LABOR MARKET STATISTICS AND WELL-BEING
A NEW ARCHITECTURE BUT UNDER CONSTRUCTION

Tatsuru   Akimoto

The current unemployment rate in wide use has little value for showing the well-being of the labor market as well as its size and the performance, and is even misleading in policy. The well-being of the employed and the unemployed in the labor market of a country with a 20 percent unemployment rate is not necessarily less than that of a country with a 5 percent unemployment rate. Divide a full-time job into two part-time jobs without benefits and security, for example, and the unemployment rate would reduce by half. This paper constructs an alternative indicator in the replacement of the current unemployment rate. Effectiveness for international comparisons is the major aim. The indicator to be constructed is not a simple macro economic/social indicator but one to reflect the well-being level of an individual's life as well as one to consider subjective aspects in order to make a comparison possible beyond differences in culture, value, tradition, and "developmental stage" or type, and also between sub-populations of two countries. The construction incorporates five steps: (1) Structuring the indicator composition which consists of six Aspects of Life ("Jobs", "Economic life", "Time life," "Housing", "Leisure" and "Security") and under them thirty individual items (e.g. "job availability", "wage and salary", and "security"); (2) Measuring the perception of the well-being of individuals, through a questionnaire survey, on the overall work life and each of its sub-fields to calculate correlation coefficients; (3) Selecting concrete indicators for each of the 30 individual items (e.g. "reasons for leaving jobs" in an Employment Mobility Survey conducted by the national government in Japan for "employment security") and converting calculated results into indices; (4) Allocating weights using the correlation coefficients above to each of the individual items to aggregate into Individuals' Synthetic Indicators; (5) Aggregating them into Group Synthetic Indicators for a country or any sub-population groups within a country e.g. by sex, age and region. Towards the conclusion, the whole design of the construction is tested with hypothetical data and some sample analyses are made for demonstration.

Key Words: Unemployment Rate, Well-being Indicator, Labor Market Well-being, International Comparison

One question triggered our present research: If one supposes that Country A has a 20 percent unemployment rate and Country B has a 4 or 5 percent unemployment rate, are the unemployed or working people in the former less happy than their counterparts in the latter, or is the level of well-being of the former lower than that of the latter? Our proposal to Ford Foundation reads:

> ....the same unemployment rate....does not mean the same thing in each country. Italy's 20-25 percent unemployment rate in its southern region is not comparable to what such a high rate would be in the U.S..... and the experience of unemployment in southern Italy is not necessarily five to six time worse than the experience in the U.S. The same is true of Spain's 16-18 percent.... .

The goal assigned to our team was the "development of....new composite indicators measuring....economic well being," or more narrowly defined "labor market well-being." (Proposal to Ford Foundation)

This paper proposes a design for the construction of such indicators to answer the above question. The indicators are developed through a review of similar efforts made in Japan since around 1970. They pertain to the well-being of whole life aspects, not specifically that of the labor market, of people or working people, and their goal was to make a chronological and regional comparison within a country, not international comparison. Many lessons were learned, however.

Reviewed are the four most representative indicators among these: Employees' Life Indicators by Ministry of Labor (now Ministry of Welfare and Labor), People' Life Indicators (PLI; National Survey on Lifestyle Preferences) by the Economic Planning Agency, Government of Japan, Affluence of Life and Satisfaction Indicators by Mitsubishi *Soken* (Research Institute) and Affluence of Life Indicators by *Rengo Soken* (Japanese Trade Union Confederation Research Institute for the Advancement of Living Standards). (See Tatsuru Akimoto and Naoyuki Kameyama, "Well-being Indicators in Japan" presented at a preparatory meeting at Rome on 27-28 May 2002 for this current meeting.)

There are three sections in this paper. The first section will be devoted to the foundation work, or the preparatory work. Four points will be discussed: (1) Can well-being be measured by labor market statistics? Is the fact that the labor market statistics have failed to reflect the actual level of well-being due to their incompleteness or the intrinsic limitation of the statistics themselves ? (2) Is it the well-being of the society on a macro scale or that of an individual's life to be measured? (3) Who are the subjects of the indicators? How should the well-being of the unemployed and atypical workers be dealt with? Finally (4) can the subjective aspect be 100 percent discarded, as it may play a crucial role for the international comparison? The second section will be devoted to the construction of new well-being indicators. The structural composition, the selection of individual

indicators, their indexation, the allocation of weights and the aggregation into composite indicators will be presented. The third section will be devoted. to a demonstration of its workability. How does the whole scheme work and what information can be obtained? We will attempt to show these by borrowing data and analyses of Rengo Indicators whose ideas and methods are closest to ours.

I . Foundation Work

1. An undeveloped state of labor market statistics or the limitation of labor market statistics?

The opening question above is both far-reaching and awkward. It seems, on one hand, to be questioning the insufficiency of the existing unemployment rate to describe well-being. Particularly given the drastic change in the labor market today, the unemployment rate, a labor market statistic, is not enough to measure the level of well-being of working and unemployed people. Thus an alternative or a set of new labor market statistics should be developed.

However, on the other hand, this query seems to be addressing the limitations of labor market statistics themselves. The unemployment rate is a labor market indicator and well-being is a condition of the life of people. The dimensions are different. It is questioning the inefficiency of a labor market indicator on the ground that it does not reflect a phenomenon that is not covered by it, and efforts are still being made to develop labor market indicators. It is a self-

contradiction, in a sense. It is essentially impossible to measure the level of well-being with only labor market statistics.

This is a definitional matter. According to Webster's Seventh New Collegiate Dictionary, "well-being" means "the state of being happy, healthy, or prosperous: WELFARE." Other words and phrases such as the quality of life, affluence, "leeway" ("play", *yutori*) and satisfaction could also replace them. The concept of well-being refers to the state of the life of people. The subjects of "being happy, healthy and prosperous" must be the state of life or, more directly, people themselves.

The labor market is the exchange process of labor force, and (family and community) life is the production process. Their processes are different and mutually exclusive. The term "life" could be also used in a different way: As the whole life encompassing the life in the three processes of the labor force reproduction cycle including the consumption process as well as other two processes above. In this case, not the processes but the dimensions are different. In any case, the concept of well-being has something to do with the life of people, which conceptually exceeds the jurisdiction of the labor market.

