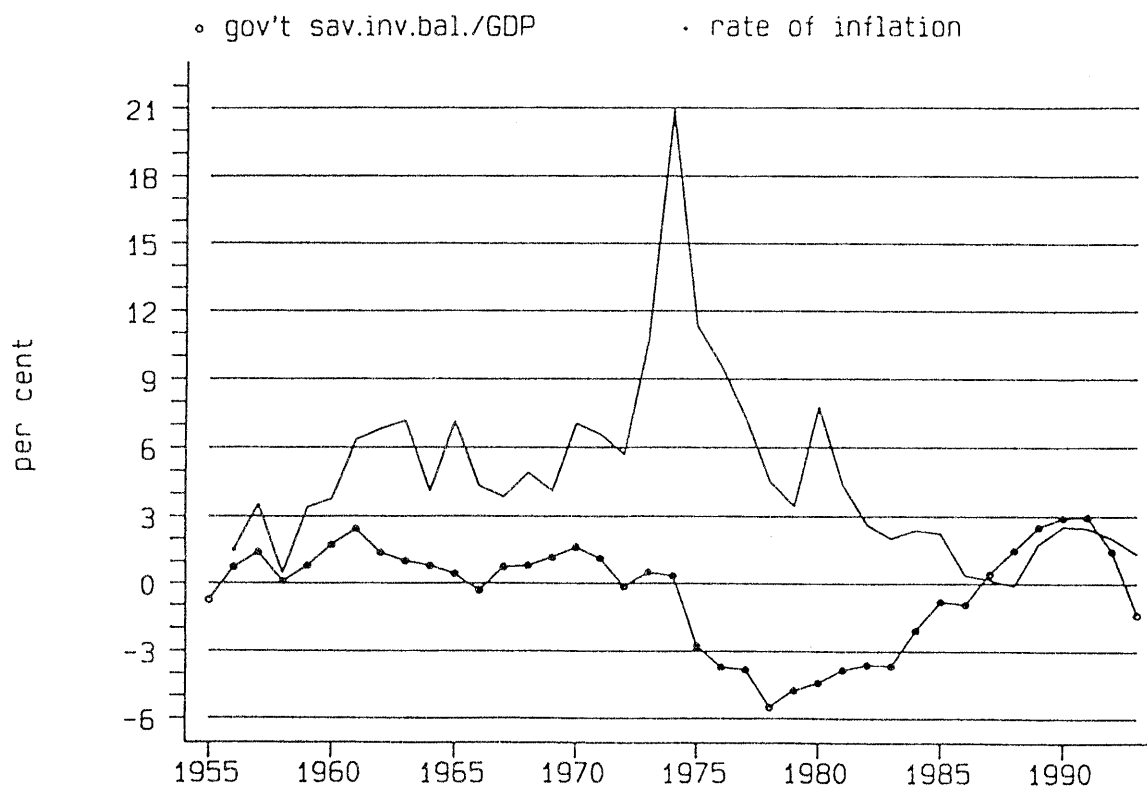


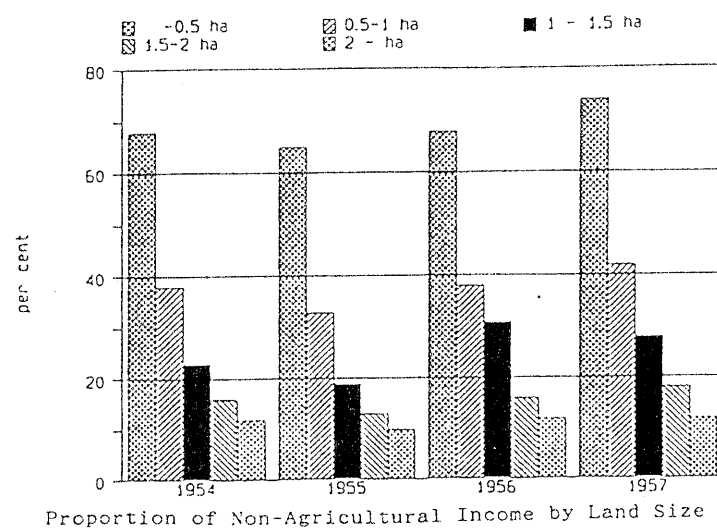
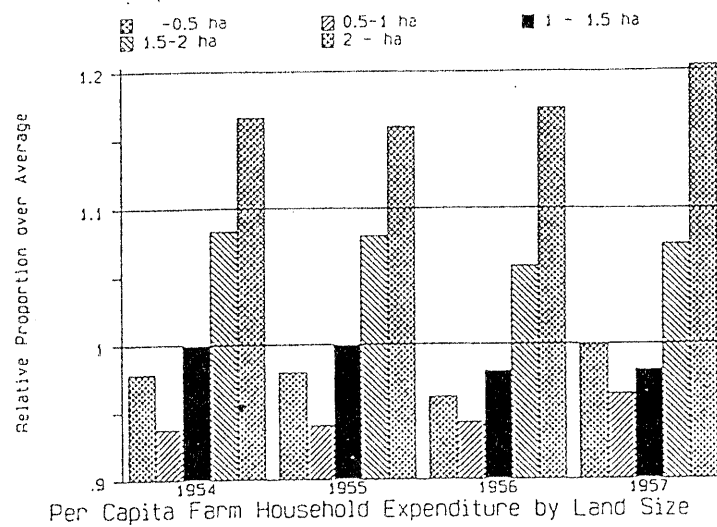
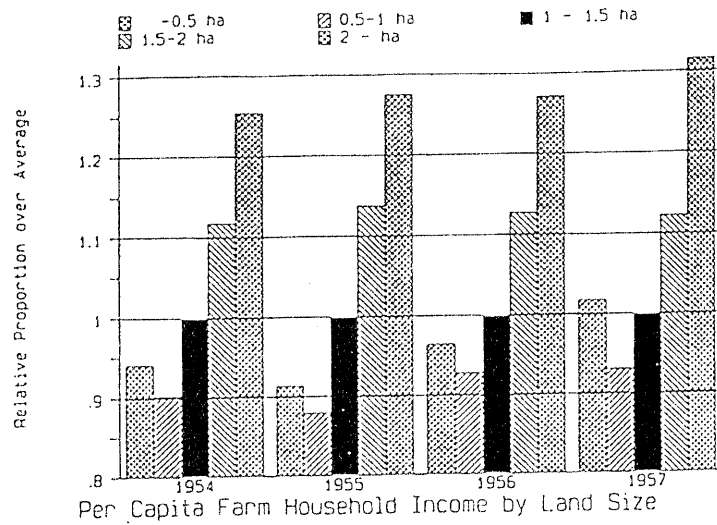
Figure 11

Government Saving-Investment Balance (Fiscal Surplus)
and the Rate of Inflation

Source:

