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Measuring Welfare of the Japanese People – including international comparisons

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I. Introduction[1]

The average income of the Japanese people in 1972 was higher than that of some European countries such as Britain, Austria, Finland, Italy, etc. As a Swedish economist forecasts there is a good possibility that Japan's nominal per capita GNP (Gross National Product) will catch up with that of the United States by the end of the 1970s[2].

In contrast with a brillant growth of GNP and national income, the improvement of the welfare of the Japanese people has lagged behind. Welfare indicators demonstrate that the "welfare" of the Japanese people is much lower in comparison with the above mentioned European countries. They also indicate that the growth of some of the welfare factors has been considerably slow as compared with the rapid growth of GNP.

The main purpose of this paper is to compare the welfare standard of the Japanese people, using welfare indicators, with that of some industrialized countries as well as to show its change during the last decade. These indicators will demonstrate those fields where Japan is still "backward" and whether the welfare standard has improved or not in the last decade.

II. Welfare Indicators: A Short Survey

Several attempts have been made or are being made in Japan to measure the welfare standard of the people. We may classify them as:

(1) Welfare GNP (or "NNW") – economic approach
(2) Social Indicators – physical approach
(3) Opinion Surveys – psychological approach.

[1] The author would like to thank Professors Tadao Yoshida of Meiji University, Hiroshi Kato of Keio University, and Hiroyuki Kanekiyo of Asia University, for their helpful comments on an earlier draft of this paper on welfare indicators. The present paper owes much to „Welfare Indicators of Workers", the draft of which was written by the above professors and the author. The author also would like to express his thanks to Mr. Shohei Sato, a research member of Domei, who helped him with troublesome calculations.

[2] Hakan Hedberg forecasts that Japan's per capita GNP will equal that of the United States by 1978. (Cf. Japan's Revenge, London 1972; in Germany known as Japan: Europas Markt von Morgen, Hamburg 1972.)

The "Welfare GNP" approach is an attempt to obtain an aggregate figure of "Net National Welfare" by deducting social costs from GNP as well as adding some of the benefits which are neglected in the traditional calculation of GNP. In the United States, A. W. Sametz's work is one of the examples of such an approach[3]. In Japan, "The Committee for NNW Development", a standing committee of the Economic Planning Agency, is trying to model such a kind of "Welfare GNP".

The "Social Indicators" approach has been used by the United Nations Research Institute for Social Development (UNRISD), the OECD, the U.S. Department of Health, Education and Welfare, etc. While the "Welfare GNP" expresses the welfare standard in monetary terms, social indicators are usually expressed in physical terms. In Japan several attempts have been made in measuring the welfare standard by using a set of social indicators. The "Welfare Indicators of Workers", published by the Domei trade union confederation in 1970 is one of those attempts. At government level, the Economic Planning Agency has published "A Comparison of Living Standards" in 1969, and now the research section of the National Living Council within the Economic Planning Agency is trying to measure the welfare standard of the Japanese people by using a set of social indicators, the framework of which is based on that of OECD and UNRISD. Besides these a few local governments — including Tokyo Metropolitan Government — have published their own works on social indicators.

The "Opinion Survey" approach tries to explain the psychological or mental aspect of welfare, i.e. to know the degree of satisfaction of the people with their lives and with government policy. The most extensive and systematic opinion survey for this purpose in Japan is the "National Priority Survey" (Kokumin Senkodo Chosa), carried out by a government committee. The survey's framework roughly corresponds to that of social indicators, and the results were analyzed by the socioeconometric method. Another ambitious public opinion survey is being prepared by Domei, which seeks to express the degree — and change — of Japanese workers' satisfaction, and policy priorities desired by workers, and this with the help of subjective scores, such as welfare indicators. When the Domei survey is finished, the welfare of the Japanese people will be measured in three ways, namely in economic terms, in social or physical terms and in psychological terms.

The measurement of the welfare of the people should be pursued by the above three approaches and the welfare standard should be expressed accordingly[4].

III. Framework of Welfare Indicators

Though many attempts to measure welfare have been made in various countries and by various institutions or organizations, there is a remarkable similarity among them as to the classification of welfare. In the case of economic welfare, the time-honored propositions of A. C. Pigou — originally suggested in his book "Economics

[3] In Eleanor B. Sheldon and Wilbert E. Moore (Eds.), Indicators of Social Change, New York 1968.

[4] Cf. Udo E. Simonis, Environmental Disruption: Implications for Economic Planning, in: The Developing Economies, Vol. X, 1, Tokyo 1972.

of Welfare"[5] — gave a basic framework. As is well-known, he assumed that economic welfare will increase:

- when the average income in real terms increases,
- when the distribution of income is equalized,
- when the stability of income in real terms increases.

After a long controversy over Pigou's assumptions, the majority of economists in the West seem to have accepted the following as policy objectives:

- increasing the average income in real terms by means of economic growth and efficient allocation of resources;
- increasing economic stability or security by means of full employment, price stabilization, balance of international payments, and better social security;
- more equal distribution of income.

Yet, the above three propositions may be applied not only to "flow indicators" but also to "stock indicators" — for the welfare of the people depends not only upon their annual income and distribution of it but also upon their assets and the distribution of their assets. Thus economic welfare which is pursued by economic policy may be classified into six categories as is shown by Table 1. The framework of economic welfare indicators used by Domei and the author is based on this kind of classification.

Table 1: **Classification of Economic Welfare**

	FLOW	STOCK
(1) Increase of average level of	income (or consumption)	assets
(2) Equal distribution of	income	assets
(3) More stability of	employment prices balance of international payments income fluctuation	fluctuation of value of assets

Less of a consensus has been obtained with social indicators. However, some consensus is being formed as regards classification in recent works. Main indicators used so far by OECD, UNRISD, the U.S. Department of Health and the National Living Council of the Japanese Government may be classified into three major categories and several subcategories, from basic needs to higher needs, according to the hierarchy of needs[6].

The first column of Table 2 is a tentative classification by the author. In the following sections, a tentative measurement of the welfare of the Japanese people is undertaken with the help of the above indicators.

[5] A. C. Pigou, Economics of Welfare, London 1920.

[6] Abraham H. Maslow's hypothesis on the hierarchy of desire or needs gave a foundation for the work to classify social indicators. Cf. his Motivation and Personality, New York 1954; Towards a Psychology of Being, New York 1962.

Table 2: **Classification of Welfare**

						Japan		
							Government	
		OECD	UNRISD [a]	U.S.[b]	Domei [c]	Tokyo Metropolitan Government	National Living Council [d]	National Priority Survey
Basic Needs	(1) Income and Consumption	Command on Goods and Services	Nutrition	Income and Poverty	Real Income and Assets	Income and Consumption	Command on Goods and Services	Income
	(2) Safety	Public Safety and Justice	Safety	Public Order and Safety	Respect for Human Life	Safety	Crime and Performance of Law	
	(3) Health	Health	Health	Health and Illness	Health	Health	Health	Health
Amenity Needs	(4) Natural Environment	Physical Environment	Environment		Environmental Pollution	Natural Environment	Pollution and Accidents	Natural Environment
	(5) Living Environment			Physical Environment	Living Environment	Housing Transportation	Living Conditions	Housing and Transportation
	(6) Work Environment	Work and Employment	Living Conditions		Work and Social Welfare Environment	Work		Work
Higher Needs	(7) Education and Culture	Education	Education	Learning, Science and Art	Education, Culture and Information	Education	Education	Education
	(8) Leisure	Leisure	Leisure		Leisure	Leisure	Leisure	Leisure
	(9) Community and Participation	Community, Participation, Social Equality		Social Mobility, Participation, Alienation	Creation and Participation	Solidarity	Family, Community and Social-Mobility	Community

Note: [a] Jan Drewnowski, [b] Towards a Social Report, [c] Welfare Indicators of Workers, [d] Provisional.

IV. Economic Indicators

Although we have adopted a position on these welfare indicators, it is well acknowledged that current statistics and integrative methodology for handling such indicators are inadequate. These welfare indicators were made, however, by using and processing all that was available or possible at the present stage.
From these welfare indicators we are able to discern the general retardation of the welfare level in Japan as discussed previously, and especially to get some concept of which areas lag most. In addition, when we look at the time series of each indicator, we can detect the general trend of welfare levels in Japan, especially with regard to overall gains and losses. A discussion of the 1965—1970 international data follows.

1. Indicators for Level of Income and Assets

a) Income and Wage Level

First, real income per capita and real monetary assets in Japan have rapidly increased. In response, average real wages have risen, but until recently the rate of increase of real wages was low compared with the rate of increase of real national product (labour productivity) either on the national level or per capita. For instance, in the decade 1960—1971, real national product per population increased 2.58 times while real wages per employee increased only 1.87 times. Private consumption in real terms per capita has also increased relatively slowly. This implies that the proportion of private consumption in the GNP has declined, namely from 63.7 per cent in 1955 to 52.5 per cent in 1971 (fiscal year).
One of the reasons for the relative slow increase in wages is the unproportionately higher increase of average income of the self-employed and family-employed workers. Property income such as profits, interest and rent also exceeded earned income in rate of increase until the end of the 1960s. Consequently the relative share of employee income decreased.