The goal of this paper is to develop composite indicators measuring the life of people in the labor market and its areas of immediate concern. This goal might have been slightly shifted from the one assigned above. The

indicators will not be strictly limited to labor market indicators, as the original problem could not otherwise be solved.

2. Macro economic indicators or individual life indicators?

The concept of well-being here has now being defined as the life of people immediately related to the labor market, and not the condition of labor market per se. The next question is which well-being will it be, the well-being of society or the well-being of the individuals in it?

All social indicators in the past measured the level of the former. They were macro indicators. Some of them, including PLI, emphasize "an approach from individuals," (Economic Planning Agency 1999: 136) but they are still macro indicators in nature. (Rengo 1993a: 10) Ours must measure the level of the well-being of individuals. (cf. Rengo 1993: 6-7, 10)

The limitation of policy choice using only macro indicators has been much discussed in the past few decades. One lesson leaned was: "Start with the intervention directly in the realization of the immediate goal of the policy, and their effect to the macro economy and thus indicators would be perceived and measured." Improvement of the GDP and labor market of society does not guarantee the improvement of the well-being of people in the society. Examples are: (1) "targeting", "labor intensive projects" and "employment-friendly projects" in developmental aids to "developing countries", (2) the rejecting of the "trickle down" approach—in

the "historic" prosperity, a third of US households had annual income of lower than $25,000 at the end of 1990s and the percentage had not changed since the beginning of 1970s in constant dollars—and (3) the high road and low road theories in city management.[1] The provision of much money is not sufficient. In what kinds of programs is a given capital unit to be invested? The quality comes into question.

While the well-being at the macro level improves, the well-being of working and unemployed people may not become better or may even become worse. "Most of the individual indicators used in past social indicators were variables describing 'social conditions', not individuals' conditions." (Rengo 1993a: 6) Examples of this are the numbers of public employment security offices and vocational training facilities. They are indicators at the social level. Alternative indicators at the individual level would be "how much does each individual actually use these?" The number of facilities is deemed to show the level of well-being of individuals in a sense, but it is in the sense of: "In what community does he/she live?" These variables describe the situation of a community but do not directly show the situation of a given individual. Certain identical values "are equally assigned to all individuals who live in the community." (Rengo 1993a: 10) Infant morality rate, consumer price increase rate, and welfare and medical programs belong to this category, that is, variables at the social level. (cf. Rengo 1993: 6, 9-10)

"Individual level variables in a weak meaning are sometimes found among social indicators." The unemployment rate is an example. It is calculated based on a variable describing individuals' condition: "Being unemployed or not unemployed." "Past social indicators, however, regarded it as a variable representing a social condition, not an individual's condition. The rate of house ownership and the average commuting hours are variables of this type." (Rengo 1993a: 9)

Keeping to the well-being at the individual level would yield a by-product of avoiding an unsolved difficulty of measuring well-being at the social level. The individual's condition and its aggregation describe a certain condition of a society. However, it goes without saying that the aggregation of the well-being of individuals does not make the well-being of the society itself. There are other players such as governments and corporations. There are no ways to measure how much the individual's well-being affects the well-being of society. There are no agreed-upon standards with which we can measure or define well-being at the social level. One example: The higher social security benefits are, the better the well-being is at the individual level, but at the social level, having limited resources, the burden must be taken into consideration. (cf. Rengo 1993: 6-7)

In our design below, "all variables consisting of indicators" must be "ones depicting the life of individuals," and thus the level of well-being could be calculated for any given individual or groups in the population. (Rengo 1993a: 9-10)

3. Subjects of Well-being Indicators

The well-being of individuals, not of a macro society, will be examined. The question remains as to which part of the population should comprise the subjects, or exactly whose well-being should be examined? Our interest is in the labor force population, that is, people in the labor market. Should they, however, be limited to working people or employees? Should the unemployed, workers of "new types", "the third sector" working people, the self-employed and "the future and past workers" be subjects, and how should they be dealt with in our indicators?

Firstly, and curiously enough, in the past social indicators, the well-being of the unemployed tended to be neglected while the well-being of working people was discussed in detail.[2] In order to answer the question at the top, the well-being of the unemployed must be measured in distinction from that of the employed. A hypothesis that "the unemployed would not necessarily be unhappy, and the employed would not necessarily be happy" might lead to the selection of appropriate indicators. For the unemployed, key indicators would be if they can eat, if they have places to live in, if there are jobs available, if the quality of those jobs are worth taking, and how strong the pressure is on them to return to jobs. Factors outside the labor market must be paid attention. For example, to answer the first two "if"s, not only social/community support but also kinship support beyond the immediate family would play a big role to determine their level of well-being.

Secondly, the increase in such "non-traditional workers" is the central concern of this project as "non-regular workers", "atypical workers", "contingent workers", "temp workers," "independent contractors," etc. Again, for the measurement of their well-being, factors outside the labor market must be considered and life- or household-based indicators are required. These workers may work part of a day, week, month or year or may have second and third jobs, and/or may receive support from their own families as well as support from outside them. Some of these subjects have been forced to take jobs due to the labor market situation and some have taken jobs of their own free will. Their role and status in their family and labor market are quite different from those of "traditional" typical fulltime workers. Their well-being cannot be measured by each individual job/employment, but must be measured by combined total jobs/employment or by family/household.

Included within the category of "atypical workers" by choice, there are many people who are working in the "third sector" for cooperatives, NGOs/NPOs, voluntary, religious and charity organizations, community businesses, etc. with sub-market working conditions. Their numbers have been increasing and their work and business have been overlapping with those in the profit sector. Our indicators will neglect this sub-population, as well as that of discouraged workers.

Thirdly, there is a difficulty of how to deal with the self-employed and their alteration of status with employees at two poles. At one pole, the change in the labor market has given rise to the new "self-employed" or "independent contractors", who are substantially in the same position as employees in the labor market. At the other pole, however, the "unchanged," or constancy, of the labor market has kept the "old" self-employed. In order to answer to the initial question above, the role of the self-employed of the latter type (and family employees) should be recollected as a substitute for and as a supporter to the unemployed, particularly in countries with a high proportion of primary industries.