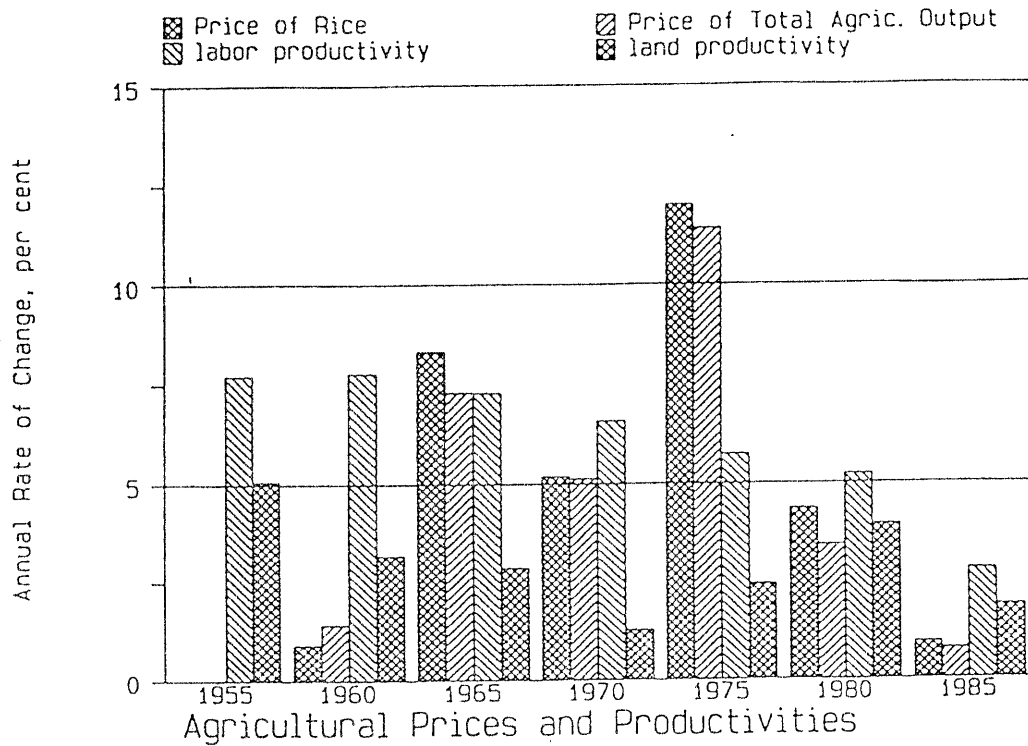
Economic Planning Agency, Annual Report on National Economic Accounts and Retrospective Report on National Accounts.

Figure 12.
Distribution and Components of Farm Household
Income by Size of Land Holding



Source: Drawn on the basis of data compiled by Mataji Umemura, Chingin, Koyo, Nogyo, Tokyo: Taimeido, 1961, p. 144, Table 6.

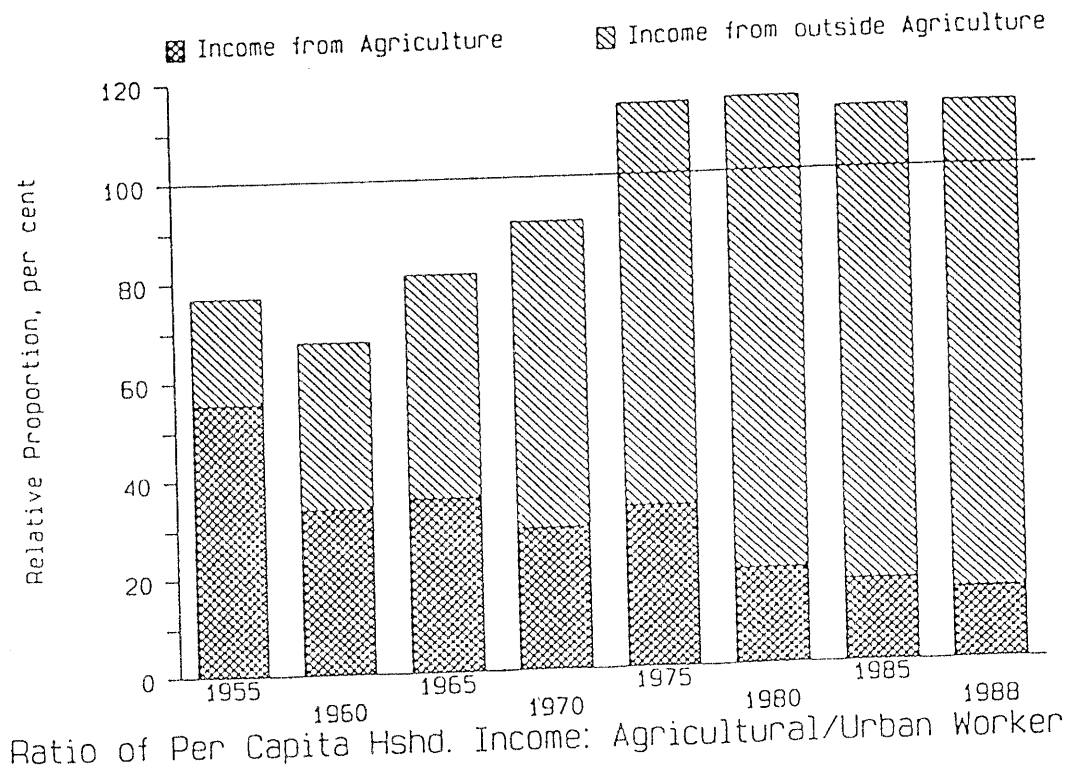
Figure 13.
Changes in Agricultural Product Prices
and Productivities



Note: The horizontal axis refers to the five year period ending in the year indicated.

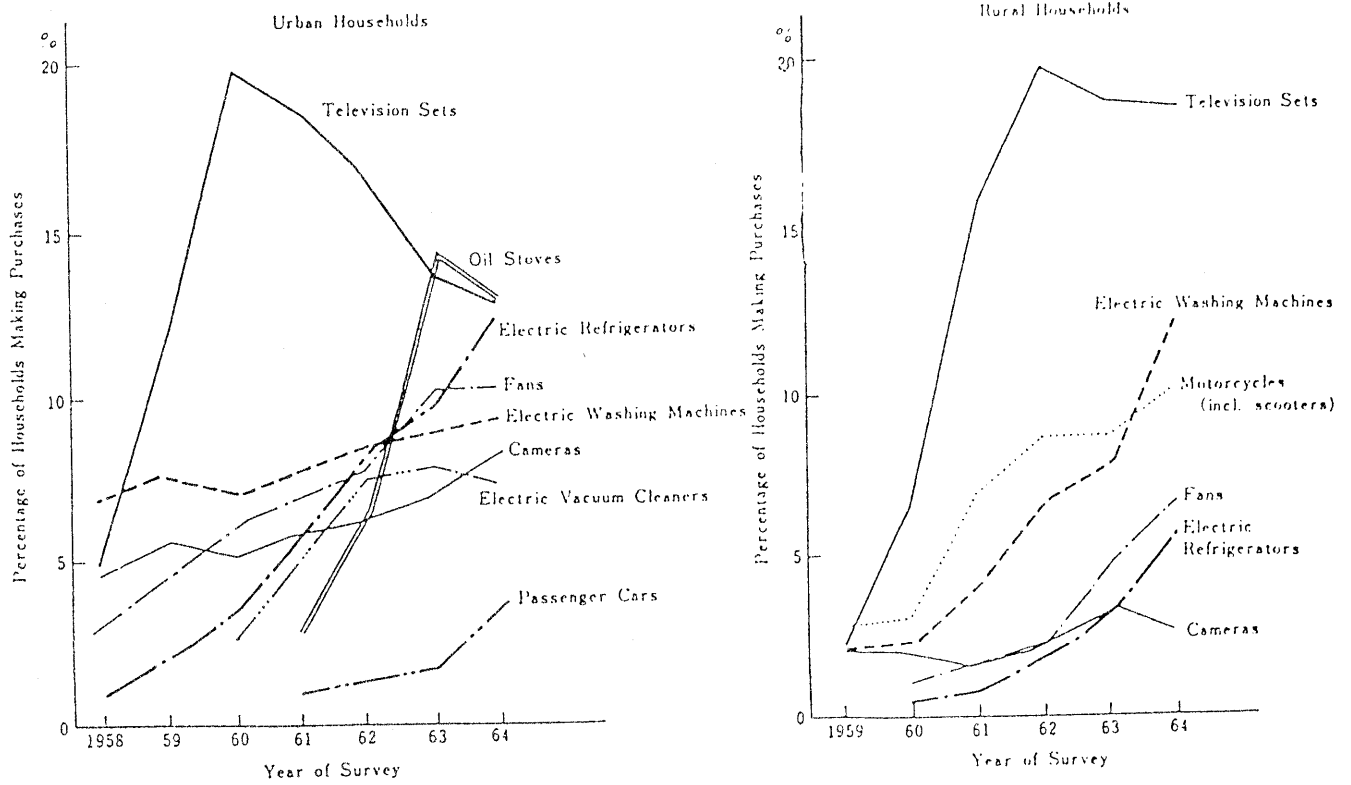
Source: Yujiro Hayami and Saburo Yamada, The Agricultural Development of Japan, A Century's Perspective, Tokyo: University of Tokyo Press, 1991, p. 254, Table A-7 and p. 256, Table A-10.

