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Firm Performance and Labour Turnover: Evidence from the 2004 Workplace Employee Relations Survey

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Abstract:

We explore the impact of labour turnover on firm performance by analysing the predictions of an extension of the efficiency wage model of Salop (1979) developed by Garino and Martin (2007), which separates incumbent and newly hired workers in the production function. Within this theoretical framework, an exogenous increase in the turnover rate can increase profits if firms do not choose wages unilaterally. We test the theoretical predictions of the model using UK cross-section establishment-level data, the 2004 Workplace and Employee Relations Survey. In accordance with our theoretical priors, the empirical results support the standard inverse relationship between the quit rate and firm performance where firms unilaterally choose the wage and generally support a positive relationship between firm performance and the quit rate where trade unions influence wage setting.

Keywords: Firm Performance; Labour Turnover; Quit Rates; Turnover Costs
JEL Classification: J21, J23, E3, F4
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1. Introduction and Background

Labour turnover is an important feature of the labour market: for example, in OECD countries, approximately 10-15% of workers quit their jobs every year (OECD Economic Outlook, 1999), with the quit rate for the UK estimated at approximately 10% in 2004 (Quintini and Martin, 2006). Labour turnover affects both workers and firms: workers may need to learn new job-specific skills, whilst firms incur the costs of hiring and training new workers. Incoming workers, however, may be more highly motivated, better educated and more highly skilled. Hence, turnover may actually enhance firm performance, a possibility which has attracted limited attention in the existing literature. The existing literature has generally focused on the impact of turnover on workers rather than on firms, with the following exceptions: turnover and hiring costs have been studied by Burgess and Dolado, 1989, Hammermesh, 1995 and Hammermesh and Pfann, 1996, while Hutchinson et al, 1997, and Kersley and Martin, 1997, have analysed the impact of turnover on productivity. The theory used to explain the impact of turnover on firms is mostly based on the well known efficiency wage model of Salop (1979), in which firms choose wages so as to minimise the marginal cost of labour, balancing the marginal effect of higher wages against the marginal reduction in training costs induced by higher wages.

In this paper, we contribute to the literature exploring the implications of labour turnover for the firm. To be specific, we empirically explore the theoretical predictions of an extension to the model of Salop (1979) developed by Garino and Martin (2007), which distinguishes between newly hired and incumbent workers, since the latter have more job-specific human capital but may have less general human capital. A higher turnover rate implies that the proportion of new hires in the workforce is larger. If this

causes a sufficiently large increase in productivity then an increase in turnover can actually increase profits. Garino and Martin (2007) show that this effect is possible, but only when firms do not unilaterally choose the wage – for example when the wage is negotiated with a union or set nationally. When the firm chooses the wage unilaterally, as in Salop's original model, the impact of turnover on profits is negative.

In order to test the predictions from this theoretical framework, we analyse cross-section, establishment-level data from the 2004 Workplace and Employee Relations Survey (*WERS*) to ascertain the nature of the relationship between turnover and firm performance. Our findings support the inverse relationship predicted by Salop (1979) if firms are able to choose wages unilaterally. In contrast, where firms do not set wages unilaterally, our empirical analysis generally supports a positive relationship between the quit rate and firm performance. The paper is set out as follows: Section 2 summarises the theoretical underpinnings, whilst Sections 3 and 4 present our empirical analysis and Section 5 concludes.

2. Theoretical Underpinnings

Output depends on the labour input of newly hired and incumbent workers. New hires and incumbents have different levels of job-specific human capital and are imperfect substitutes. The production function is given by $Y = F(h, I, \lambda, \sigma)$, where h is the number of new hires, I is the number of incumbents, λ denotes exogenous production-specific factors and σ is the elasticity of substitution between new hires and incumbents.[1] Firms pay all workers the same wage, $w > 0$, and the fixed unit cost of hiring and training new workers is $\tau > 0$. The per-period turnover rate, i.e. the proportion of the existing workforce who quit, is a fixed function q of wages and exogenous factors, including the general market wage that workers expect to earn if

