Flexible Employment Arrangements and Workplace Performance

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Abstract

There is an increasing concern on the quality of jobs and productivity that is witnessed in the flexible employment arrangements. However, the effects of the employment flexible types on workplace performance has not been explored in Britain. In this study the relationship between two employment arrangements and the workplace performance is examined. More specifically, teleworking and compress hours are two main employment types examined using the Workplace Employee Relations Survey (WERS) in years 2004 and 2011. The workplace performance is measured by the financial performance and labour productivity. A positive relationship between these two types of flexible employment arrangements and workplace performance is presented. This can have various profound policy implications for employees, employers and the society overall. However, the positive association holds for employees who have high influence on their job, while it becomes negative in the case of teleworkers who have low influence.

Keywords: Financial Performance, Labour Productivity, Propensity Score, Teleworking, Workplace Employment Relations Survey

JEL codes: D4, D24, J2, J28, J63, M54

1. Introduction

Work especially the last years with the fast boost of the information and communication technology (ICT) has been disconnected from a particular place and time. While the traditional place of work used to be the employer's premises, nowadays it is carried out in other locations, such as the employee's home or while traveling. Advances in technology reshape the relationship between work and home, where in some cases the traditional flow of employees from home to office is reversed (Bailyn, 1988). Two main types of works are usually employed as teleworkers or those who compress working hours. The first category refers on clerical employees who perform repetitive tasks such as telemarketers and customer service representative. The second category refers on technical and professional workers whose their tasks allow greater autonomy and flexibility. Also their higher wages and higher training level make these workers to invest psychologically more in work and they require privacy to plan and analyse (Perin, 1991; Perlow, 1997).

Since the 1980s an increasing part of the workforce has been teleworking at home or in location away from employer's premises at least one day a week. Previous studies have outlined the reasons for the growth of teleworking which are owned mainly to its perceived benefits. In particular, these benefits refer on both teleworking and employer including job satisfaction, increasing productivity, organizational loyalty, improved employee morale and loyalty and savings in space office among others (Bélanger, 1999; Potter, 2003). Overall teleworking is attracting increasing interest from researchers and policy-makers. The explanation of teleworking and compressing hours attraction includes both consumption and production theory. It can be considered as a consumption choice, when employees face with the distance to work and the number of alternative choices for commuting to work which can be undertaken by a variety of transportation modes. These modes have varying levels of utility for the commuter. In addition, these type of employment arrangements, allow employees to face and

cope with family demands, such as household domestic production and childcare, especially for the women. On the other hand the producer faces with choices like cost reduction through reduced use of space and equipment, increase on productivity, while some degree of control over the labour force is lost by the employer.

The aim of this paper is to explore the relationship between teleworking with labour productivity and firm performance using the panel Workplace Employment Relations Study (WERS) in 2004 and 2011. This association is compared with an alternative flexible working arrangements, which is the option "compress hours". In other words, this working type allows the employee to work the same or standard weekly hours in less number of days i.e. 35 hours in 4 days instead of 5-6 days. Even though, the linkage between the specific working types, job satisfaction and employee loyalty is not examined in this study, it is suggested for future research. In addition, the linkage among flexible employment, productivity and performance, job satisfaction and employee loyalty can be further explored.

In order to reduce the selection and heterogeneity bias a propensity score matching is taking place (Rosenbaum and Rubin, 1983). Furthermore, in order to limit the endogeneity issue which may come from the employees' or firm relocation the main population of interest in the analysis is limited to the non-mover sample. This actually refers to the firms who are located in the same area during the period examined, as well as, the employees who have not changed travel to work area (TTWA). Another issue could be those who change employer; nevertheless the survey design is such that only individuals who are employed in the same firm are included and followed. For robustness checks the results take place for the total and the movers samples, where the last includes the firms that have been relocated and the employees who have moved location, according to TTWA. However, the conclusions remain similar when the total sample is considered, since also the non-movers and job-stayers from the matched sample derived by

the propensity score procedure constitute roughly the 82 per cent of the total sample, while the respective percentage for the unmatched sample is approximately 85 per cent.

The study finds a positive relationship between teleworking, the labour productivity and firm performance. On the other hand compressing hours has no significant effects on financial performance, based on the fixed effects estimates; however its impact on the labour productivity of the workplace is positive and significant. Moreover, based on the two and three stage least squares, the association between compress hours and financial performance of the workplace becomes positive and significant. This indicates that firms can apply these employment schemes resulting to plausible benefits to both employees and employers, such as cutting costs for office space and coping with the family demands.

The paper is organised as follows: Section 2 is presents a brief literature review. Section 3 presents the methodology, while in section 4 the survey and variables used in the analysis are discussed. Section 5 reports the results and section 6 presents the concluding remarks, policy implications and areas for future research.

2. Literature Review

In this section previous research studies on the association between teleworking and labour productivity and firm performance are briefly discussed. Previous studies found that teleworkers report an increased productivity (Bailey and Kurland, 2002; Vega et al., 2014). However, a large share of the people reported also an increased number of working hours (Bailey and Kurland, 2002). Aborg et al. (2002), in a study considering within-person effects of telework in two companies, found that telework increases work effectiveness, but this may simultaneously be result of higher workload. In other words, teleworkers and flex-working employees may exhibit higher levels of job satisfaction because of the flexibility and work autonomy that these type of employment offers, resulting to harder work for these employees

as a result of reciprocal behaviour to the flexibility offered by the firm. In addition, this work flexibility may enable them to work harder and more intensive during the hours spent at home compared to working at the employer's premises.

