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TANSEL, AYSIT

Middle East Technical University

25 June 2022

Online at https://mpra.ub.uni-muenchen.de/113565/
MPRA Paper No. 113565, posted 30 Jun 2022 08:50 UTC

Job Satisfaction, Structure of Working Environment and Firm Size*

Aysit Tansel**

Department of Economics Middle East Technical University
06800 Ankara, Turkey
Institute of Labor Economics (IZA), Bonn, Germany
Economic Research Forum (ERF) Cairo, Egypt
e-mail: atansel@metu.edu.tr Telephone: 90.312.210 20 73
https://orcid.org/0000-0001-9556-2396

June 25, 2022

Abstract
Employees' wellbeing is important to the firms. Analysis of job satisfaction may give insight into various aspect of labor market behavior, such as worker productivity, absenteeism and job turn over. Little empirical work has been done on the relationship between structure of working environment and job satisfaction. This paper investigates the relationship between working environment, firm size and worker job satisfaction. We use a unique data of 28,240 British employees, Workplace Employee Relations Survey. In this data set the employee questionnaire is matched with the employer questionnaire. Four measures of job satisfaction considered are satisfaction with influence over job, satisfaction with amount of pay, satisfaction with sense of achievement and satisfaction with respect from supervisors. They are all negatively related to the firm size implying lower levels of job satisfaction in larger firms. The firm size in return is negatively related to the degree of flexibility in the working environment. The small firms have more flexible work environments. This is the first study that explore the effect of work amenities. We further find that, contrary to the previous results lower levels of job satisfaction in larger firms can not necessarily be attributed to the inflexibility in their structure of working environment.

Key Words: Job Satisfactions, Firm Size, Working Environment, Linked Employer-Employee data, Britain.

JEL Classifications: J21, J28, J29, J81

*This paper is substantially based on a joint work with Saziye Gazioglu before her demise in 2013. A first version was published as *Saziye Gazioglu and Aysit Tansel (2003): "Job Satisfaction, Work Environment and Relations with Managers in Britain," ERC Working Papers 0304, ERC - Economic Research Center, Middle East Technical University, Ankara, Turkey*. I recently worked on it and provide this updated version in honor of Saziye's memory. She was a great economist and a wonderful woman – I gratefully acknowledge her insightful contributions and the good times we had while we were working on the first working paper many years ago.

** corresponding author

1. Introduction

Working environment refers to the place and the conditions under which one works. Workers that are comfortable within their working environment will be happier, work more efficiently, with greater ease and feel engaged than those who are uncomfortable in their working environment. Unfavorable working environment may contribute to stress and health problems. This can affect the job satisfaction of the employees, their productivity, absenteeism, lateness, quit behavior, job turnover, loyalty, commitment to the firms, innovation and creativity. These in turn affect the firm's productivity and profitability. For this reason, the structure of work environment is important. This paper investigates the job satisfaction in relation to the structure of working environment and the firm size. Understanding the structure of working environment and job satisfaction has important economic indications. Investigation of the of these issues is the purpose and one of the contributions of this study.

To the best of my knowledge there are only two studies on the topic of job satisfaction, firm size and structure of working environment. The earliest study is by Idson (1990) for the USA The second study is by Garcia-Serrano (2011) for Spain. My contribution to the empirical literature on the interrelationships among job satisfaction, firm size and structure of working environment is as follows. I use a unique data set from Britain and provide evidence from Britain. The data set comes from Workplace Employee Relations Survey (WERS) (1998). This unique data includes a set of questions on the structure of working environment. There are two sets of them. The first set includes the following: Workers have some or a lot of influence on the range of tasks they do in their job; on the pace at which they work and how they do their work. I refer to the first set as "working conditions". The second set includes information on availability of flexible working hours, job sharing, parental leave and working from home. I refer to the second set as "working amenities". I will refer to the two sets together as "structure of work environment.To the best of my knowledge the effect of working amenities are being explored for the first time in this paper. There are four indicators of job satisfaction available in this data set that cover different aspects of workers' job satisfaction. They are satisfaction with influence over job, satisfaction with amount of pay, satisfaction with sense of achievement and satisfaction with respect from supervisors. Satisfaction with pay is the most often studied indicator in the literature. The other three indicators

of job satisfaction we use in this paper are not studied as often. The three main questions asked in this paper are as follows. How does structure of working environment including working amenities vary by the firm size? Namely, which aspects of the structure of working environment are important in large or small firms? How does job satisfaction vary by firm size? Finally, what role does structure of working environment play in explaining the effect of firm size on job satisfaction?

The main findings can be summarized as follows. First, the structure of work environment is more regimented in larger firms than in smaller firms when considering the influence that the workers have over the pace of their work, over what they do and how they do it. We consistently find that the firm size is negatively related to the latter attributes of the work conditions. The results are opposite when consider the working amenities such as availability of job sharing, parental leave and working from home. Second, the job satisfaction is lower in larger firms than in smaller firms as it is found in many empirical studies Third, the structure of work environment do not play a significant a role in explaining the lower levels of job satisfaction in larger firms contrary to the findings of Idson (1990) with the USA data and the findings of Garcia-Serrano (2011) with the Spanish data. There may be other factors contributing to lower levels of job satisfaction in larger firms such as poor management-employee relations (Tansel and Gazioglu, 2014), cultural differences among the countries considered and other factors. These results have important policy indications for the workers and the firms. Improving regimentation in the structure of working environment in large firms could be important. In fact, one of our findings suggest that large firms are attempting to make up for the regimentation in their work environment by providing alternative working amenities such as flexible working hours, job sharing, parental leave and working from home. Such amenities are found to be better provided in large firms than in small ones.