2. Indicators for Economic Stability

As indicators showing the stability of life in an economic sense we took the rate of fluctuation of national income, the rate of increase of prices, the rate of red-ink deficit in the international balance of payments (eliminated from the calculation when in the black, since it became an unstable factor), and the relative and absolute level of social security.

a) Rate of Fluctuation of Economy

Since the life of the people, the management of enterprises, and the employment of workers is unstable when the rate of fluctuation of national income is high, a small rate of fluctuation is desirable from a welfare point of view[7]. We used a

[7] Smaller rate of economic fluctuation is also desirable from the viewpoint of efficiency.

variable showing the rate of fluctuation of national income (standard deviation of the real economic growth rate of each year from the average real economic growth rate)[8] and, according to this calculation, economic stability is increasing; that is, the wave of fluctuation has decreased.

b) Rate of Unemployment

The rate of unemployment is a significant factor for workers; within the last decade unemployment in Japan greatly decreased. However, Japanese unemployment statistics do not accurately reflect actual conditions of unemployment, and since they could not be compared with those of foreign countries, we have not included them in the international comparison. In Japan the ratio of labor demand to labor supply at the labor exchange office is a more suitable indicator of the labor market situation. This ratio has changed favourably for workers since the middle of the 1950s, which in turn entailed a rise in the rate of wage increase. The Phillips mechanism has worked in Japan.

c) Rate of Price Increase

Price stability is a field in which the indicators revealed little improvement over time. Since a price index is used when we deflate national per capita income, it serves a double purpose in an additional use apart from being an indicator of economic stability. We, therefore, used the rate of increase of the consumer price index as one of the stability indicators because we judged that a rise in this index itself contributes negatively to general welfare and to the overall stability of life. An indicator of the economic fluctuation rate is the economic fluctuation ratio divided by an average growth rate of the economy and of prices. It is conceivable that an indicator of the rate of relative price stability should be calculated by dividing the rate of price increase by the real economic growth rate.

Using the relative fluctuation rate as a welfare indicator gives an advantage to countries with a high rate of economic growth. This is because the relative fluctuation rate of such countries tends to be relatively small. Conversely, the rate of fluctuation itself puts such countries at a disadvantage. Accordingly, in the case of international comparisons, it is appropriate to use the simple means of both indices. One is an index not divided by the real economic growth rate, the other is the indicator of relative stability divided by the real economic growth rate. As a compromise we used a relative rate for a rate of business fluctuation, and an absolute rate for a consumer's price fluctuation.

In the time series 1960—1969, both relative and absolute improvements in price stability were observed; in 1970 and 1971 they worsened again. Until recently it was believed that prices rise during a period of high growth. But during the current depression prices have risen rapidly and steadily, not only relatively but also absolutely. This turn of events has demonstrated that it is no longer valid to consider resolving prices problems by controlling aggregate demand and economic growth; the relation between the rate of economic growth in real terms and the rate of

[8] Moving average of Growth rate of GNP in real terms divided by exponential growth rate of GNP in real terms for the period of 1960—1971.

consumer price increase has changed from a positive to a negative one[9]. This is another example of the structural change in the Japanese economy.
Generally, the price index is constructed from the flow data (annual goods and services), and stocks (assets) are ignored. The rise in value of special stocks, however, threatens the population's general stability of living. The rise in prices of land and housing especially damages the welfare of persons saving to purchase a house, and the rise in cost of land, above all, has resulted in one of the greater injustices with regard to income distribution. For this reason the rate of rise in price of land and housing should be included in the welfare indicators (for the sake of convenience using the standard cost of house construction as an indicator of the price of housing). According to these indicators, the rate of rise in cost of land exceeded the rise in rate of consumer prices. The price of land in the cities in 1972 was about twenty times as high as that in 1960, while the consumer prices doubled in the same period and wholesale prices and export prices increased only twenty per cent or so. It is clear that the sharp rise of land prices has hurt the general welfare of the Japanese people. The cost of housing construction has risen considerably after the relatively stable period 1963—1966. In any case, indicators concerning prices — as well as indicators concerning pollution — have not improved and considerable justification therefore exists to call for a more positive policy.

d) Level of Social Security

The degree of stability in people's life is influenced by the absolute and relative level of social security. The absolute level is represented by the expenditure for social security per capita, and the relative level is shown by the ratio of social security expenditure to the GNP or national income. Taking the absolute level, social security expenditure increased rapidly, due to the high economic growth rate in Japan while in terms relative to GNP the increase was small.
On the international level, it is often noted that not only the absolute but also the relative level of social security in Japan is considerably low. Compared with the 10—18 per cent of the GNP which most of the advanced European countries contribute to social security, Japan achieves a level of only 5—6 per cent[10]. Although the average per capita income in Japan (in 1972) is higher than that of Italy, Austria and the United Kingdom, per capita expenditure for social security are about a half. The welfare state of Sweden spends nearly five times as much for social security as does Japan, though the per capita income of Sweden is only about 1.7 times as much as that of Japan (in 1972).

[9] It is interesting to know that the relation between the rate of economic growth in real terms and the rate of consumer price increase is not a positive one but a negative one in most of the highly developed countries. Cf. the author's paper: A Paradoxial Relation Between the Rate of Economic Growth and Price Increase, in: Keizaigaku Ronsan (Journal of Economics), Chuo University, Tokyo, July 1972.

[10] The proportion of national pension cost to national income was especially low until recently in Japan as the following table shows (1970):

Japan	0,4	USA	3,4
Britain	5,0	Sweden	5,5
West Germany	8,8		

Improvement in social security should thus be one of the highest priorities for the Japanese people. Especially the increase in the national pensions would be one of the most effective ways for improving welfare. The result of the National Priority Survey revealed that a most important factor which harms the welfare of the Japanese people is the lack of security after retirement from working life. The government began to recognize the apparent gap in this field and substantial improvements in the national pensions are expected in 1973.

e) Rate of (Red-Ink) Deficit in the Balance of Payments

In the past the deficit in the international balance of payments indirectly undermined the stable growth of the Japanese economy, but since 1968 instability has diminished. The international balance has improved considerably to the extent that a surplus or black-ink balance recently has become a big problem. If the accumulation of surplus becomes too high, speculation regarding a change in the exchange-rate will develop, creating a different sort of instability, since a large accumulation of surplus in one country tends to produce deficits in other countries. In 1973, Japan, which has a plentiful surplus is expected to promote further liberalization of trade, a reduction of customs duties and non-tariff barriers and especially a positive policy of importing foreign goods, which will contribute to stabilize domestic prices, thereby contributing to stability on an international level.

3. Indicators for Income Distribution

For the working class one of the most important but often neglected indicators of economic well-being concerns distribution of income. Unequal distribution is the source of many dissatisfactions among the workers. To demonstrate the degree of equality of distribution, we constructed four kinds of indicators.

a) Relative Income Share

The relationship between earned and property-derived income is of vital importance. Its indicator is the share of wages. There are many kinds of share of wages, and we used earned income and property income at the national level and calculated the share of wages as follows:

$$\text{Share of wages} = \frac{\text{employees' compensation}}{\text{employees' compensation} + \text{corporate income} + \text{unearned property income}}$$

The share of wages thus defined is less than 70 per cent in Japan. This is still low compared with advanced countries where the share often exceeds 75 per cent. (The share of wages in manufacturing industry is especially low in Japan.) Up to 1960, the share of wages in Japan had decreased considerably but the decreasing trend stopped and there have been signs of improvement in the last few years.

b) Differential Wages

Many kinds of wage differentials were used for this indicator. While the relative income share shows the degree of equality between labour income and property income, the differential wages indicate the degree of equality of income distribution among workers.

To calculate the differential wages we used four categories according to the scale of enterprises, industry, age and region. As the differential wages of the scale of the enterprises, we took the magnification of average wages of employees in enterprises in which the number of workers was 5—29, to that of more than 500 workers. According to this indicator, the magnification in 1960 was 2.16, but that in 1971 shrank to 1.59.

The differential wages by industry and age also show a diminishing trend; the differentials between the average wages of 17-year-old employees and that of employees aged 40—49 have been decreasing from 4.4 in 1960 to 2.7 in 1971.

c) Regional Income

The above indicators demonstrate that in Japan the differentials in the income distribution among the working groups have diminished since the end of the 1950s, though there has been little change with regard to wage differentials between the prefectures.

Among the regions of Japan there are especially big differences of social stock — i.e. public facilities — and the new government concept of "Remodelling the Japanese Archipelago" is to decrease these regional differences by means of a specific, adaptive, and positive policy.

d) Distribution of Personal Income

As an indicator of income distribution we used the one-fifth comparative statistics that distinguished five groups of personal income of the employed population. These statistics show that in Japan the difference between the income of the lowest fifth and that of the highest fifth is decreasing, and significantly so, from 4.85 in 1960 to 2.58 in 1971. We can therefore say that in that sense income distribution is tending to become more equal. However, the highest fifth consists of many highly experienced white-collar workers and professionals, and we thus must assume that the difference in income between the two groups is caused mainly by the shrinkage of differential wages, especially of wages by age.