In the field of organisational economic and psychology the effect of teleworking on working hours and job satisfaction have been further developed. Vega et al. (2014) in a within-person study based on five consecutive working days found that employees, while they telework, are more likely to report higher levels of job satisfaction and job performance, than when they work at office. Green et al. (2010) examined the flexible working arrangements in 2001-2005 using the Household Income and Labour Dynamics (HILDA) survey in Australia and they found that the flexible working types are associated with lower perception of job security and lower payments. Nevertheless, the flexible types explored were the causal and part-time employment, while this study explores teleworking and compress hours. Furthermore, the case study differs in the way that the employees have the option to choose teleworking or compress hours. However, there are still factors that determine their choice and capability for the employment arrangements explored, as well as, the workplace environment may play a crucial role.

Nevertheless, there less attention has been paid in the economics literature, to the role of teleworking and compressing hours and its implications for workplace performance. This study adds to the previous research by examining the relationship between teleworking labour productivity and job performance using a panel data analysis, while the analysis in the majority of the previous studies relies on cross-sectional data.

3. Methodology

3.1 Panel Regressions and Three Stage Least Squares

The following equation for individual *i*, in firm *j*, location *k* and at time *t* is estimated:

$$WP_{i,j,k,t} = a_0 + a_1 FE_{i,j,k.t} + +\alpha' z_{i,j,k,t} + \mu_i + \delta_\kappa + \theta_t + l_j + l_j T + \varepsilon_{i,j,k,t} \quad (1)$$

$WP_{i,j,k,t}$ denotes the workplace performance. Two alternative measures of workplace performance are employed in the study, financial performance and labour productivity, as are described in the data section. The vector $FE_{i,j,k,t}$ is a dummy indicating whether or not the respondent has the option of the flexible working type or not in firm *k,* in region *j* and in time *t*. *z* is a vector of household, firm and demographic factors, including age, education, marital status, trade union membership, number of working hours. Set μ_i denotes the individual-fixed effects, δ_κ is the firm fixed effect, l_j is the location fixed effects expressed by TTWA, θ_t is a time-specific vector, while $l_j T$ is a set of area-specific linear time trends which controls for unobservable, time-varying characteristics in the TTWA area. Finally, $\varepsilon_{i,j,k,,t}$ express the error terms which is assumed to be *iid*. Since labour productivity and firm performance may be related to each other the following structural equation using three stage least squares (3SLS) is estimated:

$$FP_{i,j,k,t} = a_0 + a_1 FE_{i,j,k.t} + a_2 LP_{i,j,k.t} + \alpha' z_{i,j,k,t} + \mu_i + \delta_\kappa + \theta_t + l_j + l_j T + \varepsilon_{i,j,k,t} \quad (2)$$

$$LP_{i,j,k,t} = \beta_0 + \beta_1 FE_{i,j,k.t} + \beta_2 FP_{i,j,k.t} + \beta' z_{i,j,k,t} + \mu_i + \delta_\kappa + \theta_t + l_j + l_j T + v_{i,j,k,t} \quad (3)$$

The variables are defined as in (1), while *FP* and *LP* denote respectively the financial performance and the labour productivity in the workplace and it is assumed that may cause each other. The measures used as dependent variables are ordered in a scale 1-5. In its current form,

the models 1-3 cannot be estimated by ordered Probit or Logit using fixed effects. While with cross-sectional data, these parametric models are easily to be implemented, in panel data no simple transformation -such as first-differencing or within-transformation- is available that would purge the ordered response models from the individual-specific fixed effects. Therefore there are two options, either estimating the model considering the dependent variable as continuous or converting the dependent ordinal variable in continuous variable assigning z-scores. The second procedure was introduced by van Praag and Ferrer-i-Carbonell (2004), which is known as the adapted Probit Ordinary least squares (POLS). Also, the "Blow-Up and Cluster" (BUC) estimator by Baetschmann et al. (2015) can be applied. However, the estimates are based on the adapted Probit estimates, while the rest of the estimates are similar and are not presented. Finally, an instrumental variable (IV) approach is followed, where the flexible working arrangements are instrumented with the variables on whether the employee has dependent children 0-2 years old, or no dependent children in the household, as well as, whether the respondent is responsible for caring a disabled person. These variables are not correlated with the workplace performance, as the regression analysis shows. Since there might be a strong heterogeneous and selection bias a propensity score matching takes place (Rosenbaum and Rubin, 1983) and the estimates are based on the matched treated and untreated samples.

3 Data

The Workplace Employment Relations Study (WERS) series have started in 1980 and have taken place six times until 2011. In this study the 2004 and 2011 panel survey is considered in the analysis, which took place in a random sub-sample of workplaces and the surveys have been conducted to managers and employees. More specifically, the survey population for both the 2004 and 2011 WERS is all British workplaces with at least 5 employees and the survey

comprises four main sections: the Employee Questionnaire, the Worker Representative Questionnaire, the Financial Performance Questionnaire and the Management Questionnaire. The first one includes information on employee characteristics, while the last three provide information about the firm-establishment. This is useful for the analysis, since the regressions control not only for employee characteristics, but also for workplace characteristics, such as competition, total employees and the market area, where the firm is operated. In addition, the analysis of the surveys of 2004 and 2011 allow us to control for unobserved characteristics of the pre-financial crisis period, as well as, the economic shocks after 2008.

The relationship of the employment arrangements between two measures of workplace performance is examined. These are the financial performance and labour productivity. The measures are derived from the Management Questionnaire and they answer in the following question "How would you assess your workplace's financial performance and labour productivity?" Then the management representative was asked to indicate in which of the following categories the measures fall into: a lot better than average; better than average; about average; below average or a lot below average. Thus, the measures are ordered variables ranging between 1 (very good) to 5 (very low). A negative coefficient sign, therefore, would indicate an improvement on the firm-workplace performance. Nevertheless, to make the interpretation easier, the measures have been recoded such as 1 indicates very low (a lot below average) and 5 very high (a lot better than average). In table 1 the summary statistics for the main variables of interest, such as the workplace performance, teleworking and compressing hours proportion are presented. It is observed that the average values of workplace performance are rather high in a scale 1-5 and the values are approximately 3.5. Approximately the 11 per cent of the sample is involved on teleworking, while almost 18 per cent of the sample is choosing compressing hours as a working type.

