ELSEVIER

Journal of Economic Psychology 18 (1997) 693–704

JOURNAL OF Economic Psychology

Job satisfaction and target earnings

S.A. Drakopoulos [a], I. Theodossiou [b,*]

[a] *Department of Economics, Section of Methodology of Social Sciences, National and Capodistrian University of Athens, Panepistimioupolis GR-157, Athens, Greece*

[b] *University of Aberdeen, Edward Wright Building, Department of Economics, Dunbar Street, Old Aberdeen AB24 3QY, UK*

Received 12 October 1995; accepted 30 May 1997

Abstract

The starting point of this paper is the idea that individuals are characterized by hierarchical behaviour. This idea, which is quite popular in other social sciences, implies that the individual sets priority targets which are ordered in terms of urgency or importance. The paper tests the hypothesis in the context of a utility-from-work framework. In particular, the paper uses data on a random sample of British workers who report levels of satisfaction from their work. The empirical results indicate the presence of hierarchical behaviour. In particular, workers earning below the target level get more satisfaction than those earning above the target level. © 1997 Elsevier Science B.V.

PsycINFO classification: 3600; 3650

Keywords: Job satisfaction; Target earnings

* Corresponding author. Tel.: 00 44 1224 272183; fax: 00 44 1224 272181; e-mail: theod@abdn.ac.uk.

PII S0167-4870(97)00030-5

1. Introduction

Priority target setting behaviour is considered to be one of the most interesting ideas in the social sciences. It implies that the individual sets priority targets which are ordered in terms of urgency or importance. The idea has been around for a number of years and can be found in psychology, sociology and political science (see for instance Maslow, 1954; Tversky, 1969; Ardrey, 1970; Bernstein and Crosby, 1980). Furthermore, a number of 19th century economists like Menger (1950) and Marshall (1949) have written about it. Among modern economists, Little (1957), Georgescu-Roegen (1966), Encarnacion (1964, 1983), Ferguson (1965), Canterbery (1979), and Earl (1983) have attempted to employ the idea in areas including consumer theory, theory of the firm, and social choice. Other theorists like Ferguson (1958), Banerjee (1964), Gorman (1971), Chipman (1971), Day and Robinson (1973), and Falkinger (1990) have incorporated the theoretical formulation of target setting behaviour.

In spite of the above, the idea has not made a significant impact on economic thought, although the behavioural properties are consistent with the requirements of general equilibrium theory (see Borch, 1968; Day and Robinson, 1973). Furthermore, there is no empirical research which tests the relevance of target setting behaviour. The purpose of this paper is to test the idea that the variables which affect the satisfaction of the individual exhibit a hierarchical order, or in other words, that some satisfaction variables are more important than others on their effect on satisfaction. In order to test this, the paper uses data on a random sample of British workers who report levels of satisfaction from their work. Section 2 of the paper will discuss the theoretical aspect of priority target setting behaviour. Sections 3–5 provide the discussion of the data, the empirical methodology and the empirical findings.

2. Priority target setting behaviour

We shall start with a brief discussion of the general target setting model and then we will proceed to see its application to a job satisfaction framework. The standard approach to an individual's utility from working is given as

$$= (, ,), \qquad (1)$$

where S is utility or satisfaction, w the level of earnings, h the hours of work and z a vector of characteristics comprising variables that affect job satisfaction. There is no accepted list of these variables but most authors include tenure, union, age, and location (see Hamermesh, 1977; Freeman, 1978; Borjas, 1979; Miller, 1990; Clark and Oswald, 1992). These variables may or may not affect earnings. Some authors like Borjas accept as a standard assumption that satisfaction and earnings are positively related.

The underlying idea of the model of priority target setting is that wants or needs are not viewed as having equal weight but are structured in an ordered manner. In particular, basic wants are satisfied first and secondary wants come later. Alternatively, we can imagine that individuals have aspiration levels or targets. Once the primary targets have been met, the secondary targets come into the picture (for an extensive discussion of such behaviour and also of types of hierarchical choice, see Georgescu-Roegen, 1966; Encarnacion, 1964; Fishburn, 1974; Earl, 1983; Drakopoulos, 1992, 1994).