This paper is organized as follows. In Section 2 we provide a brief review of literature. Section 3 introduces the data and the variables used in empirical analysis. The firm size and the structure of working environment are investigated in Section 4. In Section 5 job satisfaction measures are related to the firm size and structure of working environment. Conclusions appear in Section 6.

2. Brief Review of Literature

The literature on Job satisfaction has expanded enormously recently and attracted attention of researchers from a variety of social science disciplines such as sociology, psychology, anthropology, management sciences and labor economics. The relationship of job satisfaction to worker behavior such as productivity, job performance, motivation, quit, job turnover, lateness and absenteeism in the workplace are emphasized by a number of authors. These in turn affect the productivity and the profits of the firms. Iaffaldano and Muchinsky (1985) consider job satisfaction and motivation, productivity and job performance. Böckerman and Ilmakunnas (2012) find a positive relationship between job satisfaction and firm level productivity in Finnish manufacturing plants. Akerlof, Rose and Yellen (1988), Clark et al. (1998), Kristensen and Westgard-Nielsen (2004) and Levy-Garboua et al. (2007) find that job satisfaction is an important foreteller of quits as wages are. They also point out that job satisfaction gives information about job turnover as individuals quit low-satisfaction jobs and move onto high-satisfaction ones.

Initial studies on various aspects of job satisfaction focused on Britain or the USA. As data on job satisfaction became available studies on other countries as well as developing countries emerged also. Gazioglu and Tansel (2006) using WERS and Clark (1996) using BHPP investigated job satisfaction with various individual and firm characteristics in Britain. Job satisfaction in public and private employment attracted attention of many researchers such as Danzer (2013) in Ukraine, Demoussis and Giannakopouılos (2007) in Greece, Ghinetti (2007) in Italy and others. Recently Danzer (2019) find in Ukraine higher public sector job satisfaction and negative selection of individuals into the public sector. Asiedu and Folmer (2007) find a positive relationship between privatization and job satisfaction. Job satisfaction and relative wage is studied by several researchers such as Donohue, S. and J. Heywood, (2004), Clark and Oswald (1996), Mumford and Smith (2012) and Card et al. (2012). Javdani and Krauth (2020) find in Canada that the co-worker pay has a positive effect on both pay and job satisfaction however the effect on job satisfaction disappears when firm level fixed effects are used.

Bryson, Cappellari and Lucifora (2010) find that job satisfaction and union membership are negatively associated but, the effect disappears when selection into membership is taken into

account. Blanchflower and Bryson (2020) find a positive relationship between union membership and worker job satisfaction contrary to the previous studies using data from United States and Europe. Kawata and Owan (2020) investigate the positive and negative peer effects of elderly groups on young group's productivity or motivation in a Japanize firm.

It is a well-established result in the literature that women are more satisfied than men controlling for job, family and personal attributes (Clark, 1997). However, a recent study by Redmond and McGuiness (2019) using data from European countries find that the gap between job satisfaction of men and women disappear when job preferences are taken into account since work-life balance is important for women. Educational mismatch and job satisfaction has been a popular topic to study. Many studies indicate that over-qualified workers are less satisfied. For this reason, firms try to hire adequately qualified workers. Peiro, Agut and Grau. (2010) among young Spanish workers and Verhaest and Verhofstadt (2016) among young Flemish workers in Belgium find lower job satisfaction among the overqualified. However, Garcia-Mainar and Montuenga-Gomez (2020) find that in Spain over-qualified are less satisfied but opposite is true when endogeneity is taken into account.

Clark (2011) in a study of the job satisfaction and the state of the macro economy in Britain finds that worker's mental well-being, pay satisfaction and job security satisfaction are higher in booms but, satisfaction with the work itself and overall job satisfaction are higher in busts Pilipiec, Groot and Pavlova (2020) find that workers in Netherlands were more satisfied with their job during the recession of 2008-2013 and job satisfaction decreased after the recession was over.

Recent availability of surveys including questions on job satisfaction enabled studies on job satisfaction and its various aspects in developing countries also. Some of the studies from developing countries are as follows. McKay, Newell and Rienzo (2018) find in Madagascar, Malawi, Uganda, and Zambia, being over-educated or under-educated in the current job negatively influences job satisfaction. Berker (2015) investigated the effect of informal employment on job satisfaction in Turkey. Zeqiri and Aziri (2010) explored the role of gender and education in job satisfaction in Macedonia.

Studies on the job satisfaction and the firm size goes back to the 1970s. Scherer (1976) examined the structure of work at different firm sizes and job satisfaction. Using 1973 Quality of Employment Survey (QES), he found that job satisfaction was lower in large firms. Same result was reported by Stafford (1980), Kwoka (1980), Idson (1990), and Dunn (1980; 1986). Clark (1996) also reported lower job satisfaction in larger firms in Britain but, Marlow, Patton and Ram (2004) rejects that job satisfaction and the firm size are negatively related.