In table 2 the correlation between teleworking and workplace performance, as well as, between some selected control variables is presented. A significant correlation among the variables of interest and other control variables used into the regressions may be present; however since the number of controls is large their correlation is not reported, but their association will be presented and discussed in the empirical results section. In all cases a positive and significant association between the flexible employment types-teleworking and compress hours-, workplace performance measures, wage , education, performance pay schemes and quality of managers-employees relations is presented The exception is the relationship between education level of the employee and the quality of managers-employees relationships, which is insignificant.

4 Empirical Results

In this section the empirical results are reported. In table 3 the fixed effects regression after the propensity score matching are presented. The results show that the association between teleworking and both workplace performance is positive and significant. On the other hand, the impact of compress hours on financial performance is insignificant, while it becomes significant and positive regarding the labour productivity of the workplace.

The rest of the coefficients show that the wage is insignificant for the financial performance and positive for the labour productivity when the sample of teleworkers is considered. On the contrary, it seems that wage is not significantly related with the workplace performance, when the sample of those who choose “compress hours” as an option and their counterparts who share similar characteristics is considered. Furthermore, the remained categories of the wage are not presented as they were found to be insignificant. The socio-economic characteristics, such as

age, education, marital status and whether there are dependent children or no dependent children in the household have no significant effect on the measures of the workplace performance examine, with the exception of the sample regarding those who choose compress hours and the financial performance of the workplace. More specifically, in this case there is a non-monotonic relationship, where age and financial performance are positively related up to one point-age group of 30-39 years old- while it becomes significant and negative for the age groups 50-59 and older. The status of company, the market area that the workplace is operated and the number of the establishments are significant factors of workplace performance. More specifically, the findings suggest that the bigger the area that the workplace is operated the greater the performance is likely to be. Similarly, being the only establishment or the sole establishment in UK but being a part of a foreign company, the workplace performance is lower. The quality of relations between managers and employees, the profit related and performance related schemes have a positive relationship with the performance of the workplace. Furthermore, the proportion of the non-managerial staff under appraisal is significant and presents a monotonic relationship with the workplace's performance. More precisely, the proportion of the staff that it should be under appraisal and valuation should be 100 per cent. Regarding the number of employees, the coefficients are positive and significant only in the case when the compress hours is explored.

(Insert Table 3)

In table 4 the conditional Logit estimates for the determinants of teleworking are reported. The results overall show that age, education level, marital status, ethnicity and the degree of skills on job matching are not important factors, with the exception that higher educated people and mixed white-Asian are more likely to participate in teleworking. This can be related to the

fact that higher educated people are more likely to be managers or supervisors and to assign workload to other people, while they can spend more time at home. Also, teleworking can be related with information technology usage, where more educated people usually have these skills. This is also confirmed by the coefficient of the variable on whether the respondent supervises or manages other people.

Both performance measures are positively related with wage, the years of the employees' experience in the current workplace and the quality of relations between managers and employees. In addition the market area where the workplace is operated is a significant factor and the estimates indicate that the international, national and regional companies are more likely to implement the employment types explored here than the local companies. The results overall are consistent with other studies where performance related schemes, the market area, quality of managers-employee relationships, and wage among others are significant factors for workplace performance (Hatton, 1988; Jones and Kato, 1995; Brown and Heywood, 2002) However this study also explores the determinants of teleworking and compress hours. In addition, Green et al. (2010) found that employment types, such as causal and part-time employees are connected with low payments and low levels of job security. However, this study explores whether the option of teleworking and compress hours are related to the workplace performance. In addition, in some cases, especially women, they these employment types, including part-time. This is explained by the fact that when people choose these employment modes, make them happier as they are able to cope with the household and family demands, and spend more time on leisure activities. However, this is not examined in this study.

(Insert Table 4)

In table 5 the propensity score matching test is reported. The null hypothesis indicates that the matched treated and untreated groups share similar characteristics and that the matching process is efficient. The results refer to teleworking, while very similar conclusions are derived when the "compress hours" is considered. The only exception is the variable of whether there are formal polies for equal opportunities in the workplace or not which is significant at 10 per cent level.

(Insert Table 5)

In table 6 the results for the total and movers sample are reported. Regarding the former sample, the estimates are close with those found in table 3 and this can be explained by the fact that the non-movers sample consists approximately of the 80-82 per cent of the total sample. On the other hand, the estimates for the movers are insignificant, with the exception of the teleworkers and the financial performance of the workplace, where a positive and significant coefficient is found, but the effect is significantly lower than the respective ones found using the total and the non-movers sample.

(Insert Table 6)

In table 7 the 3SLS estimates based on the propensity score matching are reported. In this case the concluding remarks are the same with the exception that the magnitude of the coefficient is significantly larger. This shows that the adapted Probit fixed effects may underestimate the causal effect of the working modes explored in this study, even if the non-movers sample is considered. Furthermore, the effect of compress hours on financial performance of the workplace it becomes significant, as it can be seen in column (3), while it was found insignificant in table 3. Thus, the conclusions are that both employment types have

a positive relation with the workplace performance of the workplace. This may be derived by the fact that working more days at home, for teleworkers and compressing hours which implies less working days in a week at the employer's premises lead to saving costs, such as office equipment and space, and other short run costs. Similarly, the employment types have a positive relationship with the labour productivity, which may result to financial performance and vice versa, as the results in table 7 show a strong evidence of reverse causality between the two workplace performance measures.