Figure 14.
Income Disparity between Farm and Urban Employee Households



Source: Yujiro Hayami and Saburo Yamada, The Agricultural Development of Japan, A Century's Perspective, Tokyo: University of Tokyo Press, 1991, p. 102, Table 2-7.

Figure 15.
 Propagation in the Purchase of Consumer Durables
 by Urban and Rural Households



Source:
 Reproduced from Yutaka Kosai, The Era of High-Speed Growth,
 Tokyo: University of Tokyo Press, 1986, Table 7-2.

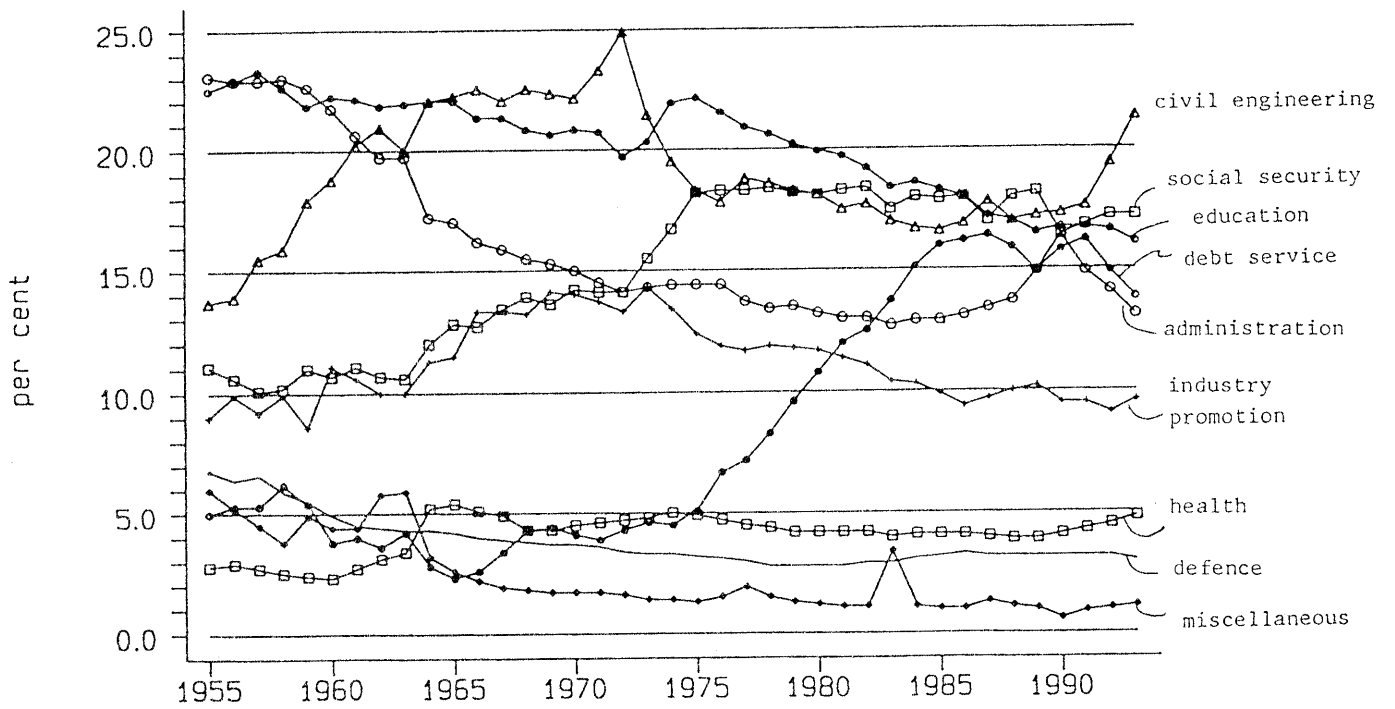


Figure 16
 Components of Government Expenditure
 Central and Local Governments

Notes:

1. The graphs represent the ratio of expenditure on each item over the total expenditures in per centage terms. The amount of expenditure is the net sum of central and local government expenditures.
2. The major contents of each category of expenditure are as follows.
 - .Administration = Administration of the government bodies, foreign affairs, payment of pension benefits to war-time soldiers and government officers (under the old system.)
 - .Defence = Defence expenditure.
 - .Debt Service = Debt service payment on national and local public debts.
 - .Civil Engineering = Construction of social overhead fixtures, flood Controls, etc.
 - .Industry Promotion = Subsidies to promote agriculture, industries and commerce.
 - .Education = school education, social education, scientific research, promotion of cultural activities.
 - .Social Security = Social Welfare (on children, the elderly, etc.) + Social Insurance (on health care and public pension) + Poverty relief + Unemployment Relief Works + Public Housing + Miscellaneous items (such as Preventive research on natural hazards. Note that expenditures concerning public hygiene are completely separated out in the next item.)
 - .Health = Public Hygiene and sanitation.

Sources: Ministry of Finance, Budgetary Statistics (Japanese title: "Zaisei Tokei".)
Ministry of Home Affairs, Annual Statistical Report on Local Government Finance (Japanese title "Chiho Zaisei Tokei Nempo.")

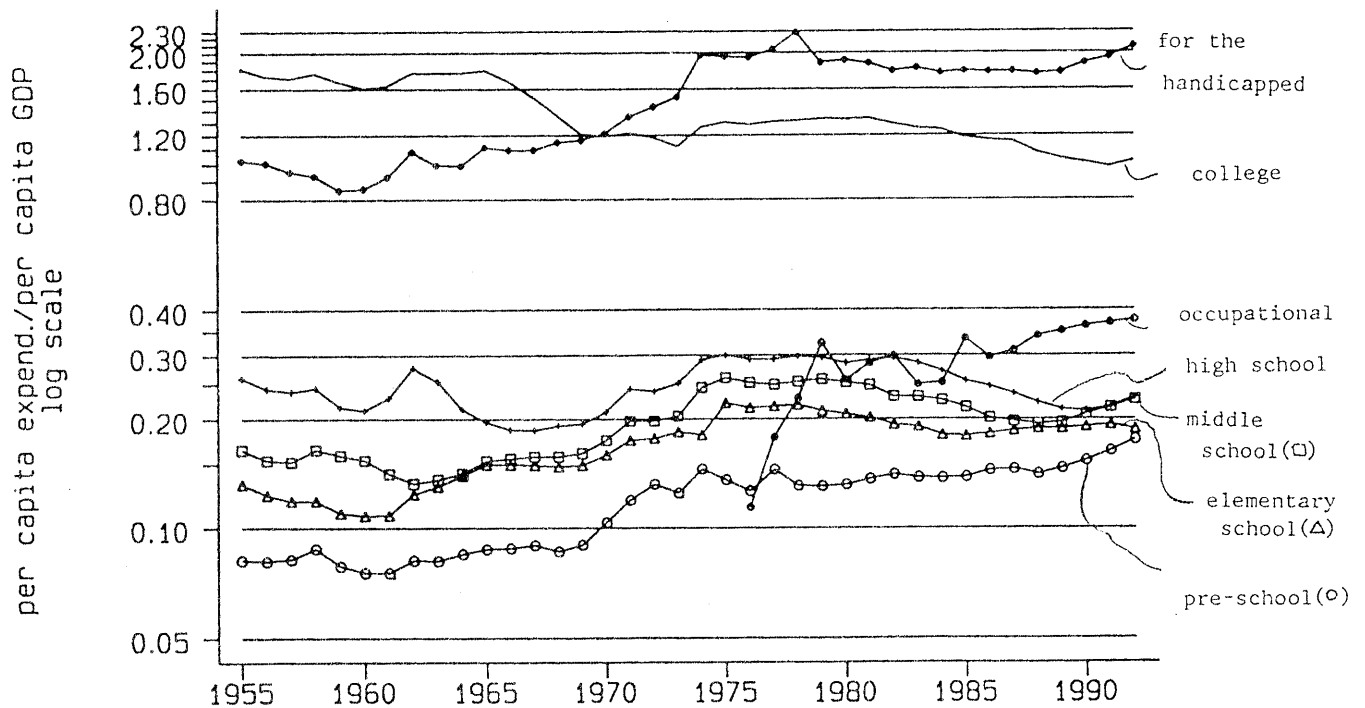


Figure 17

Per Student Expenditure on Schools at Various Levels
as Ratio over Per Capita GDP

