LABOR MARKET STATISTICS AND WELL-BEING

A NEW ARCHITECTURE BUT UNDER CONSTRUCTION

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23-27 September 2002

Bellagio, Italy

[DRAFT]

Not English-edited; Not citation sources fully indicated.

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A question triggered our present research: Suppose Country A has 20 percent unemployment rate and Country B has 4 or 5 percent unemployment rate, are the unemployed or working people of the former less happy than counterparts of 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 question above. The indicators are developed through the review of similar efforts made since around 1970 in Japan. They pertained to the well-being of the whole life aspects, not specifically in the labor market, of people or working people and their goal was to make chronological and regional comparison within a country, not international comparison. But lessons were learned.

Reviewed are four most reprehensive indicators among them: Employees' Life Indicators by Ministry of Labor (now Ministry of Welfare and Labor), People' Life Indicators (PLI; National Survey on Lifestyle Preferences) by 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 Advancement of Living Standards). Their outlines are attached as a supplement.

There are three sections in this paper. The first section will be devoted to the groundwork----the preparatory work. Four points will be discussed: (a) Can well-being be measured by labor market statistics?----The undevelopment of labor market statistics or the limitation of labor market statistics? (b) Is it the well-being of the society as a macro or of individuals' life to be measured? (3) Who are

the subjects of the indicators? How to deal with the well-being of the unemployed and atypical workers? And (4) can the subjective aspect be 100 percent discarded?----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 the demonstration of its workability. How does the whole scheme work and what information can be obtained? The example of Rengo Indicators whose idea and method are closest to ours will be introduced.

•. Groundwork

1. The undevelopment of labor market statistics or the limitation of labor market statistics?

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

However, on the other hand, it seems to be questioning the limitation of labor market statistics itself. The unemployment rate is a labor market indicator and well-being is a condition of the life of people. Dimensions are different. 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 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 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.

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 of “life” could be also used in a different way----as the whole life comprehending the life in three processes of the labor force reproduction cycle including the consumption process as well as other two processes above. In this case, not processes but 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 labor market.

The goal of this paper is to develop composite indicators measuring the life of people in labor market and its immediately neighboring area. The goal might have been slightly shifted from the one assigned above. The indicators will not be strictly limited to labor market indicators. The problem at the top could not otherwise be solved.

2. Macro economic indicators or individuals’ life indicators?

The well-being here was now defined as the life of people immediately related to labor market, 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 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: 136) but they are still macro indicators in nature. Ours must measure the level of the well-being of individuals.

The limitation of policy choice with using macro indicators has been discussed in these few decades. A 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.” The improvement of 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 reject 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 dollar----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 is questioned.

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

Individuals’ 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 individuals’ condition. The rate of house ownership and the average commuting hours are variables of this type.

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[1] The invitation of corporations and the provision of grants with huge amount of tax money used bore few employment and more low wage workers in many cases.

Sticking to the well-being at the individuals' level would have a by-product to avoid an unsolved difficult problem to measure the well-being at the social level. The individuals' condition and its aggregation describe a certain condition of a society. But it goes without saying that the aggregation of 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 individuals' well-being affects the well-being of society. There are no agreed standards with which we can measure or define well-being at the social level. An example: The higher social security benefits are, the better the well-being is at the individual level, but at the social level, having the resource limited, the burden must be taken into consideration.

In our design below, all variables consisting indicators must be ones depicting the life of individuals, and thus the level of well-being could be calculated for any given individuals and groups in the population.

3. Subjects of Well-being Indicators

The well-being of individuals, not of a macro society, will be examined, but which part of the population should our subjects be? Whose well-being should be examined? Our interest is in the labor force population, that is, working and not-working 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, 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 distiction 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

[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.

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 is the pressure on them to return to jobs. Factors outside labor market must be paid attention. For example, to answer the first two questions not only social/community support but also kinship support beyond immediate family would play e a big role to determine their level of well-being.

Secondly, the increase of 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 labor market must be considered and life- or household-based indicators are required. These workers may work part of a day, week, month and year or may have the second and third jobs, and/or may receive the support of their own families as well as the support from outside them. Some of them have been forced to take those jobs due to the labor market situation and some have taken those jobs of their own free will. Their role and status in their family and labor market are quite different from ones 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.