Fourthly, people presently outside the labor market are excluded. Juveniles, housewives, and retirees are considered as dependents but not the direct subjects of our indicators to be constructed. "Welfare programs and institutions for old people, for example, carry meaning only indirectly for the life of presently working people," unless they collect their benefits while working or maintain their family members who are collecting the benefits. (cf. Rengo 1993: 12-13)

4. Consideration of Subjective Aspect

Our indicators cannot help including subjective factors. There are two reasons:

One is a conceptual reason. The definition of well-being above noted such words and phrases as "happy, healthy, prosperous," "the quality of life, affluence, leeway, satisfaction, etc." The perception of being happy, for example, differs

by individual. Well-being cannot be intrinsically independent of the subjective aspect even if the discussion is limited to economic well-being.

More basically, limiting the discussion to the economic aspect itself is questionable. Some argue that well-being starts where the material needs are satisfied. They emphasize something not related to economy and materials as the essence of well-being. It was actually the period of the unprecedented "high economic growth" before the oil shock and the period of "Japan as No.1" in the late 80s and early 90s when well-being indicators drew people's attention and were abundantly constructed in Japan. Some people do not want more money but rather want fulfilling jobs or more free time outside work, which they consider well-being. Well-being can be value-ridden—"the value of people's life style." It "is close to a normative question of 'how people should live'" or what the life should look like. (cf. Rengo 1993: 3)

The second is a functional reason. Embracement of the subjective aspect enables an international comparison. Each country has different values, culture, tradition, and history and is in a different "developmental stage" or type. These make the experiences of the same unemployed very different.(Proposal to Ford Foundation) For example, in one country, being unemployed may not be perceived negatively or not working may even be perceived positively. The "developmental stage" is reflected to industrial, occupational, and employment status composition, family and community support

systems, the absorption mechanism of the unemployment, and the consciousness structure. The more the primary sector the society has, the stronger is the kinship to support each other when members are unemployed and even while being employed.

To escape from the awkward complicated consideration on the quantity and variety of these variables and their statistical processing, an aggregated subjective variable on the perception of well-being or the satisfaction is expected to function as a substitute variable for them. The value judgment and the preference of individuals are largely determined by comparable variables of the society to which they belong. The majority of a given society gives values of those variables at a given time. (cf. Rengo 1993: 4, 7)

During the construction of our indicators, a questionnaire survey was conducted on well-being or life satisfaction. Through its statistical examination, the consciousness structure related to well-being and its decisive factors came to be understood. The result is used for the weight allocation to each component, depending on the contribution to the total well-being or life satisfaction related to the labor market.

II. Construction

Our architecture pertains to the well-being (1) or the life of people closely related to labor market, (2) of individuals, not of the macro society, (3) of the employed and the unemployed and traditional typical fulltime workers and

newly-born atypical workers, and (4) with the subjective aspect inclusive. Simplicity and practicality are also considered.

The general plan for the architecture, the technical design, and the demonstration of its workability with "hypothetical" data this time owe much to Rengo Indicators. Many lessons were also drawn from other sources. New ideas have been inserted.

1. The Plan of the Architecture

Table 1 presents the basic plan of our architecture. Six basic life aspects, which comprise well-being in and around the labor market, and 30 items, which operationalize them, were selected. The selection was made by the designer through a review of past indicators and surveys[3] in consideration of the availability of data.

Our indicators do not exclude the subjective aspect of well-being, but do not intend to measure the level of well-being only from the subjective aspect, either. Individual perception of well-being is thus not used for the selection of individual indicators themselves, a point of divergence from Mitsubishi Indicators.

Aspect "D. Jobs" surrounded by the bold line in the table represents the core for the labor market, albeit in a narrow sense. These are items to indicate the supply and demand relations and trading conditions of the labor force. Other aspects from A to C and E and F, however, are indispensable in order to answer the question posed at the beginning of the paper.

"A. Economic life" and "B. Time life" are two basic aspects of well-being intertwining with various other life aspects in various ways. (Rengo 1993a: 20) Five items can essentially cover the parameters of economic well-being. The first two items relate to the flow: "1. The Proportion of Housing Expenses" and "2. The Proportion of Educational Expenses" would replace Engel's coefficient today particularly in "developed countries." "3. Increase in Savings" would reflect the level of economic wealth most closely. The fourth and fifth items, "4. Financial Stock" and "5. Non-financial Assets," indicate not consumption but stock, another expression of the level of well-being. (Rengo 1993a: 25)

In our indicators, income itself and consumer price, which were always part of such indicators, are not included. This is because the amount of income fluctuates in meaning depending on changes in the average standard of life over the passage of time as well as changes in the life stage and also location. The indicator cannot hold its effectiveness. The change in consumer price rate influences the economic well-being in relative relation to income, but its increase does not necessarily always indicate a negative correlation against well-being. (Rengo 1993a: 25)

All data of these five items should be considered per household.

"Free time" is a crucial factor for well-being.

Table 1 Life Aspects and Individual Items

Aspects of Life	Individual Items	The emp-loyed	Atypical workers	The un-employed	Remarks
A. Economic Life (by household)	1.The Proportion of Housing Expenses				Housing expenses / disposable income
	2.The Proportion of Educational Expenses				Educational expenses/ disposable income
	3. Increase of Savings				Annual increase of savings/annual income
	4.Financial Stock				Financial stock/ annual income
	5.Non-financial Assets				Real estate & other stock/annual income
B. Time Life	6. Working hours				Weekly/Annual
	7. Vacations & holidays				Annual
C. Housing	8.Space (per capita)				
	9.Ownership				
	10.Standard				
D.Jobs* availability and quality	11.Job Availability*		Choice or not	Returna-bility	Possibility to find (another) jobs and their quality
	12.Wage and salary*		Average according to working hours for workers having more than two jobs	NA	Hourly/Monthly
	13.Benefits *				In monetary term
	14.Working Hours*				Weekly/Monthly
	15.Autonomy				
	16.Ability Use				
	17.Equality*				
	18.Working conditions				Comfort
	19.Security				Term & lay off
	20.Occupational Safety				
	21.Accessibility				
E.Leisure	22.Travels				
	23.Sports				
	24.Entertain't activities				
F.Security*	25.Unemployment Insurance*				Community support
	26.Workers' Comp Insurance*				Coverage & benefit level
	27.Health Insurance*				of entitlement programs
	28.Old-age Insurance*				(+Employee benefits)
	29.Provision of Housing*				Kinship Support
	30.Provision of Food*				

*Indicators not included *Rengo* Indicators.