The instrumental variables employed are whether the employee has dependent children 0-2 years old, or no dependent children and whether the respondent is responsible for the caring of a disabled person. These factors can be highly correlated with the employment types, such as teleworking and compress hours, because it allows them to spend more time at home working and also taking care of the children and disabled household members if any. Finally, as robustness check the 2SLS estimates are reported in table 8. In this case the causal effects are very close to those found in the table 7 and the 3SLS. Moreover, based on the weak instrument test the null hypothesis is rejected and it is concluded that the instrumental variable proposed in this study are not weak. In addition, according to the Sargan endogeneity test the null hypothesis of no-endogeneity is accepted.

Thus, the conclusion is that these employment arrangements may be an efficient policy, especially when the employees have the option to choose their implementation, with various plausible benefits to workplace, including costs saving and improvement on productivity. On the other hand, the benefits for the employees, besides the plausible performance payments and other related benefits, can be job satisfaction improvement, ability to cope with their family demands, resulting to improvement of their work-family balance and their overall well-being.

(Insert Tables 7-8)

Finally, in table 9 the adapted Probit fixed effects estimates based on the employee's influence on job are reported. More specifically, the respondents are asked how much influence they have on their job and the outcome answering in a scale from 1 (very low) to 4 (very high). In panel A of the table 9 the analysis included the respondents who stated that they have high or very high influence, while in panel B the results for those who answered low and very low are presented. It becomes clear that influence on the work and output outcome is an important factor, such as creative versus dull jobs among others. Thus, in panel A the effects of the employment types on both workplace performance measures are positive and their magnitude significantly larger than the respective ones found in table 3. Regarding compressing hours the estimates are insignificant in panel B, while in the case of teleworking the effects are inversed and become negative. Therefore, especially for teleworkers it is important for them and the workplace performance to have some average at least influence on their job.

(Insert Table 9)

5 Conclusions

This study explored the relationship between two flexible employment arrangements and the performance of the workplace. The findings of this study suggest that there is a positive effect on performance from both teleworking and compressing hours. The results are confirmed by the 2SLS and 3SLS. However, the findings suggest that the positive relationship holds only for the employees who have high level of influence on their job. On the other hand, it becomes insignificant for those who have low influence and implement the compressing hours employment type, while it is negative for teleworking.

Overall, the findings indicate that the specific employment modes may have various benefits and policy implications for both employees and employers, as well as, for the society

overall. On the one hand, for the employers a higher performance and productivity level leads to profit increase and further growth, which can be reflected with increases on wages, and improvement on relations quality among the personnel in the workplace. Moreover, companies can lease less number of offices and equipment resulting to cost savings. On the other hand, the benefits for the employees can be various, including relief from stress which is related to traffic congestion and commuting at work. Moreover, these employment arrangements may offer more work autonomy and control of the working schedule, especially in the case of the teleworking. Furthermore, they may allow the employees to cope with the family and household demands, as well as, to devote more time on leisure activities. The latter may have additional effects on productivity through the improvement of job satisfaction and quality of life. The well-being has not been explored in this study; however, it is suggested for future research. Lastly, the benefits for the society include the social welfare for the employees and employers, as well as, other plausible benefits, such as the traffic and air pollution reduction and overall well-being improvement.

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Table 1. Summary Statistics

Variable	Mean	Standard deviation	Minimum	Maximum	
	Panel A: Ordered variables				
Financial Performance	3.5571	0.8103	1	5	
Labour Productivity	3.5033	0.7151	1	5	
	Panel B: Categorical variables				
	Yes	No		Yes	No
Teleworkers Before Matching	15.68	84.32	Compress Hours Before Matching	19.87	80.13
Teleworkers After Matching	14.82	85.18	Compress Hours After Matching	17.81	82.19

Table 2. Correlation matrix

	Financial Performance	Labour productivity	Telework	Wage	Education	Performance pay schemes	Quality of relations between managers and employees
Labour productivity	0.4580*** (0.0000)						
Telework	0.0558*** (0.0000)						
Wage	0.0260*** (0.0000)	0.0100*** (0.0000)	0.2477*** (0.0000)				
Education	0.0269*** (0.0000)	0.0189*** (0.0000)	0.1075*** (0.0000)	0.2160*** (0.0000)			
Performance pay schemes	0.0744*** (0.0000)	0.0584*** (0.0000)	0.0415*** (0.0000)	0.0952*** (0.0000)	0.0041 (0.5073)		
Quality of relations between managers and employees	0.0453*** (0.0000)	0.0768*** (0.0000)	0.0232*** (0.0000)	0.0636*** (0.0000)	-0.0010 (0.8581)	0.0211*** (0.0006)	
Compress Hours	0.0217*** (0.0000)	0.0445** (0.0345)	0.1091*** (0.0000)	0.0437*** (0.0000)	0.0100* (0.0774)	0.0774*** (0.0000)	0.0343*** (0.0000)

P-values in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 3. Adapted Probit Fixed Effects and Propensity Score Matching

