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# **Working for nothing: personality, time allocation and earnings in the UK.**

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## **Abstract**

The UK has historically had some of the longest average working hours in the EU (Hogart et al, 2007), and the TUC reports that unpaid overtime is rife in the UK labour market (TUC, 2017). Supply side explanations have instead focused on peer pressure and status races, preference for work over family, and strong work identity (Hochschild, 1997; Besley and Gathak, 2008; Bryan and Nandi, 2015). Here we focus on personality traits, which have been studied in connection with occupational choice, labour market outcomes, participation, job performance, and absenteeism, and investigate their relationship with working hours. We make use of all seven available waves of the Understanding Society Survey and ask in particular whether certain personality types are more systematically associated with long working hours and experiencing time pressures and whether there are personality premia and penalties across the wage distribution. We find that particular personality types are more prone to working longer hours and experiencing time pressures. These effects are significant and bigger than some of the conventional variables such as human capital and, for women, the presence of small children. Whilst the effect of most personality traits is consistent with a rational theory of time allocation, we also find that neuroticism is instead associated with inconsistent behaviour (working fewer paid and more unpaid hours). In terms of personality payoffs, we find that neuroticism carries a penalty across the wage distribution, conscientiousness pays off (and more so at the top for men), extraversion pays off for women (and more so at the top), and, finally, that it really does not pay to be nice: agreeableness carries a penalty, and particularly so at the top of the wage distribution.

**Keywords: labour supply, overtime, time pressure, time allocation, personality.**

**JEL Codes: A13, D01, J22, Z1.**

*Few of us mind putting in some extra time when it's needed. But if it happens all the time and gets taken for granted, that's a problem. So, make a stand today, take your full lunch break and go home on time.”* (TUC General Secretary Frances O’Grady, 13th annual Work Your Proper Hours Day, 24 February 2017)

## **1. Background**

Data released this year by the TUC (TUC, 2017) shows that in 2016 UK workers gave their employers £33.6 billion of free labour through unpaid overtime, with 5.3 million people supplying an average of 7.7 hours a week in unpaid overtime, corresponding to an average of £6,301 missed out in the average pay packet. The UK has historically had some of the longest average working hours in the EU (Hogart et al, 2007). Concerns with long working hours were included in the EU Working Time Directive in 2003, and there are concerns that post Brexit it will be harder to protect workers’ rights in general and in particular to implement measures to curb unpaid working hours, especially as some sectors (for example education) are heavily reliant on them in spite of the low productivity typically associated to this type of work.

Long hours are not uniformly distributed across types of work either: in developed industrialised countries blue collar workers are now working fewer hours than they used to, whilst professionals are working longer and more intense hours, and professionals feature heavily in the unpaid overtime list provided by the TUC (TUC, 2017). Reasons include increased competitive pressure, staff reductions, flattening hierarchies with more employees competing for fewer promotions, 24/7 work schedules enabled and intensified by new technologies (Burke and Cooper, 2008), but also peer pressure, status races (Besley and Gathak, 2008) and in some cases finding work life more rewarding than family life (Hochschild, 1997). The effects of long hours range from to high instances of accidents and mistakes in the workplace and low productivity (Pencavel, 2016 and 2015), to general poor health and stress, to family conflict and community depletion resulting from too little time being invested in relationships (Burke and Cooper, 2008), as confirmed for the UK by studies on time and income poverty (Bruchardt, 2008). After producing a series of reports on long hours, the ILO has now included decent work officially as Goal 8 of the 2030 Agenda for Sustainable Development (<http://www.ilo.org/global/topics/decent-work/lang--en/index.htm>). But what is involved in making a stand, taking one’s lunch break and going home on time may be a little trickier than the TUC recognises: maybe some individuals find it harder, all else

being equal, to resist the pressure to stay on beyond the point at which it would be good for them to do so, and we want to see whether aspects of their personality may make them less able to make good decisions for themselves. In particular we have two aims: investigate the effect of personality in time allocation to the labour market, in the experience of time pressures and satisfaction with time allocation and see whether there are personality premia or penalties across the wage distribution.

The most commonly used personality measures (for a history of measuring personality in psychology see Almlund et al., 2011) are the so called Big Five summary list (more details are provided in Appendix 1), obtained through factor analysis of several underlying factors measured through survey questions (McCrae and Costa, 2008):

- (1) ***Extraversion***: An orientation of one's interests and energies toward the outer world of people and things rather than the inner world of subjective experience; characterized by positive affect and sociability
- (2) ***Neuroticism***: a chronic level of emotional instability and proneness to psychological distress. Emotional stability is predictability and consistency in emotional reactions, with absence of rapid mood changes
- (3) ***Openness to Experience/Intellect***: the tendency to be open to new aesthetic, cultural, or intellectual experiences
- (4) ***Conscientiousness***: The tendency to be organized, responsible, and hardworking
- (5) ***Agreeableness***: The tendency to act in a cooperative, unselfish manner.

Research has already shown that non-cognitive traits can predict a variety of behaviours, such as schooling, academic achievement, wages, teenage pregnancy, health behaviours and risky behaviours, with a predictive power that is sometimes equal or greater than that of cognitive traits (for a literature review see Almlund et al., 2011). Neuroticism in particular is associated with a range of negative outcomes and considered a public health issue (Lahey, 2009): both direct and indirect evidence link it to several serious physical and mental health problems (Brickman et al., 1996; Drossman et al., 2000; T. W. Smith & MacKenzie, 2006; Suls & Bunde, 2005; Russo et al., 1997; Smith & MacKenzie, 2006), as well as quality of life (Arrindell, Heesink, & Feij, 1999; Lynn & Steel, 2006; Ozer & Benet-Martinez, 2006), marital satisfaction and separation (Gattis, Berns, Simpson, & Christensen, 2004; Donnellan, Conger, & Bryant, 2004; Karney & Bradbury, 1997; Kelly & Conley, 1987; Roberts et al., 2007; Rogge, Bradbury, Hahlweg, Engl, & Thurmaier, 2006; Tucker, Kressin, Spiro, & Ruscio, 1998), and occupational success (Ozer & Benet-Martinez, 2006; Roberts et al., 2008).

Neuroticism is related to higher likelihood of experiencing negative events and through high emotional reactivity and high self-generated thought (Perkins et al, 2015) also less effective strategies for coping with stress and lower levels of social support (Watson & Hubbard, 1996; Kendler et al, 2002 and 2006). In the case of labour supply decisions these traits can affect the effort and productivity in the labour market and preferences: particularly leisure and work trade-offs, as well as time preferences, risk aversion and social preferences. One may expect, for example, more conscientious individuals to put in more effort (and be more patient as shown by Daly et al., 2009) and hence to be more likely to participate in the labour market and work longer hours, especially as they tend to exhibit lower absenteeism (Stomer and Fahr, 2010). One may also expect an extravert person to value their leisure time more highly or a neurotic person to feel more pressure and face more obstacles to entering the labour market (Wichert and Pohlmeier, 2010). It is not known exactly how these effects occur, though here we follow the same line of argument expressed by Bowles et al. (2001) who suggest that the effect of personality traits on wage premia operates in particular through the ability to set incentive schedules (degree of future orientation), personal efficacy, and reduced disutility of effort.