[1] See Garino and Martin (2007) for a more detailed analysis of aspects of this model.

they quit, θ:

$$q = q(w, \theta) \tag{1}$$

where $q_w < 0$, $q_{ww} > 0$, $q_\theta > 0$, $q_{\theta\theta} < 0$ and $q_{w\theta} < 0$. In every period, qN workers quit implying $h = qN$ and $I = (1-q)N$. We consider the steady state and normalise output prices to unity.[2] Profits are given by:

$$\Pi = F(qN, (1-q)N, \sigma, \lambda) - (w + \tau q)N \tag{2}$$

Assume the firm chooses employment and wages. At an interior solution, the first-order conditions are as follows:

$$\Pi_N = qF_h + (1-q)F_I - (w + \tau q) = 0 \tag{3}$$

$$\Pi_w = N\left[q_w(F_h - F_I) - (1 + \tau q_w)\right] = 0 \tag{4}$$

If new hires and incumbents are perfect substitutes then $F_h - F_I = 0$ and the model reduces to Salop (1979). The response of profits to turnover factors is obtained by comparative statics:

$$\Pi_\theta = \Pi_q q_\theta = N(F_h - F_I - \tau)q_\theta = N\frac{q_\theta}{q_w} < 0 \tag{5}$$

The negative sign arises because a rise in θ can only increase profits if, for a given turnover cost, new hires are sufficiently more productive than incumbents at the margin. Since $q_w < 0$, equation (4) implies that $F_h - F_I - \tau < 0$. At the optimal wage, new hires are less productive than incumbents and an increase in θ reduces profits.

Now suppose firms do not choose the wage unilaterally.[3] There is only a first-order condition for employment, so the impact of turnover on profits is given by:

$$\Pi_\theta = \Pi_w w_\theta + \Pi_q q_\theta = N\left[(F_h - F_I - \tau)(q_w w_\theta + q_\theta) - w_\theta\right] \tag{6}$$

[2] A dynamic version of our model is available on request.
[3] For example, if a firm negotiates wages with a union, wages will reflect all factors relevant to both firm and union, as well as their relative bargaining power (Garino and Martin, 2000).

The number of new hires increases by $q_w w_\theta + q_\theta$ and incumbents decrease by the same amount. The resulting change in output, $(F_h - F_I)(q_w w_\theta + q_\theta)$, is ambiguous, since the signs of both $q_w w_\theta + q_\theta$ and $(F_h - F_I)$ are ambiguous. In $q_w w_\theta + q_\theta$, w_θ is expected to be positive, $q_w < 0$ and $q_\theta > 0$, while the sign of $(F_h - F_I)$ depends on the relative productivities of incumbents and new hires. The remaining term $\tau(q_w w_\theta + q_\theta) + w_\theta$ represents the impact on profits of the change in total labour costs induced by a rise in θ, which is itself ambiguous. Overall, therefore, the sign of equation (6) is ambiguous. For sufficiently high levels of q_w and F_h, the impact of labour turnover on firm profits could be positive.

3. Data and Methodology

In order to explore the relationship between turnover and firm performance, we analyse data from the 2004 cross-section Workplace and Employee Relations Survey (*WERS*). This is the fifth in a Government funded series of surveys conducted at British workplaces, the previous four surveys having been conducted in 1980, 1984, 1990 and 1998. The aim of the *WERS* survey is to provide nationally representative data on the current state of workplace relations and employment practices in Britain, and it is widely regarded as the principal source of information pertaining to changes in British industrial relations (Chaplin et al., 2005). The survey population for the 2004 *WERS* is all British workplaces with at least five employees except for those in agriculture, hunting and forestry, fishing, mining and quarrying, private households with employed persons, and extra-territorial organisations. The sample comprises 2295 workplaces, whilst the sample used for our econometric analysis includes 1900 workplaces due to missing values. The 2004 *WERS* comprises four main sections: the Management Questionnaire; the Worker Representative Questionnaire; the Financial Performance Questionnaire; and the Employee Questionnaire.