Analysis of the impact of working conditions on job satisfaction by firm size has taken less attention in the previous studies. Idson (1990) used USA data from Qualıty of Life Survey (1977) and Garcia-Serrano (2011) used Spanish data from Working Conditions Survey (2001 to 2004) in order to examine the interrelationship among the working conditions, firm size and job satisfaction and they both reached similar conclusions. They found that higher regimentation in the working conditions of the larger firms leads to lower levels of job satisfaction. Stafford (1980) and Oi (1983) developed models with the outcome of greater rigidity[1] in the working conditions of larger firms. However, the previous studies did not investigate these interrelationships empirically except Idson and Garcia-Serrano and they did not consider working amenities. The present study considers the working conditions and working amenities with the data from Britain.

3. The Data and Variables

We use the data from the 1998 Workplace Employee Relations Survey (WERS), of the Department of Trade and Industry in Britain. It is linked employer-employee data. It is a nationally representative survey including 28,240 employees in over 3000 firms. The three-quarters of all employees in Britain (about 15.8 million workers) are covered. The interviews are conducted with employees and managers face to face with the most senior manager. All sectors of the economy except agriculture are included. This unique data is rich in individual characteristics and workplace characteristics including working conditions and job satisfaction.

[1] Optimal amount of job search is lower for workers in large firms due to higher mobility costs in large firms (Oi, 1983). A model developed by Oi endogenously generates a more regimented working environment in larger firms since larger firms endeavor to minimize the opportunity cost of their high ability managers. Another argument proposed to explain greater regimentation in large firms is as follows. Larger firms are capital intensive and require its continuous use. This will constrain workers in the ways they perform their tasks generating greater regimentation in the structure of working environment (Garcia- Serrano, 2011).

The working condition variables I use are as follows. Workers have some or a lot of influence on the range of tasks they do in their job; on the pace at which they work and how they do their work. The working amenities variables are as follows. Flexible working hours, job sharing, parental leave and working from home. WERS includes important information related to workers' job satisfaction. An overall job satisfaction was not asked But, workers were questioned with four different aspects of their job. They are satisfaction with influence over job, with amount of pay, with sense of achievement and with respect from supervisors. They are recorded as Likert scale. On the five point Likert scale, one corresponds to "very dissatisfied", two to "dissatisfied", three to "neither satisfied nor dissatisfied", four to "satisfied" and five to "very satisfied". Table 1 shows the distributions of the four job satisfaction indicators. In all satisfaction indicators except for the satisfaction with pay indicator the "satisfied" category is the most common response (mode). In contrast, about 41 percent of the employees are either "dissatisfied" or "very dissatisfied" in the case of satisfaction with pay. For example, those who are "very satisfied" with their pay are only 3.5 percent while the other indicators of job satisfaction those who are "very satisfied" are about 11-15 percent Thus, we can confidently say that while British workers are less satisfied with their pay but are more satisfied with their influence over their job, with their sense of achievement and with the respect they receive from their supervisors.

[Table 1 about here]

The number of the employees at the firm denotes the firm size.. Table 2 shows the means for the four job satisfaction indicators by five different categories of the firm size. This table shows that the percentages of those who are "satisfied" or "very satisfied" with their pay stays around the same as the firm size increases. In contrast, the percentages of those who are "satisfied" or "very satisfied" with influence over their job, with their sense of achievement and with respect they receive from their supervisors' decrease continuously as the firm size increases.. To conclude, we can say that employees are less satisfied in large firms. We also observe that job satisfaction measures indicate a nonlinear relationship to the firm size. Therefore, while investigating the effect of the firm size in relation to the structure of working environment and in relation to the job satisfaction measures we introduce the natural logarithm of the firm size in all estimations in order to consider the relevant nonlinearities.

[Table 2 about here]

In the estimated equations in this study the control variables used are as follows. The variables which are continuous are indicated as so in the parenthesis. The rest of the variables are dummy variables taking values of one for the indicated variable and zero otherwise. Male, Age (continuous), Education, Health problems, Race, Log Weekly Income (continuous), Log Hours of Work (continuous) Union Member, Occupation Variables, Gender Concentration, Industrial Composition and Training.

4. The Firm Size and the Structure of Working Environment

A number of researchers postulated that structure of working environment is more rigid in larger firms than in smaller ones. In this section we test this hypothesis. Rigidity in the structure of working environment has implications for worker satisfaction. In this section we estimate maximum likelihood probit regressions that relate various measures of working environment (which are dependent variables) to the firm size and a rich set of control variables. In Table 3 first set of working environment variables are used. They are workers have some or a lot of influence on the range of tasks they do in their job; on the pace at which they work and how they do their work. In Table 4 the second set of working conditions variables are used. They are availability of flexible working hours, job sharing, parental leave and working from home. These probit models are estimated by maximum likelihood method.