Personality has been found to affect wages (Bowles et al., 2001a, 2001b; Nyhus and Pons, 2005; Mueller and Plug, 2006; Heineck, 2007; Heineck and Anger, 2010), job performance (Hogan and Holland, 2003), occupational choice (Cobb-Clark and Tan, 2011; Heckman et al, 2006) and absenteeism (Stomer and Fahr, 2010). Wichert and Pohlmeier (2010) finds using a German sample there are positive effects of conscientiousness and extraversion, and negative effects of neuroticism and openness to experience for female labour participation. This is in line with most of the literature which tends to find conscientiousness to be positively related to earnings, and neuroticism negatively associated with labour market outcomes (Furnham and Cheng, 2013). Fletcher (2012) uses sibling differences to estimate the effects of personality on employment and wages in the US and finds that also extraversion matters and that there are important heterogeneities in effects by gender, childhood socioeconomic status and race. Nandi and Nicoletti (2014) have estimated the effect on pay of each of the five big traits for employed men in the UK and find that openness to experience is the most important in explaining wages (but captures differences in workers characteristics), followed by neuroticism (penalty), agreeableness (penalty), extroversion and conscientiousness. Braakmann (2009) and Nyhus and Pons (2012) find that women's higher level of agreeableness contributes to their lower wages and Risse et al (2018) find the gender gap in hourly wage rates in Australia is partly explained through men's lower agreeableness, and partly compensated by women's higher level of conscientiousness. The effect of agreeableness is not entirely consistent in the

literature: Gensowski (2018) finds agreeableness also negatively correlated with lifetime earnings in the US, but Heineck and Anger (2010) find agreeableness to be positively related to the earnings of women but not of men in Germany.

In what follows, we assess the role of personality as measured with the Big Five in the supply of time to the labour market, the experience of time pressure, satisfaction with time allocation and the position in the wage distribution in the UK, making use of the UK household panel survey, Understanding Society Survey (USS). Personality questions were asked in one USS wave, and make the assumption as others have done that they are fixed (personality measures are found to be stable by age 25) and immune to fluctuations in life circumstances thus eliminating problems of reverse causality (Cobb-Clark and Schurer 2011; Caspi et al. 2005; Costa and Mcrae, 1994, 2006; Roberts and DelVecchio, 2000; Roberts et al., 2006; Cobb-Clark and Schurer, 2011; Wichert and Pohlmeier, 2010)<sup>1</sup>. Personality traits have been shown to be between 40 and 60% heritable (Bouchard and Loehlin 2001). Some argue that personality is potentially situation-specific (see Borghans et al., 2008 for a review), but it is noted the questions used in the Understanding Society survey are worded so as not to relate to specific situations. The literature finds that personality measures are different across women and men (e.g. Feltcher, 2012; Mueller and Plug, 2006), with women’s values being higher than men for all traits with the exception of openness to experience. Average values for the personality traits in our sample are provided in Table 1.

**Table 1: Average Personality by Gender**

	All*		Employed**	
	Men	Women	Men	Women
Agreeableness	5.42	5.79	5.41	5.79
Conscientiousness	5.45	5.66	5.49	5.77
Extraversion	4.45	4.72	4.43	4.74
Neuroticism	3.29	3.87	3.26	3.79
Openness to Experience	4.72	4.49	4.68	4.49

All personality traits are significantly different by gender

\*Refers to the sample aged 25-64 and excludes those in full time education or sick/disabled (includes 8,384 men and 11,366 women)

\*\*Refers to the sample aged 25-64 who are employed (excluding the self-employed) (includes 6,247 men and 8,362 women)

Our modelling strategy consists in firstly examining whether personality is associated with hours worked and in particular their role in unpaid overtime. We then examine the association between personality and time pressures and model the relationship between personality and

satisfaction with time allocated to leisure and income. Finally, we look at the effect of personality across the distribution of wages to look for premia and penalties associated with different personality types.

## **2. Our data and methodology**

We make use of the UK Understanding Society Survey, an annual survey which follows around 40,000 UK household over time which began in 2009 as a successor to the UK BHPS longitudinal survey, and currently has seven available waves. The survey collects information on social and economic variables at the individual and household level. We focus on the general population and Northern Ireland sample and exclude the ethnic minority boost and BHPS samples, so our sample is representative of the UK. We include individuals of working age between the ages of 25 and 64 in our sample to exclude those for whom personality traits may still be forming (Cobb-Clark and Schurer, 2011) and because the majority who are 25 and over should have finished their education (as also assumed by Wichert and Pohlmeir, 2010). We predominately concentrate on those who are employed (and exclude those who are long term sick/disabled and still in education when we examine our wider sample) and exclude those who are self-employed (due to differences in variables collected for those in self-employment). We make use of all waves and have a sample of 11,366 women and 8,384 men which reduces to 8,362 women and 6,247 men when we examine our employed sample.

We deploy a traditional labour supply model with the addition of measures of personality and preferences. In the standard labour supply model individuals are assumed to allocate their time between work or leisure in accordance with their budget constraint and preferences, and the choice should be made rationally so as to maximise utility. In a traditional utility maximizing framework, hours of work are assumed to be a function of the wage rate ( $W$ ), non-labour ( $V$ ) and a set of demographics which may influence preferences ( $X$ )

$$H = H(W, V, X)$$

However, it is a strong assumption that individuals can work their preferred number of hours at a given wage rate and there may be constraints from the demand side, so it is important to control for a number of job characteristics. Labour supply models used for microsimulation exercises often assume optimisation errors (see Aaberge and Colombino, 2015) and we suggest that such errors may at least in part be related to personality traits.

### ***Hours Supplied to the Labour Market***

We start by estimating a traditional labour supply model of hours worked:

$$H_{it} = \beta_1 W_{it} + \beta_2 V_{it} + \beta_3 PERS_i + \beta_4 X_{it} + \beta_5 jobchars_{it} + u_{it} \quad (1)$$

$H_{it}$  refers to hours (total, normal, paid over time or unpaid overtime) for individual  $i$  in period  $t$ . We include a measure of wage ( $W$ ), which is approximated by usual weekly pay (converted from usual monthly pay) divided by usually weekly hours<sup>2</sup>. Non-labour income ( $V$ ) is proxied by additional monthly household income (household monthly income minus the individual's monthly labour income) equivalised for household size using the OECD equivalised scale.  $X$  includes a set of demographic variables and assumed to affect labour supply, region and dummies for year of the survey. We control for age group, marital status, the age of the youngest child and highest qualification, all expected to impact on/reflect preferences. To allow for demand side factors/constraints we include a number of job characteristics (whether the job is permanent, firm size, occupation).

