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Inter-Industry and Firm Size Differences
in Job Satisfaction among Japanese Workers

by

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1. Introduction

It is often pointed out that despite the recent rise in the levels of income and wealth the greater part of Japanese households do not feel much comfort and richness in actual living. No doubt long working hours, long commuting time, heavy congestion, and exorbitant rise of land prices in the major metropolitan area make a long way in explaining such poverty in living.

Another important determinant of the richness of living, however, is the richness of the quality of work life. This is because work is not only a means to acquire goods and services necessary for living but it is also a field of activity in which people exibit their ability and responsibility thereby contributing to society and in which they simultaneously further their ability itself. Are Japanese employers responding positively to such expectations on the part of workers? Does the degree of fulfillment of such expectations differ greatly among individuals depending on which employer to work for and which type of job to hold?

This paper looks upon such a feature as a problem of distribution of job satisfaction among individuals, and investigates the factors that determine the current state of distribution using a micro survey data on individual attitudes and consciousness[1]. The data set for the present study is the workers' responses to the Survey on the Accumulation of Assets and on

<u>Worker Life in Major Metropolitan Areas</u> conducted by Ministry of Labour in November, 1990[2]. The purpose of this survey is to investigate the effect on workers' asset formation and work attitudes of the widened gap in wealth distribution that arose on account of the acute rise in land and stock prices since 1985. It asks the level, purpose as well as the (historical) source of workers' wealth holding and at the same time brings up various questions on worker attitude towards work as well as on the concept of fairness with respect to income and wealth distribution. Among the responses to these questionnaires this paper focuses on those concerning individual workers' evaluation of job satisfaction.

Related to the present study is a long standing empirical investigations on the relationship between organizational setups and incentive mechanisms of firms and the extent of worker commitment towards job. They have traditionally belonged to the fields of industrial sociology and psychology, on the one hand, and of labour management and control, on the other[3]. These studies have usually been carried out in the context of within or across specific organizations. Since the advent of concern on work motivation as an important determinant of labour productivity and macroeconomic unemployment, however, there is a growing trend for such studies to be intermeshed with the mainstream economic analysis.

Among the existing literature the most recent and perhaps methodologically the most related study with the present one is that of Lincoln and Kalleberg[4]. They have chosen the city of Atsugi (in the outskirt of Tokyo) as the study site and conducted

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a sample survey on manufacturing establishments and the workers therein. From the establishments are collected the information on detailed organizational characteristics and from workers are collected the information on individual attributes, occupational and job characteristics, hierarchical positions, the nature of social bonds with fellow workers, and both pecuniary and non-pecuniary job rewards, and the responses to the queries on the extent of work commitment and job satisfaction. The authors then related these responses to the forgoing explanatory variables.

Lincoln and Kalleberg's main conclusion is that high work commitment of the workers observed (which confirms much of earlier investigations carried out in Japan) is a contrived one in the sense that it is derived from the operation of numerous inducement apparatus set up inside Japanese firms (which is against the 'culturalist' view). While high commitment of workers is certainly a major success for Japanese employers it simultaneously entails a large gap between the expectations and the reality on the part of workers, which is why they have been observed to express relatively low job satisfaction[5].

The present study partly complements their detailed study in that it has a much larger sample frame, covering the entire (non-agricultural) industrial as well as occupational spectra and covering the whole three major metropolitan areas of Japan. It is thus particularly fit to obtain a birds-eye view on the distribution of job satisfaction among Japanese workers and on factors that tend to associate with job satisfaction.

The organization of this paper is as follows. The next section summarizes the general nature of the data. Section 3 spells

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out the observed characteristics of job satisfaction on various dimensions and discusses the basic conceptual framework within which different job satisfaction scores may appear. Section 4 presents a model and the estimation result of the ordered Probit analysis as applied to workers' evaluation of whether or not due reward is paid for their effort. Section 5 discusses the result of a similar ordered Probit analysis as applied to the workers' evaluation of the extent of challenging and stimulating experience on the job. Section 6 concludes by summarizing the main findings, discussing the general implications and noting the qualifications of the present analysis.

2. Characteristics of the Data

The data comes from the population of regularly employed married household head who is employed in a privately owned establishment with 30 or more regular employees in three major metropolitan areas (Tokyo, Nagoya and Osaka). The survey chose persons randomly; 10 persons each from 1200 establishments that were in themselves selected randomly on the basis of the 1986 Establishment Census. The questionnaire form was delivered to each sampled individual via establishment, and the response was mailed back directly to the sender from the individual. 5,600 responses were thus collected from individuals, the response rate being 46.3 %. Because of the condition that a worker must be a married household head to be included in the sample, responses by female persons were limited to only 1.4% of the total samples. Hence, this paper restricts the analysis to responses by male individuals only, and furthermore, to those made by individuals

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aged 25 and above. It appears that the second condition enables the analysis to focus on people who have largely completed the search and the job-matching processes.

Table 1 shows the mean attributes of the respondents as classified by each age group. It also shows the distribution of annual labour earnings as well as that of net worth which (which includes the market value of the golf club membership). Reflecting the recent acute rise in the land price in these metropolitan areas there indeed is an immense difference between the dispersion of earnings and that of net worth as measured by the ratio of respective mean values of the top and the bottom quartiles of the distribution (2.4 for the former and 39.6 for the latter for the age groups combined)[6].

As the accompanying note to Table 1 shows, however, there exist certain sampling biases in this survey. The manufacturing industry is underrepresented as compared with non-manufacturing industries, and even within the manufacturing industry blue-collar workers seem to be rather heavily underrepresented as compared with white-collar workers. Similarly small-sized firms are underrepresented vis-a-vis medium- and large-sized firms. Subsequent analysis shows that such sampling biases indeed call for cautious qualifications when overall evalulation of the distribution of job satisfaction is made.

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Table 1
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3. Worker Consciousness on Job Worth and Indices of Job Satisfaction

The study begins by looking at the workers' views on the

meaning they attach to the job (hereafter termed job worth). The survey asks the respondent which of the following three alternative views is the closest to his own:

(a) Job worth derives from intrinsic interest in the job, so that the levels of earnings and assets are irrelevant;

(b) Job worth does not derive solely from earnings and assets, yet in order for meaningfulness to be felt the job must assure earnings and assets that would at least enable the job holder to own a house;

(c) Job worth depends squarely on the levels of earnings and assets that can be acquired from the job.

It is to be stressed that this is not a question about the respondent's current state of affairs but about his idea in general. Table 2 summarizes the responses for each age group.

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       Table 2
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As seen from the table, the view that some moderate amounts of earnings and assets are to be secured by the job is supported by the greater part of population. Yet at the same time, each of the polar views that either intrinsic interest or pecuniary reward alone is important is taken by about 10% of the people, and that adherence to intrinsic interest in the job shows a notable increase among the old age people (i.e., age 55 and over). Between the young (aged 25-34) and the medium age (aged 35-44 and 45-54) groups there seems to be little difference in the concept about job worth.

The increased evaluation of intrinsic job interest among the aged people may be explained, first, by a life-cycle effect of

decreased monetary needs as they complete the process of child rearing and of paying back housing mortgages, and second, by a particular cohort effect that they passed through a period of dire economic severity during and immediately after the World War II. It is difficult, however, to distinguish these two effects in the data.

On the other hand, it is worth noting that the young generation, reared in the age of material affluence and often suspected of having discontinuity in ideas and values (as the popular word "new human beings" connotes), is not different from the age groups 35-44 and 45-54 in terms of what they look for in the job[7].

About the respondent's current state of job satisfaction the survey asks whether or not

A. due reward for effort is attained in terms of pay and promotion,

B. the job allows to exhibit one's own ability fully,

C. the job involves new challenge and is stimulating,

D. the job involves broad realm of responsibility.

For each item the respondent chooses one of the five categories: "satisfied", "somewhat satisfied", "neither satisfied nor dissatisfied", "somewhat dissatisfied", and "dissatisfied". Note that A not only refers to current pay but also refers to the past history and the future prospect on promotion within the firm. In effect, it asks whether the respondent's past and current effort has been fairly rewarded. Its content may largely be construed as pecuniary. B, C, and D, on the other hand, clearly refer to non-pecuniary attributes of the job.

Figure 1 shows for each questionnaire item the proportions of those workers in the sample as grouped by age whose response was either "satisfied" or "somewhat satisfied", and Figure 2 shows the same proportions for those whose response was either "dissatisfied" or "somewhat dissatisfied". (Hereafter, the categories "satisfied" and "somewhat satisfied" are frequently aggregated and are simply termed satisfied, and similarly for the categories "dissatisfied" and "somewhat dissatisfied", to be termed dissatisfied.

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    Figures 1 and 2
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These figures may give the overall impression that the job satisfaction level of Japanese workers are on the whole high, especially with regard to non-pecuniary dimensions. However, the previously noted sampling bias in the distribution of respondents and the analysis below (Sections 4 and 5) jointly show that the bars of Figure 1 are overstated while those of Figure 2 are understated. Hence it would be quite misleading to accept these absolute numbers at the face value[8].

Comparison of the two figures shows that, for each age group, the item for which the frequency of satisfaction exhibits the highest score is D (broadness of responsibility) while that exhibiting the lowest score is A (due reward for effort). B (exhibit ability fully) and C (stimulating) hold intermediate positions, and yet for each age group B gets a slightly higher frequency score than C. Also the frequency of workers expressing dissatisfaction on each of the four items gradually declines with age, but for age 55 and over the tendency reverses itself if not

sharply. In particular, a significant rise occurs in the propor-
tion of people who express dissatisfaction over D (broadness of
responsibility). It is not difficult to imagine that mandatory
retirement and other personnel practices that move the aged
people's work-place rather drastically are the cause of such a
reversal.

What then determines the workers' responses to these ques-
tions? What sort of correlations are present among the responses
to four questions within each individual? In particular, does
dissatisfaction on pecuniary rewards (A) tend to be compensated
for by satisfaction on non-pecuniary rewards B, C, D (thus
facilitating the "equalizing difference" argument) or do both
tend to be assortative?