Source:

Ministry of Education, Survey on Local Education Costs
(Japanese title: "Chiho Kyoiku-hi Chosa.")

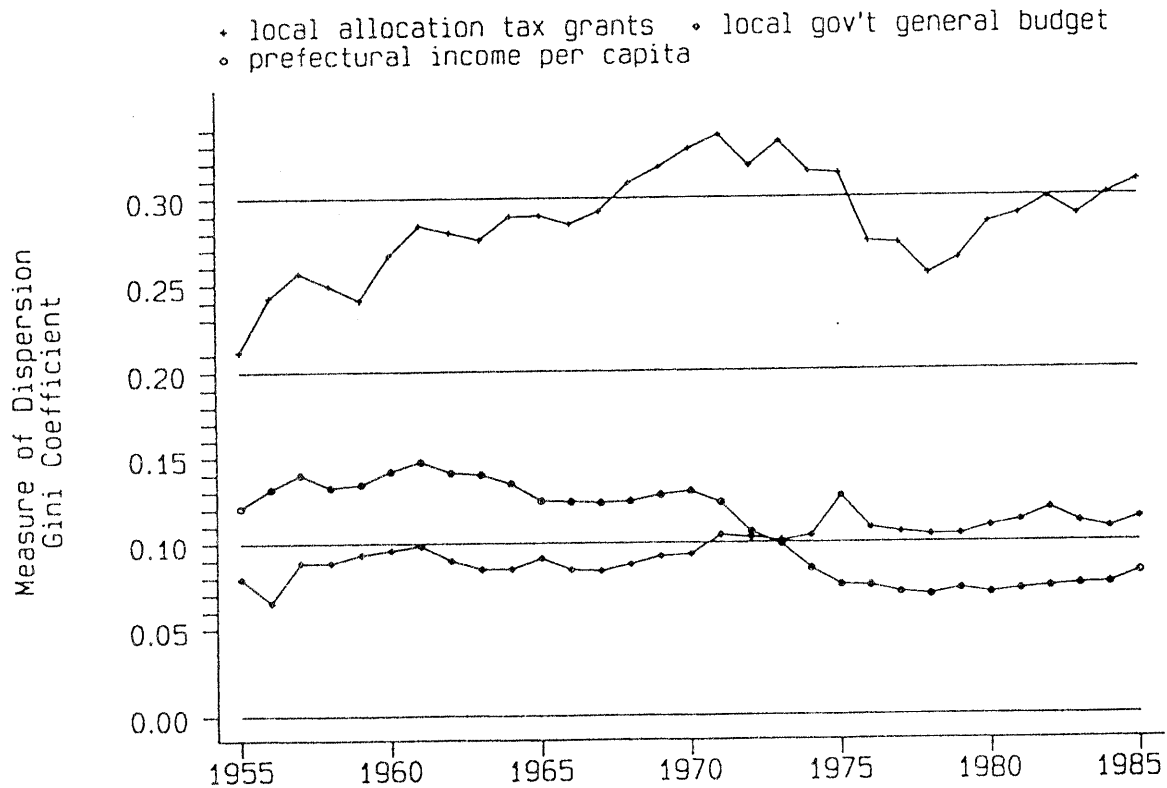


Figure 18

The Redistributive Role of Local Allocation Tax Grants

Source:

Drawn on the basis of Nobuki Mochida, "Chiho Kofu Zei Seido no Kozo to Kino," Keizai to Keizai-gaku no. 65, February, 1990, p. 89, Supplementary Table 1.

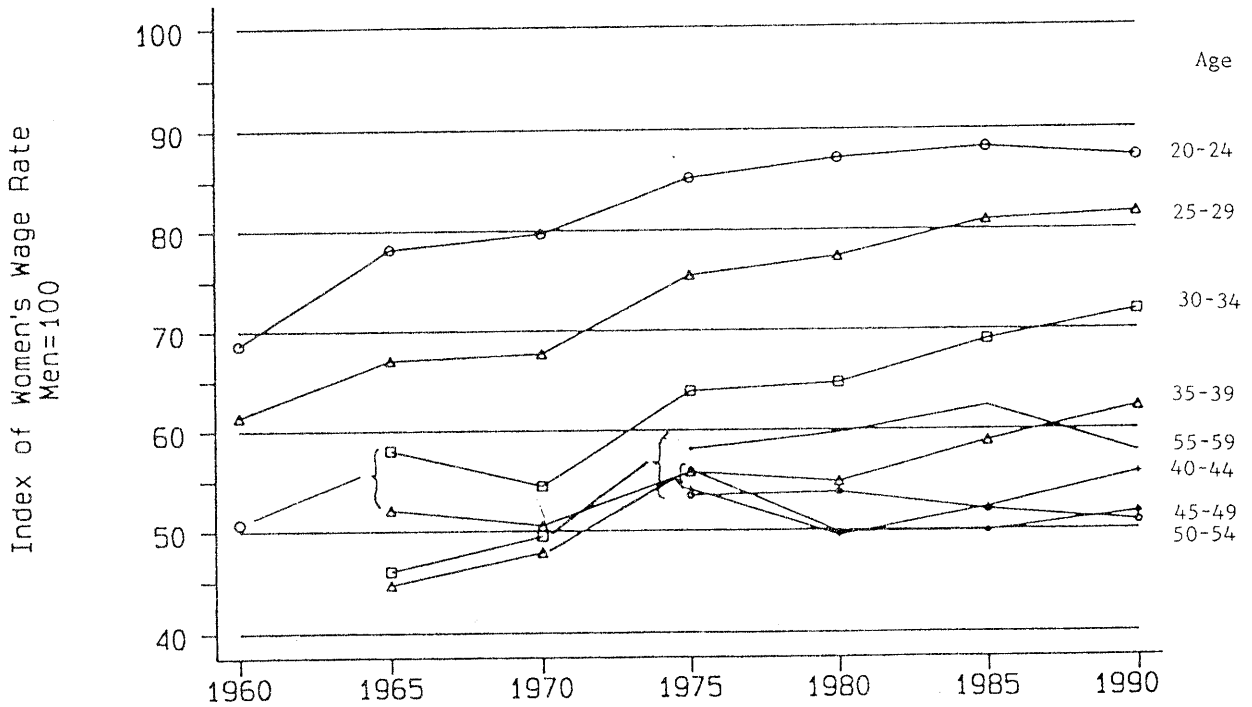
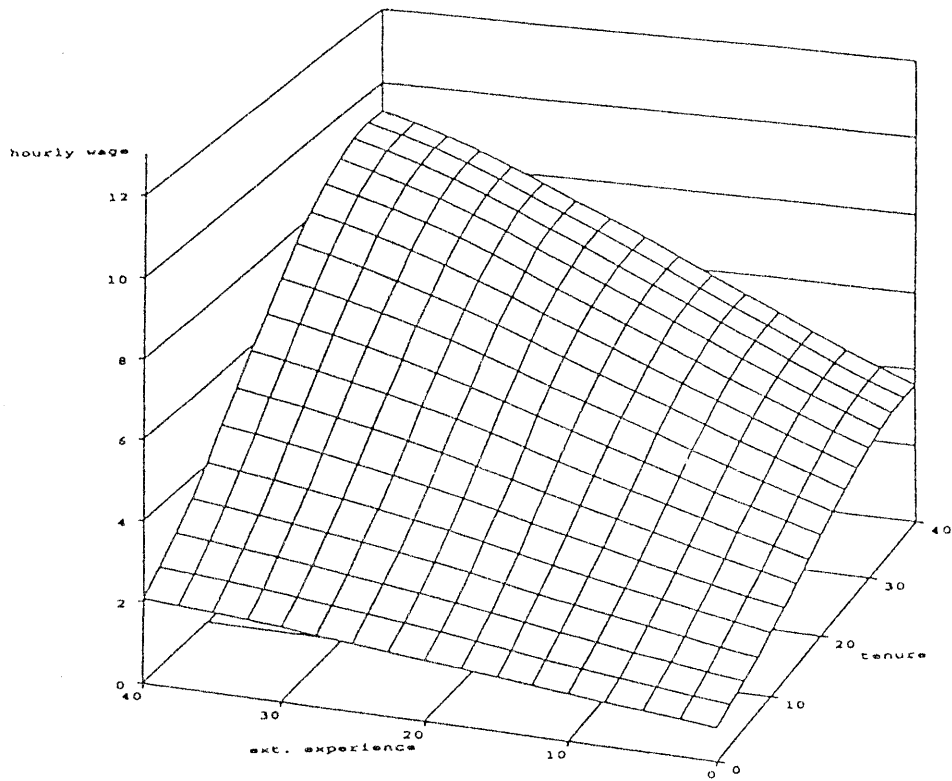