We consider four measures of hours for those in employment (we exclude the self-employed): total hours worked (usual plus over time), usual hours worked, paid overtime hours and unpaid over-time hours. We explicitly focus on paid and unpaid overtime, to see whether the effect of personality traits persists even net of the possibility that personality traits correlate with sorting just in those jobs where the most hours are worked. In our sample, 18.1% of employed respondents (22.4% of men and 14.7% of women) report doing paid overtime work and 27.3% of employed respondents (28.2% of men and 26.5% of women) report doing unpaid overtime work. Average total hours worked are higher for men (42.6 hours) than women (32.5 hours) and we thus model separately working hours by gender. Of those who do paid (unpaid) overtime, men on average do 8.3 (9.1) hours and women 6.4 (7.8).

### ***Time Pressures and Satisfaction with Time Allocation***

Respondents are also asked questions related to experiencing time pressures in wave 2, which are again all significantly different by gender, on a scale of Strongly agree to strongly disagree. Women in our employed sample responding in wave 2 are more likely to report they have enough time to do everything (59.1% compared to 56.5% of men) i.e. strongly, moderately or slightly agree.

$$TP_{it} = \beta_1 V_{it} + \beta_2 PERS_i + \beta_3 X_{it} + \beta_4 HOURS_{it} + \beta_5 jobchars_{it} + u_{it} \quad (2)$$

We control for additional household income since we may expect having more income may reduce time pressures e.g. to reduce household tasks. We then control for personality (PERS), hours worked (HOURS), split into usual, paid/unpaid overtime, and the same demographic (X) and job characteristics as in equation 1.

Respondents are asked in each wave whether they are satisfied with their leisure time but no such question in relation to hours worked is asked. We, therefore, focus on income satisfaction, since in the standard labour-leisure models individuals are assumed to allocate their time to maximise their utility obtained from leisure and consumption (income). Since the standard labour model assumes an individual allocates their time between leisure and work in order to maximize their utility (which depends on consumption (income) and leisure), deviations from this should be picked up through levels of dissatisfaction with leisure. Respondents are asked on a scale of 1 (Completely dissatisfied) to 7(Completely satisfied) how satisfied they are with their leisure time and income, as well as how satisfied they are with life overall and job.

We include controls for household income since we may expect those with higher income may be able to invest in household production saving measure. We include the same demographic variables (X) from equation 1, along with personality. We include measures for normal, paid and unpaid hours, as well as job characteristics (jobchars) as from equation 1.

$$SAT_{it} = \beta_1 HHI_{it} + \beta_2 PERS_i + \beta_3 X_{it} + \beta_4 HOURS_{it} + \beta_5 jobchars_{it} + u_{it} \quad (3)$$

**Table 4: Satisfaction by gender**

	Men	Women
Mean Satisfaction (1-7)		
Life satisfaction	5.22	5.22
Job satisfaction*	5.18	5.34
Satisfaction with Income	4.37	4.39
Satisfaction with Leisure*	4.57	4.51

Our measures of personality are fixed; therefore, we cannot use fixed effects methods and resort

instead to correlated random effects panel models. The correlated random effects approach is attributed to Mundlak (1978) and consists of including in the models the means of the time varying variables as a proxy for fixed effects (the time invariant unobserved heterogeneity) which in our case are added to equation 1 and 3 (for equation 2 we only have one wave of data). For overtime we utilize correlated random effects tobits as many do not work any overtime hours and hence we account for the existence of a corner solution

### 3. Results

We explore four outcome variables: total hours, usual hours, and paid and unpaid overtime in and model women and men separately (Chow tests show there are systematic differences across genders). The full model for men and women separately is provided in tables 5 and 6, whilst table 7 and 8 reports the effect of the different specifications. Details on the specifications and on controls are in the appendix.

Across models, we find that personality traits indeed matter to hours worked, (more so for men than women): agreeableness is negatively associated with normal hours for women and also with overtime for men; conscientiousness is associated with working more hours for both women and men; extraversion and openness to experience are both positively associated with working hours. Neuroticism has indeed a peculiar effect on time allocation: whilst the other four traits behave relatively consistently across paid and unpaid hours, neuroticism is negatively associated with paid hours and positively with overtime unpaid hours.

**Table 5: Effect of Personality on Work Hours for Women and Men**

	Women				Men			
	All	Normal	Paid OT	Unpaid OT	All	Normal	Paid OT	Unpaid OT
<b>Personality (standardised)</b>								
Agreeableness	-0.336*** [0.117]	-0.215** [0.102]	-0.214 [0.151]	-0.084 [0.141]	-0.315*** [0.120]	-0.238** [0.097]	-0.479** [0.187]	0.227 [0.172]
Conscientiousness	0.472*** [0.122]	0.244** [0.105]	0.394** [0.157]	0.365** [0.147]	0.872*** [0.134]	0.513*** [0.109]	0.621*** [0.210]	0.640*** [0.196]
Extraversion	0.233** [0.111]	0.154 [0.096]	0.085 [0.144]	0.134 [0.131]	0.357*** [0.127]	0.198* [0.103]	0.260 [0.202]	0.163 [0.180]
Neuroticism	-0.319*** [0.111]	-0.329*** [0.096]	-0.311** [0.143]	0.261* [0.134]	-0.331** [0.130]	-0.288*** [0.106]	-0.603*** [0.204]	0.764*** [0.188]
Openness to Experience	0.195* [0.115]	0.096 [0.099]	0.108 [0.149]	0.412*** [0.138]	0.069 [0.138]	-0.033 [0.112]	0.003 [0.215]	0.543*** [0.201]
Observations	37,625	37,625	37,625	37,625	27,921	27,921	27,921	27,921
Number of Individuals	8,362	8,362	8,362	8,362	6,247	6,247	6,247	6,247

Robust standard errors in brackets

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Includes controls for ethnicity, age group, marital status, age of the youngest child, additional household income, qualification, firm size, whether permanent job occupation, region of residence, year of survey and log (hourly wage), the means of time varying variables

To disentangle the gender effect, we also run a pooled version interacting gender with personality and find that openness to experience seems to make men do less usual hours and women more.

**Table 6: Effect of Personality by Gender on Work Hours for Women and Men**

	All	Normal	Paid OT	Unpaid OT
<b>Female</b>	-7.723*** [0.199]	-6.889*** [0.169]	-2.427*** [0.281]	-0.428** [0.199]
<b>Personality (standardised)</b>				
Agreeableness	-0.312** [0.127]	-0.220** [0.107]	-0.468*** [0.170]	0.185 [0.127]
Conscientiousness	1.091*** [0.142]	0.709*** [0.120]	0.697*** [0.191]	0.656*** [0.145]
Extraversion	0.475*** [0.134]	0.286** [0.114]	0.280 [0.183]	0.233* [0.132]
Neuroticism	-0.253* [0.138]	-0.223* [0.117]	-0.562*** [0.185]	0.738*** [0.139]
Openness to Experience	-0.515*** [0.144]	-0.543*** [0.122]	-0.253 [0.193]	0.442*** [0.146]
<b>Personality Interacted with Female</b>				
Agreeableness	-0.217 [0.174]	-0.174 [0.148]	0.194 [0.239]	-0.310* [0.176]
Conscientiousness	-0.635*** [0.188]	-0.486*** [0.159]	-0.231 [0.258]	-0.256 [0.193]
Extraversion	-0.333* [0.175]	-0.197 [0.148]	-0.213 [0.242]	-0.173 [0.174]
Neuroticism	-0.161 [0.178]	-0.187 [0.151]	0.209 [0.244]	-0.505*** [0.181]
Openness to Experience	1.073*** [0.182]	0.938*** [0.154]	0.547** [0.249]	0.116 [0.186]
Observations	65,546	65,546	65,546	65,546
Number of Individuals	14,609	14,609	14,609	14,609

Robust standard errors in brackets

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Includes controls for ethnicity, age group, marital status, age of the youngest child, additional household income, qualification, firm size, whether permanent job occupation, region of residence, year of survey and log (hourly wage), the means of time varying variables

We run the model with and without job characteristics to see how they might mediate the personality effect (to control for sorting into occupation by personality type) and find that the effect of personality generally lessens with the exception of Paid OT – which is indeed offered only in some occupations).