4.1 Firm Size and the Working Conditions

Firm Size in relation to the job satisfaction is widely studied (Kwoka, (1980) and others). However, studies on firm size in relation to working conditions are scanty (Idson, 1990; Garcia-Serrano, 2011). This is the focus of this section. Table 3 reports the probit estimation results when the dependent variables are binary and indicate various measures about the working conditions. For instance, if workers have some or a lot of influence about the range of tasks they do in their work then the dependent variable takes the value of one and zero otherwise. Similarly, the other dependent variables in this table are binary variables. The results confirm the conclusion reached by

Idson (1990) with the USA data and Garcia-Serrano (2011) with the Spanish data. I consistently find that the firm size is negatively related to the amount of influence the workers have over the range of tasks they do, over the pace at which they work and over how they do their work. In large establishments the workers have less influence over the range of tasks they do, over the pace at which they work and over how they do their work. Thus, in the large firms, employees face greater rigidity in the organization of work than in the smaller firms. We now briefly comment on some of the other covariates reported in Table 3. First of all, both genders are equally likely to have some or a lot of influence on the range of tasks they do in their jobs and on how they do their job but men are less likely to have some or a lot of influence about the pace at which they work. Similar results hold as workers get senior. It is of interest to note that employees with health problems have consistently less influence over what they do and how they do their job. With regards to education we observe that the "degree and post graduate and A level and O level holders" are all less likely to have some or a lot of influence over the range of their tasks, the pace at which they work and how they work.

[Table 3 about here]

4.2 Firm Size and the Working Amenities

Table 4 reports on another aspect of the structure of working environment. The questions asked in this table are different in nature than the ones in Table 3. However, I am still trying to get a feeling about the structure of working environment in an establishment. Table 4 reports on the following question. If needed would flexible working hours, job sharing, parental leave or working from home be available at your work? This table provides maximum likelihood probit estimation results. For instance, if workers could have flexible working hours when needed, then the dependent variable takes a value of one and zero otherwise. Similarly, if job sharing, parental leave or working from home are available when needed then the dependent variable takes the value of one and zero otherwise.

Our main interest is the coefficient estimates of the firm size. variable. These estimates show a positive relationship to the working amenities all cases except in the case of flexible working hours. Interestingly, as the firm size increases the flexible working hours are less likely to be available, implying more rigidity in the organization of work (Albertsen et al.,2008). Whereas job sharing, parental leave and working from home could be considered as characteristics of the large firms and are available routinely in the larger firms. Contemplating these aspects of the working environment, the larger firms could be considered more flexible. It seems they are trying to make up for their regimented working environment considered in the previous section by providing job sharing, parental leave, and working from home.

Regarding the some of the other covariates, I observe the following. Men are more likely to have flexible working hours but less likely to have job sharing, parental leave or working from home. Senior workers are less likely to have flexible working hours or job sharing but, more likely to have parental leave or working from home. Considering education of workers, I observe that "degree and post graduate and A level-O level holders" are less likely to have flexible hours but, more likely to have job sharing, parental leave or working from home.

[Table 4 about here]

5. Job Satisfaction and Structure of Working Environment

In this section I examine the effect of the structure of working environment on the job satisfaction. Table 2 which is discussed in Section 2 reports the variable means for the four job satisfaction measures I consider and the firm size. We observe from this table that workers in firms with 10-25 employees are more satisfied than the workers in the larger firms. Table 5 reports the estimates of the basic job satisfaction equations which are to be compared with those in Table 6. Table 6 provides the estimates of job satisfaction equations which are expanded by including the structure of working environment variables among the explanatory variables. The job satisfaction equations in Tables 5 and 6 are ordered probit regressions estimated with maximum likelihood technique. They are controlled for with a rich set of worker characteristics and job characteristics variables.

The Table 5 gives estimates of the job satisfaction equations which does not include the structure of working environment variables. I observe that the firm size has a negative and statistically significant coefficient estimates in all four measures of the job satisfaction equations. This implies that job satisfaction is lower in larger firms. This result confirms Clark (1996) and others. My next aim is to investigate whether the structure of working environment can account for the lower levels of job satisfaction in larger firms. For this purpose, we estimate the job satisfaction equations which include the structure of work environment variables. These are provided in Table 6. I compare the coefficient estimates of the firm size in Tables 5 and 6. I observe that the coefficient estimates of firm size in Table 6 are either the same or slightly smaller than those in Table 5 but, still negative and statistically highly significant. I have also estimated the job satisfaction equations in Table 6 by omitting the working amenities variables. (not shown) Qualitatively the results did not change. As before the coefficient estimates of the firm size were negative and statistically significant in all four job satisfaction equations. Therefore, Table 6 like Table 5 also implies lower levels of job satisfaction in larger firms.

In conclusion, I can say that observed lower levels of job satisfaction in larger firms can not necessarily be attributed to the greater rigidity or better amenities in the structure of working environment of the larger firms. This result is contrary to the findings of Idson (1990) with the USA data and Garcia-Serrano (2011) with the Spanish data.. They concluded that observed lower levels of worker satisfaction in larger firms may be attributed to the greater rigidity in their working conditions. The difference in our result may be due to impact of differences in cultural values and beliefs among the three countries (Fargher et al. 2008). Further, poor management-employee relations in large firms as discussed by Tansel and Gazioglu (2014) may also affect the results.