Its quantity is largely determined by the "6. Working hours" and "7. Vacations & holidays." A grasp of the combined working hours and holidays per month and year are necessary. (cf. Rengo 1993a: 25) Some people work more than two jobs or part of a month and year.

"C. Housing" is the basis for all activities. "8. Space (per capita)", "9. Ownership" and "10. Standards" are three items. "10.Standard" means the quality of the house. (cf. Rengo 1993a: 26)

Aspect "D. Jobs" comprises items: "11. Job Availability" and Items "12-17". The former asks about the availability of jobs: Are there any jobs available? Can the unemployed find jobs relatively easily? Can the employed find alternative jobs or change jobs relatively easily? Can atypical workers find any additional jobs if they want to do so? Concerning atypical workers, is it his/her choice to be in that position?

The latter pertains to their quality of available jobs, if any: What kinds of jobs are they? Are they decent work which is suitable for that particular person? To be checked are "12. Wage and salary," "13. Benefits" in the monetary term, "14. Working Hours," "15. Autonomy". "16. Use of Abilities," "17. Equality," "18. Working Conditions," "19. Security," "20. Occupational Safety," and "21. Accessbility" or commuting hours. These are questioned by job. Having two jobs, a person would have two sets of answers, and their well-being must be measured by their average. (cf. Rengo 1993a: 26)

"E. Leisure" is an expression of well-being. It must be placed a step above the most basic needs. Items chosen are "22. Travels," "23. Sports" and "24. Entertainment Activities," which are movie, theater, museum and concert attendance and the participation in various cultural, recreational and educational classes and activities. (cf. Rengo 1993a: 26-28)

"F. Security"[4] represents community and kinship support, which is most typically important for the well-being of the unemployed. This provides the bottom line for all aspects of well-being in and surrounding the labor market. "Community Support" means various national, state/prefectural and local governmental entitlement programs and various voluntary programs and services provided by religious, charity, and non-profit organizations at the community level. Employers may have similar, alternative, or supplemental programs as part of their employee benefits in some countries. Here "25. Unemployment Insurance," "26. Workers Compensation Insurance," "27. Health Insurance," and "28. Old-age Insurance" are included. "Kinship support" means the support provided by relatives beyond immediate families and households. "A. Economic Life" above covers their support. The supply of "29. Housing"and "30. Food" would be the two central items.

One unsolved problem is how to deal with the overlap of information, especially between "12. Wages and Salary" and items in "A. Economic Life," "14. Working Hours" and items in "B. Time

Life," "13. Benefits" and items in "F. Security" and "1.The Proportion of Housing Expenses" and items in "C. Housing." Mitsubishi indicators erased the overlap of information among statistical indicators through a multi-variable analysis (primary factor analysis). (Mitsubishi 1997b: 5)

2. Survey and Allocation of Weight

A questionnaire survey is recommended to determine the consciousness structure with the perception on the well-being of people in each country. Important points to consider are which aspect of life or which item comprises the well-being and to what extent? How much does

[A Sample Questionnaire]

(The well-being of overall working life)
Q1 How much do you think overall well-being in your working life has been realized?

1.Fully realized	2.Somewhat realized	3. Slightly realized	4. Generally not realized	5. Not realize

(Each Aspect of Working Life)
Q2 How much do you think well-being has been realized in each of following areas of your working life?

1.Fully realized	2. Somewhat realized	3. Slightly realized	4. Generally not realized	5. Not realized

(A. Economics)
1. The Proportion of Housing
   Expenses
2. The Proportion of Educational
   Expenses
3. Increase in Savings

4. Financial stock/Annual income

5. Non-financial Assets

(B. Time)
6. Working hours

7. Vacations & holidays

(C. Housing)
8. Space (per capita)

9. Ownership

10. Living standard

(D. Jobs)
11. Availability

|------------------|------------------|------------------|------------------|

<Quality of Jobs Available>
12. Wages and salary

|------------------|------------------|------------------|------------------|

13. Benefits

|------------------|------------------|------------------|------------------|

14. Working Hours

|------------------|------------------|------------------|------------------|

15. Degree of independence

|------------------|------------------|------------------|------------------|

16. Self-fulfillment

|------------------|------------------|------------------|------------------|

17. Equality

|------------------|------------------|------------------|------------------|

18. Working conditions

|------------------|------------------|------------------|------------------|

19. Security

|------------------|------------------|------------------|------------------|

20. Occupational Safety

|------------------|------------------|------------------|------------------|

21. Accessibility

|------------------|------------------|------------------|------------------|

(E. Leisure)
22. Travel

|------------------|------------------|------------------|------------------|

23. Sports

|------------------|------------------|------------------|------------------|

24. Entertainment activities

|------------------|------------------|------------------|------------------|

(F. Security)
25. Unemployment Insurance

|------------------|------------------|------------------|------------------|

26. Workers Comp Insurance

|------------------|------------------|------------------|------------------|

27. Health Insurance

|------------------|------------------|------------------|------------------|

28. Old-age Insurance

|------------------|------------------|------------------|------------------|

29. Provision of Housing

|------------------|------------------|------------------|------------------|

30. Provision of Food

|------------------|------------------|------------------|------------------|12

each item contribute to overall well-being? A common questionnaire should be used in all countries.

The question should be simple one: "How much do you think well-being has been realized in your working life?" The question is first asked regarding the overall working life and next regarding each item under each life aspect of working life listed above. Respondents are expected to check one of five choices: "1. Fully realized; 2.Somewhat realized; 3. A Slightly realized; 4. Generally not realized and 5. Not realized."[5]

The "face sheet" collects data on sex, age, employment status, family information (employment status and dependency), and household income. Found on the previous page is a sample questionnaire sheet (cf. Mitsubishi 1998b: 3).

The "working life" in the question should be replaced with the "life, related to labor market" for accuracy, but not for simplicity. For the same reason, "the well-being has been realized" may be replaced with "you have been satisfied."

Collected data lead to the allocation of weights to each item. (Cf. Mitsubishi 1997b: 6-7; Mitsubishi 1996: 2-7) The allocation of weights would be different depending on each country.

For reference, shown below (Table 2 & Table 3) are the correlation coefficients and tentative weights found in the calculation process of Mitsubishi Indicators and Rengo Indicators, respectively.