The first question will for now (pending the discussion at
the concluding section) be answered as follows. Items A, B, C,
D all contain elements that depend on individuals' inherent
framework of values and subjective valuation. Evaluation of "due
reward for effort" obviously depends on what one regards as the
proper concept of "effort" and then on what one considers as a
"fair reward". The judgement also seems likely to depend on
one's observation of the "effort" expended by other workers in
the local reference group[9]. Evaluation of whether or not the
job allows one to "exhibit ability fully" depends much on how
exactly one understands his own ability, including the potential
ones. Evaluation of whether the job is "stimulating" or not is
naturally influenced by one's perception of the gap between his
already achieved ability and his potential ability. It is an
well established proposition in psychology that tasks that are

far apart from an individual's potential ability are more painful than being pleasant stimulation, while tasks which contribute little to developing one's potential ability are hopelessly boring[10]. Finally, evaluation of the "broadness of responsibility" depends much on how one sets out the appropriate context of responsibility for himself.

The proposition that individuals' responses to items A, B, C, D are intervened by their respective framework of evaluation seems to be attested by the fact that despite the existence of large differences in the shape of the distribution of hierarchical ranks (note that rank is clearly an important objective element influencing the amount of pecuniary as well as non-pecuniary rewards) between age groups (as seen in Figure 3) the frequencies of satisfaction and dissatisfaction on all items as shown in Figures 1 and 2 do not differ much between age groups.

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Figure 3
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On the other hand, even if each individual has his own framework of reference it does not necessarily mean that it is distributed completely randomly over individuals. It is perhaps appropriate to construe as follows. Based on the levels of past learning and experience individuals form certain expectations as to what constitutes a fair achievement level on each of the four items A, B, C, and D. "Effort" is then interpreted in a widest sense including not only highly motivated and attentive direct productive effort but also conscious deferral of leisure and accumulation of knowledge as well as affective capacity either in school or on the job. The fair achievement level thus

commonly depends on an individual's level of schooling and occupational history, and one may safely suppose the existence of a relatively stable structure of evaluation among individuals.

Simultaneous to conceiving the fair achievement levels individuals evaluate the achievement levels realized by their current job. And depending on the magnitude of the gap between the fair and realized levels they form judgement in terms of five categorical levels, "satisfied" through "dissatisfied." In sum, when the gap becomes sufficiently large, they express "dissatisfaction."

Turning to the second question, the categorical responses to each job satisfaction item have been assigned numerical values of 5 for "satisfied," 4 for "somewhat satisfied," 3 for "neither satisfied nor dissatisfied," 2 for "some what dissatisfied," and 1 for "dissatisfied." The extent of correlation among different items is then calculated using these numerical values. The figures in the upper-right corner of Table 3 give the square root of Cramer's mean squared quotient (i.e., a measure of association for discrete variables) while the figures in parentheses in the lower-left corner give the usual correlation coefficient (taking the numerical indices to be continuous variables). In terms of the squared root of mean square quotient, the correlations between A-index and B-, C-, and D-indices are around 0.3-0.4, while those among B-, C-, and D-indices are around 0.5[11].

The relatively high correlations among B-, C- and D- indices are naturally expected, for the amount and quality of information handled and the extent and realm of decision making normally go together in shaping up the objective job environment that common-

ly underlies the psychological mappings of B-, C-, and D-indices. The positive correlations between A and B-, C-, D-indices, on the other hand, provide a _prima facie_ evidence that pecuniary and non-pecuniary job rewards do not stand in a compensatory relationship. That is, those who are satisfied (dissatisfied) with the quality of the job are more likely to be simultaneously satisfied (dissatisfied) with pecuniary rewards than the reverse.

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Table 3
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4. Determinants of Satisfaction with respect to Due Rewards for Effort

Suppose that a fair level of reward as conceived by individuals in the light of their past and current experience can, for each age group, be expressed by a common linear function of education, duration of service (tenure in the firm), occupation and commuting time. As the level of past effort is not directly measurable, education and duration of service are taken to be its proxy variables. They measure the cumulated time devoted to acquire the general background knowledge and affective capacities and those that are specific to the firm. Furthermore, for some occupational types past efforts to acquire abilities specific to the job are taken into consideration. Professional and technical jobs, management jobs, and skilled worker and production operative jobs are considered to belong to such categories. The length of commuting time is also regarded as one, if not major, dimension of effort. A statistical error term is further introduced to take account of any other influence that may not be

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directly measured by the above variables. Differences in the individuals' framework of values clearly constitute one of such influences.

On the other hand, the realized level of reward as perceived by a worker depends on education, duration of service, and occupational types. It is further influenced by the size of firm and industrial difference. The possibility that asset holding affects the worker's perception is also considered. Another possibility to examine is the influence of hierarchical ranks acting independently of the preceding variables. Other non-measured influences are stacked in a separate statistical error term.

By following the framework of analysis discussed in the previous section, an individual's job satisfaction is supposed to depend on the magnitude of the gap between the realized level of reward and what is conceived as a fair level of reward. This gap, to be called the satisfaction score and denoted by y, is then expressed for individual i in each age group by

$$
\begin{aligned}
y_i = b_0 &+ b_1\, educ_i + b_2\, tenure_i + b_3\, sptech_i + b_4\, manage_i + b_5\, prod_i \\
&+ b_6\, commtime_i + b_7\, net\ worth_i + b_8\, large_i + b_9\, small_i \\
&+ b_{10}\, manuf_i + b_{11}\, util_i + b_{12}\, transcom_i + b_{13}\, wholret_i \\
&+ b_{14}\, finins_i + b_{15}\, realest_i + b_{16}\, service_i + u_i \qquad (1).
\end{aligned}
$$

In some parts of estimation an additional term, $b_{17}\, rank_i$, is included. The explanatory variables are defined as follows:

  educ = years of schooling, tenure = duration of service,

  sptech = dummy for professional and technical jobs

  manage = dummy for managerial jobs

  prod = dummy for skilled worker or production operative jobs

commtime = commuting time (1 for less than 30 minutes, ...,

5 for more than 2 hours)

net worth = real and net financial wealth held in 10 million

yen (the market value of golf club membership

included)

large = dummy for large firms with 1,000 or more employees

small = dummy for small firms with less than 100 employees

manuf = dummy for manufacturing (including mining) industry

util = dummy for utility industry,

transcom = dummy for transportation and communication industry

wholret = dummy for wholesale and retail industry

finins = dummy for financial and insurance industry

realest = dummy for real estate industry

service = dummy for service industry

rank = hierarchical rank in the employed firm (1 for an

ordinary worker, 2 for a section chief (Kakari-cho)

and equivalent, 3 for a director (Kacho) and equiva

lent, and 4 for a general manager (Bucho) and

equivalent)

dummy variables take the value 1 in case the respondent

belongs to the category in question, and take the value 0

for otherwise

The statistical error term u_i is defined as the difference bet-
ween the two error terms defined earlier. The normalization
assumption is that u_i takes 0 as its mean, and 1 for its
variance. (This gives the scaling factor for the measurement of
the satisfaction score discussed above.) It is further supposed
that u_i is distributed normally.

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Given the foregoing assumptions, the degree of satisfaction on each item can be analyzed in terms of an ordered Probit model. Suppose that within each age group there are four threshold values 0, a_1, a_2, a_3 ($0<a_1<a_2<a_3$) with respect to the <u>satisfaction score</u> y_i such that

<domain of y>   <the response>

$y_i < 0$ $\rightarrow$ "dissatisfied"

$0 \ <= y_i < a_1$ $\rightarrow$ "somewhat dissatisfied"

$a_1 <= y_i < a_2$ $\rightarrow$ "neither satisfied nor dissatisfied"

$a_2 <= y_i \ a_3$ $\rightarrow$ "somewhat satisfied"

$a_3 <= y_i$ $\rightarrow$ "satisfied".

The coefficients b_0, $\ldots$,b_{16} (and b_{17}) and the unknown threshold values a_1, a_2, a_3 are then simultaneously estimated by the maximum likelihood method[12]. The coefficients b_j ($j=1,2,\ldots,16$, 17) express the size of the contribution of each factor on the <u>satisfaction score</u>. Among these coefficients b_1 through b_5 indicate the net contribution to satisfaction which is defined as each factor's contribution to the realized level of reward net of its contribution to the fair level of reward.

When (1) is estimated for each age group and the results are contrasted with the result of a pooled estimation (whereby all age groups are pooled together), it is shown that the null hypothesis that the vector of coefficients (b_0, $\ldots$, b_{16},a_1,a_2,a_3) are the same for all age groups is not rejected (in terms of the likelihood ratio test)[13]. Therefore, only the result of the pooled estimation will be discussed in the sequel. The estimation result is shown in Table 4.

It is perhaps easier to understand the implications of this result by looking at Figures 4 and 5. Figure 4 presents two curves. First, the upward sloping curve shows the relationship between the estimated deterministic part of the <u>satisfaction score</u>, hereafter to be called <u>xb-score</u>, and the predicted probability value that an individual's response is either "somewhat satisfied" or "satisfied", i.e.,

$$\Pr\{y_i >= \hat{a_i}\} = \Pr\{u_i >= \hat{a_i} - x_i\hat{b}\}$$

$$= 1 - F(a_i - x_i\hat{b})$$

where $\hat{}$ indicates the estimated value, $x_i\hat{b}$ is a vector notation for the deterministic part of the RHS of (1), and F( ) is the cumulative density function of a standard normal variable. Second, the downward sloping curve shows the relationship between the <u>xb-score</u> defined previously and the predicted probability value that the individual's response is either "somewhat dissatisfied" or "dissatisfied," i.e.,

$$\Pr\{y_i < \hat{a_i}\} = \Pr\{u_i < \hat{a_i} - x_i\hat{b}\}$$

$$= F(a_i - x_i\hat{b})$$

Quite obviously from the specification (1), the higher is the <u>xb-score</u> on the horizontal axis, the higher is the probability of being satisfied and the lower is the probability of being dissatisfied. The predicted probability value along each curve can be reinterpreted, via the law of large numbers, as the proportion of workers having the same <u>xb-score</u> who responds as such. Among the two vertical lines the right hand one expresses the mean value of <u>xb-score</u> in the sample. The probability levels

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implied by the intersection points of this line with the two curves conceptually correspond to the bar graphs of Figures 1 and 2 (except that the former represents the mean values over four age groups[14].) The vertical line on the left hand side will be explained later.