For the purposes of this study, we focus on the workplace level data elicited by the Management Questionnaire.

In the Management Questionnaire, managers were asked to specify how many employees (full-time and part-time) were on the payroll 12 months ago and how many of these employees stopped working at the workplace as they resigned or left voluntarily. The distinction between voluntary quits and other reasons for leaving the firm is particularly important for our analysis since it allows a close match between the theoretical framework and the empirical analysis. We use the responses to this question to calculate the quit rate in each workplace. The average quit rate in our sample is 13.28%.

As pointed out in the introduction, it may be the case that new hires are better skilled or more highly educated than incumbent employees. One implication of this is that firms with a low turnover rate may not necessarily have a more highly productive workforce. Using the information on the quit rate elicited from the 2004 WERS Management Questionnaire, we label workplaces according to whether they are in the first, second, third or fourth quartile of the quit rate distribution. We have matched this information with employee level information from the Employee Questionnaire, which up to 25 employees from each workplace were asked to complete, yielding a sample of 18,634 employees after conditioning on missing values. The employee level data includes detailed information on human capital measures.

Table 1, which is based on matched data from the Employee Questionnaire and the Management Questionnaire, presents information pertaining to the average level of human capital characteristics of employees across workplaces grouped according to quartiles of the quit rate distribution. The measures of human capital relate to the proportions of employees with: no academic qualifications; GCSEs grades D to G;

GCSEs grades A to C; A levels; first degree; higher degree; other academic qualifications; vocational qualifications; and an index of IT skills.[4] It is apparent that in the third quartile, the index of IT skills is relatively high as are the percentages of employees with A levels, a first degree and a higher degree. Such findings support the argument that turnover may be beneficial for the workplace, with relatively high turnover (i.e. turnover in the third quartile) being associated with a workforce with relatively high measures of human capital. In addition, qualifications and skills appear to be most prevalent in the third quartile, rather than the fourth quartile, which suggests that the relationship between turnover and human capital is not monotonic.

In Table 1, we also present summary statistics relating to the human capital characteristics of the sample of employees who have been working at the workplace for less than one year and the sample of those employees who have been at the workplace for more than one year. With respect to academic qualifications, it is apparent that for all categories of qualifications, with the exception of other qualifications, the percentages are higher for the sample of new recruits suggesting that, on average, new recruits are more highly qualified than incumbent employees. In particular, the proportion of employees reporting that they have no academic qualifications is significantly lower amongst the new recruits.

Thus, the summary statistics from the matched establishment and employee level data suggest that high turnover may be associated with high levels of human capital, which in turn may be beneficial for firm performance. Following the theoretical framework summarised in Section 2, we explore the relationship between firm performance and turnover by distinguishing between those firms who set wages

[4] There are thirteen possible IT skills: word processing; sending or receiving e-mail; checking stock movements, availability or pricing; record keeping; ordering or purchasing; controlling or monitoring processes or machinery; data entry; data analysis; desk-top publishing; computer-aided design; programming or compiling syntax; and any other task. The index runs from 0 to 13 depending on the number of IT skills that the employee reports.

unilaterally and those who do not set wages unilaterally. One of the most common reasons why employers may not be able to set wages unilaterally in the UK may be due to the fact that wages are set through negotiations with trade unions.

In the 2004 *WERS*, information is available relating to the proportion of employees who have their pay set through negotiations with trade unions either at their workplace or at a higher level. A response of 100%, therefore, indicates that the firm has no unilateral power over wage setting: 26% of the sample, 484 workplaces, state that 100% of their employees have their pay set via negotiations with trade unions. Out of the remaining 74% of workplaces, there are 1037 workplaces with a 0% response.

