JOB SATISFACTION AS AN ECONOMIC VARIABLE

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Job satisfaction, while the subject of popular attention, of an extensive sociology and industrial psychology literature, and of theories of 'alienation,' has been studied by relatively few economists (see Borjas, Hamermesh, Flanagan, Straus and Ulman). Partly, the neglect of job satisfaction reflects professional suspicion of what may be called subjective variables: variables that measure "what people say" rather than "what people do." Partly also, economists are leary of what purport to be measures of individual utility.

The purpose of this paper is to examine these concerns and evaluate the use of job satisfaction (and other subjective variables) in labor market analysis. The main theme is that, while there are good reasons to treat subjective variables gingerly, the answers to questions about how people feel toward their job are not meaningless but rather convey useful information about economic life that should not be ignored. The paper begins with a brief description of the satisfaction questions on major worker surveys, and then considers the use of satisfaction as an independent and as a dependent variable. Satisfaction is shown to be a major determinant of labor market mobility, in part it is argued because it reflects aspects of the work place not captured by standard objective variables. Satisfaction is also found to depend anomolously on some economic variables (such as unionism) in ways that provide insight into how those factors affect people.

The Job Satisfaction Variable

To begin with, table 1 reproduces the job satisfaction questions and distributions of responses from major surveys of workers. The satisfaction questions are quite similar across surveys, asking for an overall evaluation of job satisfaction, and invoked similar distributions of responses. Most persons report themselves as highly or quite satisfied with their jobs, with only a distinct minority of about ten percent reporting dissatisfaction. While there is some indication in the NLS longitudinal tapes of declines in satisfaction over time, the Michigan Quality of Work Surveys show no such pattern.

The responses to satisfaction questions (and other subjective variables that lack a definite metric) can be scaled in two possible ways in analysis. First, they can be written as n-chotomous variables, taking the value 1 if the individual's response fell into the given category and 0 otherwise. When satisfaction is an independent variable, the set of dummies has an a priori ordering of effects, with for example the third category having a larger effect than the second (relative to, say, the first) and the fourth a larger effect than the third. When satisfaction is the dependent variable, the multinomial probability model can be used to predict the effect of various factors on the probability of giving a certain response. Alternatively, the variable can be rescaled according to a specified symmetric probability distribution, such as the standard normal. With the unit normal transformation, satisfaction becomes a z-score measuring the number of standard deviations between a given response and the mean. This procedure yields a continuous variable that can be entered as a dependent or independent factor in linear regressions, with obvious computational advantages over a maximum likelihood multinomial analysis and will be followed in ensuing empirical work.

Behavioral Consequences of Job Satisfaction

Do subjective responses to job satisfaction questions contribute to explaining objective economic behavior? If they do, a case can be made for including subjective variables in analyses of economic activity. If they don't, subjective variables can be safely ignored.

To determine the relation between job satisfaction and overt behavior, the effect of job satisfaction on the behavior most likely to be affected by it, quits, has been estimated using the NLS and Michigan PSID longitudinal data tapes. These tapes have the advantage of linking satisfaction in one year to _future_ mobility, providing a fix on lines of causality and on the _predictive_ power of the variable that is not possible with cross-section data. The impact of satisfaction and other determinants of

mobility is studied in terms of a logistic probability function, linking the probability (P) of quitting a job between years t and s to the characteristics of the person and their initial job in $t(X_{1t})$, including job satisfaction:

(1) $P(Q) = 1/(1-exp\Sigma B_i X_{1t})$

The X variables include standard measures of the objective position of the worker (age, race, sex education, wage, occupation in the initial job) and ignore for simplicity (and to avoid simultaneity issues) the additional information from the new jobs to which job changers move.

Maximum likelihood estimates of the effect of job satisfaction, measured as a standard normal variable, and of several objective economic factors on quits are given in table 2, using the logistic form. All of the calculations are limited to wage and salary workers who remained in the labor force in the period considered and who reported all the relevant information about their base year job. Column 1 records the frequency of quits in the three samples. Column 2 records the estimated logistic coefficient for the Z-score of satisfaction, scaled so that positive values reflect greater satisfaction; columns 3-5 give the coefficients for ln wages, age, and years of tenure with an enterprise. Column 6 lists the other control variables in the calculations, as specified in the table note, while column 7 records the fit of the equation in terms of minus the log of the likelihood function.