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Figures 4 and 5
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The horizontal bar chart of Figure 5, on the other hand, shows the estimated impact of a unit change in some selected variables on the xb-score. The horizontal axis represents a change in the xb-score. By looking at these bars simultaneously with Figure 4 prediction can be made as to how large a change in the probability of being satisfied or that of being dissatisfied the specified change in the explanatory variables would generate. Because of the non-linearity involved the magnitude of the probability changes, in general, depends on where on the horizontal axis one measures from. Table 5 illustrates the numerical impact in question as measured from the calculated mean xb-score of the sample.

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Table 5
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From Figure 5 the following characteristics are observed. First, the effects of schooling and duration of service are negligibly small. This holds in spite of their importance as determinants of earnings and hierarchical ranks[15]. The most plausible interpretation of this result seems to be that an increase in schooling or duration of service not only raises the actual rewards but also it raises the conceptual level of fair

rewards. It is therefore consistent with the assumption that schooling and duration of service are proxies for individuals' past effort.

Second, the effects of commuting time and net worth are in the expected direction. Their quantitative significance, however, is relatively small. The coefficient of commuting time is not even statistically significant. The coefficient of net worth is statistically strongly significant (at 1% level), yet the difference in xb-score generated by the top and bottom quartiles of the distribution of net worth (which may be identified as the haves and have-nots, respectively) is 0.23, amounting to relatively little in its effect on satisfaction. (See Table 5.) One caveat is that the non-response rate on the net worth figure amounts to about a third of the total sample, which calls for a further examination to ascertain if such a magnitude of missing values might not generate a downward bias in the estimation of the net worth effect.

The estimated net worth coefficient provides an answer, if not a conclusive one, to the suspicion raised frequently recently that the widened gap in the distribution of wealth might be badly affecting the work motivation of Japanese workers. The answer from this study does not buttress this suspicion at least as long as the wealth gap stands at the current level. Yet it does impart a warning that a further worsening in the distribution of wealth would possibly incur deterioration of job satisfaction, which, in view of the notion of job worth held by the great majority of workers, would lead to the decline in work motivation.

Third, among occupational types there are rather sizeable differences in the degree of job satisfaction concerning rewards for effort between managerial and blue collar (skilled worker and production operatives) jobs and between managerial and professional or technical jobs. In terms of xb-score the former amounts to 0.54 while the latter amounts to 0.47. The blue-collar and professional/technical workers indeed have relatively strong dissatisfaction about rewards for effort when compared with white-collar workers in general[16].

Fourth, among the industrial categories there exists little difference between the manufacturing and the wholesale/retail sectors, yet there is a sizeable difference between these two industries and the finance/insurance sector. In terms of xb-score, the latter amounts to 0.48. (The estimated difference in the two coefficients $b_{14} - b_{10}$ together with its standard error is shown as "Diff. MF" near the bottom of Table 4.) Between the manufacturing and finance/insurance sectors there exists around 24-36% difference in annual wage earnings throughout age groups after controlling for schooling, duration of service, occupational types and firm size, and such an earnings differential clearly lies in the background for such a big differential in satisfaction. (Some further discussion is made at the concluding part of the paper.)

Fifth, about hierarchical ranks, there exists a large difference between a general manager and an ordinary worker. The xb-score differs by as much as 0.64. The fact that satisfaction is high among high ranking workers and is low among low ranking workers is not necessarily obvious, however. For, if each rank

is paid what workers in that rank regard as fair and if promotion occurs in ways workers regard as fair, then a significant part of the difference in question must disappear. What would still remain is the dissatisfaction with respect to the scarcity of the opportunity for promotion and/or the hierarchical structure itself. It seems, therefore, that differences in satisfaction among different ranks reflect complaints that exist around the operation of personnel management inside firms.

Sixth, and finally, there appears to be a large difference among firms of different sizes in their capacity to generate job satisfaction[17]. Between large firms (with 1,000 and more employees) and small firms (with less than 100 employees) the xb-score differs by 0.56 (i.e., see "Diff. FS" ($=b_8-b_9$) recorded near the bottom of Table 4, Column(1)). In Figure 5, there is another bar placed at the bottom which represents the effect of firm size, this time controlling for the rank of individual (thus corresponding to the estimates of Column (2) of Table 4). This implies that, comparing among workers with the same rank, there is 0.64 difference in terms of xb-score between large and small firms. The gap of 0.08 that occurs depending on whether or not the rank is controlled arises mainly from the fact that the probability of assuming a higher position is larger in small firms than in large firms[18].

Viewed from the opposite angle, even if small firms are more likely to promote individuals its effect in reducing the job satisfaction differential between large and small firms is at most 13 % (=.08/.64). Naturally the existence of large wage cum non-wage benefit differentials between large and small firms

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underlie at the heart of the matter.

It has been remarked earlier that there exists a significant underrepresentation of the manufacturing industry, blue-collar workers and small firms in the current sample. Although by no means a fully justifiable procedure, a rough adjustment of the mean xb-score was made on the basis of column (1) estimates, using the mean schooling and duration of service figures and the industrial, firm size, and white collar/blue collar composition figures of the 1990 Wage Census data. The result is shown as the left hand side vertical line in Figure 4. Adjusted figures show that individuals who are not satisfied with respect to the fairness of the reward are indeed much larger in proportion than those who are satisfied.

5. Determinants of Job Satisfaction with respect to Non-Pecuniary Qualities

What about the satisfaction indices B(exhibit ability fully), C(stimulating), and D(broadness of responsibility)? As shown in Section 3 there exist relatively high correlations among these indices. In fact, the ordered Probit analyses for the respective indices (conducted separately for each age group) have arrived at qualitatively very similar results. It implies that the explanatory variables at hand have quite analogous effects on each of the three non-pecuniary dimensions of job satisfaction[19]. In the following, the non-pecuniary attributes of the job will be represented by index C, namely whether or not the job provides challenge and stimulating experiences.

Basically the same model as in the case of satisfaction on

due rewards for effort is employed. The only modification is that of excluding the variables "commtime" and "net worth" as they seem irrelevant to the question of challenge and stimulating experience on the job. The results of estimation are given in Table 6.

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Table 6
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Figures 6 and 7 are depicted for each age group on the basis of estimated coefficients in Table 6. Among the two vertical lines in Figure 6, the right hand one shows the unadjusted mean of the xb-score, while the left hand one shows its adjusted mean explained previously. The size of adjustment is largest among the age group 25-34.

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Figures 6 and 7
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The impact of each factor on the xb-score is summarized by Figure 7 (prepared analogously to Figure 5), this time drawn for each age group. It is apparent that certain features differ significantly among age groups[20].

First, while the net impact of schooling and duration of service on satisfaction is negligible (just as in the case of satisfaction on due rewards) there is a single exception to the rule, i.e., the effect of schooling for age group 25-34 which is positive and statistically significant. Between high school and college graduates the xb-score differs as much as 0.27. Note also that the rank variable is not statistically significant for this age group. These results imply that, in the life stage during which promotion is not yet a major affair, schooling

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differentials play a leading role in allocating individuals to jobs with rich learning opportunities, which, in turn, facilitate the major source of challenge and stimulation.

Second, observing among different industries the advantage of financeinsurance industry over manufacturing industry noted previously in the case of satisfaction on due rewards still holds for the young age group (aged 25-34) as xb-score differential reaches 0.6 (see "Diff. MF" coefficient at the bottom of Table 6, Column(1)). The advantage of finance/insurance industry, however, declines monotonically with age. For the age group 45-54, it effectively disappears, and for the age group 55 and above the tendency is in the reverse; it is now the manufacturing industry which has the advantage (0.34 in xb-score, although not statistically significant)[21]. It is to be remarked that these features also hold for B and D indices. This result indicates that the finance/insurance industry, while maintaining comparative advantage in terms of rewards for effort, does not succeed in maintaining comparative advantage in the long-run over the intrinsic quality of the job. Alternatively speaking, some form of a compensating relationship in the life-time between pecuniary and non-pecuniary rewards is operating among a certain subset of industries.

The foregoing discussion has dealt with characteristics that are specific to age. Another point that is characteristic of non-pecuniary qualities of the job (vis-a-vis pecuniary rewards) is the place occupied by professional/technical workers. It has already been noted that these jobs are positioned close to blue-collar workers in terms of satisfaction on pecuniary rewards, yet

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with respect to the existence of challenging and stimulating experience they are positioned close to managerial jobs. The advantage of professional/technical jobs over blue-collar jobs in terms of xb-score amounts to 0.35-0.4 for the age groups up to 45-54, and then jumps to 0.68 for the age group 55 and above, far surpassing that of managerial jobs. Therefore, more than any other type of job, workers with this type of job continue to receive stimulating experience even when they become old.

As to the impact of firm size, a similar feature to the case of pecuniary rewards is observed, except that its effect diminishes for the age group 55 and above. Namely, there is a sizeable difference (0.3-0.4 in terms of xb-score) between large and small firms in their capacity to generate satisfaction about stimulating experience among workers, and moreover, such a difference does not diminish much even if the relative easiness of getting promotion among small firms is taken into account.

6. Concluding Remarks

This paper has analyzed the determinants of job satisfaction among Japanese workers by using a micro survey data on worker attitudes collected in three major metropolitan areas of Japan. More specifically, the paper has examined how workers' job satisfaction relate to such factors as education, job tenure in the firm, industry, occupation, firm size, and wealth holding.

Job satisfaction has been considered in two dimensions; first, how worker's effort is rewarded in terms of pay and promotion, and second, how stimulating an experience the job provides. The former may be regarded as largely, though not exclusively, pecuniary, while the latter concerns an intrinsic

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or a non-pecuniary quality of the job. In fact, the latter is taken to represent two other non-pecuniary qualities of the job questioned in the survey, whether or not the job allows fully to exhibit worker's ability and whether or not the job allows the holder to exercise a broad realm of responsibility. The major findings of the paper are as follows.

First, on both pecuniary and non-pecuniary dimensions the difference in firm size has notable impact on the degree of satisfaction. The advantage of large firms does not diminish even if the tendency (confirmed within the data) for workers in small firms to be promoted more easily than the counterpart in large firms is taken into consideration.

Second, as compared with ordinary white-collar (clerical, sales, and service) jobs, blue-collar jobs are clearly in disadvantage on both dimensions of job satisfaction. Against the same standard, professional/technical jobs have advantage with respect to non-pecuniary qualities (and whose extent increases as workers become old) but are in disadvantage with respect to (satisfaction about) pecuniary rewards. This appears to be one of the very few cases in the data for which something close to the principle of equalizing difference is operating.