[Tables 5 and 6 about here]

The working condition variables are observed in Table 6. Their coefficient estimates are all positive and statistically significant in all four measures of job satisfaction.. The working amenities variables are all reported also in Table 6. The coefficient estimates on availability of flexible working hours are statistically significant and have negative effects on all job satisfaction measures. However, the other working environment variables, job sharing, parental leave, and

working from home are all statistically insignificant, implying that they do not influence the all four job satisfaction measures. Further, there is also evidence that the large firms are making efforts to overcome the regimentation by providing job sharing. parental leave and working from home. A likelihood ratio test of the joint significance of the structure working environment variables indicate that they are jointly statistically significant at the five percent level in all four of the job satisfaction equations implying that they as a group significantly influence the four job satisfaction measures considered.

The effect of the control covariates in the job satisfaction equations are similar to those found in the literature. In summary, women are significantly more satisfied with their jobs than men. Job satisfaction decreases with age in a nonlinear fashion. Higher educated are less satisfied than the less educated. Married are less satisfied than the non-married. Those workers with health problems are less satisfied with all aspects of their jobs. Availability of training increases job satisfaction.

6. Conclusions

In this paper we explored the interrelationship among the firm's structure of working environment, firm size and job satisfaction. The structure of working environment is considered in two parts as "working conditions" and "working amenities.". Altough the effect of working conditions are investigated in two previous studies, the effect of working amenities are explored for the first time in this paper. We found that in large firms, workers face greater rigidity in the organization of the work than in the smaller firms. I also found consistently negative relationships between firm size and various measures of working conditions such as the influence workers have on the range of tasks, the pace of the work and how the work is done. Furthermore, I also investigated the relationship between firm size and various measures of working amenities. I found positive relationship between firm size and all working amenities except with flexible working hours. This result implies that although flexible working hours are less likely to be available in large firms, job sharing, parental leave and working from home are more likely to be available in the large firms. These indicate that large firms are trying to make up for the regimentation in their working conditions by providing working amenities such as flexible working hours, job sharing , parental leave and working from home. It is of interest to note that those employees with health problems have consistently less influence over what they do and how they do their job..

Another finding is that the firm size has a negatively related to all four measures of the job satisfaction. This implies that job satisfaction is lower in larger firms. This result confirms previous studies. However, introducing the measures for the structure of working environment do not change the effect of firm size on various measures of job satisfaction. I obtained qualitatively the same results when I exclude the working amenities variables. This is contrary to the findings of Idson (1990) with USA data and Garcia-Serrano (2011) with Spanish data. They find that lower levels of job satisfaction in larger firms is due to their higher regimented environment. Whereas we found that lower levels of job satisfaction in larger firms is not necessarily due to the higher levels of rigidity in their structure of working environment. .There may be other factors responsible for this result such as poor management-employee relations in large firms (Tansel and Gazioglu, 2014) or other factors and differences in cultural values and beliefs on job satisfaction (Fargher et al. 2008).

The main findings can be summarized as follows. First, there is greater rigidity in the working conditions of the larger firms. Second, working amenities are positively related to the firm size. This indicates that the large firms are making efforts to overcome the regimentation due to their size by providing amenities such as job sharing parental leave and working from home. Third, job satisfaction is lower in larger firms as it is often found many studies. Fourth, observed lower levels of job satisfaction in larger firms may not necessarily be due to greater regimentation in their structure of working conditions. These results may be useful to the managers in the large and small establishments alike.

The conclusions of this paper could be checked with more recent data since there is ongoing change in the structure of working environment in the organizations and in the amenities they offer to their employees especially in the face of the recent digital revolution, globalization and COVID-19 pandemic. An enormous increase has occurred in the proportion of workers working from home during the COVID-19 pandemic in many countries (Galasso and Faucault, 2020). In the future, post-pandemic period working from home is likely to continue to be the increasingly common form of work arrangement (Barrero, Bloom and Davis, 2021). Kim, Koh and Park (2022) find that during the pandemic working from home has negative effects on the mental health of workers in Korea. The negative effects are greater for women especially for those who carry out both housework and

market work. Further, this study could be done in other countries in order to compare the conclusions in different cultural environments. These will be the topics for future studies.

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Table 1. Distribution of Reported Job Satisfaction Measures (Percent)

	Satisfaction with influence over job	Satisfaction with amount of pay	Satisfaction with sense of achievement	Satisfaction with respect received from supervisors
Levels				
Very dissatisfied	3.2	12.5	4.6	8.5
Dissatisfied	12.0	28.2	10.3	12.7
Neither	26.0	23.5	21.4	20.3
Satisfied	47.4	32.3	48.8	44.2
Very satisfied	11.4	3.5	15.0	14.3
Total	100.0	100.0	100.0	100.0

Workplace Employee Relations Survey (WERS), 1998.

Table 2: Variable Means for Job Satisfaction and Firm Size (%)

	Satisfaction with Influence Over Job		Satisfaction with Amount of Pay		Satisfaction with Sense of Achievement		Satisfaction with Respect from Supervisors	
	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied	Satisfied	Very Satisfied
Firm Size:								
10- 25 Employees	49.9	14.4	33.1	3.3	51.9	18.1	44.4	19.0
25-99 Employees	47.9	11.8	31.9	3.4	49.9	16.0	44.5	15.5
100-199 Employees	46.1	11.9	31.1	3.7	47.9	14.0	43.6	12.6
200-499 Employees	46.5	11.2	33.4	3.3	47.7	13.7	43.7	12.6
500 or more Employees	47.0	10.4	32.7	3.7	48.3	14.1	43.3	13.3

Workplace Employee Relations Survey (WERS), 1998.