To understand thoroughly the degree of equality of income distribution, it would be necessary to compare the differential between income of a few top groups and the average income of workers; unfortunately, we could not obtain such statistics. However, we did take as a first step the difference between the average wage and the average income of the highest income group in one year. One further step would have been to take the average income of the highest one per cent; another, and the one we chose to employ here, was to take the difference between the average income of the top 5, 50, and 500 persons and the average wage. This measure reveals that the income differentials have been considerably expanded within a few years. For example, the difference between the average income of the

richest 50 persons and that of workers (average wages and salaries) rose from 270 times in 1967 to 980 times in 1971. The rapid increase of income of the upper class between 1967 and 1971 was caused to a large extent by the rapid rise in land prices and by the sale of real estates which was a function of revised tax laws, encouraging the sale of land in these years. But even temporary fluctuations in unearned income cannot be ignored by the workers.

By international comparison the differentials of income between the rich and the workers in Japan has become large. A comparison of income distribution between Japan and Sweden reveals that Japan is very unequal in this respect. In Japan, the average income (before tax) of the top 25 persons[11] was 1,130 times as high as that of the average income of workers[12], while in Sweden the comparable figure was about 40 in 1971[13].

To make the comparison more complete, the indicator on property distribution should be used. But unfortunately there are no reliable figures available.

V. Social (Non-Economic) Indicators

1. Indicators for Safety

a) Degree of Appreciation for Human Life

Safety and respect for other people's lives is fundamental to human welfare. A society in which people ignore the quality of the lives of others creates insecurity and undermines the general welfare. Measuring this part of the quality of life, however, is fraught with problems. Maternal (pregnancy) and infant mortality rates which often reflect welfare policy and which are generally available are customarily used in this respect. These two mortality rates are thought to be a decreasing function of two variables: social security expenditure, and medical standards for pregnant women and infant births. Among all the countries in the world, Sweden shows an extremely low rate in these two statistics. This probably reflects Sweden's high medical standards and its extensive social security provisions for pregnant women and for infants. The Swedish 1969 maternal (pregnancy) death rate per 100 thousand births showed 10.2 compared with Japan's 57.9 and the United States' 24.5 (1968).

In Sweden about 225 dollars are allotted per child birth (one third of this can be obtained before parturition). Pregnancy health care services are provided free of charge, as is dental care. Periodic medical examinations are generally provided throughout pregnancy, and reimbursement for transportation charges to hospital or clinic is available. Free home-care help is sometimes provided before and after birth, and a child allowance of about 20 dollars per month is provided until the age of sixteen.

Japan's social birth allowances are low, so that the individual's burden is great. The medical care standard in Japan is as high as in Sweden, and the associated death

[11] Annual income reported to the tax office.
[12] The average income of employees.
[13] Source of Swedish statistics: Swedish tax authorities, Självdeklarationerna för 1971.

rates have been decreasing constantly over the years; nevertheless, the death rate of this kind is lower in Sweden, and at least partly is attributable to the extensive and more readily available social security services there. This fact suggests the possible correlation between the provision of social security services and low mortality rates. Although the Japanese backwardness in this respect is apparent, the maternal death rate, for example, is declining rapidly.

As indicators of the degree of appreciation for human life, accident death rates and life expectancy become our referents. Some accident death rates, such as those of traffic accidents, are directly associated with industrialization, and rise along with increasing industrialization. In developing countries where there are few cars and few technological hazards, traffic accident rates are also low. Hence, a low accident rate does not necessarily signify a high appreciation for human life, while a high accident death rate, even though it results from industrialization, can be considered a negative fact for human welfare.

Comparing all kinds of accident death rates (per 100,000) during 1969, we see that France (74.3), West Germany (62.0) and the United States (54.1) are high, and England (35.3), Japan (41.8), Sweden (43.3) and Italy (45.0) are low. (Taking the automobile-traffic accident death rate among those countries listed above Sweden has the lowest rate while Japan has the highest.)

b) Rate of Homicide

Where social order is neglected, there is a tendency for homicide rates to increase. A high homicide rate results in social fears and insecurity; implied, further, is a scant regard for human life, and such fears, while sometimes vague and disproportionate, can become severely detrimental to human welfare. We compared the situation internationally for 1970 and found that England had the lowest rate of 1.7 per 100,000 and the United States an extra-ordinarily high rate of 7.8. The Japanese homicide rate among the seven countries listed above is low, ranking next to England and still diclining. While the number of homicides has decreased in Japan and increased in the United States, the United Kingdom and Sweden, Japan is expected soon to become one of the safest countries in the world as far as crime is concerned. Besides homicide, for example, the number of robbery per 100,000 in 1970 was 172 in the United States, 13 in the United Kingdom, 22 in West Germany and only 3 in Japan.

c) Health and Sanitation

As indicators of health and sanitation we used numbers of doctors, nurses and beds per 100,000 population. Compared internationally, Japan has a real shortage of nurses and hospital beds. In Japan the number of beds per capita has improved steadily over time, but the number of doctors rose only slightly. The number of qualified nurses is actually declining compared with 1965–66. Another way of expressing this situation is that the total number of officially qualified nurses is greater than the number of actually working nurses, a fact which implies that the working conditions are too bad to attract additional nurses to work.

One of the difficulties of using the above figures as indicators of health is that they are not necessarily a reflection of the degree of health but sometimes a result

of it. Some indicators which demonstrate the degree of health itself, such as the number of sick persons, should be used at the same time. For example, we can compare the proportion of the number of tuberculosis patients to the total population. The high death rate of tuberculosis in Japan suggests that the health services in this field are still backward in comparison with the Scandinavian countries.

2. Indicators for Human Environment

It has recently been recognized that human welfare depends much upon circumstances such as pollution, which are beyond the control of the individual. As part of the Domei Welfare Indicators (see Table 2), we therefore constructed indicators concerning human environment, and developed the following measures: Living environment, Work environment, "Social-Welfare" environment and Cultural environment.

a) Physical Environment and Environmental Pollution

As positive measures of physical environment we used indicators of housing and transportation. The standard of housing is one of the fields of delay in Japan compared internationally; the sewerage treatment rate is especially low. Housing itself is not sufficient for the population. Taking the difference of its quality into account, it can be said that the Japanese housing problems are serious. Historically, the reform of housing standards is comparatively late. One of the causes for the scarcity of housing is the rapid rise in price for both land and house construction. To remedy this, it is necessary that fundamental policy changes occur, including the socialization of land brokers, as well as the increase of government expenditure for house construction.

As 'plus' indicators to show city environment, measures of the areas devoted within urban settings to parks and pedestrian roads were taken. In this regard, Japan lags far behind the advanced European countries and the United States. Over the years there has been a tendency toward improvement, but there is little likelihood that Japan can reach comparable standards in the near future. For example, the number of square meters of parks per inhabitant in Tokyo and Osaka is less than one tenth ot that in London and New York.

'Minus' indicators of living circumstances include indicators of pollution. Some of them are showing a tendency to worsen, and we cannot expect an immediate improvement. Data collection must be expanded and refined. This alone will serve to encourage improvement of present conditions. For instance, the biodegradable density in the rivers of the Tokyo metropolitan and surrounding areas appears to be more improved by measurements taken on official test dates than on other dates.

b) Work Environment

Work environment is an important factor in determining the welfare of workers, and we took for this indicator the accident rate per 1,000,000 labor hours, the rate of days lost because of labor disputes, and the average number of hours worked per month. This statistic immediately revealed that Japanese working hours were

markedly longer than those of the advanced countries. Statistics on the average working hours per year for workers in the manufacturing industries reveal that until recently Japanese workers in the manufacturing industries worked nearly 60 days more than the Swedish workers and 40 days more than the German workers[14]. The marked difference in working hours is mainly explained by a short "paid vacation" and the non-prevalence of the two-days-off-per-week-system in Japan. However, this system began to be introduced in Japan in 1970, and its full realization is expected to improve the welfare level of the Japanese workers.

Labor disputes were infrequent in Japan, but if this was due to limited employee organization, a decrease in the number of disputes would not necessarily contribute to the welfare of workers. For these reasons, we used the number of days lost as a result of labor disputes divided by the rate of organization of trade unions.

$$\frac{\text{Rate of the number of days lost}}{\text{Rate of the number of organized workers}} = \frac{\text{Number of days lost}}{\text{Number of trade union members}}$$

Using this indicator, it became a positive factor that the number of days lost in labor disputes were few and the rate of organization of trade unions was high. This indicator shows that the labor relations in Japan are stable as compared with West-European countries.

c) "Social-Welfare" Environment

"Social-Welfare" indicators are derived from data concerned with provision of care for such conditions as old age, handicapped, and poverty. Japan compares quite unfavorably in these respects with the selected West-European nations, and no improvement is measurable over the time series. For example, the number of publicly employed "home-helpers" for the old aged and the handicapped per population is quite low in Japan[15].

d) Culture, Education and Mass-Media

Only those educational, cultural, and mass-media indicators available for international comparison were used. They show that the Japanese level in this field is comparatively high. For example, the proportion of the number of university entrants (including two-years-course college students) to the population of the same age in Japan was 28 per cent in 1972, which ranks third or fourth in the world.