**Table 7: Effect of Personality with and without job characteristics**

	Women		Men	
	Without Job Chars	With Job Chars	Without Job Chars	With Job Chars
<b>All Hours</b>				
<b>Personality (standardised)</b>				
Agreeableness	-0.597*** [0.130]	-0.336*** [0.117]	-0.439*** [0.125]	-0.315*** [0.120]
Conscientiousness	0.627*** [0.135]	0.472*** [0.122]	1.048*** [0.140]	0.872*** [0.134]
Extraversion	0.335*** [0.123]	0.233** [0.111]	0.399*** [0.133]	0.357*** [0.127]
Neuroticism	-0.611*** [0.123]	-0.319*** [0.111]	-0.635*** [0.135]	-0.331** [0.130]
Openness to Experience	0.199 [0.127]	0.195* [0.115]	0.023 [0.143]	0.069 [0.138]
<b>Normal Hours</b>				
<b>Personality (standardised)</b>				
Agreeableness	-0.407*** [0.111]	-0.215** [0.102]	-0.346*** [0.100]	-0.238** [0.097]
Conscientiousness	0.365*** [0.115]	0.244** [0.105]	0.634*** [0.112]	0.513*** [0.109]
Extraversion	0.226** [0.105]	0.154 [0.096]	0.207* [0.107]	0.198* [0.103]
Neuroticism	-0.583*** [0.105]	-0.329*** [0.096]	-0.502*** [0.109]	-0.288*** [0.106]
Openness to Experience	0.011 [0.109]	0.096 [0.099]	-0.085 [0.115]	-0.033 [0.112]
<b>Paid Overtime</b>				
<b>Personality (standardised)</b>				
Agreeableness	0.031 [0.104]	-0.214 [0.151]	-0.372*** [0.114]	-0.479** [0.187]
Conscientiousness	0.224** [0.109]	0.394** [0.157]	0.662*** [0.129]	0.621*** [0.210]
Extraversion	0.031 [0.099]	0.085 [0.144]	0.249** [0.122]	0.260 [0.202]
Neuroticism	-0.165* [0.099]	-0.311** [0.143]	-0.679*** [0.124]	-0.603*** [0.204]
Openness to Experience	-0.108 [0.103]	0.108 [0.149]	-0.573*** [0.131]	0.003 [0.215]

<b>Unpaid Overtime</b>				
Agreeableness	-0.515*** [0.094]	-0.084 [0.141]	0.082 [0.108]	0.227 [0.172]
Conscientiousness	0.708*** [0.100]	0.365** [0.147]	0.769*** [0.122]	0.640*** [0.196]
Extraversion	0.341*** [0.088]	0.134 [0.131]	0.249** [0.111]	0.163 [0.180]
Neuroticism	0.019 [0.090]	0.261* [0.134]	0.375*** [0.116]	0.764*** [0.188]
Openness to Experience	0.709*** [0.092]	0.412*** [0.138]	1.077*** [0.124]	0.543*** [0.201]

**Table 8: Effect of Personality by Gender on Work Hours for Women and Men**

	All	Normal	Paid OT	Unpaid OT
<b>Female</b>	-7.723*** [0.199]	-6.889*** [0.169]	-2.427*** [0.281]	-0.428** [0.199]
<b>Personality (standardised)</b>				
Agreeableness	-0.312** [0.127]	-0.220** [0.107]	-0.468*** [0.170]	0.185 [0.127]
Conscientiousness	1.091*** [0.142]	0.709*** [0.120]	0.697*** [0.191]	0.656*** [0.145]
Extraversion	0.475*** [0.134]	0.286** [0.114]	0.280 [0.183]	0.233* [0.132]
Neuroticism	-0.253* [0.138]	-0.223* [0.117]	-0.562*** [0.185]	0.738*** [0.139]
Openness to Experience	-0.515*** [0.144]	-0.543*** [0.122]	-0.253 [0.193]	0.442*** [0.146]
<b>Personality Interacted with Female</b>				
Agreeableness	-0.217 [0.174]	-0.174 [0.148]	0.194 [0.239]	-0.310* [0.176]
Conscientiousness	-0.635*** [0.188]	-0.486*** [0.159]	-0.231 [0.258]	-0.256 [0.193]
Extraversion	-0.333* [0.175]	-0.197 [0.148]	-0.213 [0.242]	-0.173 [0.174]
Neuroticism	-0.161 [0.178]	-0.187 [0.151]	0.209 [0.244]	-0.505*** [0.181]
Openness to Experience	1.073*** [0.182]	0.938*** [0.154]	0.547** [0.249]	0.116 [0.186]
White	0.381 [0.330]	0.035 [0.279]	-0.252 [0.457]	1.999*** [0.344]
<b>Age Group (ref 25-34)</b>				
Aged 35-49	0.421** [0.171]	0.118 [0.132]	0.600 [0.366]	0.603* [0.310]