On the extension line 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. The number has been increasing and their work and business have been overlapping with ones in the profit sector. Our indicators will neglect this sub-population as well as discourage workers.

Thirdly, difficulty is how to deal with the self-employed and their alteration of status with employees at both poles. At one pole, the change of labor market has borne 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 "unchange" of labor market has kept the “old” self-employed. In order to answer to the opening 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 the high proportion of primary industry.

Fourthly, people presently being outside labor market are excluded. Youngsters, 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 the 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.

4. Consideration to Subjective Aspect

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

One is a conceptual reason. The definition of well-being above was composed of such words and phrases as “happy, healthy, prosperous,” “the quality of life, affluence, leeway, satisfaction, etc.” The perception of being happy, for example, differs depending on individuals. Well-being cannot be free from the subjective aspect intrinsically even if the discussion is limited to the economic well-being.

More basically, limiting the discussion to the economic aspect itself is questionable. Some argue that well-being starts where the material life is 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 flourishingly constructed in Japan. Some people do not want more money but want jobs worth fulfilling or more free time outside work, which they name well-being. Well-being can be value-ridden----the value of people’s life style. It is close to a normative question how people should live or what the life should look like.

Two is a functional reason. The embracement of the subjective aspect makes the international comparison possible. Each country has different value, culture, tradition and history and is in a different

“developmental stage” or type. The difference makes the experience of the same unemployment very different. For example, in a country being unemployed may be not perceived negatively or not working may be perceived even 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 kinship to support each other it has when members are unemployed and even during being employed.

To escape from the awkward complicated consideration on a plenty 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 which they belong to. The majority of a given society gives values of those variables at a given time.

During the construction of our indicators, a questionnaire survey is conducted on well-being or life satisfaction. Through its statistical examination, the people’s consciousness structure related to well-being and its decisive factors are 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 labor market.

••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

The table 1 below is the basic plan of our architecture. Six basic life aspects, which make up the content of the well-being in and around labor market, and 30 items, which

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				Educat'l expenses/ disposable income
	3. Increase of Savings				Annual increase of savings/annl income
	4.FinancialStock				Financial stock/ annual income
	5.Non-financial Assets				Real estate & other stock/annl 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.Jpb 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 & layoff
	20.Occupational Safety				
	21.Accessbility				
E.Leisure	22.Travels				
	23.Sports				

	24.Entertain't activities				
F.Security*	25.Unemploym't Insrnc*				Community support Cvrg & bnft level of entitlement programs (+employee benefits)
	26.Workers' Comp Inrnc.*				
	27.Health Insurance*				
	28.Old-age Insurance*				
	29.Provision of Housing*				Kinship Support
	30.Provision of Food*				

*Indicators not included *Rengo* Indicators.

operationalize them, were selected. The selection was made by the designer through the 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. Individuals' perception of well-being is thus not used for the selection of individual indicators itself, which is different from Mitsubishi Indicators.

Aspect "D. Jobs" with the bold line surrounded in the table would be the core for labor market in a narrow sense. They are items to indicate the demand and supply relations and trading conditions of labor force. Other aspects from A to C and E and F, however, are indispensable in order to answer to the question at the top 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. Five items could cover the 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 of 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 the consumption but the stock, another expression of the level of well-being.

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

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

All data of these five items should be per household.

“Free time” is a crucial factor for well-being. Its amount is largely determined by the “6. Working hours” and “7. Vacations & holidays.” The grasp of combined working hours and holidays and per month and year would be necessary. Some people work more than two jobs or part of a month and year.

“C. Housing” is the base for all activities. “8.Space (per capita)”, “9.Ownership” and “10.Standards” are three items. “10.Standard” means the quality of the house.