The calculations show that, diverse other factors held fixed, the subjective level of job satisfaction is a significant determinant of the probability of quitting, particularly in the NLS samples, where it obtains large coefficients 4 to 5 times the standard error. The magnitude of the effect of satisfaction on the probability of quitting can be estimated by differentiating the logistic form (1) with respect to the variable, yielding $dP/dX_1 = \beta_1 P(1-P)$ which makes the effect of change depend on the level of P. At the mean level of quits, a one-standard deviation change in satisfaction changes the probability by .038 in line 1, by .012 in line 2 and by .040 in line 3, all of which are sizeable relative to the means. For comparison, the effect of a standard deviation in the variable most extensively studied by economists

wages, can also be estimated. Multiplying the logistic coefficients in table 2 by $P(1-P)$ and the standard deviation of the variable yields the following impact parameters: .024 (line 1), .047 (line 2), and .067 (line 3). By this metric satisfaction has a much greater effect than wages on quits in the older male NLS data set and only a moderately weaker effect in the PSID and younger male sets.

Estimates of the effect of satisfaction on two other measures of mobility; employer initiated separations and total separations, consisting of quits and employer actions, were also made using the same equations as in table 2. The results showed only slight effects of satisfaction on employer initiated separations (the largest logistic coefficient was -.09 with a standard error of .06 in the older male NLS), but effects on total separations similar to those in the table. By affecting quits, satisfaction alters the overall level of mobility.

While predictive power, statistical significance, and magnitude of effects are not the sole measures of the value of a variable, the evidence on quits in table 2 does provide a clear answer to the question with which we began: it shows that subjective expressions of job satisfaction are significantly related to future overt behavior, which makes satisfaction at least potentially analytically useful.

Objections and Evaluation

Granting that satisfaction contributes to predicting behavior and is not meaningless, objections can still be raised about its value in social analysis. First, it may be argued that satisfaction is largely a measure of intentions to stay or quit (which could be better captured by a direct "do you intend to quit" question) and thus that the observed impact of the variable simply relates actions to intentions to act, which does not greatly illuminate the causal forces at work. If mobility were the only variable affected by satisfaction or if the effect of satisfaction were eliminated by inclusion of quit intention questions, this objection would have merit. However, the contrary appears true. The industrial psychology literature relates

job satisfaction to such forms of behavior as mental health, absences and physical ailments (see Locke), suggesting that the variable affects a broader range of phenomena. Inclusion of a direct mobility variable (responses to "what would the wage or salary have to be for you to be willing to take [another job]?" coded 1 if the person responded at no "conceivable pay")barely reduced the coefficient of satisfaction in the NLS samples (a drop from .31 to .29 in the older male NLS, for example) and contributed less to the explanation of quits than did satisfaction, suggesting that the more general attitudinal variable has greater information content. Inclusion of the variable "have you been thinking about getting a new job?" in the PSID, however, did reduce the satisfaction variable in line 2 of table 2 (which was more weakly related to quits than the satisfaction variable in the NLS) to insignificance, which would support the objection if the intention varaible was unrelated to other forms of behavior.

A related deeper problem is that as a measure of personal feelings, satisfaction may lack systematic independent variation or links to social variables of concern to economists. Assume, for example, that satisfaction depends only on standard measured variables and random noise but does not exhibit any socially identifiable exogenous variation. Then it would partition the effect of observed variables on mobility into direct and indirect (via satisfaction) routes but provide no information about how mobility could be altered by changing satisfaction. In terms of path analysis, satisfaction would be an endogenous intervening variable of little substantive impact. Only the reduced form equation relating mobility to objective variables would yield meaningful impact parameters.

The response to this objection is that satisfaction does depend on socially identifiable but missing or unobserved factors, which give it systematic exogenous variation. On the one hand, detailed case studies link job satisfaction to a host of very specific aspects of the work place, such as mode of supervision, physical work conditions, and so forth (Locke, Vroom) which are not generally measured on large data files, making satisfaction a potential proxy for those unobserved objective

factors. On the other, lack of adequate information on the alternatives facing individuals makes the variable a reasonable indicator of alternative job opportunities, if as seems reasonable those with good opportunities are less satisfied than those with poor opportunities. Some insight into the relative importance of omitted characteristics due to changes in the features of the current work place and of alternatives might be garnered from longitudinal information on changes in the job satisfaction and wages of mobile workers.