3. Individual Indicators By Item and Indexation

Individual indicators are selected for the 30 items. For example, for the first item "1.The

Table 2 Correlation Coefficients Between Satisfaction with Overall Life and with Each Life Aspect

Housing	0.5149
Natural Environment	0.3170
Income and Assets	0.5861
Consumption	0.5149
Jobs	0.4302
Health and Family	0.3957
Medical Care, Education and Culture	0.3881
Leisure and Exchange	0.4221

(Mitsubishi 1996: 2)

Table 3 Tentative Weights by Life Aspect

Economic	1.0
Time	1.0
Housing	0.8
Working	0.55
Leisure	0.5
Educational and Culture	0.2
Leisure-related Assets	undecided
Natural Environment	0.3
Life Environment	0.2
Ease	0.4
Spiritual Richness	0.15
Social Human Relations	0.1

(Rengo 1993a : 24)

Proportion of Housing Expenses," the indicator should be "Housing expenses /Disposable income X 100," and data may come from the Family Income and Expenditure Survey and Survey on Consumption Trends. "Housing expenses" are defined as including rent, repair and maintenance costs for facilities and mortgage payment. (Rengo 1993a: 32) For "21. Accessbility" and "22. Travels", the indicators would be average commuting hours (with non-commuters excluded) and the frequency of travels ("domestic" and "aboard"), respectively; data for these are both taken from the Social Life Basic Survey of the national government. (cf. Rengo 1993a: 56, 58, 60) A few examples of more detailed selection and the process of making individual indicators will be shown in the next section.

The following gives the procedures of the conversion of collected original data into indexed values.[6] The original individual data on No. j item of No. i person are expressed as X_{ij}. All data for our indicators must be on individuals collected from individual questionnaires.

The unit each item takes differs from others. For example, commuting hours are noted in minutes, vacations and holidays days and the living space per capita in square meters. To give a common scale for all items, the original value X_j of each item will be converted into Score Z_j from 0 to 10. Conceptually, 0 means "well-being has not been realized" and 10 means "well-being has been fully realized. All values lower (at the level of well-being) than the original value which corresponds to Score 0 are assigned 0 and all figures higher than the original value which corresponds to Score 10 are assigned 10. Original values between the two original values are assigned Scores of 1 to 9. Score Z_j is a step coefficient of X_j, taking the minimum 0 and the maximum 10. (Rengo 1993a: 15) Here is an example of the conversion into scores regarding "6.Weekly Working Hours" :

Suppose the working hours per day amount to 8 hours, the category of "Shorter than 39 hours" means a 5-day work week and no overtime work while "60 hours and longer" means a 6-day work week and two hours of overtime work every day. (Rengo 1993a: 41)

Then an item value of each individual X_{ij} is converted into an individual's item index Z_{ij}, using a coefficient that gives a score to the originally given value $Z_j = Z_j(X_j)$. (Rengo 1993a: 16) All individual's original values have been now transformed into Individuals' Indexes by item.

Table 4 "6.Weekly Working Hours"—Categories and Scores

	60 hours or longer	-54 hours	-48 hours	-43 hours	-39 hours	Shorter than 39 hrs
Score	0	2	4	6	8	10

4. Individuals' Synthetic Index and Group Synthetic Index

Using the weight w_j allocated to each item, the individuals' synthetic index is calculated for a given individual i: $Z_i = \sum w_j Z_{ij}$

Since the total of w_j is 100, the Individuals' Synthetic Index Z_i takes a value from a minimum of 0 to a maximum of 1000.

The next step is the calculation of the Group Synthetic Index. Taking the average of Individuals' Synthetic Index of all individuals who belong to a given group G yields the Group Synthetic Index for that group. The group could be a country or any sub-population group within a country, for example by sex, age, or region. Its numerical expression is:

$$Z_G = \frac{1}{n_G} \sum Z_i$$

n_G is the number of individuals of a group G; Σ is the total of each individual who belongs to it. (Rengo 1993: 17)

5. The Alternative Calculation for the Group Synthetic Index

The above 3 and 4 is the theoretical procedure to calculate the Group Synthetic Index. The actual procedure taken for calculation, however, would be as follows, since data by individual are not usually available for most indicators.

The original values are classified into one of intervals carrying certain scores. All original values in an interval take the same score. The distribution of individuals who belong to each interval is calculated by item. The percentage of individuals who belong to interval k of item j

is expressed as P_{jk}.

Putting the score of interval k of item j as Z_{jk},

$$Z_j = \sum_k p_{jk} Z_{jk}$$

The equation gives the average score of the group, regarding item j. This score is termed the Group Item Index.

Based on Z_j, using the item weight w_j,

$$Z_G = \sum_j w_j Z_j$$

makes Group Synthetic Index. This index is the same as that given by the calculation on the individual basis above. (Rengo 1993a: 17-18)

III. A "Model House"

Owing mainly to a lack of data and partly one of discussion and agreement among team members, our construction of the architecture has to stop here.

However, a demonstration shall be presented to show: (a) its plausibility of the whole scheme, (b) various ideas and manipulations for the conversion of original values into scores, (c) the selection and invention of individual indicators, and (d) the correction and substitution for the missing data. The data and analysis to be shown are hypothetical in the sense that they are borrowed from the Rengo Indicators research,[7] which is closest in construction to our idea at this moment. The only difference lies in that their findings are on the well-being of the overall life of working people in Japan and for gender and regional comparisons within a

country, while ours focus on well-being in the labor market and for international comparison.

1. Test Calculation by Item

This subsection covers the process from the selection of individual indicators to the conversion into group index by item. The next subsection demonstrates the rest of the process up to the Group Synthetic Index, including the national synthetic index.

Four items are taken up in this subsection. The first is the simplest case. As governmental data are lacking, data from surveys by a non-governmental organization shall substitute, and as some regional data are lacking, substitute data are created. In the second case, the originally designed categories and scores must be modified because the expected equivalent data are not found. In the third and fourth cases, two sets of data have to be combined into one indicator and other manipulations are also required.

(1) "19. Occupational Safety"

"Occupational Casualty Rates" published by the central government are often used for this kind of indicator, but they only describe an occupational safety situation by industry and occupation and do not describe individual safety status. Thus, responses to the question, "Do you constantly feel anxiety about your health due to hard work and exhaustion?" in the '92 Rengo Life Survey are used as a substitute indicator although the data slightly differ from those on safety on job in both nature and meaning.