Aspect “D. Jobs” is composed of two kinds of items: “11.Job Availability” and Items “12-17”. The former is asking the availability of jobs----Are there any jobs available? Could the unemployed find jobs relatively easily? Could the employed find alternative jobs or change their jobs relatively easily? Could atypical workers find any additional jobs if, if they want to do so? Concerning to 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.Authonomy”, “16.Ability Use,” “17.Equality,” “18.Working conditions,” “19.Security,” “20.Occupational Safety,” and “21.Accessbility” or commuting hours. These are questioned by job. Having two jobs, he/she would have two sets of answers, and their well-being must be measured by their average.

“E. Leisure” is an expression of well-being. It is a need a step above the most basic needs. Items are “22.Travels,” “23.Sports” and “24.Entertainment activities,” which are movie, theater, museum and concert goings and the participation in various cultural, recreational and educational classes and activities.

"F. Security"[4] is the 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 the well-being in and surrounding labor market. "The 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 Comp Insurance," "27.Health Insurance," and "28.Old-age Insurance" are picked up. The "kinship support" means the support provided by relatives beyond immediate families and households. "A. Economic Life" above covers their support. The offer of "29.Housing"and "30.Food" would be the two central items.

An unsolved problem is how to deal with the overlap of information, especially between "12.Wage 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 multi-variable analysis (primary factor analysis). (Mitsubishi 1997b: 5)

2. A Questionnaire Survey and Allocation of Weight

A questionnaire survey is conducted to find the consciousness structure with the perception on the well-being of people in each country. Which

[4] Aspect "Security" is not included in Rengo indicators. Under Aspect "Ease," which refers to the mental/spiritural 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 the meaning for the concrete indivisuals' life. An old-age pension program, they aregued, certainly contributes to the ease and unease 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 serurity but materistic security.

aspect of the life or which item consists the well-being and to what extent? How much does each item contribute to the overall well-being? A common questionnaire should be used to all countries.

The question should be simple: “How much do you think the well-being has been realized with 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.Rather realized; 3. A Little realized; 4. Rather 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 next is a sample questionnaire sheet (cf. Mitsubishi 1998b: 3).

[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 hours, working hours, savings and leisure activities) were statistically analysed to determine weights through multiple regression analysis. Questions to them were “At what level do you think the affluence has been realized with regard to your (overall) life?” and “Do you feel if each family is affuluent or not affuluent?” respectively. (Rengo 1993b: 77 and 81; Q36 and Q47)

[A Sample Questionnaire]

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

	1.Fully realized	2.Rather realized	3. A little realized	4. Rather not realized	5. Not realized

(Each Field of Working Life)
Q2 How much do you think the well-being with each of following fields of your working life has been realized?

	1.Fully realized	2.Rather realized	3. A little realized	4. Rather not realized	5. Not realized
(A. Economic Life)					
1. The Proportion of Housing Expenses					
2. The Proportion of Educational Expenses					
3. Increase of Savings					
4. Financial stock/ Annual income					
5. Non-financial Assets					

(B. Time Life)
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. Wage and salary

|----------|----------|----------|----------|
13. Benefits
|----------|----------|----------|----------|
14.Working Hours
|----------|----------|----------|----------|
15.Self-control
|----------|----------|----------|----------|
16.Self-fulfillment
|----------|----------|----------|----------|
17.Equality
|----------|----------|----------|----------|
18.Working conditions

|-----------------|-----------------|---------|-----------------|
19.Security
|-----------------|-----------------|---------|-----------------|
20.Occupational Safety
|-----------------|-----------------|---------|-----------------|
21 Accessibility
|-----------------|-----------------|---------|-----------------|
(E. Leisure)
22.Travels
|-----------------|-----------------|---------|-----------------|
23.Sports
|-----------------|-----------------|---------|-----------------|
24.Entertainment
activities
|-----------------|-----------------|-----------------|-----------|
(F. Security)
25.Unemployment
Insurance
|-----------------|-----------------|-----------------|-----------|
26.Workers Comp
Insurance
|-----------------|-----------------|-----------------|-----------|
27.Health Insurance
|-----------------|-----------------|---------|-----------------|
28.Old-age Insurance
|-----------------|-----------------|---------|-----------------|
29.Prvsn of Housing
|-----------------|-----------------|---------|-----------------|
30.Provision of Food
|-----------------|-----------------|---------|