Aged 45-54	1.347***	0.874***	0.407	1.245***
	[0.240]	[0.185]	[0.509]	[0.434]
Aged 55-64	0.444	0.269	-0.429	0.457
	[0.310]	[0.240]	[0.664]	[0.563]
Married	0.672***	0.516***	-1.057**	1.213***
	[0.203]	[0.157]	[0.426]	[0.377]
Cohabiting	0.391**	0.435***	-0.506	0.476
	[0.189]	[0.146]	[0.386]	[0.348]
<b>Age of the youngest Dependent Child (ref: none)</b>				
Aged 0-2	-4.529***	-3.316***	-1.805***	-2.734***
	[0.176]	[0.136]	[0.382]	[0.306]
Aged 3-4	-4.035***	-3.026***	-1.373***	-2.154***
	[0.200]	[0.155]	[0.428]	[0.361]
Aged 5-11	-2.529***	-1.975***	-0.718*	-1.155***
	[0.178]	[0.137]	[0.377]	[0.324]
Aged 12-15	-1.077***	-0.779***	-0.509	-0.324
	[0.153]	[0.118]	[0.325]	[0.282]
<b>addhhinceq1000</b>	-0.266***	-0.260***	-0.108	0.064
	[0.040]	[0.031]	[0.097]	[0.070]
<b>Highest Qualification (ref: None)</b>				
Degree	3.291***	1.729***	3.690**	1.741
	[0.865]	[0.668]	[1.603]	[2.055]
Other higher	2.073**	0.718	3.652**	1.944
	[0.842]	[0.651]	[1.542]	[2.034]
A-level	0.816	-0.030	3.261**	0.160
	[0.780]	[0.603]	[1.382]	[1.942]
GCSE	0.764	-0.383	2.398*	2.729
	[0.736]	[0.569]	[1.294]	[1.941]
Other	-0.331	-1.223**	1.545	1.427
	[0.640]	[0.494]	[1.130]	[1.701]
Permanent	2.980***	2.118***	2.200***	1.948***
	[0.167]	[0.129]	[0.391]	[0.324]
<b>Firm Size (ref: 25-99 employees)</b>				
1-24 employees	-1.314***	-0.956***	-1.008***	-0.333
	[0.153]	[0.118]	[0.319]	[0.287]
100-499 employees	1.114***	0.851***	0.090	0.528*
	[0.161]	[0.125]	[0.342]	[0.290]
500+ employees	1.566***	1.515***	0.651	-0.195
	[0.198]	[0.153]	[0.434]	[0.352]
<b>Occupation (ref: Administrative and Secretarial occupations)</b>				
Corporate managers and directors	3.274***	2.321***	-0.946	3.356***
	[0.272]	[0.210]	[0.680]	[0.469]
Other managers and proprietors	4.542***	3.467***	-0.705	3.396***
	[0.401]	[0.310]	[0.878]	[0.687]
Science, research, engineering and technology professionals	2.821***	1.887***	-0.030	2.559***
	[0.405]	[0.313]	[1.028]	[0.667]
Health professionals	2.058***	1.749***	1.029	2.113**
	[0.490]	[0.379]	[1.099]	[0.854]

Teaching and educational professionals	5.276***	3.218***	-3.329***	4.398***
	[0.431]	[0.333]	[1.287]	[0.708]
Business, media and public service professionals	2.574***	1.825***	-0.818	2.798***
	[0.358]	[0.276]	[0.998]	[0.579]
Science, engineering and technology associate professionals	1.910***	1.799***	1.343	0.899
	[0.473]	[0.365]	[1.024]	[0.845]
Health and social care associate professionals	1.551***	1.557***	1.505*	0.131
	[0.398]	[0.307]	[0.885]	[0.719]
Protective service occupations	4.365***	4.001***	1.076	1.634
	[0.732]	[0.566]	[1.491]	[1.374]
Culture, media and sports occupations	-0.032	-0.350	-0.932	0.989
	[0.645]	[0.498]	[1.772]	[1.074]
Business and public service associate professionals	1.716***	1.415***	0.031	1.484***
	[0.273]	[0.211]	[0.689]	[0.483]
Caring personal service occupations	0.859**	0.651**	3.561***	-1.817***
	[0.335]	[0.259]	[0.690]	[0.704]
Leisure, travel and related personal service occupations	-2.943***	-2.333***	-0.774	-0.498
	[0.580]	[0.448]	[1.108]	[1.450]
Sales occupations	-4.125***	-3.998***	1.990***	-3.974***
	[0.352]	[0.272]	[0.703]	[0.817]
Customer service occupations	0.310	0.565*	-0.171	-0.071
	[0.425]	[0.328]	[0.904]	[0.828]
Skilled Trades Occupations	0.898**	0.319	3.233***	0.120
	[0.396]	[0.306]	[0.763]	[0.798]
Process, plant and machine operatives	-0.102	-0.561*	3.006***	-2.039**
	[0.392]	[0.303]	[0.724]	[0.889]
Elementary occupations	-4.165***	-4.015***	1.499**	-3.835***
	[0.331]	[0.256]	[0.650]	[0.816]
<b>Log (Hourly Wage)</b>	<b>-3.787***</b>	<b>-3.553***</b>	<b>-6.397***</b>	<b>3.540***</b>
	<b>[0.087]</b>	<b>[0.068]</b>	<b>[0.193]</b>	<b>[0.176]</b>
Observations	65,546	65,546	65,546	65,546
Number of Individuals	14,609	14,609	14,609	14,609

Robust standard errors in brackets

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Includes region and year of interview

Job characteristics and sector of occupation play a big role in determining hours of unpaid overtime: teaching professionals come out top in terms of Unpaid OT, followed by managers and then other professional occupations. Women with a degree are more likely to do more Unpaid OT and it is mostly those with a higher wage that do fewer hours but more Unpaid OT (suggesting a possible return to Unpaid OT, which we are investigating).

In all models though personality traits (in particular conscientiousness, neuroticism and openness to experience) taken together account for significant effects on labour supply, particularly the supply of overtime hours, particularly unpaid: one standard deviation change in personality traits leads to an average of between 0.2 and 0.6 extra hours of unpaid overtime per week, and the effect is bigger than that of having small children for women and for men stronger than any effect from education.

### *Time Pressures*

Personality effects persist when analysing time pressures (as in Table 9): we find that those who work more hours are more likely to report lacking time (especially those who do more Unpaid OT and for men only Paid OT). Without any interactions, we can see that conscientiousness is associated with experiencing less time pressures whilst at the other end of the spectrum lie neuroticism and openness to experience. Interactions suggest that working longer hours affects different personality types differently and there are consistent gender differences (as found in the literature)

**Table 9: Time Pressures by Gender**

	Women		Men	
	1	2	1	2
Usual hours/10	0.188*** [0.020]	0.195*** [0.021]	0.163*** [0.027]	0.176*** [0.028]
Paid overtime/10	0.079 [0.077]	-0.023 [0.076]	0.091** [0.042]	0.055 [0.055]
Unpaid Overtime/10	0.270*** [0.039]	0.287*** [0.043]	0.229*** [0.044]	0.251*** [0.048]
<b>Personality</b>				
Agreeableness	-0.023 [0.021]	-0.011 [0.060]	-0.019 [0.022]	-0.015 [0.108]
Conscientiousness	-0.064*** [0.022]	-0.067 [0.061]	-0.044* [0.024]	-0.147 [0.108]
Extraversion	-0.019 [0.019]	-0.067 [0.058]	-0.086*** [0.023]	-0.090 [0.110]

Neuroticism	0.230*** [0.020]	0.304*** [0.059]	0.192*** [0.024]	0.063 [0.107]
Openness to Experience	0.044** [0.021]	0.119** [0.058]	0.052** [0.026]	0.182 [0.137]

**Interactions**

**Agreeableness\***

Usual hours/10		-0.020 [0.020]		0.003 [0.028]
Paid overtime/10		0.203*** [0.075]		-0.013 [0.038]
Unpaid Overtime/10		0.125*** [0.044]		-0.046 [0.046]

**Conscientiousness\***

Usual hours/10		-0.000 [0.021]		0.028 [0.028]
Paid overtime/10		0.160** [0.079]		-0.102** [0.050]
Unpaid Overtime/10		-0.055 [0.055]		0.070 [0.045]

**Extraversion\***

Usual hours/10		0.014 [0.020]		0.008 [0.028]
Paid overtime/10		0.179*** [0.069]		0.002 [0.047]
Unpaid Overtime/10		-0.044 [0.041]		-0.102** [0.047]

**Neuroticism\***

Usual hours/10		-0.033* [0.020]		0.036 [0.028]
Paid overtime/10		0.107 [0.077]		-0.120** [0.051]
Unpaid Overtime/10		0.059 [0.045]		0.082 [0.051]

**Openness to Experience\***

Usual hours/10		-0.025 [0.020]		-0.033 [0.035]
Paid overtime/10		-0.111 [0.070]		0.010 [0.049]
Unpaid Overtime/10		0.022 [0.045]		-0.033 [0.049]

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Observations	5,648	5,648	4,237	4,237
R-squared	0.111	0.119	0.104	0.111

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Includes controls for personal and job characteristics

Robust standard errors in brackets

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Satisfaction

Finally, to establish whether personality variables affect one's ability to allocate time more generally, particular in line with their preferences and to maximise utility, we also consider income and leisure satisfaction. As discussed in the methodology we consider whether people are satisfied with both income and leisure, one of them or neither. Table 10 presents our results.