Another field where Japan ranks high is mass communication. The number of daily newspapers per population is the second highest to Sweden and the number of books published in a year per population ranks third. The number of TV sets – especially colour TV sets – per population is estimated among the very highest. As the number of family members in Japan is larger than that of U.S.A. or Sweden, the number of daily newspapers and TV sets per family is estimated to be the world's highest.

[14] The average working hours per year of the German workers were 1,870 hours in 1969, while those of the Japanese workers were 2,280 hours. (Estimated by the Ministry of Labour.)

[15] See Mikio Mori, Home-help Service, in: The Quarterly of Social Security Research, Tokyo, Oct. 1972.

Moreover, in relation to the time series improvement has been remarkable. However, the number of public libraries, art museums, music centers and sports facilities per inhabitant (which had to be estimated by observation, reliable data for international comparison being unavailable) appears low in Japan.

3. Indicators for Living Satisfaction

Finally, we wish to deal with the most delicate indicators on quality of life: indicators showing the degree of living satisfaction. Living satisfaction is a parameter not generally discussed by society and it is, in any case, extremely difficult to find accurate criteria for measuring it. Here we used indicators showing a degree of satisfaction with leisure, as opposed to the more negative suicide rate which demonstrates a loss of satisfaction or an inadequate quotient of satisfaction with life.

We attempted to obtain measures of the use of leisure time (such as frequency of attendance at concerts and art exhibitions) to show satisfaction, while the results of systematic and periodic public opinion polls[16] and voter performances were sought as measures of satisfaction and participation, the negative side of which is alienation; in both cases, however, these data proved unavailable. The indicators listed in the tables were therefore substituted. These demonstrate that in Japan the "living satisfaction" parameter has gradually improved. However, in comparison with the other advanced countries the number of leisure hours remains low in Japan. In addition, provisions for cultural and sports facilities for leisure time used by the public in general seemed very limited. Allocating increased leisure time through decreasing work schedules while at the same time providing additional public facilities for leisure time enjoyment has become increasingly important in the attempt to improve the quality of life of the Japanese people. In economic terms we may say that the welfare level of the Japanese people will improve by reallocating more resources from the "private goods" sector (industry) to the "public goods" sector.

VI. Conclusions

The listed welfare indicators in Tables 3–6 clearly show a relative lag in the level of general welfare in Japan when compared with other industrialized countries.

In the comparison of welfare indicators, we provided measures on a limited historical basis in Japan and made a direct comparison, for a stated year, between nations. This was expressed as a "Welfare Score". Scores were tallied separately and expressed as weighted means in the twelve welfare categories, which were assumed being of equal scale, as well as in the form of a grand total score. The international comparison of welfare indicators and welfare scores indicate that Japan is relatively

[16] Indicators obtained from systematic and periodic opinion surveys are indispensable to supplement economic and physical indicators. They are necessary firstly, to know the subjective aspect of welfare of the people and secondly, to know the policy priorities desired by the people. Thirdly, they may be used as the weight for each indicator when the aggregation of those indicators is required.

inferior or "backward" in the areas of social security and social-welfare, working hours and living environment, while superior or "advanced" in the areas of mass communication, information, and safety from criminal offenses.

Taken together (in aggregation) Sweden scored highest (66.9 in weighted mean). Japan scored lowest (30), despite the high rise in real GNP per capita since 1960.

When Domei made a similar comparison a few years ago[17], the welfare score of Japan was 26, while that of Sweden was 72. (Parentheses under welfare indicators in Table 5 and 6 show welfare scores of each country.) The relative welfare situation of the Japanese people seems to be improving. Because of the well-known technical difficulties the total aggregation of welfare is not comparable theoretically. Still, the result seems to suggest the relative welfare situation of each country[18].

Table 3 and 4, which are based on the classification explained above, demonstrate how the welfare level of the Japanese people has changed since 1960. Most of the indicators have improved favourably in the last decade. Exceptions are the indicators on price stability (5 and 7 in Table 3), personal income distribution (4 in Table 3), traffic accidents (5 in Table 4), air pollution (11 in Table 4), number of social workers (19 in Table 4). Besides, there are marked delays in the improvement of certain indicators. For example, 186,8 per cent increase of real wages per worker for the period 1960—71 is relatively small as compared with 258 per cent rise in per capita national income in real terms. (Integrating time-series indicators is not valid in this case and, therefore, was not attempted in this paper.)

The author recognizes the precariousness of welfare comparisons. Lack of strictly comparable data, difficulties in aggregation and integration, arbitrariness in the selection of indicators etc. are main reasons for this. Still, the author believes that even an incomplete welfare comparison by using welfare indicators like those used above should be more fruitful than a rigorous but abstract argumentation in lines of traditional welfare economics.

[17] Because of the difference of selected indicators not strictly comparable.

[18] A welfare score of each indicator of each country is calculated by the following formula, assuming the score of the highest figure to be 100 and the lowest one 0 (zero):

$$\text{Welfare score of the 'plus indicator' concerned} = \frac{\text{the figure concerned} - \text{the lowest figure}}{\text{the highest figure} - \text{the lowest figure}} \times 100$$

$$\text{Welfare score of the 'minus indicator' concerned} = \frac{\text{the highest figure} - \text{the figure concerned}}{\text{the highest figure} - \text{the lowest figure}} \times 100$$

The calculation and international comparisons were based on figures around 1970. The relative position of Japan has improved since then.

Plus indicators which are designated by the symbol "+", imply a positive line or relationship of size with welfare. Negative indicators, with an inverse relationship, are designated by the symbol "—"; the higher the numerical value of these indicators, the lower the real welfare level. Indexes in parentheses under welfare indicators in Table 3 and 4 indicate the change of each indicator. Basic year in most cases is 1960. The rise of index implies an improvement of welfare. Therefore, in the case of 'minus indicator', the index rises when the actual figure of the indicator decreases.