The translation of the priority targets system into the utility-from-work framework implies that the individual has a priority approach to utility from work. This means that the most important variable (the level of earnings) must be satisfied first before the second priority variable comes into the picture. This idea is also supported by research findings by a number of industrial organization specialists. [1]

We can incorporate all the above by taking a two part function:

$$(\ , \ , \ ) = \{ \ _1(\ , \ , \ ), \ _2(\ , \ , \ )\}, \tag{2}$$

where

$$(\ , \ , \ ) = \ _1 \quad \text{for} \quad \leqslant \ ^*, \qquad (\ , \ , \ ) = \ _2 \quad \text{for} \quad > \ ^*$$

with the following conditions (which are also our hypotheses to be tested in the empirical part of the paper):

$$\partial \ _1/\partial \ > 0, \quad \partial \ _2/\partial \ > 0, \tag{3}$$

$$\partial \ _1/\partial \ > \partial \ _2/\partial \ . \tag{4}$$

The conditions provide the essence of the target setting approach to utility-from-work. Condition (4) infers that low earning individuals get more satisfaction from their income than high earning individuals. Utility-from-work will be an upward sloped function with respect to individual earnings.

[1] For a comprehensive review see Locke (1976).

However, the slope of utility-from-work will be steep up to the individual's target level w^*, but thereafter the slope will become relatively flat. The change in slope at w^* implies that although w still provides satisfaction, it ceases to be the most important variable (Fig. 1). This point is the main point of difference between the standard theory which assumes a smooth increasing function.

3. The data

The empirical analysis is based on the 1986 SCELI (Social and Economic Life Initiative) survey. Six British labour markets (Aberdeen, Coventry, Kirkcaldy, Northampton, Rochdale, Swindon) were included in the survey. These cities are small to medium size and of contrasting unemployment experience. Of the 6110 respondents 4024 were employed either full- or part-time when they were interviewed and 369 were self-employed. Thus the survey offers a wealth of detail for the type of analysis proposed in this study. However, its major weakness lies in the fact that it embraces six distinct geographical areas rather than a national sample. In this study, given the nature of the inquiry, only the full-time paid employees are considered. The depen-

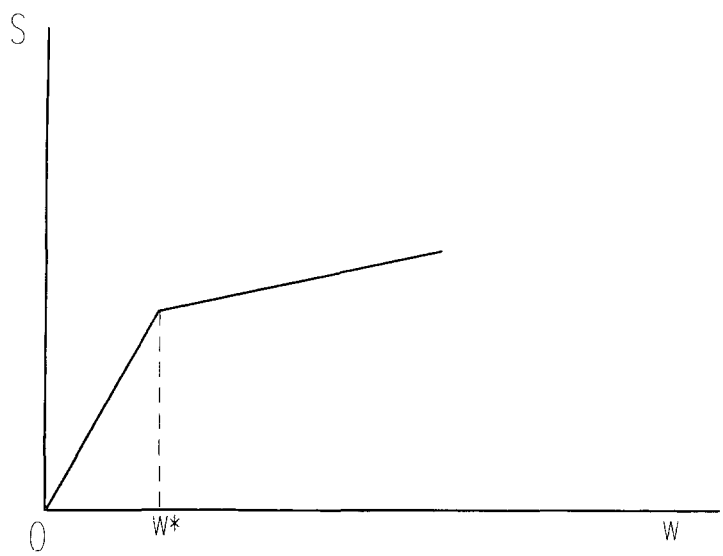

Fig. 1. Utility from work as a function of earnings.

dent variable is based on individuals' self-reported levels of satisfaction. The description of all variables used in this study is given in the appendix.