No data are available for the Hokuriku Area, the north central region of the main island of Japan, so those for "cities with populations of 100,000 to 999,999" shall be substituted for them.

Table 5 is the result of a trial calculation.

(2) "20. Employment Security"

The level of employment security is categorized into "Very Insecure," "Rather Insecure," "Relatively Secure" and "Secure", and

Table 5 Occupational Safety—Categories, Scores and Calculation Result

		Fully agree	Somewhat agree	Somewhat disagree	Totally disagree	Index
Score		0	5	8	10	
Tokyo Area	Men	10.8	28.9	48.3	12.0	6.509
	Women	4.1	18.4	49.5	18.0	7.680
Cities with 100,000-999,999	Men	8.2	29.4	51.3	11.1	6.684
	Women	5.0	21.1	51.0	22.9	7.425

(Rengo 1993a : 53-54)

scores are assigned as in Table 6. "Very Insecure" demotes layoffs against the workers' will. "Secure" means no risk of layoffs, and workers can plan their life expecting long-term employment.

The Employment Mobility Survey by the national government gives six classifications reasons of leaving jobs: 1) "the expiration of contracts," 2) "the convenience of the management," 3) "the retirement age," 4) "worker's responsibility," 5) "a personal reason," and 6) "death and disease." "The convenience of the management" is subdivided into "a temporary transfer to another firm" and "the return from a temporary transfer to another firm," and "a personal reason" further divides as "marriage" and "baby delivery and child care."

All layoffs due to "the convenience of the management" except for "a temporary transfer to another firm" and "the return from a temporary transfer to another firm" are regarded as "Very Insecure." All other reasons are classified as "Secure" due to difficulty in measuring the level of employment security. The result of a test calculation is shown in Table 7:

(3) "7. Vacations and Holidays"

The number of all "days off" is divided into six categories from "Fewer than 100 days" to "140 days and more," and scores are assigned as in Table 8. There are two types of "days off": One includes holidays such as weekly days off (e.g. Saturday and Sunday), national holidays, year-end and New Year holidays, summer holidays

Table 6   Employment Security—Categories and Scores

	Very Insecure	Rather Insecure	Relatively Secure	Secure
Score	0	3	7	10

Table 7   Employment Security—Calculation Result

	Very Insecure	Secure	Aggregate
Score	0	10	Index
Men & Women (%)	0.411	99.589	9.959
Men	0.367	99.633	9.963
Women	0.481	99.519	9.952

[National; Firms with five and more employees; All industries]

Source: *Employment Mobility Survey Report*, Department of Labor, 1991.

(Rengo 1993a : 54-55)

Table 8 Vacations and Holidays—Categories and Scores

	Fewer than 100 days	100-	110-	120-	130-	140-
Score	0	1	3	5	8	10

Table 9 Vacations and Holidays—Distribution of Workers by the total of annual holidays (1991)

	-69	70-79	80-89	90-99	100-109	110-119	120-
Representative Value	64.5	74.5	84.5	94.5	104.5	114.5	124.5
Distribution (%)	4.0	5.7	7.4	17.3	15.3	19.5	30.8

[National; Firms with 30 and more employees; all industries]

Table 10 Vacations and Holidays—Annual Paid Holidays Actually Taken

	0	1-4	5-9	10-14	15-19	20-24	25-
Representative Value	0	2.5	7	12	17	22	27
Men &Women	4.1	11.4	18.0	23.1	22.5	18.9	1.8
Men	4.4	11.5	17.8	22.8	22.6	19.1	2.0
Women	2.8	11.0	19.6	25.3	22.4	18.1	0.7

[Rengo Members; Men 1,538, Women 281; Total 1,819]

Table 11 Vacations and Holidays—Calculation Result

	Fewer than 100	100-	110-	120-	130-	140-	Index
Score	0	1	3	5	8	10	
Men & Women	16.49	12.67	16.64	19.48	21.04	13.68	4.651
Men	16.50	12.63	16.64	19.50	20.90	13.83	4.655
Women	16.41	12.92	16.64	19.35	21.83	12.85	4.628

Source: *General Survey on Wages and Working Hours System Report*, Department of Labor, 1991; *Life Affluence Survey*, Rengo, 1993.

and the founding day of a company. The other group includes vacations and personal paid holidays, which are taken with employees' personal initiative.

"140 days" mean 104 days from a 5-day work week, 14 national holidays, 20 annual paid holidays, and 2 additional days. "Fewer than 100 days" mean "fewer than 2 day-off per week," and even all national holidays and annual paid holidays may not be taken. .

The General Survey on the Wages and Working Hours System contains data on the first group above but does not contain the data on the second group. "Paid holidays annually taken" data are added from Rengo's Life Affluence Survey. Both distributions are supposed to be independent, and a combined distribution is calculated. (Table 10 and Table 11)

(4) "6. Weekly Working Hours"

Weekly Working Hours are defined as the total of straight time hours and overtime hours. In terms of the availability of data and the combination of the two distributions, the situation is the same as in (3) "7. Vacations and Holidays" in the foregoing paragraphs. Regarding categories and scores, see Table 3 and its section above.

The General Survey on the Wages and Working Hours System by the Department of Labor contains data of weekly straight time hours but not hours actually worked. Data for the latter are taken from the Life Affluence Survey by Rengo Research Institute and the monthly overtime hours actually worked are converted into weekly overtime hours worked. Assuming that weekly straight time hours and weekly overtime hours worked are independent in their distribution, the distribution of total working hours can be estimated. Those distribution tables are omitted here, and only the calculation result table is presented as Table 12.

In terms of regional data, the Monthly Labor Survey has provided data on monthly hours actually worked, by prefecture. Weekly data are calculated from this data and the difference from national averages. (Table 13)

Table 12 Weekly Working Hours—Calculation Result

	60-	-54	-48	-43	-39	Shorter than 39	Index
Score	0	2	4	6	8	10	
Men & Women	2.30	4.64	21.10	35.40	28.20	8.36	6.153
Men	2.45	5.30	23.40	36.26	25.75	6.75	5.952
Women	0.84	1.02	8.50	30.67	41.68	17.20	7.254

The calculation results by region are as in Table 14.