Table 3: **Indicators of Economic Welfare (Japan)**

			1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
I Income and Assets	(1) (+) National[1] Income per Capita	yen at 1965 prices	211,378	242,131	255,280	279,412	314,387	325,654	355,174	399,227	451,552	499,408	526,773	545,420
		(Index)	(100.0)	(114.5)	(120.8)	(132.2)	(148.7)	(154.1)	(168.0)	(188.9)	(213.6)	(236.3)	(249.2)	(258.0)
	(2) (+) Assets per family[2]	thousand yen at 1965 prices	485,1	593,2	523,6	715,9	722,8	784,5	817,5	873,7	1008,8	1170,2	1240,6	1351,4
		(Index)	(100.0)	(122.3)	(107.9)	(147.6)	(149.0)	(161.7)	(168.5)	(180.1)	(208.0)	(241.2)	(255.7)	(278.6)
	(3) (+) Average Wage[3] Per Worker (month)	yen at 1965 prices	32,939	34,180	35,406	36,566	38,508	39,360	41,794	47,341	48,178	53,124	57,095	61,534
		(Index)	(100.0)	(103.8)	(107.5)	(111.0)	(116.9)	(119.5)	(126.9)	(143.7)	(146.3)	(161.3)	(173.3)	(186.8)
	Average of (1) (2) (3)	Index	*100.0*	*113.5*	*112.1*	*130.3*	*138.2*	*145.1*	*154.5*	*170.9*	*189.3*	*212.9*	*226.1*	*241.1*
II Economic Stability and Security	(4) (–) Rate of Fluctuation GNP (Real terms)[4]	%	31.0	40.3	32.0	25.7	31.3	30.0	29.0	25.4	31.3	21.4	20.5	13.2
		(Index)	(100.0)	(76.9)	(96.9)	(120.6)	(99.0)	(103.3)	(106.8)	(122.0)	(99.0)	(144.9)	(151.2)	(234.8)
	(5) (–) Rate of Increase CPI	% Moving Average of three years	3.33	5.23	6.57	6.07	6.33	5.50	5.53	4.77	4.90	6.07	6.33	5.98
		(Index)	(100.0)	(63.7)	(50.7)	(54.9)	(52.6)	(60.5)	(60.2)	(69.8)	(68.0)	(54.9)	(52.6)	(55.7)
		Each year	3.6	5.3	6.8	7.6	3.9	6.6	5.1	4.0	5.3	5.2	7.7	6.1
	(6) (–) Rate of Increase City Residential-Land Price	% Moving Average of three years	28.1	29.2	26.5	18.5	14.8	11.6	10.3	10.9	15.4	19.6	20.0	19.2
		(Index)	(100.0)	(96.2)	(106.0)	(151.9)	(189.9)	(242.2)	(272.8)	(257.8)	(182.5)	(143.4)	(140.5)	(158.8)
	(7) (–) Rate of Increase Average Cost of Housing Construction	% Moving Average of three years	7.9	13.7	13.4	10.6	5.2	4.6	5.4	8.0	9.7	11.4	11.4	10.5
		(Index)	(100.0)	(57.7)	(59.0)	(74.5)	(151.9)	(171.7)	(146.3)	(98.8)	(81.4)	(69.3)	(69.3)	(75.2)
	(8) (–) Balance of International Payments as % of Imports[5]		11.31	7.39	7.56	1.78	1.59	0.65	2.50	2.14	1.83	0.00	0.00	0.00
	(9) (+) Rate of Unemployment	%	1.7	1.4	1.3	1.3	1.6	1.2	1.3	1.3	1.2	1.1	1.1	1.2
		(Index)	(100.0)	(121.4)	(130.8)	(130.8)	(154.5)	(141.7)	(130.8)	(130.8)	(141.7)	(154.5)	(154.5)	(141.7)
	(10) (+) Social Security Costs as % of National Income	%	5.0	5.0	5.2	5.4	5.8	6.1	6.1	6.0	5.8	5.8	6.0	6.5*
		(Index)	(100.0)	(98.0)	(102.0)	(105.9)	(113.7)	(119.6)	(119.6)	(117.6)	(113.7)	(113.7)	(117.6)	(127.5)
	(11) (+) Social Security Costs per Capita	yen at 1965 prices	95,059	107,374	116,290	129,323	147,762	163,164	179,215	197,489	214,500	231,047	260,208	273,483
		(Index)	(100.0)	(113.0)	(122.3)	(136.0)	(155.4)	(171.6)	(188.5)	(207.8)	(225.6)	(243.1)	(273.7)	(287.7)
	Average of (4)~(11)	Index	*100.0*	*89.6*	*95.4*	*110.7*	*131.0*	*144.4*	*146.4*	*143.5*	*130.3*	*132.0*	*137.1*	*154.5*
III Distribution of Income	(12) (+) Share of Wages[6]	%	69.1	68.8	70.6	72.1	71.6	73.2	72.3	70.3	68.6	68.4	67.9	70.5
		(Index)	(100.0)	(99.6)	(102.2)	(104.3)	(103.6)	(105.9)	(104.6)	(101.7)	(99.3)	(99.0)	(98.3)	(102.0)
	(13) (–) Distribution of Income Top 1/5 families: Bottom 1/5 families	(Index)	4.85 (100.0)	4.98 (97.4)	4.62 (105.0)	4.57 (106.1)	3.02 (160.6)	2.90 (167.2)	2.92 (166.1)	3.03 (160.1)	2.79 (173.8)	2.62 (185.1)	2.62 (185.1)	2.58 (188.0)
	(14) (–) Personal Income Distribution[7]						145.2	133.5	112.2	112.2	108.9	276.7	256.4	386.6
	Average Income of Upper 500 persons / Average wages	(Index)					(100.0)	(108.8)	(129.4)	(129.4)	(133.3)	(52.5)	(56.6)	(37.6)
	(15) (–) Wage Differentials	(Index)	(100.0)	(108.0)	(119.6)	(126.1)	(129.4)	(131.2)	(130.8)	(130.0)	(131.3)	(130.2)	(130.1)	(133.9)
	(a) (–) By Scale of Enterprises[8]		2.16	2.03	1.75	1.72	1.66	1.58	1.62	1.67	1.59	1.62	1.62	1.59
		(Index)	(100.0)	(106.4)	(123.4)	(125.6)	(130.1)	(136.7)	(133.3)	(129.3)	(135.8)	(133.3)	(133.3)	(135.8)
	(b) (–) By Industries[9]		3.1	2.9	2.8	2.7	2.7	2.7	2.7	2.7	2.8	2.9	2.9	2.7
		(Index)	(100.0)	(106.9)	(110.7)	(114.8)	(114.8)	(114.8)	(114.8)	(114.8)	(114.8)	(110.7)	(106.9)	(114.8)
	(c) (–) By Age[10]		4.4	4.1	3.5	3.1	3.0	3.0	3.0	3.0	3.0	2.9	2.7	2.7
		(Index)	(100.0)	(107.3)	(125.7)	(141.9)	(146.7)	(146.7)	(146.7)	(146.7)	(146.7)	(151.7)	(163.0)	(163.0)
	(d) (–) By Region[11]		2.44	2.19	2.06	2.00	1.94	1.93	1.90	1.89	1.91	1.95	2.08	2.00
		(Index)	(100.0)	(111.4)	(118.4)	(122.0)	(125.8)	(126.4)	(128.4)	(129.1)	(127.7)	(125.1)	(117.3)	(122.0)
	Average of (12)~(15)	Index	*100.0*	*101.7*	*108.9*	*112.2*	*123.4*	*128.3*	*132.7*	*130.3*	*134.4*	*116.7*	*117.5*	*115.4*

Notes:
[1] Symbol "+" signifies "plus indicator" and symbol "–" "minus indicator".
[2] Deposits outstanding per family.
[3] Wages and salaries (earnings) per worker.
[4] Deviation from the exponential rate of economic growth = $\frac{(\Sigma \mid G^* - G \mid) \times 1/3}{G^*} \times 100$ G: Growth rate of GNP in real terms of each year. G*: Exponential Growth rate of GNP in real terms for the period 1961–71.

[5] $\frac{\text{Deficit in the balance of international payments (Total of three years)}}{\text{Imports (value) of each year}}$

[6] Share of Wages = $\frac{\text{Employees' compensation}}{\text{Employees' compensation + Corporate profits before tax + Rent + Interest}}$

[7] $\frac{\text{Average income of upper 500 persons before tax (Incomes reported to tax office)}}{\text{Average wages and salaries}}$

[8] $\frac{\text{Average wages at large firms employing more than 500 workers}}{\text{Average wages at small firms employing less than 10 workers}}$

[9] Wage differentials between the highest wage industry (Public utilities – electricity, gas and water) and the lowest wage industry.
[10] Wage differentials between 40–47 years old male workers and less than 17 years old male workers.
[11] Wage differentials between the Top region and the Bottom region.

Table 4: Social Indicators (Japan)