4. Econometric methodology

The approach used for the model specification is outlined as follows: First a standard earnings equation is estimated which takes the following form:

$$\ln \; _i = \; _{i\,1} + \; _{i\,2} + \; _{1i} \tag{5}$$

where w_i is the earnings of individual i, x_i a vector of personal and job characteristics, y_i represents the firm characteristics, and u_{1i} the random error component. Second, the predicted earnings $E(w_i)$ are retrieved from relation (5). It is assumed that they represent a reasonable target level of earnings since they are the earnings that an individual should be expected to earn given his/her personal and human capital characteristics. Although the use of the expected earnings as an approximation of the unobserved "subjective target income" is not ideal, the basis of our approach here follows the lines of the standard human capital theory (Mincer, 1958; Becker, 1964). It is an acceptable approach under the assumption that a rational individual would consider as satisfactory that level of income which is earned by individuals with experience, qualifications, age, etc. similar to his/her own.

The value of $E(w_i)$ is used to disaggregate the sample of employees to those who earn above the target or expected earnings and to those who do not. Finally separate ordered probit equations are estimated for each segment of the employed labour force in order to assess whether the level of earnings affects the level of individual's job satisfaction with a different intensity. The equations are constructed following the relatively simple approach of Hamermesh (1977) and Freeman (1978) which, however, is considered to be standard in the literature.

Thus for those who earn above the target level of earnings the model is

$$_i = \; _0 + \; _1 \; _1 + \; _i, \tag{6}$$

whereas for those below or equal to the target level of earnings the model is

$$_i = \; _0 + \; _1 \; + \; _i, \tag{7}$$

where S_i is an ordinal variable which adopts the discrete values of 1–10 corresponding to 10 levels of job satisfaction recorded into the questionnaire; $\boldsymbol{x}$ a vector of all control variables including the level of earnings, $z \sim N(0,1)$ and

a_0, a_1, b_0 and b_1 are the relevant coefficients. To assess whether the effect of targets other than earnings on the level of satisfaction may also change depending on whether the individual earns above or below his/her target earnings, two additional variables are included; whether the individual has a career and the number of hours worked.

The X variables are the individual and job characteristics including gender, age, union membership, educational level and the log of hours of work. Apart from the standard variables, we also include some further individual characteristics such as: whether the individual owns his/her house and whether he/she works for essentials as a control for personal wealth; the cumulative unemployment burden during the individual's working life as a control of the individual's attachment to the employment labour force; and whether the individual has a career profile to indicate his/her attachment to current employment (Theodossiou, 1995). There are also five industry dummies (Agriculture, Energy, Manufacturing, Services and Construction-the omitted variable); six location dummies (Aberdeen, Coventry, Kirkcaldy, Northampton, Rochdale, and Swindon-the omitted variable); and three dummy variables indicating the size of the firm. Both equations are estimated by ordered probits in order to assess the importance of the above explanatory variables in determining the utility from work. The log of earnings is the variable of interest.

5. Empirical results

Table 1 reports the estimation results for the earnings equation which will be reviewed briefly here since they are not the main concern of this study. In particular, male or married workers enjoy higher earnings than female and unmarried workers. The whole range of formal educational attainment from O-level and above positively affects the level of earnings. Apprenticeship also appears to be important. Both work experience (EXPER) and time to proficiency (PTPROF) for the particular job, which reflect the general and specific training respectively, increase at a diminishing rate an individual's pay. The unemployment experience variable has a significant adverse effect on the individual's pay. The variable UNION has a significant effect and therefore unionisation is associated with higher pay. The size of the firm is positively correlated with earnings. Employees in the energy industry enjoy higher rewards than those in the construction industry (the omitted variable), and average earnings in Rochdale and Kirkcaldy seem lower than those in Swindon