VARIABLES	(1) DV: Financial Performance	(2) DV: Labour Productivity	(3) DV: Financial Performance	(4) DV: Labour Productivity
Teleworking	0.1097***			
	(0.0269)			
Teleworking		0.0742**		
		(0.0318)		
Compress hours			0.0579	
			(0.0446)	
Compress hours				0.0444**
				(0.0210)
Wage (reference category £141-£180 per week)				
Wage - £181-£220 per week	-0.0732	-0.0415	-0.0038	0.0209
	(0.0782)	(0.0662)	(0.0917)	(0.0844)
Wage - £221-£260 per week	0.1831**	-0.0803	-0.1368	-0.0051
	(0.0751)	(0.0627)	(0.0881)	(0.0842)
Wage - £261-£310 per week	-0.0981	-0.0079	-0.0154	0.1015
	(0.0740)	(0.0629)	(0.0868)	(0.0818)
Wage - £431-£540 per week	0.1217*	-0.0305	-0.0411	0.0847
	(0.0710)	(0.0611)	(0.0832)	(0.0814)
Wage - £681-£870 per week	0.0011	-0.0761	0.0810	0.0948
	(0.0839)	(0.0676)	(0.1023)	(0.0936)
Wage - £871 or more per week	0.0895	-0.0635	0.1332	0.0417
	(0.0865)	(0.0710)	(0.1070)	(0.0953)
Number of weekly hours work	0.0026	0.0015	0.0031	0.0025
	(0.0019)	(0.0016)	(0.0023)	(0.0022)
Age (reference category=16-17 years old)				
Age (18-19)	-0.0455	-0.0766	0.1916*	-0.0233
	(0.0864)	(0.0743)	(0.1015)	(0.0990)
Age (20-21)	-0.0412	-0.0244	0.2048*	0.0185
	(0.0940)	(0.0775)	(0.1135)	(0.1030)
Age (22-29)	0.0420	0.0256	0.0977	0.0306
	(0.0811)	(0.0667)	(0.0955)	(0.0891)
Age (30-39)	0.0157	-0.0041	0.1452**	-0.0123
	(0.0814)	(0.0668)	(0.0660)	(0.0894)
Age (40-49)	-0.0021	-0.0141	0.1238	-0.0275
	(0.0825)	(0.0679)	(0.0984)	(0.0915)
Age (50-59)	-0.0268	-0.0210	-0.1821*	-0.0146
	(0.0836)	(0.0687)	(0.0996)	(0.0924)
Age (60-64)	0.0787	0.0719	-0.0926	0.1151
	(0.0945)	(0.0785)	(0.1190)	(0.1134)
Age (65 and above)	-0.1203	0.0108	-0.3091**	0.0575
	(0.1315)	(0.1003)	(0.1528)	(0.1449)
Marital Status (reference=Single)				
Marital status-Married or couple	0.1099	0.0556	0.1196	0.0121
	(0.0771)	(0.0588)	(0.0991)	(0.0904)
Marital status-Divorced	-0.0063	-0.0076	-0.0355	-0.0365
	(0.0416)	(0.0334)	(0.0549)	(0.0469)
Marital status-Widowed	0.0051	0.0132	0.0064	-0.0005
	(0.0262)	(0.0213)	(0.0342)	(0.0301)
Education level (reference primary school)				
Education level- GCSE A-AS levels	0.0559**	0.0174	-0.0434	0.0136
	(0.0254)	(0.0199)	(0.0324)	(0.0274)
Education level-First degree	-0.0294	-0.0126	-0.0083	0.0177
	(0.0271)	(0.0212)	(0.0355)	(0.0299)
Education level-Higher degree	-0.0060	0.0211	0.0261	0.0664
	(0.0446)	(0.0350)	(0.0571)	(0.0487)

Table 3 (cont). Adapted Probit Fixed Effects and Propensity Score Matching

VARIABLES	(1) DV: Financial Performance	(2) DV: Labour Productivity	(3) DV: Financial Performance	(4) DV: Labour Productivity
Dependent children aged 0-2 (Yes)	0.0197	0.0080	0.0609	0.0342
	(0.0364)	(0.0292)	(0.0487)	(0.0416)
Dependent children any age (No)	-0.0180	0.0163	-0.0079	-0.0041
	(0.0241)	(0.0196)	(0.0330)	(0.0288)
Skills matching with the job (much higher)				
Skills matching with the -bit higher	-0.0278	-0.0258	0.0382	0.1207
	(0.1250)	(0.0941)	(0.1570)	(0.1244)
Skills matching with the job-the same	0.0001	-0.0363	0.0482	0.1120
	(0.1174)	(0.0884)	(0.1458)	(0.1148)
Skills matching with the -bit lower	0.0406	-0.0230	0.1225	0.1225
	(0.1177)	(0.0886)	(0.1457)	(0.1144)
Skills matching with the -much lower	0.0027	-0.0173	0.0800	0.1328
	(0.1181)	(0.0889)	(0.1464)	(0.1155)
Quality of relations between managers and employees (reference-very poor)				
Quality of relations-Poor	0.0120	-0.0036	0.1613**	0.0148
	(0.0516)	(0.0428)	(0.0796)	(0.0730)
Quality of relations-Neither good nor bad	0.0075	0.0180	0.1805**	0.0624
	(0.0487)	(0.0404)	(0.0760)	(0.0697)
Quality of relations-Good	0.0115	0.0263	0.1566**	0.0536
	(0.0483)	(0.0402)	(0.0748)	(0.0691)
Quality of relations-Very Good	0.0090	0.0557	0.1657**	0.1005
	(0.0518)	(0.0431)	(0.0792)	(0.0724)
Years of experience in this workplace	0.0087	0.0073	0.0145	0.0149
	(0.0080)	(0.0064)	(0.0107)	(0.0092)
Ethnicity (reference British)				
Ethnicity-Irish	0.1707*	-0.0830	0.0487	-0.0619
	(0.0974)	(0.0687)	(0.1227)	(0.0972)
Ethnicity-other white	0.0583	0.0672*	-0.0774	0.0529
	(0.0535)	(0.0404)	(0.0678)	(0.0556)
Ethnicity-White and Black Caribbean	0.0503	0.2090*	0.0440	0.1861
	(0.1548)	(0.1156)	(0.1959)	(0.1355)
Ethnicity-White and Black African	0.5822	0.0589	0.5987	0.1081
	(0.5303)	(0.1354)	(0.5553)	(0.1721)
Ethnicity-White and Asian	-0.3276	-0.1873	-0.2862	0.1489
	(0.2049)	(0.1154)	(0.3324)	(0.1225)
Ethnicity-Other mix	0.2435*	0.2358**	0.2010	0.1840
	(0.1317)	(0.1041)	(0.1408)	(0.1754)
Ethnicity-Indian	0.0315	-0.0461	0.0679	0.0653
	(0.0742)	(0.0476)	(0.0946)	(0.0686)
Ethnicity-Pakistani	0.1264	-0.1143	0.3076**	-0.0326
	(0.1299)	(0.1090)	(0.1502)	(0.1336)
Ethnicity-Bangladeshi	0.1360	-0.0398	-0.0832	0.2257
	(0.1657)	(0.1515)	(0.2488)	(0.2243)
Trade union or staff association members (reference Yes)				
Trade union or staff association members-No but in the past	0.0084	0.0786***	-0.0004	0.1147***
	(0.0303)	(0.0241)	(0.0406)	(0.0350)
Trade union or staff association members-No	0.0448*	0.0865***	0.0530	0.0730**
	(0.0263)	(0.0214)	(0.0351)	(0.0304)
Profit related payments (Yes)	-0.0007	0.0462**	0.0839**	0.0105
	(0.0248)	(0.0199)	(0.0328)	(0.0276)