Third, industry-wise, there exists a significant difference in the degree of satisfaction concerning pecuniary rewards between the manufacturing and wholesale/retail industries, on the one hand, and the finance/insurance industry, on the other. Yet, with respect to the capacity of providing stimulating experience (and other non-pecuniary qualities) the relative advantage of finance /insurance industry declines quickly with age, and it may

even turn into disadvantage for workers in the old age group.

Fourth, even though the levels of education and firm job-tenure certainly enhance wage earnings and the chances of getting higher ranks they have virtually no effect at all on workers' job satisfaction in both dimensions. (The single exception is the effect of education on the young workers' feeling of stimulating experience on the job.) Such discrepancy in the results may be explained by the simultaneous rise in the levels of rewards (in both dimensions) that workers consider as fair and those that they actually receive.

Fifth, there exists a statistically significant wealth effect on the degree of satisfaction concerning pecuniary rewards, yet quantitatively its effect is a relatively mild one. Therefore, the acute rise in the skewness of wealth distribution that Japan experienced recently has yet to affect seriously the work motivation of individuals, in particular, the young workers who do not own land in the urban area. The present result does facilitate an evidence, however, to the effect that a further worsening in the dispersion of wealth distribution might possibly adversely affect the motivation of workers as a whole by increasing the number of workers who would feel that they are not paid a fair reward.

So much for the findings. Overall one may be inclined to point out a paradox involved. The paradox is that workers in the manufacturing sector (blue-collar workers, in particular, but not limited to them) which boasts of internationally renowned productivity and quality of product exhibit relatively low scores in terms of job satisfaction, or to be more precise, high incidence

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of worker dissatisfaction about the job on both pecuniary and non-pecuniary grounds. The manufacturing sector in Japan is also associated with an intricate network of small subsidiary firms, and the smallness of firm size is shown to be an additional factor contributing to the incidence of worker dissatisfaction.

It is perhaps not far-fetched to relate such high incidence of dissatisfaction to the existence of dualistic division in the labour market that is most heavily enmeshed in the manufacturing industry.

The parallel study of the author based on the micro data set of the Wage Census and employing the methodology of switching regressions (as applied by Dickens and Lang)[22] has delineated the existence of a clear dualistic wage structure in the overall Japanese labour market. One component, the primary sector, is represented by an earnings equation with high rates of return to both education and experience (both internal and external) and is generally associated with high wage, while the other component, the secondary sector, is represented by an earnings equation with almost no returns to education and external experience but with a moderate rate of return to internal experience and yet is generally characterized by low wage and relatively long working hours. The moderate rate of return on internal experience is not much of a blessing for secondary sector workers, for either voluntarily or involuntarily they tend to move among firms frequently thereby losing the opportunity to reap its benefit. Incidence of the secondary sector turned out to be particularly high in the manufacturing industry, and especially among the blue-collar jobs. As the secondary sector

job is associated with little learning opportunities such workers may also naturally feel discontent with respect to the non-pecuniary qualities of the job.

One general implication of this study concerning worker welfare, and more specifically for enriching the life-long quality of work life for Japanese workers, might be to raise the specialty content of the job[23]. It would be particularly helpful to older workers. In terms of practice, however, that may not be so simple, for it certainly requires a major reappraisal and restructuring of the personnel management system. More specifically, examination of possible trade-offs that such a modification in job content may entail, e.g., deteriorating breadth of knowledge held by workers, must be made. In any case, in an increasingly aging society like Japan such a reappraisal should certainly be a welcome move on the part of workers, and it may even facilitate a profitable source of organizational innovation for employers.

This study study concludes by pointing out two qualifications of the present analysis. The first concerns the limitation of the data. Because of the sampling design, attitudes of workers employed in very small firms (with less than 30 employees) are not considered, and because of the smallness of the samples female workers have been excluded from the analysis. Yet as far as the excluded female samples are concerned they tend to exhibit a higher incidence of job dissatisfaction than male counterparts, which accords well with the popular expectation. It is also unfortunate that the survey lacks the data on working hours. One of the main dependent variable, rewards for effort,

could have been analyzed much further had there been information on working hours.

The second qualification pertains to the basic methodology adopted in the analysis. The point is that there may be an alternative interpretation to the respondents' answer of "neither satisfied nor dissatisfied" concerning job satisfaction indices. A fairly large proportion of workers has actually chosen that answer. The interpretation adopted in this study has been that the size of the gap between the fair and the realized levels of reward for an individual with that particular answer lies in between the range generating satisfaction and the range registering complaint. It bases on the presumption that all individuals have at their hands a considered opinion and evaluation of their jobs when they are given a questionnaire. Without such preparation, however, individuals may simply refuse or avert to answer the question that delves deeply into one's identity by taking the choice "neither satisfied nor dissatisfied." Although the estimation results (Tables 4 and 6) indicate consistency of the data with the present interpretation (cf. the meaningfulness of the boundary coefficients), it does not necessarily mean that the alternative interpretation is foreclosed by the data.

The distinction of well-considered responses from those that are not certainly requires a more refined design of the question- naire form. A more refined survey should also contain questions on the possible concrete sources of job satisfaction (like the ones collected by Lincoln and Kalleberg) the lack of which has led the present study to rest at a rather surface level of

relating job satisfaction to the observable environment of employment.

Notes

1) Discussion of the distribution of such subjective scores as whether or not "expectation" is "fulfilled" obviously faces, in principle, the difficulty known as interpersonal utility comparisons. Yet as long as individual differences in preference are random and are statistically independent of the observable individual attributes and characteristics of the work place that are chosen as the explanatory variables of the present analysis it can be examined whether or not there exists stable dependence of "satisfaction" on the variables just listed. This constitutes the major presumption of the analysis below.

2) For an overall discussion of the findings from the survey see Ministry of Labour, <u>Shisan Kakusa to Kinrosha Seikatsu ni kansuru Kenkyukai Hokokusho</u> (The Report of the Research Group on Wealth Dispersion and Worker Life, in Japanese), August, 1991.

3) The classic works in the fields of industrial sociology, industrial psychology, and labour management and control include Robert Blauner <u>Alienation and Freedom: The Factory Worker and His Industry</u>, Chicago: University of Chicago Press, 1964, William F. Whyte <u>Money and Motivation: An Analysis of Incentives in</u>

Industry, New York: Harper and Row, 1955, and Richard Edwards Contested Terrain: The Transformation of the Workplace in the Twentieth Century, New York: Basic Books, 1979, respectively.

4) James R. Lincoln and Arne L. Kalleberg Culture, Control, and Commitment: A Study of Work Organization and Work Attitudes in the United States and Japan, Cambridge: Cambridge University Press, 1990. It includes a useful survey of the existing literature on work commitment and job satisfaction in Japan. See op. cit., pp. 53-62. I am indebted to Mari Sako for informing me of the existence of this work at the conference.

5) Another major purpose of Lincoln and Kalleberg's study not mentioned in text is comparison of work attitudes between Japanese workers and American workers, for which they have conducted a similar survey in the city of Indiannapolis. Interested readers are also referred to this portion of their study.

6) Respondents were frequently found to err about the knowledge of the size of the firm they work. (This came to be known because several individuals who belong to the same establishment answer differently about the firm size.) After mining out all the questionable responses the author requested the Ministry of Labour to investigate the correct size of the firm, who then kindly tracked down all the names of the establishments to which questionable samples belonged and obtained the correct figures of firm size by using their own records of establishments. Corrected firm size figures thus assured are employed throughout the entire analysis reported in this paper.

Another difficulty with the data was that missing values

appeared frequently concerning the value of real wealth holding. In casese where information on the date and method of acquisition (either through new purchase or through inheritance) is obtained the missing values are estimated by assigning the mean value of the real assets having similar physical attributes in the respective area (Tokyo, Nagoya or Osaka).

Finally, non-responses with respect to the ownership of the golf club membership were identified as zero holding.

7)   This aspect on job worth seems quite independent of the frequently discussed changes in the importance that workers attach to the importance of family or individual leisure life as compared with life at work or life in organization. Across age cohorts young aged workers are observed to show relatively more concern on the former. This aspect of changes in worker consciousness is surveyed and discussed in Yoshihisa Ieuji, "Jyakunenso no Kinro Ishiki no Henka to Kigyo Keiei" (in Japanese, Changes in the Work Consiousness of the Young and Firm Management) Rodo Tokei Chasa Geppo 38 (June, 1986), pp. 6-14, and Ministry of Labour (ed.) Gendai Wakamono no Shokugyo Ishiki: Shokugyo Ishiki no Henka ni Taiou suru tameni (in Japanese, Occupational Consciousness of the Contemporary Young) September, 1991. Also Muramatsu, in a survey on white collar workers in the automobile and automobile parts industries in the Nagoya area, notes the simultaneous existence of the tendency for the value orientation towards family life to increase among the young workers and the tendency for the feeling of the necessity of job worth (i.e., meaningfulness of the job) to remain constant across the age groups, which seems to support the hypothesis that the

two facets of valuation are independent. See Kuramitsu Muramatsu "Howaito Karar no Hatarakigai to Noryoku Shugi" (in Japanese, The Job Meaningfulness for White Collar Workers and Meritocracy) Nanzan Keizai Kenkyu 7 (October, 1992), pp. 60-61.

9) The author is indebted to a criticism of Paul Ryan with regard to the ambiguity of the meaning of effort used in an earlier version of the paper.

10) See Tibor Scitovsky, The Joyless Economy: The Psychology of Human Satisfaction, New York: Oxford University Press, Second edition, 1992, 34-35, in particular, the discussion on the Wundt curve.

11) The Mantel-Haenszel chi-square statistics obtained indicate that the null hypothesis that there exists a linear relationship between any two of B-, C- and D-indices is rejected by a wide margin. Hence, there is no reason to suppose that these indices are substantively identical indices. On the other hand, it will later be stated (in 19)) that the model in this paper is not powerful enough to be able to delineate the causes of different responses to each of these indices.

12) For a more detailed explanation about the estimation method, see G. S. Maddala, Limited Dependent and Qualitative Variables in Econometrics, Cambridge: Cambridge University Press, 1983, pp. 46-49.

13) In fact, in terms of the likelihood ratio test the null hypothesis that all the coefficients are identical among four different age groups was not rejected with the chi-square test statistic equalling 42.22 with 60 degrees of freedom.