Consistent with the labour/leisure model, working more hours increases satisfaction with income and decreases it with leisure. Conscientiousness is associated with satisfaction with both income and leisure. Extraversion is positively related with satisfaction with leisure but less with income. Again, neuroticism stands out as the personality feature that is most negatively associated with satisfaction with both income and leisure.

**Table 10: Satisfaction with life, job, leisure and income by gender**

	Women				Men			
	Life	Job	Leisure	Income	Life	Job	Leisure	Income
Usual hours/10	-0.015 [0.012]	-0.015 [0.013]	-0.203*** [0.014]	0.082*** [0.014]	-0.011 [0.014]	-0.032** [0.016]	-0.149*** [0.017]	0.069*** [0.016]
Paid overtime/10	-0.011 [0.027]	0.163*** [0.028]	-0.122*** [0.030]	0.042 [0.030]	0.064*** [0.022]	0.123*** [0.024]	-0.131*** [0.025]	0.130*** [0.025]
Unpaid Overtime/10	-0.055*** [0.018]	-0.102*** [0.019]	-0.222*** [0.020]	-0.004 [0.020]	-0.000 [0.017]	-0.023 [0.019]	-0.162*** [0.020]	0.043** [0.020]
<b>Personality</b>								
Agreeableness	0.049*** [0.012]	0.083*** [0.013]	0.009 [0.014]	0.017 [0.015]	0.063*** [0.012]	0.086*** [0.014]	0.045*** [0.015]	0.042*** [0.015]
Conscientiousness	0.110*** [0.012]	0.068*** [0.013]	0.051*** [0.014]	0.103*** [0.015]	0.089*** [0.014]	0.085*** [0.016]	0.069*** [0.016]	0.083*** [0.016]
Extraversion	0.047*** [0.011]	0.035*** [0.012]	0.028** [0.013]	-0.018 [0.014]	0.106*** [0.013]	0.069*** [0.015]	0.102*** [0.015]	0.021 [0.015]
Neuroticism	-0.270*** [0.011]	-0.167*** [0.012]	-0.265*** [0.013]	-0.247*** [0.014]	-0.273*** [0.013]	-0.193*** [0.015]	-0.209*** [0.016]	-0.199*** [0.016]
Openness to Experience	-0.005 [0.012]	-0.033*** [0.012]	-0.011 [0.013]	-0.026* [0.014]	-0.021 [0.014]	-0.029* [0.016]	-0.062*** [0.017]	-0.058*** [0.017]
Observations	37,531	37,594	37,537	37,534	27,851	27,899	27,847	27,844
R-squared	8,352	8,360	8,351	8,352	6,242	6,246	6,242	6,242

As a robustness check, we also model satisfaction with life, job, leisure and income as separate regressions and treating them as continuous. We find again that unpaid overtime has a negative impact on both job and leisure satisfaction, and that neuroticism has the strongest negative

impact on satisfaction with all aspects.

#### 4. Does Personality pay off at the top of the wage distribution?

The final exercise consists in investigating whether there are personality wage premia and penalties that vary along the wage distribution: this is important in both a general equality sense (given overtime is increasingly concentrated amongst professionals), and also in gender terms, given that Goldin’s grand convergence theory (Goldin, 2014) emphasizes the role of firms’ incentives to reward returns from doing long and particular hours in determining the gender gap in earnings.

Nandi and Nicoletti (2014) applied a Oaxaca-Binder decomposition to separate the contribution of different mediating factors (occupation, education, sector -private or public-, firm size, work experience, health, past unemployment and training) from a pure personality effect on personality wage gaps for men only and found significant differences in pay between high and low neurotic, high and low extrovert, and high and low agreeable workers, even after controlling for the observed mediating channels. And that the effect of personality traits is generally heterogeneous across occupations, it is similar across different levels of education.

Here we construct a simple wage equation and run quantile regression with the inclusion of personality (Table 11) so the results are not entirely comparable, but they are consistent with their findings in that we find as they do that agreeableness carries a definite penalty, particularly at the top of the wage distribution, whilst conscientiousness is associated with higher wages along the whole distribution, and at the top more so for men. Being open pays off more at the top (but not as much as conscientiousness for men). Extraversion pays off for women and has more impact than openness at the top for women. Neuroticism earns less across the distribution and this seems to be worse for men.

**Table 11: Personality along the wage distribution**

	Men				
	0.1	0.25	0.5	0.75	0.9
<b>Personality</b>					
Agreeableness	-0.002 [0.005]	-0.001 [0.004]	-0.005* [0.003]	-0.007*** [0.003]	-0.021*** [0.004]
Conscientiousness	0.017*** [0.004]	0.013*** [0.003]	0.013*** [0.002]	0.022*** [0.002]	0.030*** [0.004]

Extraversion	-0.003 [0.004]	-0.004 [0.003]	-0.006* [0.003]	-0.000 [0.002]	-0.002 [0.005]
Neuroticism	-0.010* [0.005]	-0.013*** [0.003]	-0.024*** [0.002]	-0.030*** [0.004]	-0.034*** [0.005]
Openness to Experience	-0.018*** [0.005]	-0.015*** [0.003]	-0.009*** [0.003]	-0.001 [0.004]	0.014** [0.006]
Women					
	0.1	0.25	0.5	0.75	0.9
<b>Personality</b>					
Agreeableness	-0.010*** [0.002]	-0.012*** [0.002]	-0.016*** [0.002]	-0.018*** [0.003]	-0.022*** [0.003]
Conscientiousness	0.018*** [0.005]	0.014*** [0.003]	0.013*** [0.003]	0.006* [0.003]	0.009** [0.004]
Extraversion	0.002 [0.004]	0.006*** [0.002]	0.009*** [0.002]	0.011*** [0.003]	0.016*** [0.004]
Neuroticism	-0.019*** [0.004]	-0.016*** [0.002]	-0.016*** [0.002]	-0.017*** [0.002]	-0.022*** [0.002]
Openness to Experience	-0.007* [0.003]	-0.004 [0.002]	0.001 [0.002]	0.004** [0.002]	0.014*** [0.004]

## 5. Discussion

Our results suggest that personality traits indeed affect labour supply decisions, and time allocation more broadly as postulated by Bowles et al. (2001). We find in all models that even once controlling for all the usual labour market constraints personality traits still matter to time allocation and to the satisfaction and pressures experienced: personality traits matter to hours worked, paid and unpaid overtime, experiencing time pressures, and satisfaction with time allocation and they matter to the position in the earnings distribution, effectively acting as premia or penalties. In terms of personality payoffs, we find that neuroticism carries a penalty across the wage distribution, conscientiousness pays off (and more so at the top for men), extraversion pays off for women (and more so at the top), and, finally, that it really does not pay to be nice: agreeableness carries a penalty, and particularly so at the top of the wage distribution.