Table 3. Maximum Likelihood Probit Estimates of the Structure of Work Environment: Range of Tasks, Pace of Work and How They Work

	Workers Have Some or a Lot of Influence					
	On the Range of Tasks They Do in Their Job		On the Pace At Which They Work		On How They Do Their Work	
	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]
Log Firm size	*-0.031*	*4.36*	*-0.017*	*2.30*	*-0.019*	*2.22*
Male	-0.013	0.65	-0.047	2.25	-0.015	0.63
Age ($x10^{-2}$)	-0.843	1.58	-1.188	3.46	-0.272	0.45
Age Square ($x10^{-3}$)	0.169	2.59	0.284	4.27	0.081	1.07
Level of Education:						
Degree+Post Graduate	-0.127	3.81	-0.113	3.38	-0.080	2.01
A Level+O Level	-0.095	3.81	-0.049	1.94	-0.082	2.86
Married	-0.073	3.65	-0.042	2.06	-0.051	2.14
Health Problems	-0.167	4.54	-0.170	4.62	-0.188	4.56
Race:						
White	-0.081	1.47	-0.063	1.13	0.049	0.79
Black	0.098	1.09	-0.011	0.12	0.073	0.70
Job Characteristics:						
Log Weekly Income	0.284	11.92	0.198	8.23	0.316	11.38
Log Hours of Work	-0.062	2.09	-0.059	1.97	-0.120	3.46
Union Member	-0.248	13.10	-0.254	13.34	-0.222	9.89
Occupation:						
Managerial/Professional	0.461	14.94	0.215	6.92	0.458	12.56
Clerical	-0.018	0.77	0.083	3.45	0.148	5.60
Gender Concentration:						
Mostly Men ($x10^{-2}$)	-0.689	0.30	1.138	0.59	3.267	1.20
Industrial Composition:						
Manufacturing	-0.023	0.80	0.016	0.54	-0.061	1.80
Electricity+Gas+Water	0.020	0.42	-0.026	0.56	-0.038	0.68
Construction	-0.013	0.30	-0.036	0.83	-0.066	1.22
Transportation	-0.276	7.29	0.225	5.92	-0.317	7.51
Financial Services	-0.178	6.45	-0.084	2.99	-0.153	4.68
Education Sector ($x10^{-2}$)	0.112	0.04	-0.093	2.89	0.029	0.74
Health Sector	0.054	1.69	0.041	1.28	0.063	1.66
Training:						
Less Than 5 Days	0.106	5.40	0.080	4.02	0.071	3.11
5 Days or More	0.223	8.68	0.180	6.95	0.135	4.40
Constant	-0.588	4.52	0.149	1.13	-0.274	1.86

-Log Likelihood	14 891	14 572	10 089
Chi-Squared	2 057	715	1 347
Number of Observations	24 814	24 737	24 704

Notes: a: Absolute value of the asymptotic t-ratio.

The critical values at 5 and 1 percent levels of significance are 1.65 and 1.99 respectively.

Table 4. Maximum Likelihood Probit Estimates of the Structure of Work Enviroment: Flexibility of Hours, Job Sharing, Parental Leave and Place of Work

	If you Needed Would the Following be Available							
	Flexible Working Hours		Job Sharing		Parental Leave		Working from Home	
	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]
Log Firm size	-0.081	10.80	0.032	3.95	0.075	7.40	0.103	6.75
Male	0.256	11.73	-0.167	7.01	-0.245	7.17	-0.124	2.77
Age ($x10^{-2}$)	-0.476	0.79	-0.391	0.60	0.689	0.79	0.037	2.52
Age Square ($x10^{-3}$)	0.100	1.35	0.006	0.08	-0.134	1.24	-0.395	2.20
Level of Education:								
Degree + Postgraduate	-0.499	13.76	0.277	7.02	0.443	7.99	0.826	7.51
A level+O level	-0.334	11.19	0.235	7.30	0.299	6.52	0.576	5.49
Married	0.050	2.28	-0.048	2.00	-0.078	2.59	0.109	2.46
Health Problems	-0.759	1.86	0.077	1.74	0.030	0.53	-0.037	0.40
Race:								
White	-0.100	1.72	0.088	1.36	0.013	0.17	0.660	0.55
Black	-0.088	0.94	0.062	0.60	0.049	0.39	0.053	0.28
Job Characteristics:								
Log Weekly Income	-0.296	11.43	0.146	5.25	0.241	6.60	0.343	5.86
Log Hours of Work	0.299	9.32	-0.160	4.64	-0.256	5.76	-0.269	3.92
Union Member	-0.100	5.00	0.043	1.98	0.093	3.39	0.066	1.61
Occupation:								
Managerial/Professional	-0.353	10.19	0.176	4.74	0.149	8.02	0.686	6.10
Clerical	-0.307	10.83	0.133	4.37	0.451	10.27	0.595	5.67
Gender Concentration:								
Mostly Men	0.184	7.60	-0.074	2.80	-0.168	5.12	-0.233	4.65
Industrial Composition:								
Manufacturing	0.520	15.14	-0.225	6.16	-0.608	11.07	-0.772	7.23
Electricity+Gas+Water	0.074	1.62	0.044	0.88	-0.096	1.62	-0.194	2.26
Construction	0.297	6.08	-0.168	3.12	-0.263	3.71	-0.276	2.46
Transportation	0.262	5.97	-0.161	3.33	-0.207	3.32	-0.115	1.27
Financial Services	0.088	3.11	0.023	0.56	-0.074	2.02	-0.307	5.26
Education Sector	0.503	14.73	-0.140	3.82	-0.585	11.85	-0.594	8.34
Health Sector	0.191	5.80	-0.062	1.72	-0.198	4.53	-0.227	3.52
Training:								
Less than 5 Days	-0.207	9.46	0.170	7.10	0.175	5.53	0.110	2.45
5 Days or More	-0.304	11.31	0.205	7.00	0.238	6.32	0.233	4.03
Constant	2.092	14.38	-0.626	10.35	-2.739	13.10	-5.311	14.17