With respect to measures of workplace performance, there is only one measure available in the *WERS* 2004 Management Questionnaire, which relates to overall financial performance. Managers are asked to assess their workplace's financial performance as compared to other establishments in the same industry. Responses are given on a five point scale: 'a lot better than average'; 'better than average'; 'about average for industry'; 'below average'; and, finally, 'a lot below average'.[5] It is apparent that this measure of financial performance is subjective. Furthermore, the response rates below suggest that there is a bias towards the 'above average' categories. Evaluations of this subjective measure, however, have indicated that the ordinal properties of the data are unaffected by such bias (see Bryson et al, 2005). Hence, we use the responses to these questions to construct a four point index representing financial performance (FP_{wp}):

[5] Cases where the manager indicated that either 'no comparison is possible' or 'relevant data is not available' were omitted from our econometric analysis. Given the low response rate for the 'a lot below average' category, 1%, we collapse the last two categories together.

$$FP_{wp} = \begin{cases} 3 = A\,lot\,better\,than\,average\,(12\%) \\ 2 = Better\,than\,average\,(40\%) \\ 1 = Average\,(39\%) \\ 0 = Below\,average\,(9\%) \end{cases} \quad (7)$$

where *wp* denotes the workplace subscript and the figures in parenthesis indicate the percentage in each category. We then conduct weighted ordered probit analysis to explore the determinants of FP_{wp}:[6]

$$FP^{*}_{wp} = \pi' X_{wp} + \gamma_1 q_{wp} + \gamma_2 q_{wp} \bullet NUWS + \gamma_3 NUWS + v_{wp} \quad (8)$$

where FP^{*}_{wp} represents a latent variable denoting the unobserved propensity of workplace *wp* to achieve a certain level of financial performance; q_{wp} denotes the quit rate; X_{wp} is a vector of workplace characteristics expected to influence FP^{*}_{wp} ; β is the associated coefficients vector; γ_1 represents the coefficient on q_{wp} ; *NUWS* is a dummy variable indicating that the workplace is characterised by non unilateral wage setting (i.e. where the manager stated that 100% of employees at the workplace have their pay set via negotiations with trade unions); and v_{wp} is a random error term. The inclusion of the interaction term between q_{wp} and *NUWS* enables us to explore whether the effect of quit rates on firm level financial performance varies according to whether wages are set unilaterally or not.

X_{wp} includes: industry; workplace size and age; foreign ownership; union density; an index of the percentage of the establishment's sales revenue or operating costs accounted for by labour costs; operating hours of 24 hours a day; whether the establishment faces competition from overseas based suppliers; and whether the current

[6] The data was weighted as workplaces had different probabilities of being selected for the survey. The sampling frame for the 2004 WERS was the Inter-Departmental Business Register maintained by the Office for National Statistics. Differential sampling fractions have been used according to the number of employees and the 2003 Standard Industrial Classification (Chaplin et al., 2005).

state of the market is growing. Workforce characteristics include the proportions of: females, part-timers, fixed term contract workers, agency workers, managers, professionals, associate professional and technical employees, administrative and secretarial employees, skilled trade employees, personal service employees, operative employees and routine unskilled employees.[7] Summary statistics of the variables used in the empirical analysis are presented in Table 2.

We explore the robustness of our empirical analysis in four ways. Firstly, we re-estimate equation (8) via a generalised ordered probit model, which allows the cut-off points to vary between workplaces (see Williams, 2006). Secondly, we omit the interaction term and the unilateral wage setting control and we estimate equation (8) separately for firms that unilaterally set wages and for those who do not set wages unilaterally. We present one set of results whereby we do not control for sample selection bias and one set of results whereby we include an inverse mill ratio term in the financial performance equation to control for the possible endogeneity of *NUWS*. The inverse mill ratio term is based on a probit model with *NUWS* as the dependent variable and the following set of over-identifying instruments, which are jointly significant at the 1% level in the probit model: the number of trade unions who have members at the workplace; the number of trade unions recognised by management for negotiations over pay and conditions for any section of the workforce; and a dummy variable for whether trade union subscriptions are deducted from employees' pay. For the unilateral wage setting analysis, we explore two samples: firstly, where *NUWS* equals zero; and, secondly, where the manager indicates that no employees at the workplace have their pay set through negotiations with trade unions either at the workplace or at a higher

[7] The variables denoting the occupational structure of the workplace are included to control for human capital at the workplace. Unfortunately, WERS does not include information relating to education across the whole workforce (only for the sample of employees who completed the Employee Questionnaire). Since education and occupation are highly correlated, we include the occupation variables to control for workplace human capital.

level.