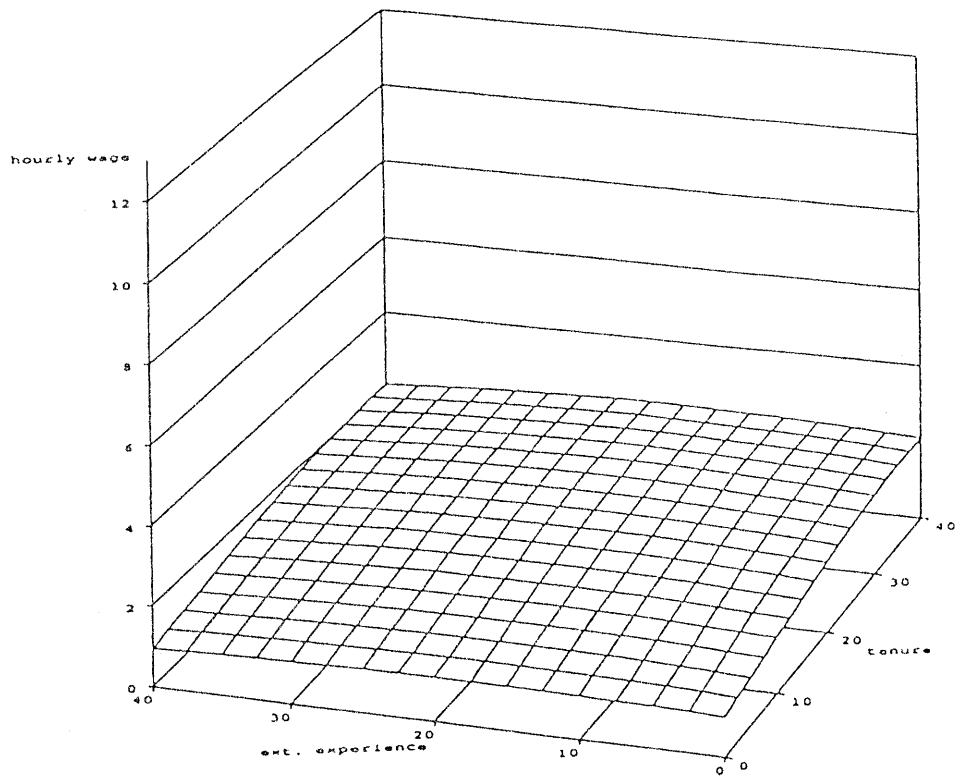
Figure 19
Wage Disparity between Men and Women

Source: Drawn on the basis of Machiko Osawa, *Keizai Henka to Joshi Rodo*, Tokyo: Nippon Keizai Hyoron Sha, p. 70, Table 3-2. The original statistical source is Ministry of Labor, The State of Women's Labor (Japanese title: "Fujin Rodo no Jitsujo.")

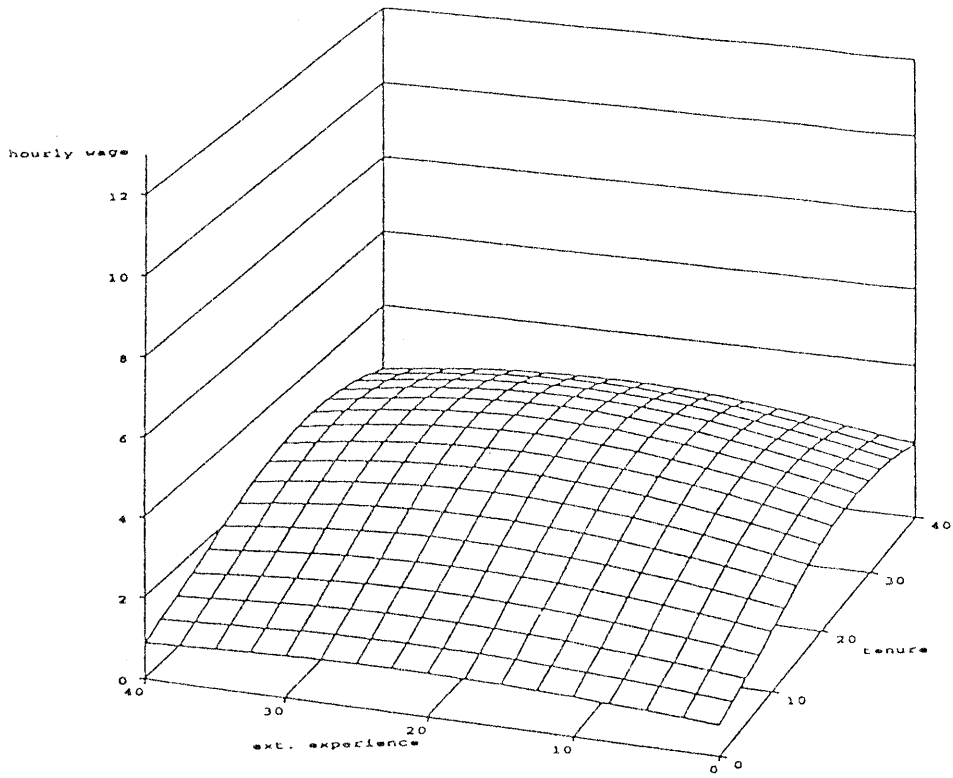
Figure 20.
Wage Manifolds with respect to Tenure in the Firm
and Outside Experience