The omitted variable argument can be developed further by assuming that mobility depends solely on objective factors, including the omitted variables, and by treating satisfaction as an indicator of the omitted factors. If, as seems reasonable, the omitted aspects of the work place are correlated with the measured factors, the coefficients of the latter will be biased. Consistent estimates could be obtained by using satisfaction and other (subjective) variables that depend on the unobserved work characteristics as proxies, using general unobservables models. In this case, the satisfaction variable is needed to correct for econometric problems in estimating the effect of the observed variables. Whatever model structure is preferred, the link between satisfaction and objective but unmeasured variables rescues the variable from what may be called the solipsism problem.

Finally, even if the interpretative problems with job satisfaction measures cannot be entirely resolved, the evidence that satisfaction is related to future mobility and other overt behavior (wages and standard variables held fixed) does provide useful clues to individual actions and to needed areas of research. It suggests that nonpecuniary factors are important in mobility and that additional effort be devoted to measuring and analyzing those factors.

Job Satisfaction as a Dependent Variable

The definition of job satisfaction in industrial psychology as a "positive emotional state resulting from the appraisal of one's job" (Locke, p. 1300) highlights the principal problem in interpreting responses to satisfaction questions:

that they depend not only on the objective circumstances in which an individual finds himself but also on his psychological state and thus on aspirations, willingness to voice discontent, the hypothetical alternatives to which the current job is compared, and so forth. Because job satisfaction reflects both objective and subjective factors, it is more complex than standard economic variables and requires more sophisticated and careful analysis. By altering the way in which persons respond to questions, variables like education (which raises aspirations) or collective bargaining (which provides a mechanism for "voicing" discontent) could have very different effects on job satisfaction than on objective economic conditions. The impact of satisfaction on overt behavior could also differ among groups, depending on the importance of objective and subjective factors in responses.

The distinct features of measured job satisfaction that result from its dependence on psychological as well as objective circumstances can be fruitfully analyzed by comparing the effect of variables on satisfaction with their effect on overt mobility behavior (satisfaction excluded as an explanatory factor). Assuming that overt mobility depends solely on objective circumstances while satisfaction is influenced by subjective as well as objective factors, marked inconsistencies between the effect of variables on the two outcomes could be interpreted as reflecting the dependence of satisfaction on the subjective factor.

Estimates of the effect of various economic variables on job satisfaction (measured, as before, by a z-score scaled so that positive values reflect increased satisfaction) and on the probability of quits (satisfaction held fixed) were made for the PSID and older male NLS samples. Because unionism was not available in the older male NLS until 1969, the calculations focus on quits from 1969 to 1971. Table 3 summarizes the results in terms of the coefficients on variables having markedly different effects on satisfaction and quits.

The principal paradoxical finding is that trade unionism, which reduces quits significantly in the data sets, and thus would be expected to raise job satisfaction, either reduces it significantly (in the PSID and in the 1971 satisfaction equation in th

older male NLS) or has little effect (1969 satisfaction in the older NLS). A negative or negligible coefficient of unionism on job satisfaction has also been found in other data sets (Hughes), including the younger male NLS, and has been documented, with a different model, for the older male NLS   by Borjas. In the 1975 meetings, I suggested that the inverse relation might reflect the role of unions as a "voice" institution which encourages workers to express discontent during contract negotiations and to make formal grievances rather than to quit and which keeps the dissatisfied from leaving the employer. If this view is correct, the satisfaction relation lends some support to the exit-voice model of the union (Freeman, 1976). Since wages are included in the calculation and since a negative relation is found for young as well as older workers, it is difficult to account for the anomolous relation in terms of the flatter age earnings profile of union workers, or related objective factors.

The other variable with consistently different effects is tenure, which is associated with much lower quit rates (possibly because of selectivity) but which has virtually no effect on job satisfaction. This could reflect the greater aspirations of those in a company due to increased benefits with seniority; their greater willingness to voice discontent due to job protection, or other subjective factors. While there were other differences in the effect of variables on satisfaction and quits in some of the data sets, there were no other clear patterns for all of the samples. Most variables like age, wages, and a race dummy had the expected opposite coefficients on satisfaction compared to quits.