As a third robustness check, we analyse data from the WERS 2004 Financial Performance Questionnaire, which is the first in the WERS series to include monetary measures of the financial performance of the workplaces. After completion of the Management Questionnaire, a Financial Performance Questionnaire was left for 'someone responsible for financial matters at the workplace' to complete. The response rate for the Financial Performance questionnaire (as a proportion of questionnaires placed) is 51.5% (see Chaplin et al., 2005). Our sample size is reduced to 832 establishments once we allow for missing values. Hence, we explore the relationship between the quit rate and a monetary rather than categorical indicator of financial performance in order to explore the robustness of our empirical findings. To be specific, we explore the relationship between the natural logarithm of sales turnover (i.e. the total amount received in respect of sales of goods and services excluding value added tax) and the quit rate. For this smaller sample of workplaces, the mean turnover rate is at 12.92% (standard deviation of 15.99), slightly lower than that reported for the larger sample. The dependent variable is specified as the natural logarithm of sales turnover, which has a mean value of 9.2107.[8]

4. Results

Table 2 presents the estimated coefficients related to the financial performance model represented by equation (8). It is apparent that the estimated coefficient on the quit rate variable is negative and statistically significant at the 5% level. The inverse relationship

[8] A variety of measures of financial performance are available in the WERS Financial Performance Questionnaire. The relatively low response rate to this part of the survey, combined with missing values, precludes their inclusion in our empirical analysis. The low response rate reflects the fact that a high proportion of workplaces declined to take part in the Financial Performance Questionnaire. Furthermore, there is some evidence that the workplaces which did not take part in this aspect of WERS were not a random sample (Chaplin et al., 2005). In the following analysis, weights were used which were calculated by multiplying the inverse of the probability of WERS workplaces responding to the Financial Performance Questionnaire with the establishment weight (see footnote 6 and Chaplin et al., 2005).

between financial performance and the quit rate is in accordance with the predictions of Salop (1979). In contrast, the interaction term between the quit rate and the dummy variable representing non unilateral wage setting is characterised by a positive estimated coefficient. Table 3 presents the associated marginal effects in Panel A, which reveal how the quit rate influences the probability of being in each of the four financial performance categories. The quit rate is positively associated with the probability of being in the lowest two categories of financial performance and, in accordance with the predictions of Salop (1979), negatively associated with being in the two 'better than average' financial performance categories. This pattern is reversed in the marginal effects relating to the interaction term between the quit rate and the non unilateral wage setting dummy variable, with turnover being positively (negatively) associated with the relatively high (low) levels of financial performance. In accordance with our theoretical priors, the findings suggest that there are distinct differences in the relationship between the quit rate and financial performance across firms depending on whether or not they set pay unilaterally. In Panel B, the marginal effects from the generalised ordered probit model are presented. It is apparent that only the marginal effects associated with the highest level of financial performance attain statistical significance. However, the pattern of the marginal effects ties in with those from the ordered probit model with the quit rate being inversely associated with the probability of being in the 'above average' financial performance category and the interaction term being characterised by a positive association.

In Panel C, we present the marginal effect relating to the quit rate variable for the sample of workplaces characterised by non unilateral wage setting. The pattern of the marginal effects accords with our theoretical prediction that turnover may be positively associated with firm performance: the marginal effects suggest that turnover may be associated with a lower (higher) probability of being in the relatively low (high) categories

of firm financial performance. In Panel F, the corresponding analysis is summarised – the only difference being the inclusion of an inverse mills ratio term incorporated to control for sample selection bias. It is apparent that the pattern of the marginal effects is robust to its inclusion.