14) When compared with Figures 1 and 2, the calculated value of

the satisfaction probability tends to be underestimated. This discrepancy results from the exclusion of those samples with missing values on net worth in the regression procedure. The excluded samples amounted to 1,831 in the total sample size of 5519.

15) For annual wage earnings the rates of return on schooling and job tenure in the firm are estimated as follows. The explanatory variables in the log-earnings equations are identical with those in equation (1), with controls on firm size, occupation and industry.

Age Group	25-34	35-44	45-54	55-
Schooling	4.6%	2.9%	3.2%	3.7%
Job Tenure	3.4%	0.9%	0.8%	1.6%

All of these coefficients are statistically significant at 1% level.

The next figures represent the estimated coefficients on the same set of variables when an ordered Probit model is applied to the individual's position in the hierarchy (with the numerical assignment of 4 for a general manager, 3 for a division director, 2 for a section chief, and 1 for an ordinary worker) whereby firm size dummies are included as the other explanatory variables.

Age Group	25-34	35-44	45-54	55-
Schooling	.152	.177	.208	.181
Job Tenure	.131	.0476	.0335	.0112

These figures express the impact of each variable on the xb-score, just as in the main text. The effect of job tenure is thus found monotonically to decline with age, while that of schooling is found to stand still. All the coefficients are statistically significant at 1% level.

16) The estimated coefficients of occupational dummies in the

log earnings functions reported in 15) are as follows.

Age Group	25-34	35-44	45-54	55-
Professional/Technical	-.0220	.0265	.000505	.165
	(.0207)	(.0162)	(.0231)	(.0624)
Managerial	.0358	.140	.133	.262
	(.0308)	(.0150)	(.0186)	(.0523)
Skilled/Production	.0249	-.112	-.112	.0582
	(.0786)	(.037)	(.0424)	(.132)

The figures in parentheses are standard errors. The base of the occupational dummies is taken to be the white collar occupation other than three categories listed above.

17) A statistically significant positive effect of plant size on worker job satisfaction (as well as on workers' feeling of commitment towards work) has also been found by Lincoln and Kalleberg. See op. cit., p. 228, Table 8.1.

18) In fact, the coefficients of firm size dummies in the order-ed Probit equations described previously in 15) are:

Age Group	25-34	35-44	45-54	55-
Large Firms	-.394	-.342	-.336	-.273
Small Firms	.182	.118	.422	-.0106

where the base of firm size is taken to be the medium-sized firm with 100-999 regular employees. The coefficients for large firms are all statistically significant at 1% level, whereas for small firms only the estimate for the age group 45-54 is statistically significant at 1% level.

19) This also points out the limitation of the present data. Had it contained information on objective job characteristics such as those collected by Lincoln and Kalleberg differences in the responses to three items of non-pecuniary attributes could have been analyzed further.

20) In fact, the likelihood ratio test similar to the one

described in 13) conducted on B, C, and D indices, respectively, have shown that, in each case, the null hypothesis of identical coefficients among different age groups is rejected at 1% significance level.

21) One possible explanation for the reversal of the coefficient in the finance industry may be that workers there tend to move to subsidiary or related firms from the age of late 40's so that few workers in high ranking positions remain in the sample for the age group 55 and above. As a matter of fact, the sample counts of this particular group of workers turned out to be only 19, which no doubt explains the statistical weakness of the estimate. Yet the composition of these 19 samples in terms of the hierarchical position occupied turned out to be 7 general managers, 1 division director, 1 section chief and 9 ordinary workers, and 1 unknown. Therefore, the above conjecture does not seem to hold.

22) The switching regression results referred to in the text is reported in Tsuneo Ishikawa and Takahisa Dejima "Measuring the Extent and Nature of Duality in Japanese Labour Market," which is a paper presented at the International Workshop, "Europe, Japan and the United States: Technological Progress and Financial Structure," Turin, Italy, April 1-3, 1993. For the pioneering contribution applying this methodology in the context of the U. S. study, see William Dickens and Kevin Lang, "A Test of Dual Labor Market Theory," American Economic Review, 75 (September, 1985), pp. 792-805.

23) I am indebted to Atsushi Seike for a discussion on this point. It accords well with the proposal made in his book

<u>Koreisha no Rodo Keizaigaku</u> (The Labour Economics of the Elderly)

Tokyo: Toyo Keizai., 1992.

Table 1. Mean Attributes of the Sample

Age Group	25-34	35-44	45-54	55 -	Total
Schooling (years)	14.9	14.2	13.1	12.6	13.9
Duration of Service (years)	7.8	15.9	23.3	20.5	16.8
Occupation					
· Profes./Technical	25.8	22.2	17.9	19.3	21.4
· Managerial	8.4	25.5	36.1	37.8	26.0
· Skilled/production Operatives	3.0	3.9	5.8	4.9	4.4
· Clerical, sales and Others	62.8	48.4	40.2	38.0	48.2
Firm Size (%)					
· large (1,000 and more employees)	55.9	55.0	52.1	32.2	52.0
· medium (100-999 employees)	33.8	35.0	35.5	48.3	36.3
· small (less than 100 employees)	10.3	10.0	12.4	19.5	11.7
Industry (%)					
· Construction	9.6	11.4	9.2	10.7	10.3
· Manufacturing (incl. Mining)	23.7	24.0	30.4	23.6	25.8
· Utility	2.9	2.4	2.8	2.3	2.6
· Transportation & Communication	7.5	10.3	16.0	12.7	11.7
· Wholesale & Retail	23.4	25.2	21.0	15.0	22.5
· Finance & Insurance	8.5	8.4	5.7	3.4	7.1
· Real estate	2.2	1.2	0.9	3.2	1.5
· Service	22.1	17.0	14.0	29.0	18.5
Employed Earnings (10,000 yen/year)					
· Bottom Quartile	355	451	507	329	418
· Median	460	625	730	600	600
· Top Quartile	705	964	1,083	1,076	983
Net worth (10,000 yen)					
· Bottom Quartile	-31	413	1,099	1,514	265
· Median	500	2,900	4,600	5,900	3,000
· Top Quartile	5,247	8,565	12,854	15,280	10,488
Sample Size	1,203	2,096	1,641	559	5,549

Notes to Table 1:
1. Mean figures are calculated by excluding missing values.
2. The composition of the Wage Census (Ministry of Labor, surveyed in June, 1990) samples for the corresonding population of workers,

i.e., male regular workers aged 25 and above who are employed in a privately owned establishment with 30 or more regular employees in three major metropolitan areas (Tokyo, Nagoya and Osaka)is as follows.

Schooling = 12.3 years, Duration of Service = 14.5 years,
Production Workers Ratio (= Production Workers in Mining, Construction and Manufacturing Industries / Workers in All Industries)
   = 32.6 %
Firm Size: Large Firms = 43.3 %, Medium Firm = 15.4 %
            Small Firms = 41.2.%
Industry: Construction = 3.7 %,
         Manufacturing (incl. Mining) = 57.1 %,
         Utility = 0.8 %,
         Transportation and Communication = 12.4 %,
         Wholesale and Retail = 9.6 %,
         Finance and Insurance = 2.2 %,
         Real Estate = 0.6 %, Service = 13.6 %.

Table 2. Workers' Views on Job Worth

Content of Job Worth	Age 25-34	Age 35-44	Age 45-54	Age 55 -
Intrinsic Interest in the Job	% 8.7	% 8.4	% 9.8	% 15.7
Moderate Amount of Earnings and Assets	80.6	81.0	79.7	70.8
Earnings and Assets Alone	10.7	10.6	10.4	13.5
Total	100.0	100.0	100.0	100.0

Note: Percentage ratios are calculated by excluding missing values.

Table 3. Correlation among Various
Job Satisfaction Indices

	A	B	C	D
A	1.0	0.392	0.333	0.335
B	(0.542)	1.0	0.536	0.472
C	(0.484)	(0.702)	1.0	0.487
D	(0.470)	(0.627)	(0.635)	1.0

Notes:
1. The definition of job satisfaction indices
    are as follows:
    A = Due Reward for Effort
    B = Exhibit Ability Fully
    C = Involves New Challenge and Stimulation
    D = Involves Broad Realm of Responsibility
2. The measure of association in the upper-right
    triangle is the square root of Cramer's Mean
    Squared Quotient. The figures in the paren-
    these in the lower-left triangle are the
    ordinary correlation coefficient by regarding
    the satisfaction indices as continuous varia-
    bles.

Table 4. Ordered Probit Regression Results on Pooled Data

Dependent Variable = Satisfaction Index A on Due Reward for Effort

	All Ages (25 -)	
	(1)	(2)
const.	1.100	1.013
	(.150)	(.151)
educ	-.00151	-.00169
	(.00820)	(.00838)
tenure	-.00367	-.0128
	(.00224)	(.00244)
sptech	-.107	-.130
	(.0473)	(.0474)
manage	.364	.199
	(.0444)	(.0478)
prod	-.175	-.0804
	(.108)	(.109)
commtime	-.0332	-.0358
	(.0214)	(.0214)
net worth	.0222	.0165
	(.00399)	(.00404)
large	.357	.438
	(.0420)	(.0429)
small	-.203	-.254
	(.0647)	(.0650)
manuf	-.0915	-.0442
	(.0649)	(.0652)
util	.332	.448
	(.120)	(.121)
transcom	-.0107	.0542
	(.0795)	(.0799)
wholret	-.0925	-.0824
	(.0663)	(.0664)
finins	.389	.403
	(.0832)	(.0834)
realest	-.105	-.139
	(.155)	(.155)
service	.0502	.0656
	(.0702)	(.0704)
rank	-	.214
	-	(.0229)
A1	.885	.895
	(.0268)	(.0271)
A2	1.738	1.760
	(.0322)	(.0326)
A3	3.133	3.177
	(.0481)	(.0488)
Diff. FS	.560	.692
	(.0643)	(.0660)
Diff. MF	.481	.447
	(.0724)	(.0726)
Num. of Obs.	3,595	3,595
Log lklhd.	-4,994.8	-4,950.7