			1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
I Basic Needs	1 Subsistence	(1) (–) Engel Coefficient (%) [1]	41.6	40.3	39.0	38.5	37.9	38.1	37.1	36.6	35.6	34.6	34.2	
		(Index)	(100.0)	(103.2)	(106.7)	(108.1)	(109.8)	(109.2)	(112.1)	(113.7)	(116.9)	(120.2)	(121.6)	
	2 Safety	(2) (–) Mortality Rate from Tuberculosis (per 100,000) [2]	34.2	29.6	29.3	24.2	23.6	22.8	20.3	17.8	16.7	16.1	15.5	12.9
		(Index)	(100.0)	(115.5)	(116.7)	(141.3)	(144.9)	(150.0)	(168.5)	(192.1)	(204.8)	(212.4)	(220.6)	(265.1)
		(3) (–) Infant Mortality Rate (per 1,000 birth)	30.7	28.6	26.4	23.2	20.4	18.5	19.3	14.9	15.1	14.2	13.1	12.4
		(Index)	(100.0)	(107.3)	(116.3)	(132.3)	(150.5)	(165.9)	(159.1)	(206.0)	(203.3)	(216.2)	(234.4)	(247.6)
		(4) (–) Maternal Mortality Rate (per 100,000 birth)	131	120		102		88	93	71	68	58	52	45
		(Index)	(100.0)	(109.2)		(128.4)		(148.9)	(140.9)	(184.5)	(192.6)	(225.9)	(251.9)	(291.1)
		(5) (–) Mortality Rate from Traffic Accidents (per 100,000)	12.9	13.6	12.0	12.8	13.7	12.7	14.0	13.6	14.1	15.9	16.2	15.5
		(Index)	(100.0)	(91.9)	(107.5)	(100.8)	(94.2)	(101.6)	(92.1)	(94.9)	(91.5)	(81.1)	(79.6)	(83.2)
		(6) (–) Homicide Rate (per 100,000) [3]	2.83	2.78	2.47	2.37	2.42	2.33	2.22	2.10	2.17	2.05	1.91	1.85
		(Index)	(100.0)	(101.8)	(114.6)	(119.4)	(116.9)	(121.5)	(127.5)	(134.8)	(130.4)	(138.0)	(148.2)	(153.0)
		(7) (+) Life Expectancy (Average of male and female)	67.8	68.4	69.2	69.8	70.2	70.8	71.0	71.5	71.7	71.9	72.0	72.9
		(Index)	(100.0)	(100.9)	(102.1)	(102.9)	(103.5)	(104.4)	(104.7)	(105.5)	(105.8)	(106.0)	(106.2)	(107.5)
		Average of (2)–(7) Index	*100.0*	*104.7*		*119.9*		*130.6*	*130.6*	*151.2*	*152.9*	*161.3*	*164.4*	
	3 Health	(8) (+) Doctors per 100,000	110.4	110.6	110.8	110.7	111.2	111.3	111.8	111.4	112.1	113.0	114.7	
		(Index)	(100.0)	(100.2)	(100.4)	(100.3)	(100.7)	(100.8)	(101.3)	(100.9)	(101.5)	(102.4)	(103.9)	
		(9) (+) Nurses per 100,000	198.7	206.4	215.4	224.0	236.4	249.5	267.6	228.1	235.7	248.1	263.8	
		(Index)	(100.0)	(103.9)	(108.4)	(112.7)	(119.0)	(125.6)	(134.7)	(114.8)	(118.6)	(124.9)	(132.8)	
		(10) (+) Hospital beds per 100,000 [4]	735	759	791	826	858	889	927	961	990	1,007	1,025	
		(Index)	(100.0)	(103.3)	(107.6)	(112.4)	(116.7)	(121.0)	(126.1)	(130.7)	(134.7)	(137.0)	(139.5)	
		Average of (8)–(10) (Index)	*100.0*	*102.5*	*105.5*	*108.5*	*112.1*	*115.8*	*120.7*	*115.5*	*119.3*	*121.4*	*126.4*	
II Amenity Needs	4 Natural Environment (Environmental Pollution)	(11) (–) Air Pollution (–) Sulfur-Oxide, Tokyo (ppm) [5]			0.053	0.042	0.049	0.059	0.074	0.068	0.074	0.068	0.053	
		(Index)			(100.0)	(126.2)	(108.2)	(89.8)	(71.6)	(77.9)	(71.6)	(77.9)	(100.0)	
		(–) Carbon Monoxide, Tokyo, (ppm) [6]						4.1	4.4	4.9	5.1	6.4	5.0	
		(Index)						(100.0)	(93.2)	(83.7)	(80.4)	(64.1)	(82.0)	
		(–) Dust Fall (t/km², month) [7]		19.7	19.1	18.5	15.4	17.0	16.8	16.2	16.0	15.8		
		(Index)		(100.0)	(103.1)	(106.4)	(127.9)	(115.9)	(117.3)	(121.6)	(123.1)	(124.7)		
		(12) (–) Water Pollution (BOD, ppm) [8]		22.4	14.0	40.9	21.8	16.7	15.1	17.0	16.3	18.9		
		(Index)		(100.0)	(160.0)	(54.8)	(102.8)	(134.1)	(148.3)	(131.8)	(137.4)	(118.5)		
	5 Living Environment	(13) (+) Houses, Average Square Measure of rooms per one person [5] (1.6 m²)	4.3	–	–	4.9	–	5.1	–	–	5.6	–	6.1	
		(Index)	(100.0)			(114.0)		(118.6)			(130.2)		(141.9)	
		(14) (+) Pervasion Degree of Sewerage [6] (%)		19.3	19.6	20.8	23.6	23.8	24.7	27.0	28.6	28.7	26.4	
		(Index)		(100.0)	(101.6)	(107.8)	(122.3)	(123.3)	(128.0)	(139.9)	(148.2)	(148.7)	(136.8)	
		(15) (+) Park Area per inhabitant [7] (m²) Tokyo	0.46	0.51	0.57	0.63	0.69	0.76	0.83	0.89	0.99	1.07	1.20	
		(Index)	(100.0)	(110.9)	(123.9)	(137.0)	(150.0)	(165.2)	(180.9)	(193.5)	(215.2)	(232.6)	(260.9)	
		Average of (13)–(15) Index	*100.0*			*119.6*		*135.7*			*164.5*		*179.9*	
	6 Work and Social-Welfare Environment	(16) (–) Mortality Rate for Work Related Accidents [8] (per 100,000 workers)	17.4	17.4	15.5	13.8	13.5	12.4	12.5	11.8	13.5	12.7	11.3	10.0
		(Index)	(100.0)	(100.0)	(112.3)	(126.1)	(128.9)	(140.3)	(139.2)	(147.5)	(128.9)	(137.0)	(154.0)	(174.0)
		(17) (–) Days Lost by Labour Disputes [9] per trade union members in a year (days)	0.6595	0.7542	0.6148	0.2989	0.3279	0.5630	0.2660	0.1747	0.2637	0.2363	0.3410	0.5160
		(Index)	(100.0)	(86.7)	(106.3)	(218.7)	(199.3)	(116.1)	(245.7)	(374.1)	(247.9)	(276.6)	(191.7)	(126.7)
		(18) (–) Average Hours of Work per month [10] (hours)	202.7	201.0	197.8	196.6	195.7	192.9	193.2	193.0	192.7	190.0	187.7	185.7
		(Index)	(100.0)	(100.8)	(102.5)	(103.1)	(103.6)	(105.1)	(104.9)	(105.0)	(105.2)	(106.7)	(108.0)	(109.2)
		(19) (+) Social Welfare Environment (+) Social workers (per 1,000 [11] population)	1.42	1.42	1.46	1.45	1.46	1.46	1.46	1.44	1.43	1.27		
		(Index)	(100.0)	(100.0)	(102.8)	(102.1)	(102.8)	(102.8)	(102.8)	(101.4)	(100.7)	(89.4)		
		(20) (+) Social Welfare Facilities (per 100,000 population [12])	4.20	4.48	4.56	4.69	5.05	5.35	5.78	6.12	6.18	8.81	9.46	9.92
		(Index)	(100.0)	(106.7)	(108.6)	(111.7)	(120.2)	(127.4)	(137.6)	(145.7)	(194.8)	(209.8)	(225.2)	(236.2)
		Average of (16)–(20) Index	*100.0*	*98.8*	*106.5*	*132.3*	*131.0*	*118.3*	*146.0*	*174.7*	*155.5*	*163.9*		
III Higher Needs	7 Education and Culture	(21) (+) University and College Students [13] (%)	17.2	17.9	19.3	20.9	23.4	25.4	24.5	23.7	23.1	23.1	24.2	26.8
		(Index)	(100.0)	(104.1)	(112.2)	(121.5)	(136.0)	(147.7)	(142.4)	(137.8)	(134.3)	(134.3)	(140.7)	(155.8)
		(22) (+) Senior High School Pupils [14] (%)	57.7	62.3	64.0	66.8	69.3	70.7	72.3	74.5	76.8	79.4	82.1	85.0
		(Index)	(100.0)	(108.0)	(110.9)	(115.8)	(120.1)	(122.5)	(125.3)	(129.1)	(133.1)	(137.6)	(142.3)	(147.3)
		(23) (–) Pupils per Teacher	(100.0)	(99.8)	(106.5)	(110.2)	(118.4)	(122.9)	(125.6)	(130.7)	(136.4)	(136.4)	(136.4)	(139.1)
		(–) Elementary school	35	34	32	31	29	28	28	27	26	26	26	25
		(Index)	(100.0)	(102.9)	(109.4)	(112.9)	(120.7)	(125.0)	(125.0)	(129.6)	(134.6)	(134.6)	(134.6)	(140.0)
		(–) Secondary school	29	30	28	27	25	24	23	22	21	21	21	21
		(Index)	(100.0)	(96.7)	(103.6)	(107.4)	(116.0)	(120.8)	(126.1)	(131.8)	(138.1)	(138.1)	(138.1)	(138.1)
		(24) (+) Newspaper Copies per Day [15] per 100 population	26	27	27	29	30	31	32	33	34	34	36	37
		(Index)	(100.0)	(103.8)	(103.8)	(111.5)	(115.4)	(119.2)	(123.1)	(126.9)	(130.8)	(130.8)	(138.5)	(142.3)
		(25) (+) TV Sets per 100 families	33.2	49.5	64.8	75.9	83.0	75.6	79.8	84.2	88.1	91.7	94.8	96.7
		(Index)	(100.0)	(149.1)	(195.2)	(228.6)	(250.0)	(227.7)	(240.4)	(253.6)	(265.4)	(276.2)	(285.5)	(291.3)
		(25) (+) Telephones per 100 population [16]	0.5	0.6	0.8	1.1	1.4	2.0	2.7	3.6	4.8	6.1		
		(Index)	(100.0)	(120.0)	(160.0)	(220.0)	(280.0)	(400.0)	(540.0)	(720.0)	(960.0)	(1220.0)		
		Average of (21)–(26) Index	*100.0*	*110.6*	*126.2*	*141.0*	*157.1*	*157.6*	*193.5*	*219.9*	*254.1*	*288.5*		
	8 Leisure	(27) (+) Average Leisure hours in a year per capita (hours) [17]	2,022.8	–	–	–	–	2,359.1	–	–	–	–	2,348.8	–
		(Index)	(100.0)					(116.6)					(116.1)	
		(28) (+) Travelling Number of Travellers more than one night per 100,000 [18]	32	37			47			60	65	71		
		(Index)	(100.0)	(115.6)			(146.9)			(187.5)	(203.1)	(221.9)		
		Number of Travellers Abroad [19] per 100,000	127.9	152.6	153.1	193.8	227.7	270.3	344.5	427.0	534.2	693.7	902.6	1203.0
		(Index)	(100.0)	(119.3)	(119.7)	(151.5)	(178.0)	(211.3)	(269.4)	(333.9)	(417.7)	(542.4)	(713.5)	(940.6)
		(29) (+) Leisure Consumption Coefficient [20] (%)				18.2	18.5	18.5	19.4	20.2	21.4	22.4	23.3	23.4
		(Index)				(100.0)	(101.6)	(101.6)	(106.6)	(111.0)	(117.6)	(123.1)	(128.0)	(128.6)
	9 Communication (Alienation)	(30) (–) Suicide Rate [21] per 100,000	21.6	19.6	17.6	16.1	15.1	14.7	15.2	14.2	14.5	14.5	15.3	15.6
		(Index)	(100.1)	(110.2)	(122.7)	(134.2)	(143.0)	(146.9)	(142.1)	(152.1)	(149.0)	(149.0)	(141.2)	(138.5)