Overall, the results of comparing satisfaction as a dependent variable with quits indicates that, consistent with economists' suspicion, satisfaction cannot be treated in the same way as standard economic variables. The divergent effects of unions (and to a lesser extent tenure) on satisfaction and quits suggests that at least some economic institutions and variables have very distinct effects on the subjective way in which individuals view their job satisfaction.

Conclusion

This paper has attempted to show that subjective variables like job satisfaction, which economists traditionally view with suspicion, contain useful information for predicting and understanding behavior, but that they also lead to complexities due to their dependency on psyhological states. The empirical analysis has found job satisfaction to be a major determinant of labor market mobility and has turned up puzzling relations between certain economic variables, notably unionism, and satisfaction that appear attributable to the subjective nature of the variable.

Table 1: Questions about Job Satisfaction and Responses to Questions from Major Surveys

Survey and Year	Question and Response			
National Longitudinal Survey (NLS)	"How do you feel about the job you have now?"			
	dislike it very much	dislike it somewhat	like it fairly well	like it very much
Older Men, 1966	2%	5	37	56
1971	2	6	45	48
Young Men, 1966	3	8	42	47
1971	2	9	50	38

Michigan Work Quality (1968-9) and Quality of Employment (1972-3)	"All in all how satisfied would you say you are with your job?"			
	not at all	not too satisfied	somewhat satisfied	very satisfied
1968-69	3	11	39	46
1972-73	2	8	38	52

Michigan Panel Survey of Income Dynamics (PSID)	"In general would you say your job is:				
	not enjoyable at all	not very enjoyable	somewhat enjoyable	mostly enjoyable	very enjoyable
1972	2	2	21	42	28

Source: Calculated from distribution of answers for the population given by each

of the surveys.

Table 2: <u>Maximum Likelihood Estimates of the Coefficients and Standard Errors of</u>

<u>Job Satisfaction and Other Variables on the Probability of Quits, Using, Using the Logistic For</u>

Sample, Period, and Numbers of Observations	Mean Quits	Logistic Coefficients and Standard Errors				Other Variables[a]	Minus ln Likelihood
		Satisfaction	ln Wage	Age	Tenure		
1. NLS Older Men 1966-71 (3284)	.145	-.31 (.06)	-.37 (.14)	.021 (.013)	-.05 (.006)	2-7, 10	2438
2. Michigan PSID 1972-73 (3730)	.093	-.14 (.06)	-.89 (.12)	-.027 (.006)	-.06 (.01)	1-9,11	2585
3. NLS Younger Men 1969-71 (1742)	.123[b]	-.37 (.09)	-.62 (.24)	-.605 (.033)	-.25 (.06)	2-11	596

[a]Other variables defined as 1=sex; 2=race; 3=years of schooling; 4=occupation (7 dummy variables) in NLS samples; 9 in PSID); 5-industry (9 dummies in NLS samples, 5 in PSID); 6=number of dependents; 7=geographic locale (3 region dummies); 8=years of work experience; 9=local market conditions (unemployment in area in NLS young men sample; 3 variables reflecting unemployment, shortage of workers, and area wage in PSID) 10=SMSA dummy; 11=union.

[b]Quits calculated by a complicated algorithm based on changes from intervening jobs, and is subject to considerable potential error.

Source: Calculated from surveys with questions on satisfaction as described in table 1.

Table 3 <u>Estimates of the Differential Effect of Unionism and</u>

<u>Job Tenure on Satisfaction and Quits</u>

	Michigan PSID		NLS Older Male		
	Satisfaction	P(Quit)	Satisfaction		P(Quit)
	1972	1972-73	1969	1971	1969-71
Union	-.15	-.35	.04	-.13	-1.93
	(.04)	(.16)	(.05)	(.05)	(.42)
Tenure	-.001	-.06	+.000	-.002	-.16
	(.002)	(.01)	(.002)	(.002)	(.03)
R^2/(ln likelihood)	.067	(2385)	.073	.075	(231)

Note: All equations include controls used in table 2.   P(Quit) estimated on logistic function using maximum likelihood. Sample sizes, as in table 2 except for older male NLS, which has 1735 observations.

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