- Log Likelihood	12 608	10 214	5 951	2 364
Chi-Squared (25)	2 942	803	1 252	802
Number of Observations	24 585	24 585	24 585	24 586

Notes: a: Absolute value of the asymptotic t-ratio.
The critical values at 5 and 1 percent levels of significance are 1.65 and 1.99 respectively.

Table 5. Maximum Likelihood Ordered Probit Estimates of Job Satisfaction when Work Structure Variables are Excluded

	Satisfaction with Influence Over Job		Satisfaction with Amount of Pay		Satisfaction with Sense of Achievement		Satisfaction with Respect from Superv.	
	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]
Log Firm Size($x10^{-2}$)	-2.537	4.37	-1.614	2.84	-3.648	6.31	-2.366	4.07
Male	-0.077	4.66	-0.250	15.20	-0.105	6.31	-0.129	7.80
Age	-0.031	7.02	-0.040	8.37	-0.021	4.73	-0.037	8.47
Age Square ($x10^{-3}$)	0.448	8.29	0.478	9.12	0.359	6.66	0.542	10.32
Level of Education:								
Degree + Postgraduate	-0.275	10.63	-0.204	7.85	-0.300	11.40	-0.205	7.86
A level+O level	-0.160	7.93	-0.066	3.32	-0.188	9.21	-0.131	6.59
Married	-0.088	5.41	-0.048	2.95	-0.075	4.63	-0.029	1.76
Health Problems	-0.216	7.29	-0.150	5.05	-0.169	5.87	-0.156	5.32
Race:								
White	-0.150	1.19	0.142	3.32	0.044	1.01	-0.038	0.87
Black	-0.047	0.70	-0.153	2.06	-0.068	0.96	-0.117	1.61
Job Characteristics:								
Log Weekly Income	0.124	6.56	0.615	37.07	0.021	1.08	0.037	1.95
Log Hours of Work	-0.150	6.30	-0.845	44.79	-0.040	1.62	-0.175	7.49
Union Member	-0.271	17.95	-0.171	11.23	-0.193	12.65	-0.241	16.01
Occupation:								
Managerial/Professional	0.244	9.89	-0.077	3.14	0.326	12.92	0.223	9.01
Clerical	0.031	1.54	-0.187	9.57	0.134	6.72	0.065	3.37
Gender Concentration:								
Mostly Men	0.010	0.56	-0.031	1.67	0.073	3.83	-0.027	1.41
Industrial Composition:								
Manufacturing	0.013	0.56	0.018	0.79	-0.016	0.69	-0.036	1.52
Electricity+Gas+Water	0.043	1.18	0.298	8.35	-0.026	0.72	0.039	1.04
Construction	0.075	2.14	0.036	1.01	0.042	1.21	0.048	1.38
Transportation	-0.173	5.71	-0.085	2.71	-0.134	4.78	-0.115	3.68
Financial Services	-0.019	0.83	-0.008	0.36	-0.038	1.65	0.033	1.44
Education Sector	0.028	1.09	-0.124	4.80	0.245	11.36	0.161	6.24
Health Sector	-0.046	1.77	-0.135	5.41	0.191	7.44	-0.012	0.48
Training:								
Less Than 5 Days	0.085	5.32	0.108	6.72	0.132	8.17	0.174	10.95
5 Days or More	0.259	12.52	0.213	10.47	0.365	17.73	0.395	19.05

	Satisfaction with Influence Over Job		Satisfaction with Amount of Pay		Satisfaction with Sense of Achievement		Satisfaction with Respect from Superv.	
	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]
Constant	2.570	23.10	1.782	17.26	2.101	19.00	2.577	24.16
Treshold Parameters:								
M (1)	0.880	58.01	0.973	94.12	0.694	53.96	0.600	59.04
M (2)	1.670	100.35	1.607	135.73	1.396	95.13	1.226	101.11
M (3)	3.133	165.38	3.142	169.50	2.853	166.71	2.563	170.69
- Log Likelihood	31 928		34 003		31 806		33 807	
Chi-Squared (25)	1 175		2 299		1 614		1 540	
Number of Observations	24 575		24 480		24 364		24 208	

Notes: a: Absolute value of the asymptotic t-ratio.
The critical values at 5 and 1 percent levels of significance are 1.65 and 1.99 respectively.