Table 3 (cont). Adapted Probit Fixed Effects and Propensity Score Matching

VARIABLES	(1) DV: Financial Performance	(2) DV: Labour Productivity	(3) DV: Financial Performance	(4) DV: Labour Productivity
Proportion of non-managerial under performance appraisal (reference 100%)				
Proportion - (80-99%)	-0.2861***	-0.0761	-0.2682***	-0.0348
	(0.0685)	(0.0595)	(0.0817)	(0.0839)
Proportion - (60-79%)	-0.1452**	-0.3664***	-0.2152**	0.4687***
	(0.0588)	(0.0432)	(0.0868)	(0.0751)
Proportion - (40-59%)	-0.4406***	-0.1914***	-0.0813	-0.2600***
	(0.0847)	(0.0528)	(0.1060)	(0.0920)
Proportion - (20-39%)	-0.3763***	-0.3653***	-0.1723**	-0.3341***
	(0.0464)	(0.0354)	(0.0760)	(0.1253)
Proportion - (1-19%)	-0.3494***	-0.2051***	-0.4000***	-0.4437***
	(0.0599)	(0.0516)	(0.0981)	(0.0857)
Performance related payments (Yes)	0.0948***	0.0900***	0.1232***	0.0385
	(0.0247)	(0.0204)	(0.0330)	(0.0301)
Total Employees	0.00001	0.00001	0.0001***	0.0001***
	(0.00001)	(0.00001)	(0.00001)	(0.00001)
Number of establishments (reference many)				
Number of establ. (single)	-0.1211***	-0.0297	-0.0728	-0.0687
	(0.0348)	(0.0295)	(0.0497)	(0.0435)
Number of establ. (sole in UK-foreign)	-0.3888***	-0.1205**	-0.4192***	0.1355
	(0.0645)	(0.0565)	(0.1073)	(0.0957)
Company Status (reference Public)				
Company- Private Limited Company	-0.0145	0.1009***	-0.1060***	0.1194***
	(0.0289)	(0.0234)	(0.0381)	(0.0328)
Company- Limited by guarantee	0.2305***	-0.1296**	0.0692	-0.4004***
	(0.0695)	(0.0558)	(0.1038)	(0.0832)
Company- Partnership	0.1476**	0.2390***	0.1387	0.2411***
	(0.0615)	(0.0461)	(0.0877)	(0.0730)
Company-Trust/charity	0.0232	-0.0088	-0.1692**	0.0019
	(0.0544)	(0.0458)	(0.0676)	(0.0628)
Company-Royal charter	-0.0666	-0.0955	-0.3080	0.1304
	(0.1070)	(0.0673)	(0.1936)	(0.0863)
Company- Co-operative	-0.6383***	-0.2983***	-0.7869***	-0.5419***
	(0.0824)	(0.0595)	(0.0888)	(0.0585)
Formal policy equal opportunities (Yes)	-0.0031	0.1940***	-0.1818***	0.0803*
	(0.0399)	(0.0358)	(0.0456)	(0.0479)
Supervise other employees (No)	0.0345	-0.0444**	0.0880***	-0.0035
	(0.0222)	(0.0184)	(0.0300)	(0.0271)
Market Area (reference-Local)				
Market Area-Regional	0.0442	0.1961***	0.2554***	0.2535***
	(0.0394)	(0.0343)	(0.0520)	(0.0482)
Market Area-National	0.0214	0.2052***	0.0394	0.2411***
	(0.0343)	(0.0281)	(0.0432)	(0.0393)
Market Area-International	0.0296	0.1846***	0.1510***	0.2230***
	(0.0375)	(0.0316)	(0.0463)	(0.0427)
Observations	5,341	5,230	3,236	3,012
R-squared	0.1656	0.2868	0.1789	0.2812

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 4. Determinants of Telework and Compress hours employment arrangements