Notes: [1] Engel coefficient = $\frac{\text{Household expenditure for food and drinkings}}{\text{Household expenditure for consumption}} \times 100$
Household in the cities with more than 50,000 population. Source: Bureau of Statistics.
[2] Per 100,000 means per 100,000 population.
[3] Homicide Rate = $\frac{\text{Number of homicide}}{\text{population}} \times 100{,}000$. Source: Criminal Agency.
[4] Source of (2), (3), (4), (7), (8), (9) and (10): Ministry of Health and Welfare.
[5] Average of three places in Tokyo, Average of a year.
[6] Average of three places in Tokyo, Average of a year. Main road sides.
[7] Average of Tokyo, Osaka and five industrial cities.
[8] Average of four rivers in Tokyo Area. Source of (11) and (12): Environmental Protection Agency.
[9] Labour dispute rate = $\frac{\text{Total days lost by labour dispute}}{\text{Number of trade union members}}$ Source: Ministry of Labour.
[10] Manufacturing Industry. Source: Ministry of Labour.
[11] Ibid.
[12] Facilities for a day nursery are not included.
[13] % of entrants to those who finished the course of senior high school. Source: Ministry of Education.
[14] % of entrants to those who finished the course of junior high school. Source: Ministry of Education.
[15] Source: Japan Newspaper Publishers and Editors Association.
[16] Home use only.
[17] Source: Ministry of International Trade and Industry.
[18] Source: White Paper on Sightseeing (Kankoo Hakusho).
[19] Including travellers to Okinawa. Source: White Paper on Sightseeing.
[20] Leisure Consumption Coefficient = Household expenditure for meals at restaurants, for TV, radio, gramophone, car, piano, movie, travel cost, etc. / Household expenditure for consumption. Source: White Paper on National Life (Kokumin Seikatsu Hakusho).
[21] Source: Ministry of Welfare.

Table 5: **International Comparison: Economic Welfare Indicators**

			Unit	Year	Japan	U.S.	U.K.	W. Germany	France	Italy	Sweden
I Income Level	(+)	(1) Per Capita National Income after tax [1]	dollars, 1970		1,319.8	2,712.4	1,039.6	1,632.3	1,837.2	1,167.0*	1,826.9
			(Score)		(16.8)	(100.0)	(0)	(35.4)	(47.7)	(7.6)	(47.1)
	(+)	(2) Average Wages per hour [2] manufacturing Industry	dollars, 1971		1.40	3.58	1.88	2.07	1.01	1.20	3.22
			(Score)		(15.2)	(100.0)	(18.7)	(41.2)	(0)	(7.4)	(86.0)
		Average of (1) and (2)	(Score)		*16.0*	*100.0*	*9.4*	*38.3*	*28.9*	*7.5*	*66.6*
II Economic Stability and Security	(—)	(3) Rate of Economic Fluctuation. Deviation from the Exponential Rate of Economic Growth [3]	%, Average of recent 5 years		27.5	41.9	25.4	57.4	14.5	13.3*	35.8
			(Score)		(67.8)	(35.1)	(72.6)	(0)	(97.3)	(100.0)	(49.0)
	(—)	(4) Rate of Consumer Price Increase [4]	%, Average of recent 5 years		5.7	4.5	5.7	3.0	4.9	3.5	4.7
			(Score)		(0)	(44.4)	(0)	(100.0)	(29.6)	(81.5)	(37.0)
	(—)	(5) International Balance of Payments. Deficit Ratio [5]	%, 1969~71		0.0	7.8	0.0	0.0	8.6	0.0	1.9
			(Score)		(0)	(26.6)	(43.1)	(100.0)	(83.9)	(58.8)	(76.4)
	(+)	(6) Social Security Cost									
		a) % of National Income [6]	%, 1966		6.6	8.1	15.0	21.8	19.7	18.7	17.3
			(Score)		(0)	(9.9)	(55.3)	(100.0)	(86.2)	(79.6)	(70.4)
		b) per capita [7]	dollars, 1970		90.0	314.8	250.0	609.3	513.3	286.9*	517.3
			(Score)		(0)	(43.3)	(30.8)	(100.0)	(81.5)	(37.9)	(82.3)
		Average of (3)~(6)	(Score)		*22.6*	*35.4*	*38.6*	*66.7*	*70.3*	*85.1*	*54.1*
III Distribution of Income	(+)	(7) Relative Income Share	(Score)		(0)	(70.9)	(94.4)	(52.5)	(47.3)	(66.9)	(90.1)
		a) Labour's Share in National Income [8]	%, Average of 1969 and 1970		68.8	77.1	80.4	75.3	78.3	80.4	78.1
			(Score)		(0)	(71.6)	(100.0)	(56.0)	(81.9)	(100.0)	(80.2)
		b) Share of Wages in Manufacturing Industry	%, 1969		32.2	46.5	50.3	(1968) 42.2	34.8	(1966) 39.1	52.6
			(Score)		(0)	(70.1)	(88.7)	(49.0)	(12.7)	(33.8)	(100.0)
	(+)	(8) Wage Differentials Manufacturing Industry	(Score)		(0)	(40.3)	(65.9)	(56.8)	(25.9)	(50.0)	(44.2)
		a) By scale of firms	%		63.3 (1969)	69.7 (1963)	79.9 (1954)	72.0 (1962)	—	—	—
			(Score)		(0)	(38.6)	(100.0)	(52.4)			
		b) By Sex	%, 1967		43.3	59.5 (1964)	55.6	67.0	63.3	82.0 (1962)	77.5
			(Score)		(0)	(41.9)	(31.8)	(61.2)	(51.7)	(100.0)	(88.4)
		Average of (7) and (8)			*0*	*55.6*	*80.2*	*54.7*	*36.6*	*58.5*	*67.2*
		Average of I~III			**12.9**	**63.7**	**42.7**	**53.2**	**45.3**	**50.4**	**62.6**

Notes:

[1] Per capita national income after tax = $\frac{\text{National income (1970)}}{\text{Population (1970)}} \times$ Taxation Ratio (1968).

[2] Manual worker. Source: ILO, Bulletin of Labour Statistics. Japan, Maitsuki Kinro Tokei, Ministry of Labour.

[3] Rate of economic fluctuation = $\frac{\sum_{1967}^{1971} \left| \text{Growth rate of GNP in real terms in each year} - \text{Exponential growth rate} \right| \div 5}{\text{Exponential Growth rate of GNP in real terms (1962–1971)}} \times 100$

[4] Exponential increase rate of consumer prices (1967–71).

[5] Deficit rate = $\frac{\text{Total deficit for three years (1969–71)}}{\text{Value of Imports (1971)}} \times 100$

[6] $\frac{\text{Total Social Security Cost}}{\text{National income}} \times 100$. Source: ILO, The Cost of Social Security, 1972.

[7] $\frac{\text{Total Social Security Cost}}{\text{Population}}$ Source: ILO, The Cost of Social Security, 1972.

[8] Labour's share in national income = $\frac{\text{Employees Compensation}}{\text{Employees compensation} + \text{Private income from property} + \text{Corporate income}} \times 100$

[9] Share of wages = $\frac{\text{Wages}}{\text{Gross value added}} \times 100$. Source: U.N., The Growth of World Industry.

[10] Wage differentials by scale of firms = $\frac{\text{Average wages at small business employing less than 50 and more than 10 workers}}{\text{Average wages at big business employing more than 1,000 workers}} \times 100$

[11] Wage differentials by sex = $\frac{\text{Average wages of female workers}}{\text{Average wages of male workers}} \times 100$.