Table 5. The Relationship between the Deviation in xb-Score
from Its Sample Mean and the Changes in the Probabilities
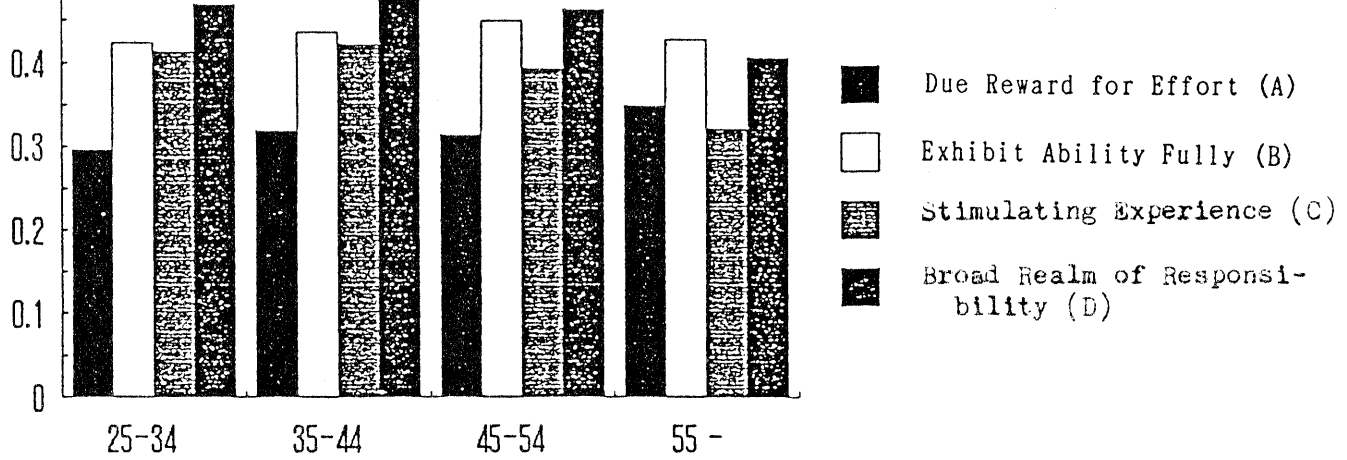of Satisfaction and Dissatisfaction

(%)

Δ xb-Score	−0.8	−0.6	−0.4	−0.2	+0.2	+0.4	+0.6	+0.8
△ Probability of Satisfaction	−21.7	−17.6	−12.8	−6.7	+7.8	+15.6	+23.3	+31.1
△ Probability of Dissatisfaction	+31.1	+23.3	+15.6	+7.8	−6.7	−12.8	−17.6	−21.7

Source: Figure 4.

# Table 6. Ordered Probit Regression Results on Data for Each Age Group

Dependent Variable = Satisfaction Index C on Stimulating Experience

|	Age 25-34 (1)	(2)	Age 35-44 (1)	(2)	Age 45-54 (1)	(2)	Age 55 - (1)	(2)
const.	-.165	-.178	1.256	1.185	1.149	1.0182	1.126	1.0606
	(.354)	(.354)	(.214)	(.214)	(.205)	(.206)	(.279)	(.282)
educ	.0681	.0659	.00141	-.0183	.0116	-.0157	.00939	-.000098
	(.0197)	(.0198)	(.0112)	(.0116)	(.0111)	(.0118)	(.0176)	(.0185)
tenure	-.000477	-.00299	-.00338	-.0107	-.00403	-.00968	-.00349	-.00440
	(.00957)	(.00998)	(.00453)	(.00466)	(.00364)	(.00374)	(.00391)	(.00395)
sptech	.215	.213	.166	.157	.214	.202	.575	.533
	(.0784)	(.0784)	(.0622)	(.0623)	(.0781)	(.0783)	(.138)	(.140)
manage	.236	.212	.309	.176	.272	.102	.292	.196
	(.115)	(.119)	(.0587)	(.0619)	(.0634)	(.0681)	(.110)	(.125)
prod	-.196	-.198	-.188	-.107	-.148	-.0106	-.0980	-.0709
	(.202)	(.202)	(.131)	(.132)	(.127)	(.129)	257	(.258)
large	.294	.302	.230	.285	.353	.425	.162	.179
	(.0754)	(.0759)	(.0552)	(.0558)	(.0639)	(.0649)	(.119)	(.120)
small	-.104	-.109	-.151	-.177	-.0543	-.129	-.0144	-.0127
	(.113)	(.113)	(.0844)	(.0846)	(.0909)	(.0918)	(.130)	(.130)
manuf	.200	.203	.176	.207	.214	.290	.172	.209
	(.119)	(.119)	(.0853)	(.0856)	(.102)	(.103)	(.182)	(.183)
util	.256	.267	.208	.311	.183	.321	.138	.207
	(.206)	(.207)	(.167)	(.168)	(.184)	(.185)	(.343)	(.346)
transcom	.111	.117	-.172	-.111	-.0790	.0443	-.121	-.0864
	(.155)	(.155)	(.103)	(.103)	(.113)	(.115)	(.200)	(.201)
wholret	.423	.417	.101	.0901	.318	.354	.232	.253
	(.122)	(.122)	(.0851)	(.0852)	(.106)	(.106)	(.189)	(.189)
finins	.801	.790	.400	.376	.253	.327	-.171	-.130
	(.150)	(.150)	(.109)	(.109)	(.144)	(.145)	(.297)	(.298)
realest	.374	.346	-.216	-.249	.643	.763	.065	.0739
	(.230)	(.233)	(.223)	(.224)	(.301)	(.302)	(.293)	(.293)
service	.105	.0998	.0321	.0121	.349	.409	-.00248	.0244
	(.124)	(.124)	(.0912)	(.0914)	(.115)	(.116)	(.172)	(.173)
rank	-	.0496	-	.218	-	.235	-	.0832
	-	(.0560)	-	(.0314)	-	(.0342)	-	(.0508)
A1	.682	.683	.790	.802	.835	.851	.690	.692
	(.0445)	(.0445)	(.0389)	(.0395)	(.0502)	(.0511)	(.0738)	(.074)
A2	1.552	1.553	1.734	1.758	1.992	2.0274	1.981	1.986
	(.0550)	(.0550)	(.0459)	(.0466)	(.0587)	(.0599)	(.0936)	(.0939)
A3	2.9001	2.902	3.124	3.165	3.386	3.444	3.178	3.187
	(.0751)	(.0751)	(.0605)	(.0614)	(.0751)	(.0767)	(.123)	(.123)
Diff. FS	.398	.411	.381	.462	.407	.554	.177	.192
	(.116)	(.116)	(.0847)	(.0856)	(.0939)	(.0965)	(.145)	(.145)
Diff. MF	.601	.586	.224	.170	.0387	.0374	-.343	-.339
	(.128)	(.129)	(.0969)	(.0974)	(.125)	(.125)	(.278)	(.278)
Num. of Obs.	1181	1181	2067	2067	1593	1593	522	522
Log lklhd.	-1653.10	-1652.71	-2813.61	-2789.49	-2052.78	-2029.12	-680.68	-679.33

Note: The height of each bar represents the proportion of individuals who responded with the answer of either being "satisfied" or "somewhat satisfied".

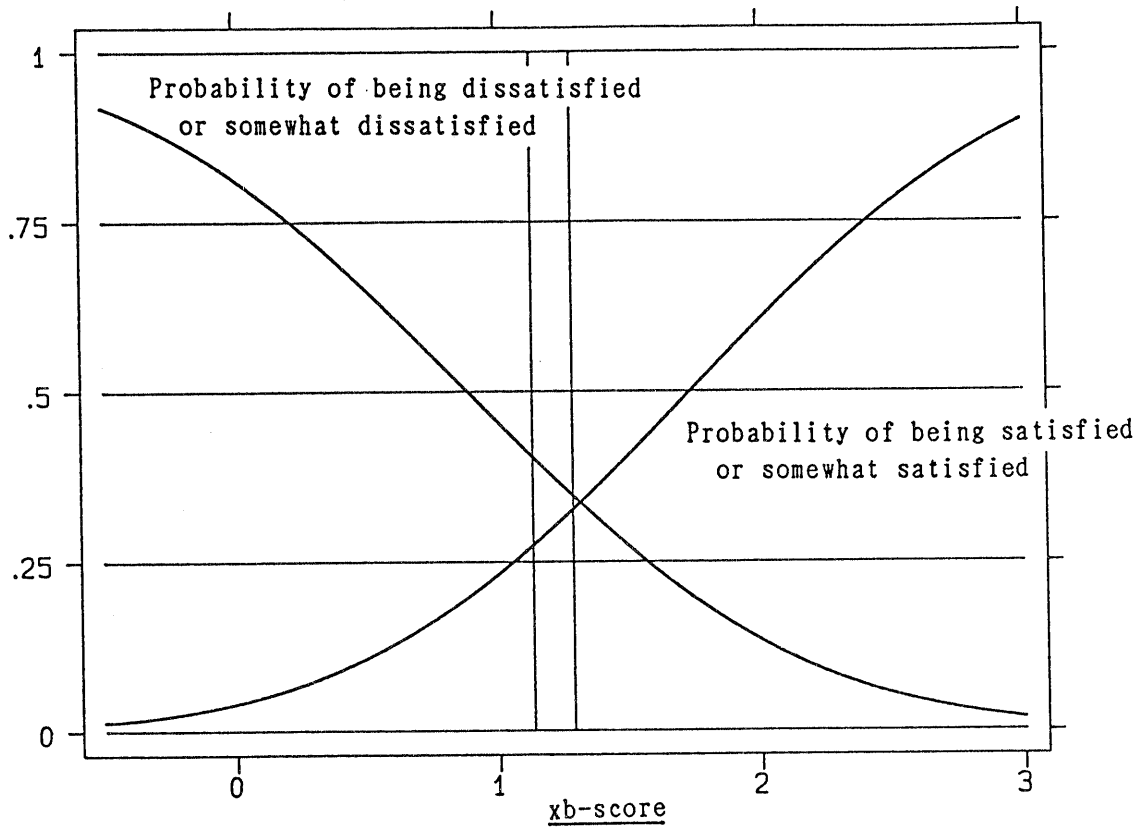Figure 2. Dissatisfaction about Job
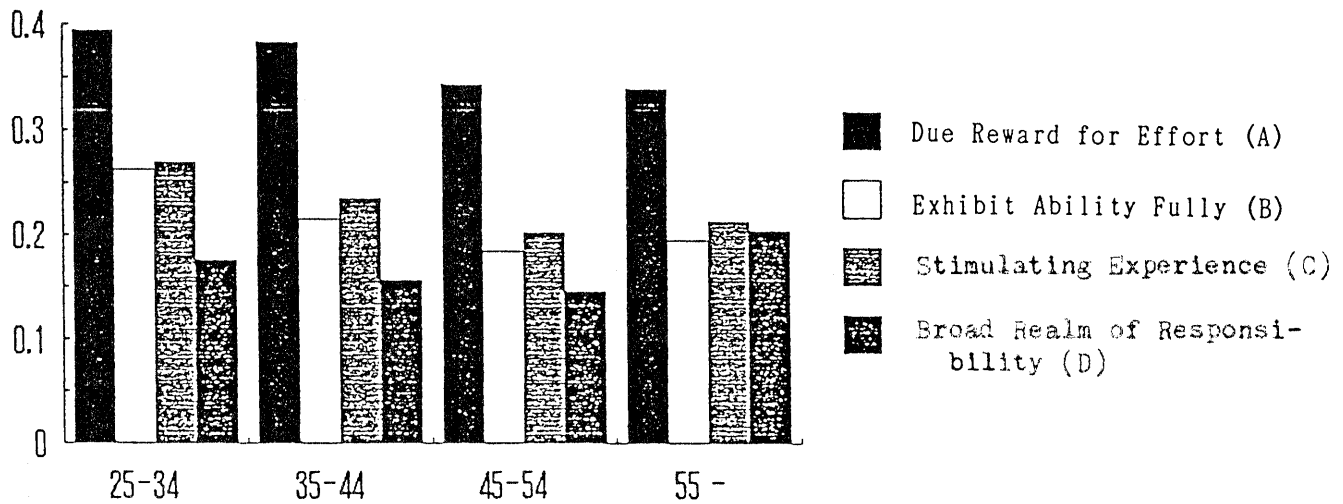
Note: The height of each bar represents the proportion of individuals who responded with the answer of either being "dissatisfied" or "somewhat dissatisfied".