The effects on labour supply are significant and bigger than some of the conventional variables such as human capital and, for women, the presence of small children, so they are definitely important for policy purposes. Neuroticism features as a particularly important personality aspect that can lead to allocating time in very dissatisfactory way thus impacting on wellbeing,

confirming findings of the psychological and medical literature (Lahey, 2009), which considers neuroticism an important public health issue, also in the light of its increase (for historical trends in the US see Twenge, 2000). This is an increasingly important policy issue in the light of evidence of increasing levels of anxiety and other traits associated with neuroticism (such as depression) and declining mental health in the general population (ONS, 2017), together with the persistence of unpaid overtime (TUC, 2017). The association with unpaid overtime is particularly worrying in this sense as this is time associated with both low productivity and adverse health and wellbeing outcomes: there may be also innate reasons for being unable to take a proper lunch break and leave at the right time, raising the issue of whose responsibility it is to ensure this happens. With firms increasingly testing personality as part of the hiring process (Mainert, 2015; Mantell, 2011) it is paramount for both fairness and efficiency reasons that job applicants are not sorted in ways they are not aware of, and that managers wishing to avoid discriminatory practices understand the dangers of allowing employees to routinely carry out overtime work.

Finally, in terms of implications for models of labour supply, we find that whilst the effect of most personality traits is consistent with a rational theory of time allocation, we also find that neuroticism is instead associated with inconsistent behaviour (working fewer paid and more unpaid hours), suggesting there may be important heterogeneities based on differential abilities to allocate time that models ought to account for.

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<b>Personality traits</b>			
<b>F a c t o r (opposite)</b>	<b>Definition (a person...)</b>	<b>Facet (correlated trait adjective)</b>	<b>Questions Asked in BHPS</b>
<b>Agreeableness (antagonism)</b>	Needs pleasant and harmonious relations with others	Trust (forgiving) Straightforwardness (not demanding) Altruism (warm) Compliance (not stubborn) Modesty (not show-off)	I see myself as someone who is sometimes rude to others (reverse coded) I see myself as someone who has a forgiving nature I see myself as someone who is considerate and kind to almost everyone
<b>Conscientiousness (lack of direction)</b>	Is willing to comply with conventional rules, norms and standards	Competence (efficient) Order (organized) Dutifulness (not careless) Achievement (thorough) Self-discipline (not lazy) Deliberation (not impulsive)	I see myself as someone who does a thorough job I see myself as someone who tends to be lazy (reverse coded) I see myself as someone who does things efficiently
<b>Extraversion (introversion)</b>	Needs attention and social interaction	Gregariousness (sociable) Assertiveness (forceful) Activity (energetic) Excitement-seeking (adventurous) Positive emotions (enthusiastic) Warmth (outgoing)	I see myself as someone who is talkative I see myself as someone who is outgoing, sociable I see myself as someone who is reserved (reverse coded)
<b>Neuroticism (emotional stability)</b>	Experiences the world as threatening and beyond his/her control	Anxiety (tense) Angry hostility (irritable) Depression (not contented) Self-consciousness (shy) Impulsiveness (moody) Vulnerability (not self-confident)	I see myself as someone who worries a lot I see myself as someone who gets nervous easily I see myself as someone who is relaxed, handles stress well (reverse coded)
<b>Openness to experience</b>	Needs intellectual stimulation, change and variety	Ideas (curious) Fantasy (imaginative) Aesthetics (artistic) Actions (wide interests) Feelings (excitable) Values (unconventional)	I see myself as someone who is original, comes up with new ideas I see myself as someone who values artistic, aesthetic experiences I see myself as someone who has an active imagination

Notes: Hogan and Hogan (2007) in Borghans et al., 2008, p.983. Facets John and Srivastava (1999)

## **SOC codes**

- 4 Administrative and Secretarial occupations
- 5 Skilled Trades Occupations
- 8 Process, plant and machine operatives
- 9 Elementary occupations
- 11 Corporate managers and directors
- 12 Other managers and proprietors
- 21 Science, research, engineering and technology professionals
- 22 Health professionals
- 23 Teaching and educational professionals
- 24 Business, media and public service professionals
- 31 Science, engineering and technology associate professionals
- 32 Health and social care associate professionals
- 33 Protective service occupations
- 34 Culture, media and sports occupations
- 35 Business and public service associate professionals
- 61 Caring personal service occupations
- 62 Leisure, travel and related personal service occupations
- 71 Sales occupations
- 72 Customer service occupations

Average hours: average hours for the 2 digit SOC Level in each year were estimated from the Labour force survey