Table 1
Earnings equation

Variable	Coef.	t-Stat.
Constant	0.503	9.577
MALE	0.229	13.186
MARRIED	0.050	2.724
LESS THAN O-LEVEL	0.063	1.742
APPRENTICESHIP ETC.	0.052	1.913
O-LEVEL ETC.	0.129	5.318
A-LEVEL ETC.	0.176	5.669
DEGREE ETC.	0.397	15.762
TPROF	0.012	4.123
TPROFSQ	0.000	2.968
EXPER	0.002	9.727
EXPERSQ	0.300×10^{-5}	8.237
CAREER	0.120	6.783
WORKERS < 100	0.093	4.231
100 < WORKERS < 500	0.126	5.565
WORKERS > 500	0.161	6.969
UNION	0.048	2.849
MONTHS IN UNEMPL	0.003	4.126
AGRICULTURE	0.053	0.982
MANUFACTURING	0.006	0.156
SERVICE	0.023	0.620
ENERGY	0.136	2.671
ABERDEEN	0.015	0.571
KIRKCALDY	0.054	1.968
ROCHDALE	0.100	3.636
COVERNTRY	0.037	1.301
NORTHAMPTON	0.030	1.105
R Square	0.386	
Adjusted R Square	0.379	
Standard Error	0.367	
No of obs.	2297.00	
F-Stat (df = 26)	54.00	

(the omitted variable). Thus the above results are compatible with the predictions of the human capital theory and the relevant econometric studies.

Table 2 reports the estimation results of the ordered probits. The dependent variable is the level of overall satisfaction derived from work for those earning above the expected earnings and those earning either the expected earning or below the expected earnings. It appears that the performed split to those earning above and below target earnings is appropriate given that the Kolmogorov–Smirnov non-parametric test indicated that the two

Table 2
Ordered probit estimates of overall job satisfaction

Variable	Earnings > expected earnings		Earnings ⩽ expected earnings	
	Coef.	*t*-Stat.	Coef.	*t*-Stat.
Ln(earnings)	0.193	1.641	0.280	2.250
Male	0.277	3.403	0.355	4.393
Age	0.005	0.209	0.004	0.171
Agesq	0.0002	0.614	0.0001	0.265
Union	0.173	2.519	0.088	1.269
Ln(hours of work)	0.059	0.350	0.132	0.842
Less than o-level	0.053	0.349	0.123	0.870
Apprenticeship etc	0.108	0.961	0.196	1.834
O-level etc.	0.322	3.115	0.235	2.416
A-level etc.	0.507	3.815	0.440	3.597
Degree etc.	0.696	5.924	0.382	3.697
Owner	0.140	1.702	0.192	2.740
Employer Training	0.070	1.029	0.123	1.830
WORKERS < 100	0.250	2.787	0.125	1.403
100 < WORKERS < 500	0.127	1.368	0.262	2.839
WORKERS > 500	0.178	1.825	0.181	1.912
Work for essen	0.123	1.711	0.136	1.930
Career	0.449	5.784	0.295	4.163
Months in unempl	0.0002	0.074	0.002	0.612
Agriculture	0.010	0.045	0.078	0.353
Manufacturing	0.020	0.128	0.200	1.349
Service	0.048	0.309	0.090	0.615
Energy	0.096	0.446	0.152	0.773
Aberdeen	0.040	0.353	0.019	0.179
Kirkcaldy	0.062	0.527	0.129	1.187
Rochdale	0.071	0.619	0.007	0.067
Coverntry	0.114	0.972	0.014	0.124
Northampton	0.141	1.244	0.082	0.765
Constant1	2.859		1.781	
Constant2	2.689		1.674	
Constant3	2.391		1.472	
Constant4	2.120		1.200	
Constant5	1.837		0.977	
Constant6	1.482		0.568	
Constant7	1.234		0.350	
Constant8	0.805		0.017	
Constant9	0.098		0.607	
Constant10	0.335		1.073	
Number of obs	1114.00		1183.00	
chi2(28)	113.04		101.97	
Log Likelihood	2102.92		2374.81	