In Panel D, we repeat the analysis for those firms where *NUWS* equals zero and the estimates are not corrected for potential sample selection bias. The pattern of the marginal effects ties in with that predicted within the standard Salop (1979) framework whereby turnover is associated with an inverse (positive) probability of being in the higher (lower) financial performance categories. This finding is robust to controlling for sample selection bias (see Panel G). In Panel E, we impose a stricter definition for unilateral wage setting where no employees at the workplace have their pay set through negotiations with trade unions either at this workplace or at a higher level. It is apparent that the pattern of the estimated marginal effects in Panel E (no correction for sample selection bias) and Panel H (corrected for potential sample selection bias) ties in with those for the sample of workplaces where *NUWS* equals zero and, hence, with the predictions of Salop (1979).

In Table 4, we repeat the analysis presented in Table 3 Panels C to H replacing the categorical dependent variable with a continuous measure of firm performance: the sales turnover of the firm. We specify a weighted OLS model with the logarithm of sales turnover as the dependent variable and the set of explanatory variables is consistent with that in equations (2) and (3) above where the weights reflect the probability of selection into the survey. In the case of unilateral wage setting, the inverse association between firm performance and labour turnover prevails, as predicted by Salop (1979). In contrast, where there is no unilateral pay setting, the estimated relationship between labour turnover and firm performance is statistically insignificant.

Such a finding of an ambiguous relationship between firm performance and labour turnover ties in with the theoretical analysis presented in Section II, where the sign of equation (6) is ambiguous.

5. Conclusions

We have explored the theoretical predictions from an extension to the efficiency wage model of Salop (1979) developed by Garino and Martin (2007), where incumbent and newly hired workers are separated in the production function. If firms can choose wages unilaterally, the effect of turnover on profits is negative, since, for a given turnover function, profit maximising firms adjust the wage to minimise the cost of labour. In the case where firms cannot choose the wage unilaterally, the impact of an exogenous increase in turnover on the maximun profit function can be positive as well as negative. Our empirical analysis of workplace level data drawn from the WERS 2004 suggests that the nature of the relationship between employee turnover and firm performance is influenced by whether workplaces set pay unilaterally. Our empirical findings accord with the predictions of the theoretical framework supporting the standard inverse relationship between the quit rate and firm performance where workplaces are able to choose wages unencumbered by trade union negotiations. In cases, where workplaces cannot choose wages unilaterally, our empirical findings support the possibility that a positive association between firm performance and turnover may prevail.

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Table 1: Human Capital Measures, Quit Rates and Workplace Tenure (Matched Management and Employee Questionnaire Data)

Human Capital Measures	$q < q_1$	$q_1 \leq q < q_2$	$q_2 < q \leq q_3$	$q > q_3$	Tenure: $\leq$ 1 year	Tenure: > 1 year
No Academic Qualifications	0.1520	0.1686	0.1498	0.1780	0.1030	0.1735
GCSE D-G	0.2798	0.2797	0.2607	0.2885	0.2863	0.2751
GCSE A-C	0.5615	0.5449	0.5585	0.5041	0.5612	0.5408
A levels	0.3067	0.3046	0.3225	0.2717	0.3538	0.2935
First Degree	0.2445	0.2533	0.2709	0.1973	0.2840	0.2367
Higher Degree	0.0539	0.0709	0.0768	0.0429	0.0722	0.0609
Other Academic Qualifications	0.3198	0.3191	0.3253	0.2870	0.3097	0.3152
Vocational Qualifications	0.9398	0.9394	0.9358	0.9259	0.9170	0.9402
Index of IT Skills	3.4241	3.5852	3.6893	3.1298	3.2962	3.5163
Number of Observations	4171	5807	4673	3983	2951	15611

Notes: q_1 denotes the 25th quartile ($q_1 = 0.0124$); q_2 denotes the 50th quartile ($q_2 = 0.0816$); q_3 denotes the 75th quartile ($q_3 = 0.1692$).