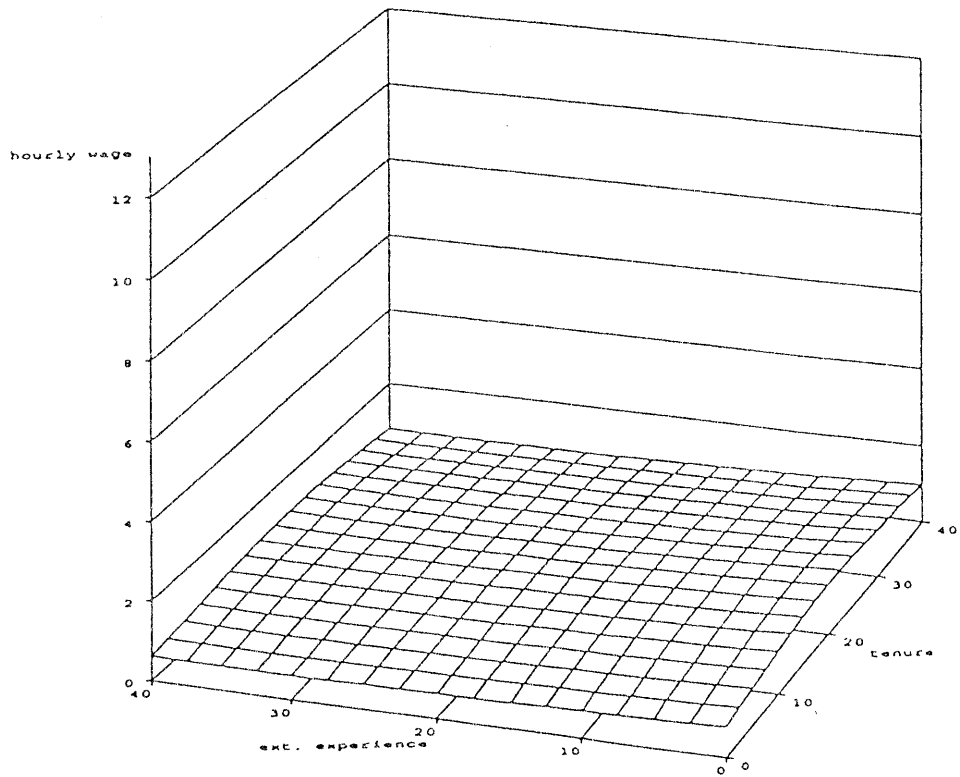
male
primary sector



male
secondary sector



female
primary sector



female
secondary sector

Note: Drawn on the basis of the estimated switching regression coefficients, whereby values of variables other than tenure in the firm and outside experience are set to the mean values of each group.

Source: Tsuneo Ishikawa and Takahisa Dejima, "Rodo Shijo no Nijyu Kozo," in Ishikawa (ed.) Nihon no Shotoku to Tomi no Bunpai, Tokyo: University of Tokyo Press, 1994, p. 184, Figure 6-1.

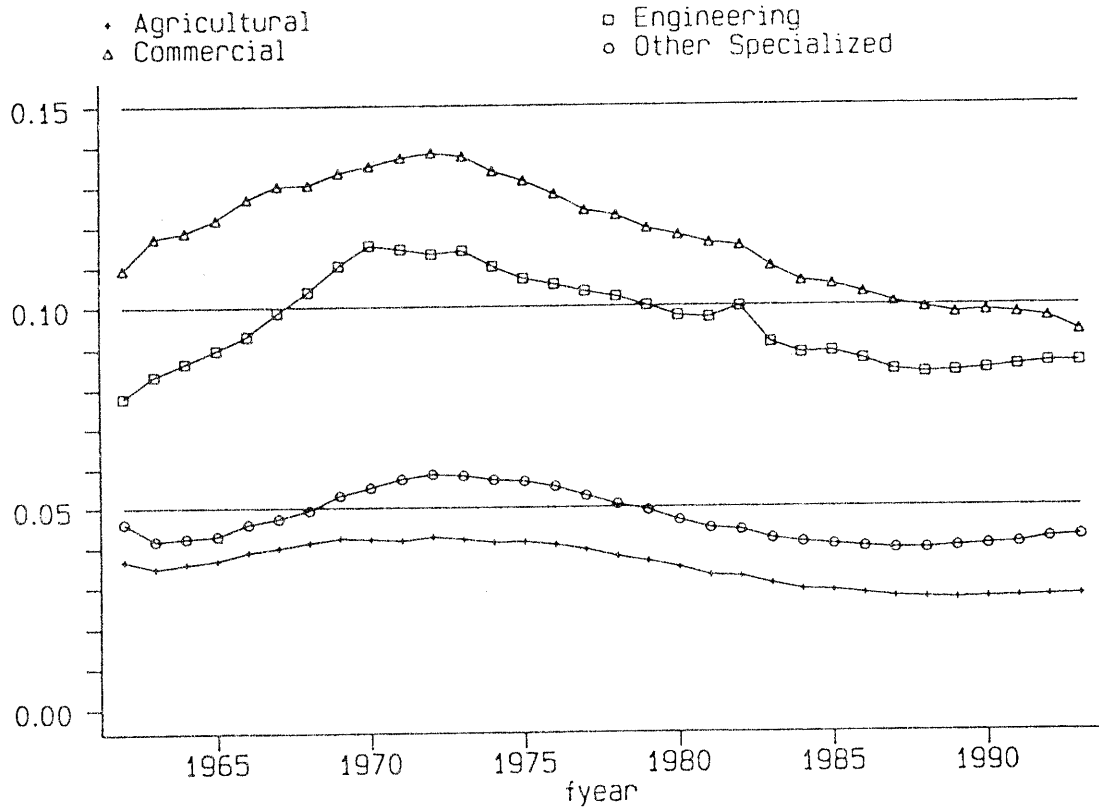


Figure 21

Secondary School Enrollment Ratio
by School Types

Source:

Calculated from Ministry of Education, The Basic Survey on Schools. (Japanese Title: "Gakko Kihon Chosa")

Table 1: Expansion of School Education
Historical Statistics (1875-1965)

	RNY per capita 1000yen	Ed. Exp. /NY %	% Completed Primary		% Completed Secondary		% Completed Higher		Average Years of Schooling		Average Years of Schooling	
			Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
			Age 15-64		Age 15-64		Age 15-64		Age 15-64		Age 25	Age 20
1875	-	-	0.0	0.0	0.01	0.00	0.02	0.00			-	-
1880	-	-	5.0	2.1	0.08	0.01	0.10	0.00			-	-
1885	22.0	1.80	12.3	5.2	0.13	0.03	0.20	0.00	0.5	0.2	-	-
1890	30.1	1.09	21.1	9.9	0.16	0.05	0.32	0.00	1.0	0.3	1.2	1.4
1895	36.3	1.17	29.1	13.9	0.26	0.07	0.44	0.01	1.5	0.6	4.4	1.9
1900	41.8	2.05	37.3	18.9	0.62	0.13	0.58	0.01	2.0	0.8	5.3	2.3
1905	37.5	2.03	46.3	26.5	1.28	0.30	0.74	0.01	2.5	1.1	5.5	2.7
1910	45.0	3.01	56.3	37.7	2.03	0.62	0.93	0.02	3.2	1.5	6.2	3.7
1915	54.7	2.47	65.5	49.1	2.92	1.16	1.12	0.03	3.9	2.0	6.5	4.9
1920	63.2	2.62	72.5	58.3	3.92	1.93	1.34	0.04	4.7	2.6	6.8	6.3
1925	73.3	3.60	78.1	66.4	5.4	3.3	1.70	0.07	5.4	3.3	7.3	6.6
1930	74.3	4.39	80.3	72.1	7.1	5.1	2.25	0.14	6.2	4.0	7.6	7.0
1935	95.5	3.68	81.5	76.6	8.5	6.7	2.81	0.21	6.5	4.6	8.0	7.3
1940	101.8	2.54	81.8	80.0	10.0	8.5	3.28	0.28	6.9	5.2	8.3	7.5
1945	-	-	-	-	-	-	-	-	-	-	8.4	7.8
1950	74.0	5.14	78.5	82.8	15.1	13.6	5.11	0.78	7.8	6.5	8.7	8.2
1955	108.6	6.09	72.4	79.8	20.2	17.8	6.74	1.30	8.3	7.2	9.0	10.0
1960	174.1	5.78	66.5	74.9	24.8	22.6	8.23	1.89	8.9	7.9	11.1	10.5
1965	255.1	7.13	58.9	67.4	30.5	29.2	10.17	2.89	9.4	8.5	11.4	10.9

Source: Ministry of Education, Report of the Central Education Committee, September, 1971, Tables I-3, I-6 & I-25.