earnings distributions are different. Inspection of the results highlights a number of interesting points. Importantly with respect to this study, the coefficient of the log of earnings for those above the predicted earnings has an insignificant effect on individuals' job satisfaction but it has a highly significant effect on the satisfaction of those below or equal to their expected earnings. In addition the former coefficient is just under 70% of the latter. The estimation results suggest that hours of work do not exert any statistically significant influence on the utility-from-work variable. Men appear to derive less utility from their work compared with females for both segments. Union members who are above their expected earnings are significantly less satisfied with their work and this is in accordance to the "exit voice" explanation of the union and other empirical findings (Miller, 1990). Importantly, for those above the target earnings having a career profile appears to be more important than for those below the target earnings since the size of the coefficient in the latter group is just over 65% of that in the former. Finally, no strong industry or locational effects were present.

6. Conclusion

The main aim of this paper was to test the idea that variables which affect the satisfaction from work are hierarchically ordered. In other words, more important variables must reach a target level before lower order variables come into the picture. A simple formulation of this idea is to model a set of variables affecting utility-from-work. In order to test this model which is consistent with approaches popular in other social sciences, we used data from British workers with self-declared levels of satisfaction from work. First, we estimated earnings using a standard human capital formulation. Second, a utility-from-work equation was estimated for those earning above the target earnings and those earning either at or below the target earnings. It was observed that earnings are much more important for the first group which implies that earnings beyond a target or satisfying level become less important determinants of utility from work for individuals earning more than expected earnings. Therefore it can be surmised that once target earnings are reached other determinants of utility-from-work become important.

The result, in general, suggests that workers are characterized by priority setting behaviour when it comes to utility-from-work. The important implication here is that it attaches additional significance to the priority setting model and consequently challenges the established approach to job

satisfaction which can be found in economic textbooks. In more general terms, our findings imply kinks in the Demand and Consumption functions and in turn, econometric estimates that do not take this into account are likely to be biased.

Acknowledgements

Special thanks are due to Andrew Oswald, Peter Sloane, Richard Day, Thomas Moutos, Robert Elliott, two anonymous referees and an editor.

Appendix. Variables used

1. MARRIED (a dummy variable equal to 1 if the respondent is married).
2. MALE (a dummy variable equal to 1 if the respondent is male).
3. EXPER (months of working experience during the respondent's life since he first entered the labour market).
4. PTPROF (years required to become proficient in the respondents, current type of job). The answers were coded in ranges with the last open-ended over two years.
5. UNION (a dummy variable which indicates whether an individual is a member of a trade union or not).
6. EDUCATION (a set of qualification dummy variables, where LESS THAN O-LEVEL refers to other qualifications of less than O level standard, APPRENTICESHIP refers to apprenticeship, clerical and commercial qualification e.g. typing shorthand or book-keeping, O-LEVEL ETC. refers to O level or equivalent, A-LEVEL ETC. represents A-level or equivalent and DEGREE ETC. refers to degree or equivalent professional qualification (no qualifications is the omitted variable).
7. HOURS OF WORK (hours of work per week).
8. SATISFACTION (overall satisfaction with the present job coded in integers from 1 to 10 with 10 as highly satisfied).
9. CAREER (a dummy variable which indicates whether an individual considers himself/herself as having a career).
10. FIRM SIZE (a set of dummy variables, where WORKERS < 100 refers to firms employing more than 20 and less than 100 workers, $100 \leqslant$ WORKERS < 500 refers to firms employing more than 100 and less than 500 workers and WORKERS $\geqslant 500$ refers to firms employing

more than 500 workers (firms employing less than 20 workers is the omitted variable).

11. MONTHS IN UNEMPL (months of unemployment during the respondent's life since he first entered the labour market).
12. OWNER (a dummy variable which indicates whether an individual owns a house).
13. WORK FOR ESSEN (a dummy variable which indicates whether an individual considers that he/she works for essentials).

References

Ardrey, R., 1970. The Social Contract. Dell, New York.