Table 2: Financial Performance and Labour Turnover (Sample = All Workplaces)

Explanatory Variables	Coefficient	T-Stat	Mean	Standard Deviation
Quit Rate	-0.5168	-2.06	0.1328	0.3386
Quit Rate*Non Unilateral Wage Setting	1.6279	2.30	0.0199	0.0627
Non Unilateral Wage Setting	-0.3475	-2.48	0.2547	0.4358
Ln(Workplace Size)	0.1474	3.36	4.4674	1.7566
Ln(Workplace Age)	0.0644	1.63	3.0372	1.2045
Foreign Owned	0.1594	1.01	0.1379	0.3449
Private Sector	0.0891	0.63	0.7100	0.4539
24 Hours per Day	-0.2280	-1.89	0.4979	0.5001
Overseas Competition	-0.2384	-1.76	0.1426	0.3498
Growing Market	0.2581	2.75	0.3642	0.4813
Labour Costs/Sales Revenue	-0.0022	-0.18	2.1705	1.2562
% Trade Union Members	0.0039	1.20	0.2857	0.1302
% Fixed Term contract employees	0.1382	0.88	0.0600	0.1659
% Agency workers	-0.7780	-1.93	0.0272	0.0954
% Females Workers	0.2613	1.11	0.4996	0.2952
% Part-time workers	-0.5228	-2.43	0.2669	0.2730
Number of Observations				1900
Mean (Standard Deviation) of FP_{wp}				1.5632 (0.8085)
Wald Chi Squared				69.54 (35 d.f.)
Log pseudo-likelihood				-2180.78
Pseudo R Squared				0.0352
Cut Off Point 1 (standard error)				-0.9734 (0.4248)
Cut Off Point 2 (standard error)				0.4089 (0.4277)
Cut Off Point 3 (standard error)				1.7343 (0.4294)

Notes: (i) Occupational structure controls are included: the proportion of: managers and senior officials; professionals; associate professional and technical employees; administrative and secretarial employees; skilled trade employees; personal service employees; and operative employees. The omitted category is the proportion of routine unskilled employees. (ii) Controls for industry are included: manufacturing; construction; wholesale and retail; hotels and restaurants; transport and communication; financial services; other business services; public administration; education; health; and other community services. The omitted category is electricity, gas and water.

Table 3: Financial Performance and Labour Turnover: Marginal Effects and Robustness