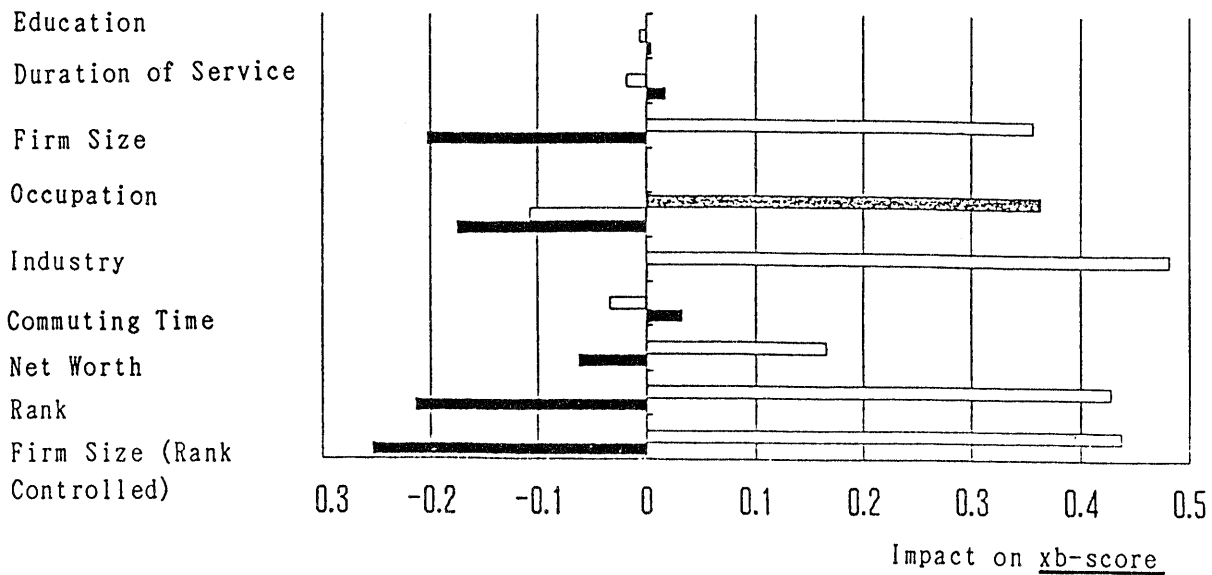Figure 3. Distribution of Hierarchical Ranks among Respondents
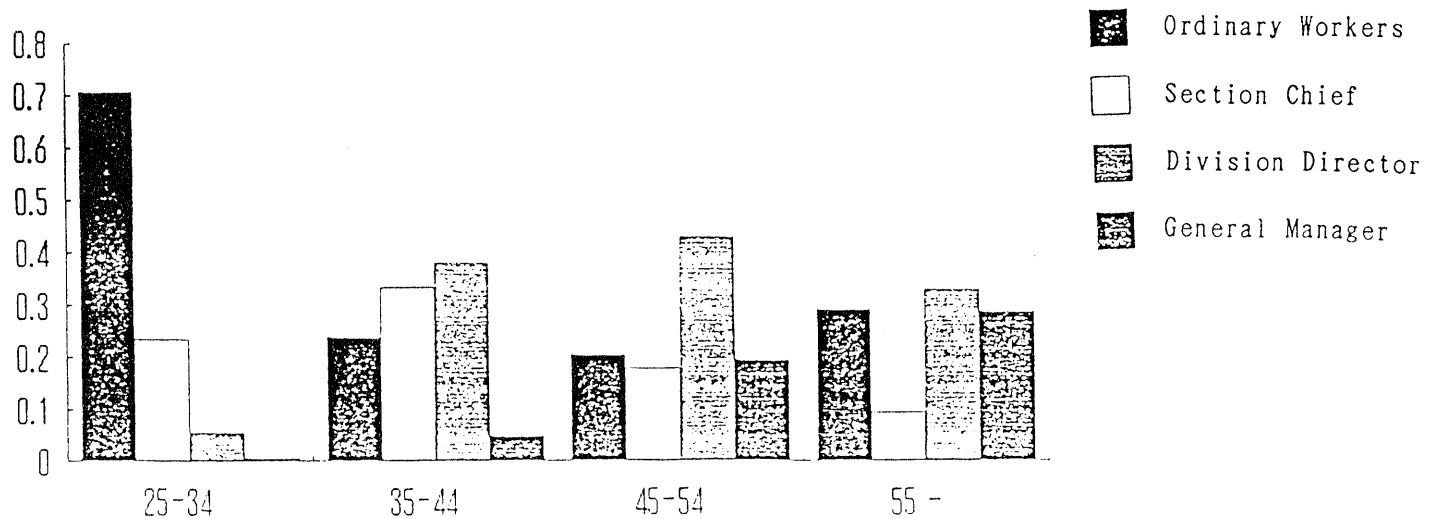
Source: Table 4.

Figure 5.   Determinants of Job Satisfaction
with respect to Due Rewards for Effort

Notes:
The standard of comparison and the unit change of each factor chosen to evaluate the impact on xb-score are as follows.

Factor	Upper Bar (Black)	Standard of Comparison	Lower Bar (White)
(1) Education	Junior High School Graduate	High School Graduate	College Graduate
(2) Duration of Service	5 years	10 years	15 years
(3) Firm Size	Small (- 99 employees)	Medium (100-999 employees)	Large (1000- employees)
(4) Occupation	Skilled Worker/ Produc. Operat. (Blue-collar)	White Collar (Clerical, (Sales and others)	Prof./Technic. (white) Managerial (gray)
(5) Industry	Manufacturing	Wholesale & Retail	Finance & Insurance
(6) Commuting Time	- 0.5 hour	0.5 - 1 hour	1 - 1.5 hours
(7) Net Worth	Mean of Bottom Quartile (2.65 mill. yen)	Median (30 million yen)	Mean of Top Quartile (104.88 million yen)
(8) Rank	Ordinary Worker	Section Chief	General Manager
(9) Firm Size, Rank Controlled	Small	Medium	Large

The bars for (1)-(7) are drawn on the basis of estimated coefficients for equation (1) while the bars (8)-(9) are drawn on the basis of those for equation (1) with the addition of the rank variable.