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The “working life” in the question should be replaced with the “life related to labor market” for accuracy, but was 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 are correlation coefficients and tentative weights found in the calculation process of Mitsubishi Indicators and Rengo Indicators respectively:

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 Life
1.0
Time Life
1.0
Housing
0.8
Working
0.55
Leisure
0.5

Educational and Culture 0.2	Rengo 1993a: 24
Leisure-related Assets undecided	
Natural Environment 0.3	
Life Environment 0.2	
Ease 0.4	
Spiritual Richness 0.15	
Social Human Relations 0.1	

3. Individual Indicators By Item and Indexation

Individual indicators are selected for the 30 items. For example, for the first item "1.The Proportion of Housing Expenses," the indicator should be "Housing expenses /Disposable incomeX100," and data may come from The Family Income and Expenditure Survey and Survey on the Consumption Trends. "Housing expenses" are defined to include rents, repair and maintenance cost for facilities and mortgage repayment. 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 and data are taken both from Social Life Basic Survey of the national government. A few examples of more detailed selecting and making process of individual indicators will be shown later in the next section.

Following is the procedures of the conversion of collected original data into indexed values. The original individual data on No. j item of No. i person are expressed X_{ij}. All data for our indicators must be on individuals basically collected from individual questionnaires.

The unit each item takes is different from others. For example, commuting hours are minutes, vacations and holidays days and the living space per capita square meters. To gives a common scale for all items, original value X_j of each item will be converted into Score Z_j from 0

to 10. Conceptually 0 means "the well-being has not been realized" and 10 means "the well-being has been fully realized. All values lower (at the level of well-being) than the original value which corresponds to Score O 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 one of 1 to 9. Score Z_j is a step coefficient of X_j, taking the minimum 0 and the maximum 10. Here is an example of the conversion into scores regarding "6.Weekly Working Hours":

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

Suppose working hours per day are 8 hours, "Shorter than 39 hours" means 5 day work week and no overtime work while "60 hours and longer" means 6 day work week and two hour overtime work every day.

Then an item value of each individual X_{ij} is converted into an individuals' item index Z_{ij}, using a coefficient that gives a score to an original given value $Z_j = Z_j(X_j)$. (Cf. Rengo 1993a: 15-16) Individuals' original values have been now transformed into Individuals' Indexes by item.

4. Individuals' Synthetic Index and Group Synthetic Index

Using the weight w_j allocated 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, Individuals' Synthetic Index Z_i takes the value of the minimum of 0 to the maximum of 1000.
The next step is the calculation of Group Synthetic Index. Taking the average of Individuals' Synthetic Index of all individuals who belong to a given group G makes Group Synthetic Index for that group. The group could be a country or any sub-population groups within a country for example by sex, age and region. Its numerical expression is:

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

n_a is the number of individuals of a group G, • is the total of each individual who belongs to it. (Rengo 1993: 17)

5. The Alternative Calculation for Group Synthetic Index

Hereinbefore (3 and 4 above) is the theoretical procedure to calculate Group Synthetic Index. Procedure actually taken for calculation, however, would be as follows. For data by individual are not usually available for most indicators.
Original values are classified into one of intervals carrying certain scores. All original values in an interval take a 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},

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

The equation gives the average score of the group, regarding item j. This score is named as 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 what was given

by the calculation on the individual basis above. (Rengo 1993a: 17-18)

•• A “Model House”

Mainly because of the lack of data and partly because of the lack of discussion and agreement among team members, our construction of the architecture has to stop here.

However, a demonstration is made 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 lacking data. Used are data and fruits of Rengo Indicators,[6] which are closest in nature to our idea at this moment. The difference only is in that theirs are on the well-being of the overall life of working people in Japan and for the gender and regional comparison within a country and ours are on the well-being in labor market and for the 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 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 substitute, and as some regional data are lacking, substitute data are made up. In the second case, originally designed categories and scores must be modified because of 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”

[6] The content of this subsection is mostly the excerpt from Rengo’s *Life Affluence Index*, 1993..

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

No data are available for Hokuriku Area, the north central region of the main island of Japan, so ones for “cities with the population of 100,000 to 999,999” substitute them.