Marginal Effects	FP_{wp} =0	FP_{wp} =1	FP_{wp} =2	FP_{wp} =3
Panel A: All Workplaces; Ordered Probit				
Quit Rate	0.0783	0.1279	-0.1194	-0.0867
	(2.01)	(2.04)	(-2.07)	(-1.98)
Quit Rate*Non Unilateral Wage Setting	-0.2466	-0.4028	0.3762	0.2732
	(-2.25)	(-2.27)	(2.30)	(2.22)
Non Unilateral Wage Setting	0.0526	0.0860	-0.0803	-0.0583
	(2.38)	(2.46)	(-2.44)	(-2.43)
Number of Observations				1900
Wald Chi Squared				69.54 (35 d.f.)
Log pseudo-likelihood				-2180.78
Panel B: All Workplaces; Generalised Ordered Probit				
Quit Rate	0.0469	0.1105	0.0210	-0.1784
	(0.98)	(1.02)	(0.18)	(-2.82)
Quit Rate*Non Unilateral Wage Setting	-0.2210	-0.3551	0.2653	0.3108
	(-1.37)	(-1.08)	(0.87)	(2.15)
Non Unilateral Wage Setting	0.0897	0.0378	-0.1071	-0.0204
	(2.51)	(0.57)	(-1.69)	(-0.73)
Number of Observations				1900
Wald Chi Squared				250.42 (105 d.f.)
Log pseudo-likelihood				-2074.8686
Panel C: Non Unilateral Wage Setting; Ordered Probit				
Quit Rate	-0.1961	-0.3262	0.1924	0.1807
	(-1.75)	(-1.73)	(1.78)	(1.67)
Number of Observations				484
Wald Chi Squared				68.84 (33 d.f.)
Log pseudo-likelihood				-521.66
Panel D: Unilateral Wage Setting Sample 1; Ordered Probit				
Quit Rate	0.0828	0.1431	-0.1293	-0.0966
	(2.13)	(2.18)	(-2.22)	(-2.10)
Number of Observations				1416
Wald Chi Squared				46.47 (33 d.f.)
Log pseudo-likelihood				-1622.15
Panel E: Unilateral Wage Setting Sample 2; Ordered Probit				
Quit Rate	0.0786	0.1395	-0.1240	-0.0939
	(1.99)	(2.04)	(-2.07)	(-1.97)
Number of Observations				1037
Wald Chi Squared				44.47 (33 d.f.)
Log pseudo-likelihood				-1186.28
Panel F: Non Unilateral Wage Setting; Ordered Probit				
Quit Rate	-0.2247	-0.3628	0.3820	0.2055
	(-1.94)	(-1.97)	(2.02)	(1.88)
Number of Observations				484
Inverse mills ratio term: estimated coefficient (t-statistic)				-0.4208 (-1.47)
Wald Chi Squared				64.28 (34d.f.)
Log pseudo-likelihood				-524.07

Table 3: Financial Performance and Labour Turnover: Marginal Effects and Robustness (continued)

Panel G: Unilateral Wage Setting Sample 1; Ordered Probit				
Quit Rate	0.0836	0.1413	-0.1277	-0.0972
	(2.15)	(2.18)	(-2.22)	(-2.12)
Number of Observations				1416
Inverse mills ratio term: estimated coefficient (t-statistic)				-0.2416 (-1.24)
Wald Chi Squared				47.92 (34 d.f.)
Log pseudo-likelihood				-1630.1971
Panel H: Unilateral Wage Setting Sample 2; Ordered Probit				
Quit Rate	0.0786	0.1365	-0.1214	-0.0936
	(1.99)	(2.03)	(-2.06)	(-1.97)
Number of Observations				1037
Inverse mills ratio term: estimated coefficient (t-statistic)				-0.1830 (-1.07)
Wald Chi Squared				43.03 (34 d.f.)
Log pseudo-likelihood				-1191.79

Note: (i) marginal effects are presented with t-statistics in parenthesis; (ii) sample 1 relates to *NUWS* =0 and sample 2 relates to workplaces where 0% of employees have their pay set through negotiations with trades unions.

Table 4: Financial Turnover and Labour Turnover

	Estimated Coefficient	T-Statistic
Panel A: Non Unilateral Wage Setting; Ordered Probit		
Quit Rate	0.4852	0.26
Number of Observations		204
Panel B: Unilateral Wage Setting Sample 1; Ordered Probit		
Quit Rate	-3.6958	-2.58
Number of Observations		629
Panel C: Unilateral Wage Setting Sample 2; Ordered Probit		
Quit Rate	-3.3285	-2.17
Number of Observations		441
Panel D: Non Unilateral Wage Setting; Ordered Probit		
Quit Rate	0.9351	0.50
Inverse mills ratio term	-0.6119	-1.39
Number of Observations		204
Panel E: Unilateral Wage Setting Sample 1; Ordered Probit		
Quit Rate	-3.4332	-2.40
Inverse mills ratio term	1.4518	1.93
Number of Observations		629
Panel F: Unilateral Wage Setting Sample 2; Ordered Probit		
Quit Rate	-3.3369	-2.17
Inverse mills ratio term	-0.1862	-0.31
Number of Observations		204

Note: sample 1 relates to *NUWS* =0 and sample 2 relates to workplaces where 0% of employees have their pay set through negotiations with trades unions.