Banerjee, D., 1964. Choice and order: Or first things first. Economica 31, 158–167.

Becker, G., 1964. Human Capital: A Theoretical and Empirical Analysis. National Bureau of Economic Research, New York.

Bernstein, M., Crosby, F., 1980. An empirical examination of relative deprivation theory. Journal of Experimental Social Psychology 16, 442–456.

Borch, K., 1968. The Economics of Uncertainty. Princeton University Press, Princeton, NJ.

Borjas, G.J., 1979. Job satisfaction, wages and unions. Journal of Human Resources 14, 21–40.

Canterbery, R., 1979. Inflation, necessities and distributive efficiency. In: Gapinski, J., Rockwood, C. (Eds.), Essays in Post-Keynesian Inflation. Ballinger, Cambridge Mass.

Chipman, J., 1971. On the lexicographic presentation of preference orderings. In: Chipman.

Clark, A., Oswald, A., 1992. Satisfaction and comparison income. LSE Working Paper No. 207.

Day, R., Robinson, S., 1973. Economic decision and L** utility. In: Cochrane, J., Zeleny, M. (Eds.), Multiple Criteria Decision Making. University of South Carolina Press, Columbia.

Drakopoulos, S., 1992. Psychological thresholds, demand and price rigidity. Manchester School LX, 152–168.

Drakopoulos, S., 1994. Hierarchical choice in economics. Journal of Economic Surveys 8, 133–153.

Earl, P., 1983. The Economic Imagination. Wheatsheaf Books, Brighton.

Encarnacion, J., 1964. A note on lexicographical preferences. Econometrica 32 (1,2), 215–217.

Encarnacion, J., 1983. Social values and individual choices. Journal of Economic Behaviour and Organization 4 (2,3), 265–275.

Falkinger, J., 1990. On growth along a hierarchy of wants. Metroeconomica 3, 209–233.

Ferguson, C.E., 1958. An essay on cardinal utility. Southern Economic Journal 25, 11–23.

Ferguson, C.E., 1965. The theory of multidimensional utility analysis in relation to multiple-goal business behaviour: A synthesis. Southern Economic Journal 32, 169–175.

Fishburn, P., 1974. Lexicographic orders, utilities and decision rules: A survey. Management Science 20 (11), 1442–1471.

Freeman, R.B., 1978. Job satisfaction as an economic variable. American Economic Review 68, 135–141.

Georgescu-Roegen, N., 1966. Analytical Economics. Cambridge University Press, Cambridge.

Gorman, W., 1971. Preference, revealed preference and indifference. In: Chipman et al. (Eds.), Preferences, Utility and Demand. Harcourt, Brace and Jovanovich, New York .

Hamermesh, D.S., 1977. Economic aspects of job satisfaction. In: Ashenfelter, O.C., Oates, W. (Eds.), Essays in Labor Market Analysis. Wiley, New York.

Little, I.M.D., 1957. A Critique of Welfare Economics. Clarendon Press, Oxford.

Locke, E.A., 1976. The nature and causes of job satisfaction. In: Dunnette, M. (Ed.), Handbook of Industrial and Organizational Psychology. Rand McNally, Chicago, pp. 1302–1309.

Marshall, A., 1949. Principles of Economics, 8th ed. Macmillan, London.

Maslow, A., 1954. Motivation and Personality. Harper & Row, New York.

Menger, C., 1950. Principles of Economics (J. Dingwall, B. Hoselitz, Trans.). Free Press, Glencoe, IL.

Miller, P., 1990. Trade unions and job satisfaction. Australian Economic Papers 29, 226–248.

Mincer, J., 1958. Investment in human capital and personal income distribution. Journal of Political Economy 66, 281–302.

Theodossiou, I., 1995. Wage determination for career and non-career workers in the U.K.: Is there labour market segmentation? Economica 62, 195–211.

Tversky, A., 1969. Intransitivity of preferences. Psychological Review 76, 31–48.