Table 5 is the result of its trial calculation.

Table 5 Occupational Safety –Categories, Scores and Calculation Result

		Fully agree	Rather agree	Rather 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

(2) “20. Employment Security”

The level of employment security is categorized into “Very Insecure,” “Rather Insecure,” “Relatively Secure” and “Secure” and scores are assigned as in Table 6. “Very Insecure” means layoffs against workers’ will. “Secure” means no risk of layoffs and workers can design their life expecting the long-term employment relationship.

Table 6 Employment Security--Categories and Scores

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

Employment Mobility Survey by the national government classifies reasons for leaving jobs into six: Due to “the expiration of contracts,” “the convenience of the management,” “the retirement age,” “worker’s responsibility,” “a personal reason,” and “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” into “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 the difficulty to measure the level of employment security. The result of a test calculation is shown in Table 7:.

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.

(3) “7. Vacations and Holidays”

The number of all “days off” is categorized into six from “Fewer than 100 days” to “140 days and more” and scores are assigned as in Table 8. Days off consist of two groups: One group includes holidays such as weekly days off (e.g. Saturday and Sunday), national holidays, Year-end and New year holidays, summer holidays and Birthday 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 5 day work week, 14 national holidays, 20 annual paid holidays and 2 additional days. "Fewer than 100 days" mean "fewer than 2 days-off per week" and even all national holidays and annual paid holidays may not be taken. .

Table 8 Vacations and Holidays--Categories and Scores

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

General Survey on Wages and Working Hours System contains the 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 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

(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 two distributions, the situation is 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 Wages and Working Hours System by Department of Labor contains data of weekly straight time hours but no hours actually worked. Data for the latter are taken from 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 are estimated. Those distribution tables are omitted here and only the calculation result table is presented as Table 12.
.

Table 12 Weekly Working Hours—Calculation Result

	60-	-54	-48	-43	-39	Shorter	Index

						than 39	
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

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

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 37.446153	Difference -1.323076
Tokyo	160.5	37.038461		
Kanagawa	164.5	37.961538		
Toyama	170.4	39.323076	Hokuriku Area Average 39.357692	Difference 0.5884615
Ishikawa	170.7	39.392307		

The calculation result by region is as in Table 14:

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

2. Group Indexed Values by Item and Group Synthetic Indicators

All index values calculated as in the preceding subsection are put together in a table. Table 15 is the table.

With this table, the comparison between groups is possible by item. In order to make the aggregate comparison between groups, however, blank cells need to be filled and item values must be weighted.
To fill the blank, the same value is used for both sexes in an Area as far as “by household” items are concerned, and the average of values of both sexes is regarded as the value for the total of the Area as far as “by individual” items are concerned. Other supplement, substitution and manipulation are made. Weights are distributed to

Table 15 Indexes Test-calculated

	National			Tokyo Area			Hokuriku Area		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
A1 Economic Leeway									
1 % of housing expnss	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 of 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 (6.988)	5.952 (6.756)	7.254 (8.220)	6.923 (6.996)	(6.720)	(8.464)	6.126 (6.950)	(6.848)	(7.610)
7 Annual holidays	4.651 (5.795)	4.655 (5.754)	4.628 (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 (6.524)	(6.418)	(7.071)	4.839 (5.444)	(5.249)	(6.469)	7.860 (8.747)	(8.777)	(8.570)
11 Living standard	5.243			4.986			7.097		
12 Dstnc 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 wrkplc	-								
16 Safety on work		6.600	7.558		6.509	7.680		6.684	7.425
17 Emplym't security	9.959	9.963	9.952						
18 Commuting hours		6.705 (6.420)	7.512 (6.857)		5.908 (5.415)	6.764 (6.343)		7.048 (8.478)	8.474 (8.178)
19 Commuting cngstn		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 Apprctn 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	environ't								
25 Degree of green	-								
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 Field and Item