Notes: Educational Expenditure = Total School Education Cost
 Primary Education: Compulsory Education, including primary and middle school for postwar years
 Secondary School: High School for postwar years; in prewar years, middle school, advanced girls' school, practical girls' school, practical training school, teachers' school.
 Higher Education: College, Junior College, Technical College for postwar years; for prewar years, high school, special schools, college, advanced teachers' college.

Table 2.
Distribution of School Category Completed
by Age Group

	prim ary	secon dary	high er	enrol led	no sch ooling	un- known	total
1960							
15-24	47.6	23.1	2.2	26.9	0.2	0.0	100.0
25-34	54.0	36.4	9.1	0.3	0.2	0.0	100.0
35-44	62.3	30.5	6.7	0.0	0.5	0.0	100.0
45-54	73.0	20.8	5.1	0.0	1.1	0.0	100.0
55-64	81.9	11.6	3.6	0.0	2.9	0.0	100.0
total	59.6	26.3	5.4	7.9	0.7	0.0	100.0
1970							
15-24	25.3	33.1	5.4	36.0	0.2	0.0	100.0
25-34	43.6	42.5	13.4	0.3	0.2	0.0	100.0
35-44	51.0	38.3	10.4	0.1	0.2	0.1	100.0
45-54	61.5	30.3	7.8	0.0	0.4	0.1	100.0
55-64	73.1	19.7	6.2	0.0	0.9	0.1	100.0
total	46.2	34.6	8.9	10.0	0.3	0.0	100.0
1980							
15-24	7.6	30.5	10.8	50.9	0.1	0.1	100.0
25-34	21.7	52.3	25.2	0.5	0.1	0.2	100.0
35-44	38.0	47.2	14.5	0.0	0.1	0.1	100.0
45-54	44.1	45.0	10.6	0.0	0.2	0.1	100.0
55-64	54.2	37.6	7.6	0.0	0.3	0.2	100.0
total	31.0	43.4	14.8	10.5	0.2	0.1	100.0
1990							
15-24	5.9	27.9	11.7	54.0	0.0	0.4	100.0
25-34	7.1	48.8	41.5	0.8	0.1	1.6	100.0
35-44	19.1	52.7	26.5	0.1	0.1	1.5	100.0
45-54	35.6	47.3	15.2	0.0	0.1	1.7	100.0
55-64	47.1	40.3	10.8	0.0	0.2	1.7	100.0
total	22.0	43.4	21.1	12.0	0.1	1.4	100.0

Notes: "Enrolled" means currently enrolled in school. "No Schooling" refers to persons without any form of school education.

Source: Bureau of Statistics, Population Census (Japanese title "Kokusei Chosa.")

Table 3.
Distribution of Household Income,
All Households including Single Member Households

year	Primary Income (Gini)	After Tax Income (Gini)	Redistrib-uted Income (Gini)	Primary Income						Redistributed Income			
				Bottom 10% (Share)	Bottom 20% (Share)	Top 10% (Share)	Top 20% (Share)	Bottom 10% (Share)	Bottom 20% (Share)	Top 10% (Share)	Top 20% (Share)		
1962	0.3904	-	0.3442	1.7	5.3	29.5	45.0	3.1	7.2	27.1	42.1		
1967	0.3749	0.3611	0.3276	1.7	5.5	28.2	43.8	3.1	7.5	25.8	40.9		
1972	0.3538	0.3384	0.3136	2.1	6.1	27.0	42.6	2.9	7.6	24.9	39.7		
1975	0.3749	0.3638	0.3455	1.5	4.9	27.0	42.9	2.6	6.7	24.9	40.2		
1977	0.3652	0.3517	0.3381	1.8	5.6	28.0	43.2	2.4	6.7	26.3	41.4		
1980	0.3491	0.3301	0.3317	1.6	5.6	26.1	41.6	2.6	7.1	24.2	39.4		
1983	0.3975	0.3824	0.3584	0.5	3.4	28.4	44.2	2.2	6.2	26.1	41.4		
1986	0.4049	0.3879	0.3564	0.2	2.7	27.9	44.3	2.3	6.4	25.4	41.0		
1989	0.4334	0.4207	0.3791	0.0	1.8	29.7	46.4	1.6	5.2	26.6	42.5		

Note: The primary, after-tax and redistributed incomes all include private transfer incomes such as stipend from family member, company pension and retirement bonus, the receipt of life insurance.

Source: Ministry of Health and Welfare: Survey on Income Redistribution (Japanese title: "Shotoku Saibunpai Chosa.")

Table 4 Movement of Casual Employment
in the Initial Phase of Rapid Growth

	(1,000 persons)			
	1956	1959	1962	1965
Persons Wishing to Change the Job	2,178	1,636	1,735	1,539
Among whom due to:				
. temporary or unstable job	561	393	236	214
. low income and difficult to live	651	525	336	301
Total working population	39,781	41,316	42,422	44,630
Persons Unemployed and wanting a job	-	-	402	442

Note: - indicates "not available."

Source: Bureau of Statistics, Employment Status Survey

Table 5.
Wage Disparity by Schooling, Job Type and Age

Manufacturing, Firm Size=1000+
Men.
Middle School Graduate
Production Worker = 100

Year	Age	1958	1964	1970	1984
High School Graduate	20-24	106.9	97.3	96.9	96.9
Office Worker	25-29	107.4	103.9	102.0	103.7
	30-34	116.1	110.2	108.2	109.9
	35-39	128.7	114.7	115.0	115.8
	40-49	134.0	129.8	120.6	126.0
College Graduate	25-29	112.9	114.9	106.4	103.3
Office Worker	30-34	132.2	124.7	120.4	116.6
	35-39	156.4	144.0	134.9	129.3
	40-49	194.9	174.5	158.1	155.1

Notes:

1. The figures entirely refer to those of men in large-size firms (with regular employees one thousand and above) in the manufacturing industry.
2. "Wage" refers to monthly regular earnings.
3. The basis of the index is chosen by monthly regular earnings of production workers who are middle school graduates.

Source: Ministry of Labor, Labor Market and Seniority Wage (Japanese title "Rodo Shijo to Nenko Chingin,") Tokyo: Nikkan Rodo Tsushin Sha, 1972, p.61, Table I-16, the original source of figures being Ministry of Labor, The Basic Survey on Wage Structure (The Census of Wages) (Japanese title: "Chingin Kozo Kihon Chosa.") Figures for 1984 are added by the author.

Table 6.
Wage Disparity among Different Sized Firms

Manufacturing, Firm Size=1000+
Men.
Middle School Graduate
Production Worker = 100

Firm Size = 10-99 Men	Age	1958	1961	1964	1967	1970
Production Workers	20-24	89.3	95.2	108	103.2	94.2
	25-29	76.4	86.7	114.8	79.5	92.7
	30-34	68.4	71.8	86.1	90	86.7
	35-39	65.6	67	74.9	76.4	79.8
	40-49	58.8	59.3	68.7	68.4	69.6
	50-59	51.6	52.6	59.9	59.1	62.4
Office Workers	20-24	80.1	90.3	106.7	101	92.4
	25-29	81.6	89.2	106.1	100	93.3
	30-34	74.2	80.5	96.2	93.3	89.3
	35-39	67.2	72.7	83.9	85.7	82.6
	40-49	58.7	61.5	72.5	75.2	75.3
	50-59	52.1	53.2	61.7	63.5	66.5

Notes:

1. The figures entirely refer to those of men in the manufacturing industry.
2. "Wage" refers to monthly regular earnings.
3. The basis of the index is chosen by average monthly regular earnings of workers in large-size firms with one thousand or more regular employees.