Figure 6. <u>The Relationship between xb-score and the</u>
<u>Probability of Satisfaction with respect to</u>
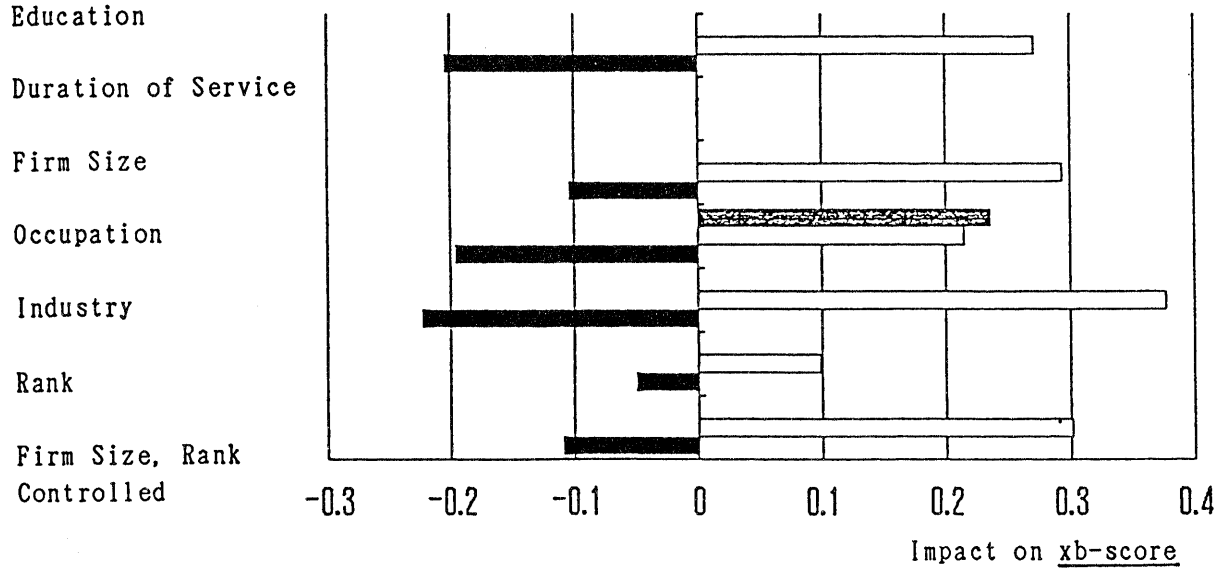<u>the Existence of Stimulating Experience on the Job</u>
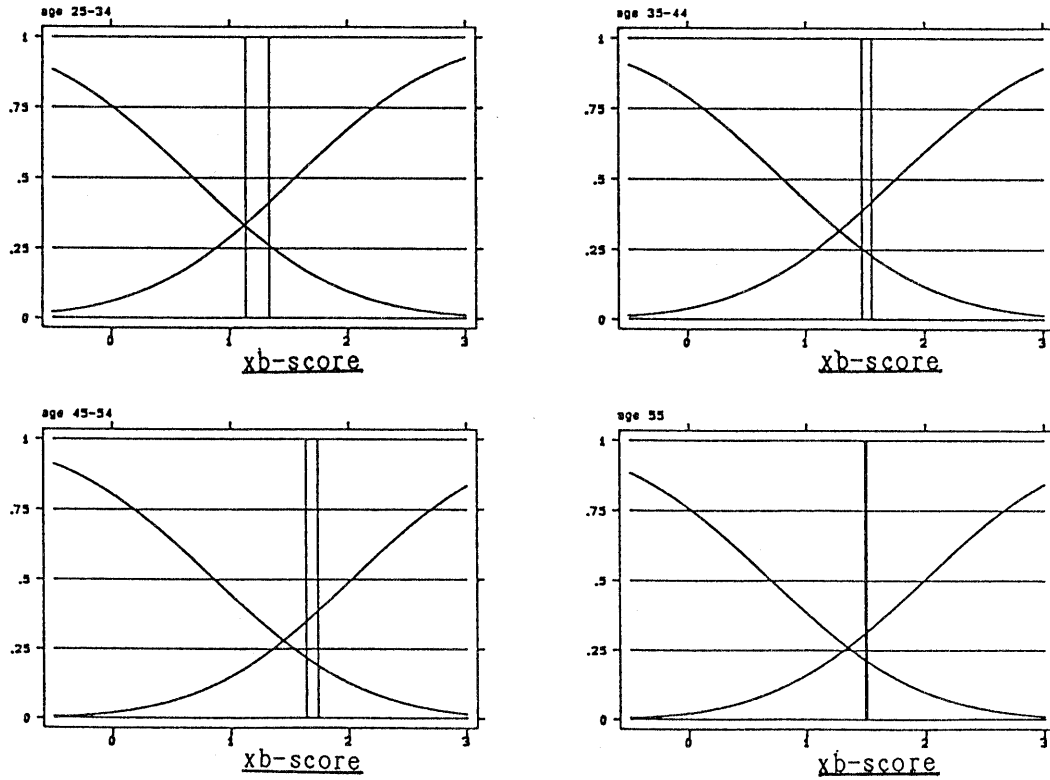
Note: In each figure, the upward sloping curve represents the
probability of being satisfied or somewhat satisfied, while the
downward sloping curve represents the probability of being dis-
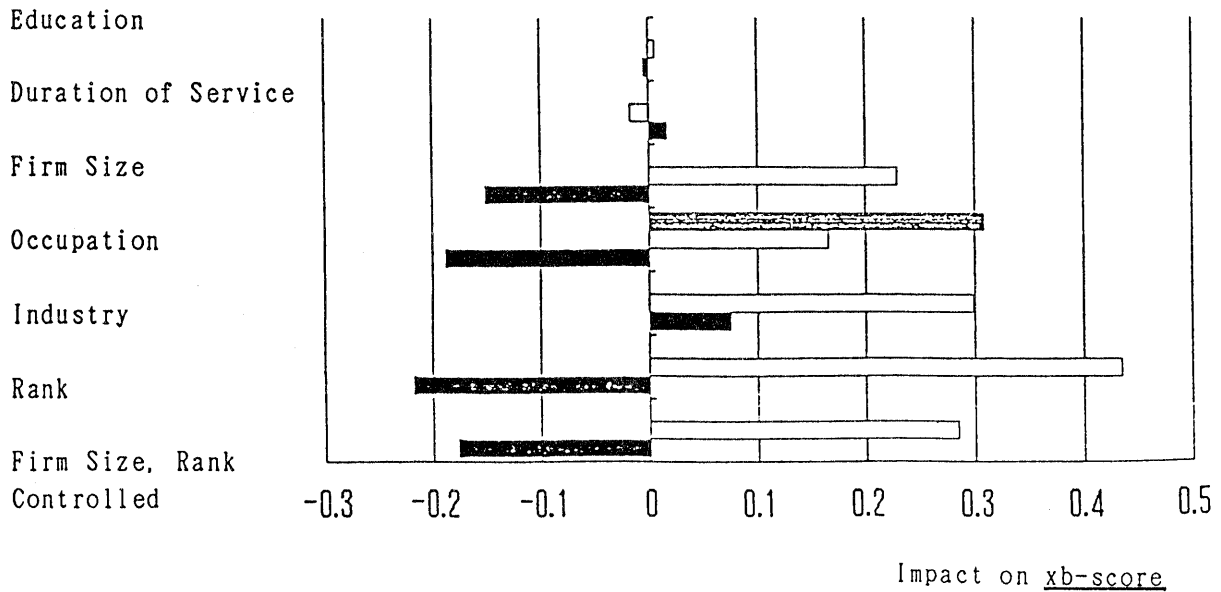satisfied or somewhat dissatisfied.
Source: Table 6.

(1) Age Group 25-34

Education

Duration of Service

Firm Size

Occupation

Industry

Rank

Firm Size, Rank
Controlled

-0.3   -0.2   -0.1   0   0.1   0.2   0.3   0.4

Impact on xb-score

(2) Age Group 35-44

Education

Duration of Service

Firm Size

Occupation

Industry

Rank

Firm Size, Rank
Controlled

-0.3   -0.2   -0.1   0   0.1   0.2   0.3   0.4   0.5

Impact on xb-score
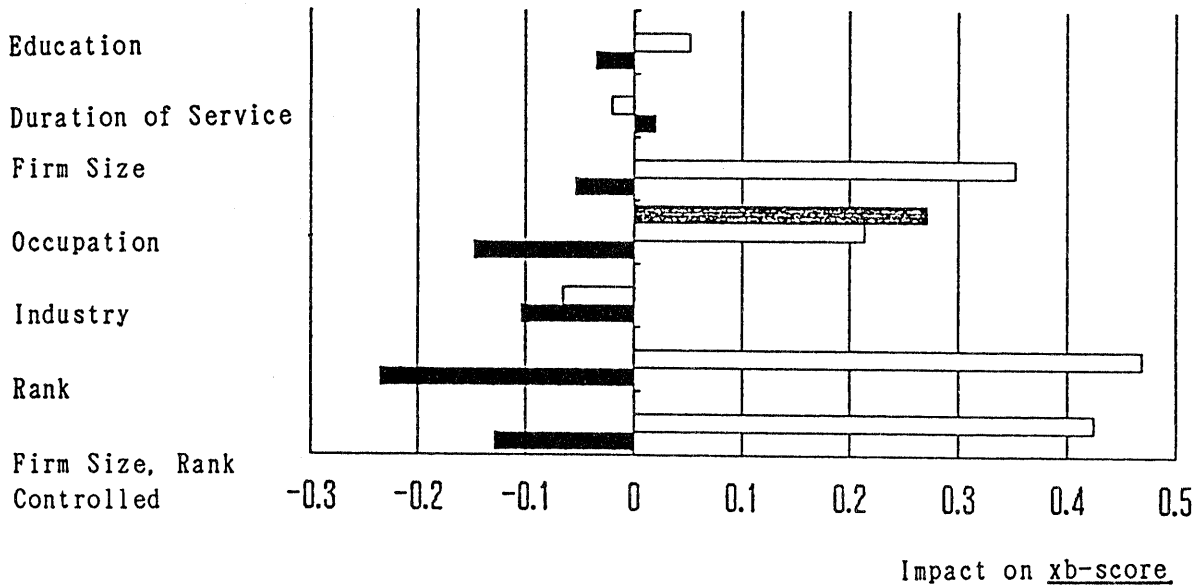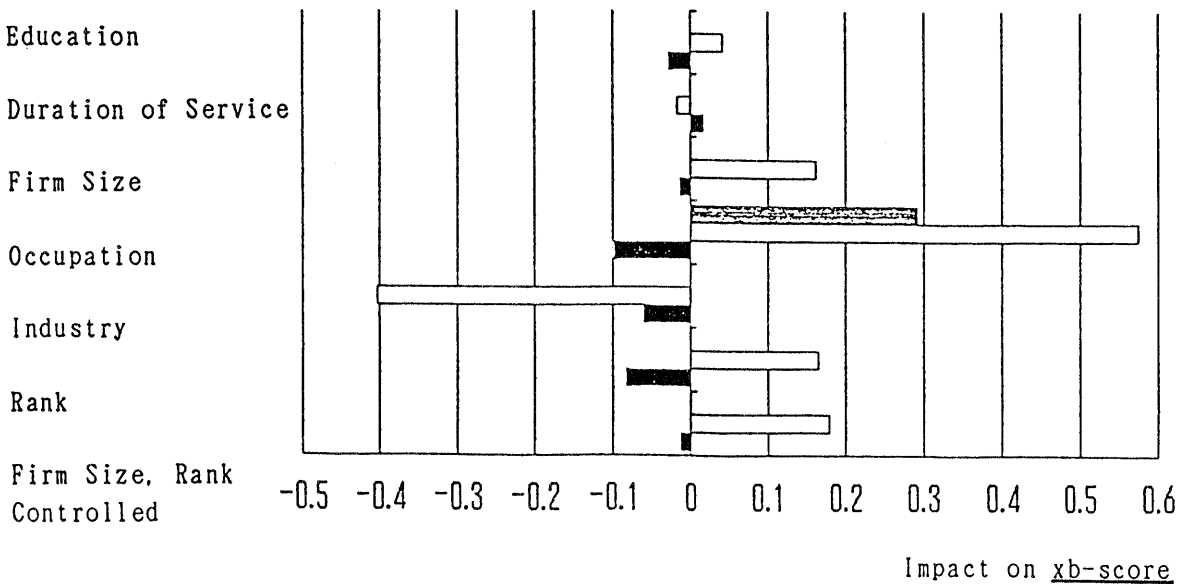
48

(3) Age Group 45-54

(4) Age Group 55-

Note: The standard of comparison and the unit change in each
explanatory factor is identical with that of Figure 5. The
commuting time and net worth variables have been excluded from
set of explanatory variables.