Table 6. Maximum Likelihood Ordered Probit Estimates of Job Satisfaction when Work Structure Variables are Included

	Satisfaction with Influence Over Job		Satisfaction with Amount of Pay		Satisfaction with Sense of Achievement		Satisfaction with Respect from Superv.	
	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]
Log Firm Size($x10^{-2}$)	-2.030	3.34	-1.676	2.88	-3.330	5.61	-2.455	.13
Male	-0.068	3.95	-0.244	14.54	-0.096	5.62	-0.109	6.48
Age	-0.031	6.69	-0.342	7.76	-0.019	4.26	-0.036	8.15
Age Square ($x10^{-3}$)	0.428	7.58	0.446	8.31	0.331	6.00	0.527	9.85
Level of Education:								
Degree+Postgraduate	-0.265	9.71	-0.199	7.45	-0.277	10.20	-0.204	7.65
A Level + O Level	-0.144	6.76	-0.638	3.11	-0.171	8.06	-0.123	6.04
Married	-0.078	4.58	-0.047	2.84	-0.071	4.27	-0.018	1.07
Health Problems	-0.154	5.01	-0.120	3.96	-0.119	4.00	-0.107	3.56
Race:								
White	-0.025	0.58	0.137	3.14	0.056	1.26	-0.036	0.81
Black	-0.066	0.92	-0.171	2.25	-0.066	0.89	-0.133	0.79
Job Characteristics:								
Log Weekly Income	-0.013	0.63	0.585	34.60	-0.067	3.34	-0.057	2.89
Log Hours of Work	-0.124	4.96	-0.848	43.73	-0.011	0.45	-0.151	6.29
Union Member	-0.200	12.41	-0.136	8.70	-0.140	8.89	-0.194	12.46
Occupation:								
Managerial/Professional	0.048	1.97	-0.143	5.72	0.224	8.64	0.107	4.22
Clerical	0.634	1.68	-0.207	10.30	0.124	6.02	0.035	1.75
Gender Concentration:								
Mostly Men	0.013	0.69	-0.029	1.52	0.074	3.83	-0.023	1.21
Industrial Composition:								
Manufacturing	0.048	1.97	0.034	1.42	-0.002	0.08	0.207	0.01
Electricity+Gas+Water	0.063	1.68	0.308	8.53	-0.023	0.62	0.057	1.48
Construction	0.106	2.86	0.053	1.47	0.047	1.32	0.070	1.96
Transportation	-0.025	0.77	-0.038	1.18	-0.053	1.62	-0.024	0.74
Financial Services	0.055	2.36	0.098	0.42	0.001	0.03	0.079	3.33
Education Sector	0.050	1.84	-0.117	4.38	0.307	11.42	0.200	7.56
Health Sector	-0.075	2.85	-0.144	5.68	0.189	7.18	-0.020	0.78
Training:								
Less Than 5 Days	0.048	2.88	0.097	5.91	0.113	6.81	0.145	8.97
5 Days or More	0.187	8.74	0.182	8.79	0.324	15.43	0.341	16.21
Work Structure Variables:								
1) The Workers have some or a Lot Influence Over:								

The Range of Tasks They Do In Their Job	0.820	44.97	0.208	11.99	0.451	26.00	0.406	23.42
Pace at which They Work	0.403	21.63	0.181	10.02	0.172	9.63	0.197	10.93
How They do Their Work	0.439	18.28	0.094	4.09	0.301	13.32	0.322	14.23

	Satisfaction with Influence Over Job		Satisfaction with Amount of Pay		Satisfaction with Sense of Achievement		Satisfaction with Respect from Superv.	
	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]
2) If Needed Would the Following be Available:								
Flexible Working Hours	-0.242	2.49	-0.185	1.81	-0.191	2.18	-0.313	2.91
Job Sharing	-0.087	0.89	-0.100	0.98	-0.073	0.83	-0.113	1.04
Parental leave	-0.081	0.81	-0.065	0.62	-0.184	2.04	-0.075	0.69
Working From Home	-0.573	0.55	-0.148	1.35	-0.938	0.96	-0.062	0.53
Constant	2.550	16.64	1.794	12.02	2.020	13.95	2.660	17.11
Treshold Parameters:								
M (1)	1.029	58.05	0.989	92.43	0.739	53.18	0.639	58.70
M (2)	1.975	100.70	1.633	133.30	1.482	93.32	1.301	100.45
M (3)	3.639	163.01	3.191	165.58	3.000	162.15	2.700	67.97
- Log Likelihood	27 715		32 498		29 861		31 976	
Chi-Squared (32)	7 122		2 863		3 576		3 642	
Likelihood Ratio Test	1 882		1 692		1 460		1 148	
Number of Observations	23 634		23 634		23 634		23 634	

Notes: a: Absolute value of the asymptotic t-ratio.
The critical values at 5 and 1 percent levels of significance are 1.65 and 1.99 respectively.

The likelihood ratio test in the table tests for the joint significance of the structure of working environment variables included. In each case, the statistic is distributed as a chi-square with seven degrees of freedom and is significant at the five percent level. The null hypothesis that the structure of working environment variables are jointly zero is rejected in each case. This implies that they as a group significantly influence job satisfaction measures.