2. Group Indexed Values by Item and Group Synthetic Indicators

All index values calculated as in the preceding subsection have been compiled in Table 15.

With this table, a comparison between groups is possible by item. In order to make an aggregate comparison between groups, however, blank cells need to be filled and item values must be weighted.

. To fill the blanks, the same value is used for both sexes in a given area as far as "by household" items are concerned, and the average of values for both sexes is regarded as the value for the total of the area as far as "by individual" items are concerned. Other supplements, substitutions and manipulations are made. (cf. Rengo 1993a: 70-71) Weights are distributed to the items as in Table 16.

The weighted indicators are averaged into aggregate indicators for subpopulations (e.g. areas and sexes) and finally for the total national population. Table 17 presents these Group

Table 13 Weekly Working Hours—Average Monthly Hours Actually Worked by Prefecture (1991)

	Monthly	Weekly		
National	168.0	38.769230		
Chiba	161.8	37.338461	Tokyo Area Average	Difference
Tokyo	160.5	37.038461	37.446153	-1.3230 76
Kanagawa	164.5	37.961538		
Toyama	170.4	39.323076	Hokuriku Area Average	Difference
Ishikawa	170.7	39.392307	39.357692	0.5884615

Table 14 Weekly Working Hours—Calculation Result (By Region)

	60-	-54	-48	-43	-39	Shorter than 39	Index
Score	0	2	4	6	8	10	
Tokyo Area	1.89	3.00	14.16	29.18	31.56	20.22	6.923
Hokuriku Area	2.31	4.75	21.32	35.60	27.95	8.06	6.126

Source: *General Survey on Wages and Working Hours System*, Department of Labor, 1991; *44th Labor Statistics Annual Report*, Department of Labor; *Life Affluence Survey*, Rengo, 1993.

(Rengo 1993a: 41-3)

Table 15　Indexes Test-calculated

	National Total	Men	Women	Tokyo Area Total	Men	Women	Hokuriku Area Total	Men	Women
A1 Economic Leeway									
1 % of housing expenses	7.720								
2 % of education expenses	7.897								
	(7.233)	(7.065)	(8.255)	(7.320)	(7.115)	(8.500)	(7.060)	(6.970)	(7.638)
3 Increase in saving	5.903								
4 Financial asset	5.226								
	(4.060)	(3.988)	(4.460)	(3.984)	(3.890)	(4.524)	(4.216)	(4.206)	(4.302)
5 In-kind Asset	2.725								
A2 Time Leeway									
6 Weekly working hours	6.153	5.952	7.254	6.923			6.126		
	(6.988)	(6.756)	(8.220)	(6.996)	(6.720)	(8.464)	(6.950)	(6.848)	(7.610)
7 Annual holidays	4.651	4.655	4.628						
	(5.795)	(5.754)	(5.976)	(6.502)	(6.476)	(6.594)	(4.303)	(4.278)	(4.439)
8 Free time per day		6.467	5.124		5.604	5.947		6.393	4.884
B1 Housing									
9 Space	5.973			5.173			7.397		
10 Householder or not	5.967			4.839			7.860		
	(6.524)	(6.418)	(7.071)	(5.444)	(5.249)	(6.469)	(8.747)	(8.777)	(8.570)
11 Living standard	5.243			4.986			7.097		
12 Distance to a station	4.655			6.197			3.765		
B2 Work									
13 Autonomy		6.504	6.316		6.672	6.368		6.670	6.540
14 Use of ability		6.717	6.442		6.690	6.368		6.670	6.540
15 Comfort of workplace	-								
16 Safety at work		6.600	7.558		6.509	7.680		6.684	7.425
17 Employment security	9.959	9.963	9.952						
18 Commuting hours		6.705	7.512		5.908	6.764		7.048	8.474
		(6.420)	(6.857)		(5.415)	(6.343)		(8.478)	(8.178)
19 Commuting congestion		3.936	4.090		3.277	3.619		5.272	5.255
C1 Leisure									
20 Domestic Travel		5.480	5.623		6.304	5.875		5.533	5.459
21 Travel abroad		0.811	0.975		1.104	1.349		0.828	0.535
22 Sports		7.154	6.218		7.390	5.608		7.715	5.156
C2 Culture									
23 Appreciation activities		2.432	3.879		2.873	4.589		2.379	3.288
C3 Leisure Assets									
24 Ownership	2.177			1.965			2.384		
D1 Scenery/Natural environment									
25 Degree of greenery	-								
26 Beauty of streets	-								
D2 Life Environment									
27 Roads	4180			4.363			4.318		
28 Drainage	4.50			7.43			3.15		
29 Parks	-		-		-				
30 Public Library	4.335			6.941			4.603		
31 Medical facilities	4.501			6.036			3.821		

Table 16 Weights by Aspect and Item (Rengo 1993a: 71)

	Field Weight	Item Weight
A1 Economic Leeway	24	
1 % of housing expenses		5
13 % of education expenses		5
14 Net increase of saving		5
15 Financial asset		5
16 In-kind Asset		4
A2 Time Leeway	24	8
17 Weekly working hours		8
18 Annual holidays		8
19 Free time per day		8
B1 Housing	16	
20 Space		4
21 Householder or not		4
23 Living standard		4
24 Distance to a station		4
B2 Work	12	
13 Autonomy		2
14 Use of ability		2-
20 Comfort of workplace		-
21 Safety on work		2
22 Employment security		2
23 Commuting hours		2
24 Commuting congestion		2

	Field Weight	Item Weight
C1 Leisure	12	
20 Domestic Travel		5
21 Travel abroad		2
25 Sports		5
C2 Culture	4	
26 Appreciation activities		4
C3 Leisure-related Assets	1	
27 Ownership of assets		1
D1 Scenery/Ntrl envrnm't	-	
25 Degree of green		-
26 Beauty of streets		-
D2 Life Environment	7	
22 Roads		1
28 Drainage		2
29 Parks		-
30 Public Library		2
31 Medical facilities		2
Total	100	100

Table 17 Group Synthetic Indicators by Aspect—Area, Sex and National Total (Rengo 1993a: 72)