VARIABLES	(1) DV: Teleworking	(2) DV: Compress Hours
Wage (reference category £141-£180 per week)		
Wage - £181-£220 per week	0.5963**	0.5712
	(0.2348)	(0.3785)
Wage - £221-£260 per week	1.1172***	1.0551***
	(0.2287)	(0.3678)
Wage - £261-£310 per week	1.1980***	0.9851***
	(0.2283)	(0.3696)
Wage - £431-£540 per week	1.5058***	1.2082***
	(0.2395)	(0.3855)
Wage - £681-£870 per week	1.5925***	1.3220***
	(0.2516)	(0.3969)
Wage - £871 or more per week	1.9161***	1.2788***
	(0.2570)	(0.4110)
Number of weekly hours worked	0.0004	0.0010
	(0.0046)	(0.0070)
Age (reference category=16-17 years old)		
Age (18-19)	-0.1961	-0.1140
	(0.3132)	(0.4357)
Age (20-21)	-0.0234	-0.0411
	(0.3036)	(0.4513)
Age (22-29)	0.0144	0.0616
	(0.2794)	(0.3975)
Age (30-39)	0.2505	0.0375
	(0.2795)	(0.3988)
Age (40-49)	0.2736	-0.0617
	(0.2809)	(0.4027)
Age (50-59)	0.1771	-0.0982
	(0.2824)	(0.4055)
Age (60-64)	0.0981	0.2622
	(0.3033)	(0.4535)
Age (65 and above)	-0.0167	0.9828*
	(0.3959)	(0.5789)
Marital Status (reference=Single)		
Marital status-Married or couple	-0.0901	0.6260*
	(0.1991)	(0.3232)
Marital status-Divorced	0.0154	-0.1182
	(0.0995)	(0.1484)
Marital status-Widowed	-0.0104	-0.1083
	(0.0644)	(0.0958)
Education level (reference primary school)		
Education level- GCSE A-AS levels	0.1715***	0.0281
	(0.0516)	(0.0789)
Education level-First degree	0.1938***	-0.0735
	(0.0594)	(0.0894)
Education level-Higher degree	0.2672***	-0.0987
	(0.0621)	(0.0949)
Dependent children any age (No)	-0.0114*	-0.0631
	(0.0059)	(0.0852)
Dependent children 0-2 years old	0.0152***	
	(0.0274)	
Skills matching with the job (much higher)		
Skills matching with the -bit higher	-0.0249	-0.5389
	(0.3080)	(0.4432)
Skills matching with the job-the same	-0.1896	-0.7139*
	(0.2907)	(0.4156)
Skills matching with the -bit lower	-0.1615	-0.5945
	(0.2911)	(0.4161)

Table 4 (cont.) Determinants of Telework and Compress hours employment arrangements

VARIABLES	(1) DV: Teleworking	(2) DV: Compress Hours
Skills matching with the -much lower	-0.2506	-0.4892
	(0.2923)	(0.4196)
Quality of relations-Poor	0.1509	-0.1826
	(0.1339)	(0.1879)
Quality of relations-Neither good nor bad	0.0466	0.2951*
	(0.1258)	(0.1771)
Quality of relations-Good	0.0443*	0.3718**
	(0.0228)	(0.1759)
Quality of relations-Very Good	0.0906**	0.5145***
	(0.0419)	(0.1894)
Years of experience in this workplace	0.0588**	0.0225**
	(0.0297)	(0.0102)
Ethnicity (reference British)		
Ethnicity-Irish	0.2145	-0.4200
	(0.2159)	(0.3578)
Ethnicity-other white	-0.1658	-0.1792
	(0.1345)	(0.2193)
Ethnicity-White and Black Caribbean	0.0188	-0.2899
	(0.3766)	(0.5749)
Ethnicity-White and Black African	0.0076	1.1188
	(0.4881)	(0.8593)
Ethnicity-White and Asian	1.0253**	-0.5888
	(0.5055)	(0.6782)
Ethnicity-Other mix	-0.1234	0.0871
	(0.3960)	(0.5981)
Ethnicity-Indian	-0.0510	-0.2339
	(0.1637)	(0.3035)
Ethnicity-Pakistani	-0.3850	-0.7558
	(0.3954)	(0.5685)
Ethnicity-Bangladeshi	-0.1459	0.8594
	(0.5164)	(0.9835)
Trade union or staff association members-No but in the past		
	0.1004	-0.0669
Trade union or staff association members-No	(0.0740)	(0.1075)
Profit related payments (Yes)	0.0580	-0.2154**
	(0.0633)	(0.0945)
Performance related payments (Yes)	0.0650	-0.1860*
	(0.0618)	(0.1030)
Proportion of non-managerial under performance appraisal (reference 100%)		
Proportion - (80-99%)	-0.7672***	-1.0276***
	(0.1294)	(0.1786)
Proportion - (60-79%)	0.6780***	-1.2427***
	(0.1162)	(0.2033)
Proportion - (40-59%)	0.9132***	0.6755***
	(0.1675)	(0.2148)
Proportion - (20-39%)	-0.1743	-0.1243
	(0.1440)	(0.2742)
Proportion - (1-19%)	-0.4264***	-3.3266***
	(0.1451)	(0.3447)
Performance related payments (No)	-0.2003***	-0.3812***
	(0.0563)	(0.0854)
Total employees	0.0008***	0.0003***
	(0.0001)	(0.0000)

Table 4 (cont.) Determinants of Telework and Compress hours employment arrangements

VARIABLES	(1) DV: Teleworking	(2) DV: Compress Hours
Company Status (reference Public)		
Company- Private Limited Company	0.8181***	0.7911***
	(0.0713)	(0.1129)
Company- Limited by guarantee	1.8149***	1.1222***
	(0.1773)	(0.2289)
Company- Partnership	0.6858***	0.4012*
	(0.1643)	(0.2347)
Company-Trust/charity	0.9915***	1.3405***
	(0.1394)	(0.1874)
Company-Royal charter	2.9244***	-0.7936
	(0.4121)	(0.6938)
Company- Co-operative	0.8484***	-0.1321
	(0.1810)	(0.2846)
Formal policy equal opportunities (Yes)	-0.2799**	-0.3088*
	(0.1098)	(0.1713)
Supervise others (No)	-0.2578***	0.1215
	(0.0569)	(0.0849)
Number of establishments (reference many)		
Number of establ. (single)	-0.4591***	0.3272
	(0.1075)	(0.3767)
Number of establ. (sole in UK-foreign)	-1.471***	-0.2579**
Market Area (reference-Local)	(0.3795)	(0.1122)
Market Area-Regional	1.4389***	0.31592
	(0.1258)	(0.2004)
Market Area-National	1.4979***	0.4556***
	(0.1051)	(0.1437)
Market Area-International	1.4340***	0.5725***
	(0.1142)	(0.1709)
Observations	5,532	3,413
Wald chi-square	2,714.41	2,205.73
	[0.000]	[0.000]