Source:

Ministry of Labor, Labor Market and Seniority Wage (Japanese title "Rodo Shijo to Nenko Chingin,") Tokyo: Nikkan Rodo Tsushin Sha, 1972, p.81, Table I-25, the original source of figures being Ministry of Labor, The Basic Survey on Wage Structure (The Census of Wages) (Japanese title: "Chingin Kozo Kihon Chosa.")

Table 7.
Components of Government Expenditure
as Ratio over GDP

Year	total	defence	civil engineers	industry promot.	agricult.	education	social security	social welfare	social insurance	living assist.	unemploy. works	housing support	public hygiene
1955	23.22	1.58	3.18	2.10	1.91	5.23	2.58	0.22	0.30	0.98	0.56	0.52	0.38
1956	21.69	1.39	3.01	2.15	1.69	4.96	2.29	0.22	0.28	0.84	0.50	0.44	0.36
1957	21.02	1.38	3.26	1.93	1.81	4.89	2.11	0.21	0.28	0.76	0.47	0.40	0.33
1958	21.63	1.28	3.43	2.14	1.61	4.89	2.20	0.21	0.32	0.77	0.49	0.40	0.36
1959	20.57	1.13	3.67	1.76	1.60	4.49	2.27	0.19	0.39	0.75	0.45	0.37	0.33
1960	20.00	0.98	3.76	2.22	1.76	4.44	2.15	0.18	0.50	0.69	0.40	0.33	0.32
1961	20.14	0.91	4.06	2.14	1.92	4.44	2.23	0.19	0.59	0.69	0.39	0.35	0.40
1962	22.19	0.97	4.64	2.22	2.01	4.85	2.38	0.23	0.63	0.71	0.40	0.45	0.49
1963	21.98	0.93	4.40	2.20	1.97	4.81	2.34	0.25	0.66	0.70	0.39	0.41	0.54
1964	21.36	0.93	4.69	2.42	1.69	4.70	2.56	0.57	0.64	0.72	0.36	0.45	0.80
1965	21.82	0.91	4.85	2.50	1.76	4.80	2.80	0.59	0.79	0.77	0.34	0.51	0.83
1966	21.78	0.87	4.91	2.89	2.01	4.65	2.77	0.61	0.79	0.75	0.31	0.48	0.79
1967	21.19	0.83	4.67	2.82	1.94	4.51	2.95	0.64	0.82	0.74	0.28	0.50	0.70
1968	20.89	0.79	4.71	2.75	1.90	4.34	2.90	0.66	0.85	0.71	0.26	0.51	0.65
1969	20.74	0.77	4.62	2.92	2.00	4.28	2.82	0.69	0.83	0.66	0.22	0.54	0.66
1970	21.55	0.79	4.76	3.02	2.10	4.49	3.06	0.79	0.84	0.69	0.20	0.66	0.70
1971	23.50	0.84	5.48	3.22	2.19	4.86	3.31	0.91	0.87	0.71	0.20	0.73	0.75
1972	25.02	0.84	6.24	3.33	2.23	4.94	3.52	1.12	0.93	0.76	0.16	0.68	0.78
1973	24.84	0.82	5.31	3.56	2.32	5.05	3.85	1.40	1.04	0.73	0.15	0.63	0.79
1974	27.28	0.89	5.31	3.66	2.43	5.99	4.56	1.65	1.32	0.79	0.16	0.74	0.88
1975	28.30	0.92	5.18	3.50	2.29	6.26	5.15	1.81	1.68	0.85	0.16	0.73	0.88
1976	28.84	0.89	5.13	3.44	2.22	6.20	5.29	1.89	1.76	0.88	0.15	0.71	0.87
1977	30.28	0.91	5.68	3.56	2.32	6.32	5.54	1.97	1.87	0.90	0.15	0.77	0.89
1978	31.96	0.90	5.96	3.81	2.49	6.59	5.88	2.06	2.03	0.95	0.14	0.82	0.93
1979	32.93	0.92	6.03	3.88	2.56	6.66	6.01	2.10	2.13	0.94	0.14	0.82	0.92
1980	33.11	0.93	5.98	3.89	2.51	6.60	6.01	2.11	2.15	0.90	0.13	0.84	0.92
1981	33.49	0.95	5.87	3.81	2.39	6.58	6.13	2.16	2.20	0.91	0.13	0.86	0.92
1982	33.06	0.95	5.85	3.66	2.22	6.34	6.10	2.17	2.16	0.93	0.10	0.83	0.90
1983	33.35	0.98	5.66	3.47	2.10	6.13	5.84	2.15	1.98	0.93	0.10	0.79	0.89
1984	31.49	0.97	5.26	3.25	1.94	5.85	5.67	2.10	1.93	0.91	0.09	0.75	0.86
1985	30.72	0.99	5.11	3.04	1.81	5.61	5.51	2.08	1.89	0.84	0.08	0.71	0.84
1986	30.32	0.99	5.14	2.86	1.73	5.45	5.46	2.05	1.89	0.80	0.10	0.70	0.82
1987	30.03	0.98	5.51	3.01	1.79	5.34	5.28	2.05	1.85	0.75	0.06	0.66	0.81
1988	30.46	0.98	5.19	3.05	1.65	5.17	5.49	2.10	2.12	0.68	0.05	0.62	0.79
1989	30.72	0.98	5.28	3.13	1.60	5.08	5.59	2.13	2.08	0.64	0.04	0.77	0.78
1990	30.46	0.99	5.28	2.89	1.48	5.09	5.00	2.14	1.71	0.58	0.03	0.61	0.82
1991	30.39	0.98	5.34	2.89	1.45	5.06	5.11	2.24	1.72	0.55	0.03	0.63	0.84
1992	31.42	0.99	6.10	2.87	1.54	5.22	5.40	2.45	1.75	0.54	0.03	0.71	0.91
1993	33.04	0.99	7.05	3.18	1.67	5.33	5.68	2.61	1.81	0.55	0.02	0.80	0.99

Notes:

1. The "expenditure" refers to the net sum of central and local government expenditures during each fiscal year.
2. The dotted vertical lines separating items in the table refer to detailed item inside a major category, e.g., "social welfare" within the category of "Social security."

Sources:

Ministry of Finance, Budgetary Statistics (Japanese title: "Zaisei Tokei")
Ministry of Home Affairs, Annual Statistical Report on Local Government Finance (Japanese title "Chiho Zaisei Tokei Nempo.")

Table 8.
 The Correlation between the Under Five and Infant Mortality
 Rates and the Government Expenditure on Public Hygiene:
 The Results of Regression Analysis

	GUDF			GINGE		
	(1)	(2)	(3)	(1)	(2)	(3)
Const.	4.65*** (7.27)	4.48*** (4.81)	4.01*** (4.05)	4.19*** (6.27)	4.77*** (4.94)	4.39*** (4.33)
WHG	0.104** (2.13)	0.0992* (1.84)	0.0764 (1.36)	0.157*** (3.07)	0.176*** (3.14)	0.137** (2.37)
WY	-	0.0412 (0.243)	-0.0434 (-0.183)	-	-0.147 (-0.837)	-0.0842 (-0.345)
WY(-1)	-	-	0.228 (0.951)	-	-	0.0193 (0.079)
WHG(-1)	-	-	0.00695 (0.126)	-	-	0.0618 (1.10)
R-Square	0.118	0.119	0.158	0.217	0.234	0.260

N = 35