Total	Japan			Tokyo			Hokuriku		
	Men	Women	Total	Men	Women	Total	Men	Women	
A1 Ecnmc Lwy	0.565	0.560	0.594	0.587	0.581	0.623	0.564	0.564	0.578
A2 Time Lwy	0.619	0.633	0.594	0.642	0.627	0.700	0.563	0.584	0.564
B1 Housing	0.560	0.557	0.574	0.545	0.540	0.571	0.675	0.676	0.671
B2 Work	0.678	0.670	0.687	0.659	0.642	0.677	0.726	0.721	0.732
	81.418	80.400	82.430	79.122	77.052	81.186	87.136	86.466	87.800
C1 Leisure	0.525	0.540	0.510	0.545	0.589	0.501	0.509	0.566	0.451
C2 Culture	0.316	0.243	0.388	0.373	0.287	0.459	0.283	0.238	0.329
C3 Leisure Assts	0.218	0.218	0.218	0.197	0.197	0.197	0.238	0.238	0.238
D2 Lvng Envrn't	0.441	0.441	0.441	0.645	0.645	0.645	0.392	0.392	0.392
Total	0.564	0.563	0.581	0.589	0.583	0.616	0.568	0.577	0.566

Figures in the second line of "B. Work" are those before the recalculation into the full mark=1.
"Japan" is the total of the "Tokyo Area" and "Hokuriku Area"

Synthetic Indicators. Figures have been recalculated into the full mark=1.

3. Some Sample Analyses

Having these indicators, the following analyses, for example, would be possible.

(1) Group Synthetic Indicators

The total aggregate indicator for Japan is 564 out of 1000. There is still a significant gap between reality and the full mark, the state in which affluence is realized. Particularly, the lowest items is "C3 Leisure-related Assets" (cars, sports club membership and vacation houses) whose indicator is 218. "Culture" (the frequency to go to movies, plays, and music concerts) is also low, 316. "Living environment" is lower than half in score, which is a reflection of the non-development of social capital. On the other hand, the highest field is "Work." Employment security, self-fulfillment through work, etc. are its components.

Geographically speaking, the aggregate Indicator of Tokyo Area is 589 while that of Hokuriku is 568. There is a 20-point gap. Tokyo leads Hokuriku in "Time Leeway" and "Living Environment."

In terms of sex, the aggregate indicator for men is 563 while that of women is 581, a 20-point advantage for women. "Economic leeway" and "Culture" contribute to this difference. Women here are employees, and many of them reside in double-income households or are singles.

With area and sex combined, it is women in Tokyo area who are the most affluent (616), with the men in Tokyo second (583), men in Hokuriku third (577) and the women in Hokuriku last (566). There is a gap of nearly 50 points between women in Tokyo and women in Hokuriku. The latter is behind the former in almost all fields except for housing and commuting.

Indicators of women particularly differed between areas. Tokyo area women are relatively affluent in "Economic leeway", "Time leeway", and "Culture", and Hokuriku women are disadvantaged in "Time leeway" and "Leisure". "The approach to realize affluence should differ depending on the area." (Rengo 1993: 77)

Because indicators per capita were not used, Hokuriku, which always ranked high in various previous indicators, is now ranked not necessarily high compared with Tokyo, even though Rengo Indicators dropped the factor of "Scenery/Natural environment". (Rengo 1993a: 72-75)

(2) Group Synthetic Indicators by Field—"Work"

A similar analysis is possible by Field. Let's take "Work" as an example.

There is little difference between men (80) and women (82) with the full mark of 120 points, but there is a big difference between the two areas. The Tokyo Area is 79 while Hokuriku is 87. This comes from the commuting hours and

their congestion. (Table 17) Between men and women, safety at work for women is better than that for men, but in other items there is no significant difference. (Table 15) (Rengo 1993a: 76)

Final Comments

This paper has presented both a ground design of indicators to measure the level of well-being, or life, closely related to the labor market and a demonstration of its workability with similar indicators on the overall well-being of working people in Japan.

Our indicators are life-centered, individual-oriented, with the unemployed and atypical workers included, and subjective aspects considered. These make a comparison possible beyond the differences in culture, values, traditions and "developmental stage" or type, and also between subpopulations of two countries. The indicators await refinement through international discussion and cooperation.

If sufficient data is compiled, our scheme could be implemented immediately and trial calculations could be made for the employed, atypical workers, the unemployed and their aggregation and also for counterparts in other countries. Only the availability of data is a hindrance. The use of used timber, or existing statistics and data, is encouraged (Proposal to Ford Foundation) but new materials will also be necessary. They must be based on individuals or describe individuals' life situations to be obtained by individual questionnaires. Their collection, however, would not be so difficult provided governments desired and implemented it (Rengo 1993a: 11).

1) The invitation of corporations and the provision of grants with huge amounts of tax money used failed to boost employment and in many cases led to more low wage workers.

2) In the case of Japan, it may be attributable to the low unemployment rate of only 1 or 2 percent till the mid-90s.

3) Aspects A-E of our indicators are roughly identical with those of Rengo indicators. Rengo's "Affluence of Life" Survey found a significant gap of contribution to well-being ("leeway") between these five items and the remaining other items they included. (cf. Table 3)

4) The aspect "Security" is not included in Rengo indicators. Under the aspect "Ease," which refers to the mental/spiritual aspect, the inclusion of entitlement programs was discussed but discarded on the ground of the ambiguity of relationship between the level of these benefits and their practical meaning for the individuals' life. An old-age pension program, it was argued, certainly contributes to the ease or lack thereof of working people but "in what sense" and "to what extent" are unknown, for instance. (Rengo 1993: 30) The purpose of their inclusion into our indicators is to

measure not mental security but materialistic security.

5) Rengo indicators adopted a different method. (1) Key words (which describe each item under life aspects) written in the open space and (2)the five-rank rating of ten "model families" (by family composition, workplace location, annual income, housing, commuting time, working hours, savings and leisure activities) were statistically analyzed to determine weights through multiple regression analysis. Questions for them were "At what level do you think affluence has been realized with regard to your (overall) life?" and ""Do you feel if each family is affluent or not affluent?"" respectively. (Rengo 1993b: 77 and 81; Q36 and Q47)

6) The following description of this subsection is mostly the translation of edited excerpts of pages cited from the Rengo report.

7) The following description of this subsection is mostly the translation of the edited excerpts of the cited pages of the Rengo report.

[Reference]

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