Table 6: **International Comparison: Social Indicators**

				Unit	Year	Japan	U.S.	U.K.	W. Germany	France	Italy	Sweden
I Basic Needs	1. Subsistence	(—)	(1) Engel Coefficient [1]	%	1968	35.4	17.9	23.7	31.9	27.5	36.9	17.1
				(Score)		(7.6)	(96.0)	(66.7)	(25.3)	(47.5)	(0)	(100.0)
	2. Safety	(—)	(2) Mortality Rate from Motor Vehicle Accidents [2]	per 100,000	1967	28.0	39.4	21.0	43.9	40.8	35.4	21.6
				(Score)		(69.4)	(19.7)	(100.0)	(0)	(13.5)	(37.1)	(97.4)
		(—)	(3) Maternal and Infant Mortality Rate	(Score)		(54.0)	(66.4)	(71.6)	(35.4)	(77.5)	(0)	(100.0)
			a) Maternal Mortality Rate [3]	per 100,000 births	1968	68.1	24.8	24.4	51.0	29.0	75.0	8.8
				(Score)		(10.4)	(75.8)	(76.4)	(36.3)	(69.5)	(0)	(100.0)
			b) Infant Mortality Rate [4]	per 1,000 live births	1970	13.1	19.8	18.2	23.5	15.1	29.2	12.7
				(Score)		(97.6)	(57.0)	(66.7)	(34.5)	(85.5)	(0)	(100.0)
		(—)	(4) Homicide Rate [5]	per 1,000	1970	1.9	7.8	1.7	4.4	2.8	2.6	2.1
				(Score)		(96.7)	(0)	(100.0)	(55.7)	(82.0)	(85.2)	(93.4)
		(+)	(5) Life Expectancy [6] (Average of Male and Female)	years old		72.9	71.2	71.8	70.6	71.8	69.8	74.2
						(1971)	(1968)	(1967–69)	(1966–68)	(1968)	(1960–62)	(1967)
				(Score)		(70.5)	(51.8)	(45.5)	(18.2)	(45.5)	(0)	(100.0)
			Average of (2)~(5)			*72.7*	*29.5*	*79.3*	*27.3*	*54.6*	*30.6*	*97.7*
	3. Health	(+)	(6) Doctors per 1,000 [7]		1968	1.1	1.5	1.5	1.7	1.3	1.8	1.3
				(Score)		(0)	(57.1)	(57.1)	(85.7)	(28.6)	(100.0)	(28.6)
		(+)	(7) Nurses per 1,000 [8]		1968	2.5	4.8	2.7	2.8	3.5	1.3	4.3
				(Score)		(34.3)	(100.0)	(40.0)	(42.9)	(62.9)	(0)	(85.7)
		(+)	(8) Hospital Beds per 1,000 [9]		1968	12.5	8.3	11.1	11.1	6.7	10.0	14.3
				(Score)		(82.9)	(21.1)	(57.9)	(57.9)	(0)	(43.4)	(100.0)
			Average of (6)~(8)			*39.1*	*59.4*	*51.7*	*52.2*	*30.5*	*47.8*	*71.4*
II Amenity Needs	4. Natural Environment	(—)	(9) Air Pollution, ppm Average	(Score)		(50.0)	(40.8)	(81.8)	(22.1)			
			a) Sulfurous Gas [10]			0.0510	0.103	0.070	0.08			
						(1966)	(1965, 1969)	(1968)	(1967–68)			
			b) Suspended Particulates, μg/m³			(100.0)	(0)	(63.5)	(44.2)			
				(Score)		388	108 (1970)	56 (1967–68)				
						(0)	(81.6)	(100.0)				
		(—)	(10) Mercury Content in Hair [11]	ppm		6.50	0.50	1.50	0.10			
				(Score)		(0)	(93.8)	(78.1)	(100.0)			
			Average of (9)~(10)			*25.0*	*67.3*	*80.0*	*61.1*			
	5. Living Environment	(—)	(11) Average Number of Persons per Room [12]			1.1	0.7	0.8	0.9	0.9	1.1	0.8
						(1958)	(1956)	(1960)	(1960)	(1968)	(1961)	(1965)
				(Score)		(0)	(100.0)	(75.0)	(50.0)	(50.0)	(0)	(75.0)
		(+)	(12) Sewage Facilities [13]	%		20	68	90	63	40	30	71
						(1970)	(1962)	(1963)	(1960)	(1963)	(1966)	(1964)
				(Score)		(0)	(68.6)	(100.0)	(61.4)	(28.6)	(14.3)	(72.9)
		(+)	(13) Roads Paved [14]	%		12.6	43.6	100.0	76.6	82.6	88.9	26.8
				(Score)		(0)	(35.5)	(100.0)	(73.2)	(80.1)	(87.3)	(16.2)
		(+)	(14) Parks, Square Meter per Inhabitant [15]	m²		1.2 (Tokyo)	19.2 (New York)	22.8 (London)	26.9 (Frankfurt)	5.8 (Paris)	10.4 (Rome)	
				(Score)		(0)	(70.0)	(84.0)	(100.0)	(17.9)	(35.8)	
			Average of (11)~(14)			*4.2*	*68.5*	*97.8*	*71.2*	*44.2*	*34.4*	*57.5*
	6. Work Environment	(—)	(15) Mortality Rate for Work-Related Accidents [16]	per 1,000 workers	1970	0.04	0.04	0.04	0.17 (1969)	0.10 (1969)	0.13	0.05
				(Score)		(100.0)	(100.0)	(100.0)	(0)	(53.8)	(30.8)	(92.3)
		(—)	(16) Working Hours in a Year [17]	hours	1969	2,280	1,952 (1968)	1,997 (1968)	1,870	1,868	—	1,800
						(0)	(68.3)	(59.0)	(85.4)	(90.8)		(100.0)
		(—)	(17) Working Days Lost by Labour Disputes per Worker [18]	(Score)		110	736	325	6	173	1,735	11
				per 1,000 employees	1969–71	(94.0)	(57.8)	(81.6)	(100.0)	(90.3)	(0)	(99.7)
			Average of (15)~(17)			*64.7*	*75.4*	*80.2*	*61.8*	*68.3*	*10.3*	*97.3*
III Higher Needs	7. Education and Culture	(+)	(18) University and College Students per 1,000 Population under 24 years old [19]		1970	3.4	9.4	2.5	3.1	2.2	2.1	4.1
				(Score)		(17.8)	(100.0)	(5.5)	(13.7)	(1.4)	(0)	(27.4)
		(+)	(19) Telephones and TV-Sets	(Score)		(18.0)	(99.6)	(36.7)	(25.8)	(6.7)	(0)	(100.0)
			a) Telephones	per 100	1970	22.4	53.7	25.0	20.4	16.0	16.0	53.7
				(Score)		(17.0)	(100.0)	(23.9)	(11.7)	(0)	(0)	(100.0)
			b) TV	per 100	1969	21.4	39.9	28.4	26.2	20.1	17.0	40.1
				(Score)		(19.0)	(99.1)	(49.4)	(39.8)	(13.4)	(0)	(100.0)
		(+)	(20) Books and Newspaper Copies	(Score)		(55.6)	(31.8)	(72.0)	(76.6)	(28.0)	(0)	(99.7)
			a) Books Published Daily	per 1,000	1969	0.30	0.31	0.58	0.57	0.37	0.16	0.93
				(Score)		(18.2)	(19.5)	(54.5)	(53.2)	(27.3)	(0)	(100.0)
			b) Newspaper Copies Daily	per 1,000	1969	503	305	488 (1966)	531	243 (1968)	127	528
				(Score)		(93.1)	(44.1)	(89.4)	(100.0)	(28.7)	(0)	(99.3)
			Average of (18)~(20)			*30.5*	*77.1*	*38.1*	*38.7*	*36.3*	*0*	*75.7*
	8. Leisure	(+)	(21) Number of Travellers Abroad	per 1,000	1970	12.0	98.8	165.9		910.4		203.9 (Out of Scandinavia)
				(Score)		(0)	(9.7)	(17.1)		(100.0)		(21.4)
	9. Community (Alienation)	(—)	(22) Suicide Rate	per 100,000	1967	16.1	15.7	11.7	29.5	23.3	7.8	31.9
				(Score)		(85.6)	(87.2)	(93.8)	(10.0)	(35.7)	(100.0)	(0)
	Average of Social Indicators Score (Average of 1~9)					*30.4*	*61.1*	*65.1*	*44.7*	*52.1*	*31.9*	*64.8*
	Average of Total Welfare Score (Average of Economic Welfare Score [I~III] and Social Indicators Score [1~9]).					**29.0**	**61.8**	**59.8**	**47.0**	**50.3**	**37.4**	**64.2**

Notes: [1] Engel Coefficient = $\frac{\text{Expenditure for food*}}{\text{Total Expenditure for consumption}} \times 100$

* Expenditure for drinkings is included in the case of Germany.

[2] Source: WHO, World Health Statistics Annual.

[3] Source: ibid. Japan: Ministry of Welfare.

[4] The Maternal Mortality Rate in Japan was 45 per 100,000 births in 1971 as compared 68 in 1968.
Source: U.N. Demographic Yearbook. For Japan, Ministry of Welfare.

[5] Number of homicide per 100,000 population. Source: Police Agency.

[6] Life Expectancy at zero years old baby. Simple average of male and female.

[7] Dentists are not included. Source: United Nations, Statistical Yearbook.

[8] Source: United Nations, Statistical Yearbook.

[9] ibid.

[10] Japan: Average of Tokyo and Osaka.
United States: Average of New York (1969) and Chicago (1965).
United Kingdom: London.
W. Germany: Hamburg.

[11] Japan: Tokyo, average of 6 places.
United States: New York, average of 38 places.
United Kingdom: London.
Source: Daisaku Kiyoura, Sekaino Kankyo Osen (World Environmental Pollution), Nihon Keizaishinbun-sha, 1972.

[12] Source: United Nations, Statistical Yearbook.

[13] Population in the area where sewage system is provided / Total population of City area
Source: Ministry of Construction.

[14] Source: International Road Federation.

[15] Source: Ministry of Construction.

[16] Manufacturing Industry.
Source: ILO, Year Book of Labour Statistics. For Japan: Ministry of Labour.

[17] Manufacturing Industry, manual workers.
Source: Estimated by Ministry of Labour.

[18] Per 1,000 employees.
Source: ILO, Yearbook of Labour Statistics.
Statistics Bureau, Federal Republic of West Germany.
For Japan: Ministry of Labour.