	Field Weight	Item Weight		Field Weight	Item Weight
A1 Economic Leeway	24		C1 Leisure	12	
1 % of housing expenses		5	20 Domestic Travel		5
13 % of education expenses		5	21 Travel abroad		2
14 Net increase of saving		5	25 Sports		5
15 Financial asset		5	C2 Culture	4	
16 In-kind Asset		4	26 Appreciation activities		4
A2 Time Leeway	24	8	C3 Leisure-related Assets	1	
17 Weekly working hours		8	27 Ownership of assets		1
18 Annual holidays		8	D1 Scenery/Ntrl envrnm't	-	
19 Free time per day		8	25 Degree of green		-
B1 Housing	16		26 Beauty of streets		-
20 Space		4	D2Life Environment	7	
21 Householder or not		4	22 Roads		1
23 Living standard		4	28 Drainage		2
24 Distance to a station		4	29 Parks		-
B2 Work	12		30 Public Library		2
13 Autonomy		2	31 Medical facilities		2
14 Use of ability		2-	Total	100	100
20 Comfort of workplace		-			
21 Safety on work		2			
22 Employment security		2			
23 Commuting hours		2			
24 Commuting congestion		2			

Table 17 Group Synthetic Indicators by Field (Area, Sex and National Total)

	Japan			Tokyo			Hokuriku		
	Total	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 ones before the recalculation into the full mark=1.
”Japan” is the total of “Tokyo Area” and “Hokuriku Area”

items as in Table 16.

The weighted indicators are averaged into aggregate indicators for sub populations (e.g. areas and sexes) and finally for the total national population. Table 17 is these Group Synthetic Indicators. Figures have been recalculated into the full mark=1.

3. Some Sample Analysis

Having these indicators, following analysis, 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 the reality and the full mark, the state in which the affluence has been realized. Particularly, the lowest field is “C3 Leisure-related Assets” (cars, sports club membership and cottage houses) whose indicator is 0.218. “Culture” (the frequency to go to movie, play and music concert) is also low, 0.316. “Living environment” is lower than half in its score, which is the reflection of the undevelopment of social capital. On the other hand, the highest field is “Work.” Employment security, self-fulfillment through work, etc. are its ingredients.

Geographically speaking, the aggregate Indicator of Tokyo Area is 589 while that of Hokuriku is 568. There is 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 with 20-point advantage for women. “Economic leeway” and “Culture” contribute to this difference. Women here are employees and many of them are those in double-income households or singles.

With area and sex crossed, it is women in Tokyo area who are most affluent (616) with the men in Tokyo at the second (583), men in Hokuriku at the third (577) and the women in Hokuriku at the bottom (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.

Particularly indicators of women largely differed between areas. Tokyo area women are affluent relatively in “Economic leeway”, “Time leeway”, and “Culture” and Hokuriku women are disadvantaged in Time leeway” and “Leisure”. “The approach to realize the affluence should be different depending on the area.” (Rengo 1993: 77)

Because indicators per capita were not used, Hokuriku that was always ranked high in various previous indicators is now ranked not necessarily high compared with Tokyo, although Rengo Indicators dropped the factor of “Scenery/Natural environment”. (Rengo 1993: 72-75)

(2) Group Synthetic Indicators by Field --“Work”

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 big difference between the two areas. Tokyo Area is 79 while Hokuriku 87. This comes from the commuting hours and their congestion. (Table 17) Between men and women, the safety at work of women is better than that of men but in other items there is no significant difference. (Table 15) (Rengo 1993a: 76)

Final Comment

Hereinbefore is a ground design of indicators to measure the level of the well-being, or the 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, the-unemployed-and-atypical- workers-included and subjective-aspect-considered. They make a comparison possible beyond the differences of culture, value, tradition and “developmental stage” or type, and also between sub-populations of two countries.

The indicators await the refinement through international discussion and cooperation.

Having data, our scheme could be implemented immediately and the trial calculation could be made the employed, atypical workers, the unemployed and their aggregation and also for counterparts in other countries. The availability of data is only a hindrance. The use of used timber, or existing statistics and data, is encouraged (the proposal to Ford Foundation) but new materials timber would be necessary. They must be based on individuals or describe individuals' life situation to be given by individual questionnaires. Their collection, however, would not be difficult so much once governments want and intend it.

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