Robust standard errors in parentheses, p-brackets in brackets, *** p<0.01, ** p<0.05, * p<0.1

Table 5. Propensity Score Matching Test for Telework

Variables	PS test	Variables	PS test	Variables	PS test
Age	0.30	Member of trade	-1.23	Workplace Type-Status	0.21
	(0.762)	union	(0.187)		(0.833)
Marital Status	0.40	Profit-related	-1.01	Formal polies for equal opportunities	1.96*
	(0.686)	payments	(0.313)		(0.050)
Education level	1.49	Proportion of non-	-1.39	Supervise others	0.24
	(0.136)	managerial staff evaluated	(0.165)		(0.810)
Dependent children	0.80	Performance related	-1.35	Market area	1.43
0-2 years old	(0.422)	payment	(0.152)		(0.142)
No dependent	-0.65	Total employment	0.33	Standard occupation classification	0.27
children	(0.392)		(0.745)		(0.788)
Skills matching	-0.42	Number of	0.84		
with the job	(0.673)	establishments	(0.399)		
Quality of relations	0.13	Years working in the	1.27		
between managers	(0.899)	current workplace	(0.204)		
and employees					
Wage	0.09	Number of weekly	-0.53		
	(0.928)	hours worked	0.596		
Ethnicity	0.06				
	(0.953)				

P-values in parentheses, * p<0.1

Table 6 Adapted Probit Fixed Effects and Propensity Score Matching for Total Sample and Movers

VARIABLES	(1) DV: Financial Performance	(2) DV: Labour Productivity	(3) DV: Financial Performance	(4) DV: Labour Productivity
Panel A: Total Sample				
Teleworking	0.0992***			
	(0.0272)			
Teleworking		0.0761**		
		(0.0351)		
Compress hours			0.0296	
			(0.0303)	
Compress hours				0.0416**
				(0.0201)
Observations	6,221	6,061	3,812	3,533
R-squared	0.1396	0.2440	0.1433	0.2340
Panel B: Movers Sample				
Teleworking	0.0344**			
	(0.0165)			
Teleworking		-0.0132		
		(0.0198)		
Compress hours			0.1048	
			(0.0959)	
Compress hours				-0.0866
				(0.0774)
Observations	880	831	576	521
R-squared	0.3453	0.3580	0.3126	0.3340

Robust standard errors in parentheses, *** p<0.01, ** p<0.05

Table 7. 3SLS Estimates for Employment Arrangement, and Workplace Performance

VARIABLES	(1)	(2)		(3)	(4)
Panel A: DV Firm Performance			**Panel B: DV Labour Productivity**		
Teleworking	0.2136***		Teleworking	0.1249***	
	(0.0354)			(0.0351)	
Flexible Hours		0.1487***	Flexible Hours		0.0955***
		(0.0162)			(0.0081)
Labour Productivity (reference category a lot below average)			Firm Performance (reference category a lot below average)		
Below average	0.8803***	2.2308***	Below average	0.9150***	-0.1081
	(0.1087)	(0.4441)		(0.0791)	(0.1408)
About Average	1.6877***	2.4493***	About Average	1.3817***	0.5119***
	(0.1050)	(0.4275)		(0.0768)	(0.1513)
Better than average	2.5068***	3.4872***	Better than average	2.0344***	0.9241***
	(0.1051)	(0.4446)		(0.0769)	(0.1485)
A lot better than average	3.4945***	4.2683***	A lot better than average	2.6046***	1.2891***
	(0.1076)	(0.4136)		(0.0782)	(0.1484)
Observations	5,230	3,012	Observations	5,230	3,012
R-squared	0.1086	0.1115	R-squared	0.1590	0.1642

Robust standard errors in parentheses, *** p<0.01

Table 8. 2SLS for the Employment Arrangements and Workplace Performance

VARIABLES	(1) DV: Financial Performance	(2) DV: Labour Productivity	(3) DV: Financial Performance	(4) DV: Labour Productivity
Teleworking	0.2080***			
	(0.0645)			
Teleworking		0.1527***		
		(0.0202)		
Compress hours			0.1211**	
			(0.0529)	
Compress hours				0.0917***
				(0.0258)
Observations	5,142	5,043	3,087	2,863
R-squared	0.1534	0.2009	0.1586	0.2049
Weak instrument test	94.466	72.703	42.920	45.095
	[0.000]	[0.000]	[0.000]	[0.000]
Sargan endogeneity test	7.012	3.719	7.266	6.699
	[0.4277]	[0.8115]	[0.4359]	[0.4609]

Robust standard errors in parentheses, p-values in brackets, *** p<0.01, ** p<0.05

Table 9. Adapted Probit Fixed Effects based on Job Influence

VARIABLES	(1) DV: Financial Performance	(2) DV: Labour Productivity	(3) DV: Financial Performance	(4) DV: Labour Productivity
	Panel A: High Influence			
Teleworking	0.1215***			
	(0.0288)			
Teleworking		0.1082***		
		(0.0242)		
Compress hours			0.1016**	
			(0.0475)	
Compress hours				0.0642**
				(0.0305)
Observations	4,461	4,340	2,736	2,520
R-squared	0.1742	0.1949	0.2884	0.2809
	Panel B: Low Influence			
Teleworking	-0.0061*			
	(0.0032)			
Teleworking		-0.0096**		
		(0.0042)		
Compress hours			0.1131	
			(0.1921)	
Compress hours				-0.2665
				(0.1682)
Observations	880	890	500	492
R-squared	0.3718	0.4169	0.4274	0.4822

Robust standard errors in parentheses, *** p<0.01, ** p<0.05 , * p<0.1