	Women				Men			
	All	Normal	Paid OT	Unpaid OT	All	Normal	Paid OT	Unpaid OT
<b>Personality (standardised)</b>								
Agreeableness	-0.336*** [0.117]	-0.215** [0.102]	-0.214 [0.151]	-0.084 [0.141]	0.315*** [0.120]	-0.238** [0.097]	-0.479** [0.187]	0.227 [0.172]
Conscientiousness	0.472*** [0.122]	0.244** [0.105]	0.394** [0.157]	0.365** [0.147]	0.872*** [0.134]	0.513*** [0.109]	0.621*** [0.210]	0.640*** [0.196]
Extraversion	0.233** [0.111]	0.154 [0.096]	0.085 [0.144]	0.134 [0.131]	0.357*** [0.127]	0.198* [0.103]	0.260 [0.202]	0.163 [0.180]
Neuroticism	-0.319*** [0.111]	0.329*** [0.096]	-0.311** [0.143]	0.261* [0.134]	-0.331** [0.130]	0.288*** [0.106]	0.603*** [0.204]	0.764*** [0.188]
Openness to Experience	0.195* [0.115]	0.096 [0.099]	0.108 [0.149]	0.412*** [0.138]	0.069 [0.138]	-0.033 [0.112]	0.003 [0.215]	0.543*** [0.201]
White	-0.945** [0.426]	1.004*** [0.368]	-0.754 [0.550]	2.109*** [0.522]	2.070*** [0.475]	1.365*** [0.384]	0.133 [0.746]	2.130*** [0.692]
<b>Age Group (ref 25-34)</b>								
Aged 35-49	0.441** [0.223]	0.253 [0.177]	0.112 [0.509]	0.773* [0.401]	0.376 [0.264]	-0.080 [0.197]	1.142** [0.520]	0.354 [0.527]
Aged 45-54	1.765*** [0.313]	1.306*** [0.248]	-0.218 [0.703]	1.740*** [0.559]	0.677* [0.369]	0.206 [0.275]	1.047 [0.729]	0.496 [0.741]
Aged 55-64	1.000** [0.402]	0.802** [0.319]	-1.127 [0.900]	0.980 [0.720]	-0.353 [0.481]	-0.471 [0.359]	0.367 [0.972]	-0.585 [0.979]
Married	0.434* [0.257]	0.316 [0.204]	-1.053* [0.568]	0.985** [0.468]	0.637* [0.330]	0.450* [0.246]	-0.967 [0.645]	1.642** [0.686]
Cohabiting	0.054 [0.245]	0.269 [0.194]	-0.752 [0.525]	0.235 [0.430]	0.391 [0.298]	0.273 [0.222]	-0.239 [0.574]	0.783 [0.633]
<b>Age of the youngest Dependent Child (ref: none)</b>								
Aged 0-2	-7.755*** [0.240]	6.079*** [0.190]	2.619*** [0.563]	4.227*** [0.410]	1.017*** [0.259]	-0.258 [0.193]	1.463*** [0.528]	-1.437*** [0.498]
Aged 3-4	-7.004*** [0.271]	5.637*** [0.214]	-1.501** [0.619]	3.219*** [0.486]	-0.708** [0.298]	-0.045 [0.222]	1.551*** [0.598]	-1.248** [0.590]
Aged 5-11	-4.334*** [0.234]	3.479*** [0.186]	-1.126** [0.523]	1.677*** [0.420]	-0.433 [0.275]	-0.220 [0.205]	-0.566 [0.551]	-0.526 [0.554]
Aged 12-15	-1.804*** [0.192]	1.463*** [0.152]	-0.534 [0.421]	-0.486 [0.345]	-0.246 [0.254]	0.040 [0.189]	-0.696 [0.511]	-0.011 [0.523]
addhincq1000	-0.177*** [0.049]	0.204*** [0.039]	0.004 [0.114]	0.100 [0.084]	0.354*** [0.070]	0.294*** [0.052]	-0.360** [0.176]	0.022 [0.133]
<b>Highest Qualification (ref: None)</b>								
Degree	4.635*** [1.166]	3.106*** [0.923]	2.625 [2.313]	5.532** [2.715]	1.850 [1.288]	0.416 [0.960]	4.344* [2.241]	-3.088 [3.590]
Other higher	3.117*** [1.118]	2.605*** [0.884]	0.601 [2.175]	5.336** [2.695]	0.938 [1.298]	-1.867* [0.966]	7.775*** [2.248]	-2.086 [3.558]
A-level	1.328 [1.037]	0.856 [0.821]	1.602 [1.952]	3.482 [2.538]	0.617 [1.193]	-0.803 [0.889]	5.555*** [1.993]	-4.386 [3.473]
GCSE	2.021**	1.142	0.898	6.505**	-0.686	-	3.950**	-1.329

						2.138***		
	[0.996]	[0.788]	[1.887]	[2.577]	[1.087]	[0.809]	[1.780]	[3.422]
Other	0.688	-0.194	2.175	4.236*	-1.418	2.404***	1.225	-1.732
	[0.851]	[0.673]	[1.653]	[2.274]	[0.961]	[0.715]	[1.544]	[2.984]
Permanent	2.928***	2.073***	2.044***	1.829***	2.928***	2.067***	2.282***	2.282***
	[0.207]	[0.164]	[0.508]	[0.379]	[0.279]	[0.208]	[0.601]	[0.636]
<b>Firm Size (ref: 25-99 employees)</b>								
1-24 employees	-1.349***	1.049***	-1.036**	-0.394	1.081***	0.648***	-0.961**	-0.308
	[0.197]	[0.156]	[0.430]	[0.366]	[0.238]	[0.178]	[0.472]	[0.497]
100-499 employees	1.528***	1.211***	0.120	0.721*	0.599**	0.387**	0.132	0.258
	[0.218]	[0.172]	[0.497]	[0.377]	[0.238]	[0.177]	[0.468]	[0.485]
500+ employees	2.126***	1.957***	0.857	-0.025	0.791***	0.903***	0.448	-0.523
	[0.265]	[0.210]	[0.604]	[0.459]	[0.296]	[0.221]	[0.618]	[0.587]
<b>Occupation (ref: Administrative and Secretarial occupations)</b>								
Corporate managers and directors	3.731***	2.592***	-0.949	3.375***	2.637***	1.818***	-0.879	3.724***
	[0.346]	[0.274]	[0.881]	[0.572]	[0.463]	[0.345]	[1.094]	[0.891]
Other managers and proprietors	4.686***	3.816***	0.795	1.944**	4.218***	2.848***	-2.414*	5.442***
	[0.528]	[0.418]	[1.102]	[0.888]	[0.637]	[0.475]	[1.455]	[1.202]
Science, research, engineering and technology professionals	3.024***	1.940***	0.304	2.528**	2.492***	1.613***	-0.092	2.976***
	[0.630]	[0.498]	[1.647]	[1.008]	[0.585]	[0.436]	[1.414]	[1.090]
Health professionals	2.025***	2.061***	0.548	1.170	2.666**	0.743	4.438*	5.049**
	[0.540]	[0.427]	[1.230]	[0.910]	[1.176]	[0.876]	[2.425]	[2.354]
Teaching and educational professionals	5.615***	3.149***	-1.382	4.464***	4.498***	3.246***	7.580***	4.761***
	[0.509]	[0.403]	[1.436]	[0.812]	[0.800]	[0.596]	[2.656]	[1.456]
Business, media and public service professionals	2.696***	2.381***	-1.299	1.898***	2.244***	1.012**	-0.437	4.109***
	[0.471]	[0.372]	[1.328]	[0.727]	[0.572]	[0.426]	[1.542]	[1.043]
Science, engineering and technology associate professionals	2.582***	2.110***	0.792	1.662	1.392**	1.437***	1.585	0.861
	[0.754]	[0.596]	[1.970]	[1.289]	[0.656]	[0.489]	[1.344]	[1.308]
Health and social care associate professionals	1.898***	2.027***	2.025**	-0.451	-0.263	-0.857	-0.238	2.313
	[0.444]	[0.351]	[1.009]	[0.777]	[0.885]	[0.659]	[1.785]	[1.847]
Protective service occupations	4.418***	6.655***	-2.873	-5.032*	4.038***	2.812***	1.944	4.271**
	[1.427]	[1.130]	[3.342]	[2.760]	[0.895]	[0.667]	[1.792]	[1.875]
Culture, media and sports occupations	-0.692	-1.051	2.646	-0.115	0.269	-0.099	-3.529	2.097
	[0.960]	[0.760]	[2.684]	[1.603]	[0.898]	[0.669]	[2.407]	[1.659]
Business and public service associate professionals	2.111***	1.710***	0.278	1.484***	0.968**	0.732**	-0.436	1.855**
	[0.333]	[0.263]	[0.838]	[0.575]	[0.484]	[0.360]	[1.192]	[0.938]
Caring personal service occupations	1.076***	1.087***	3.351***	-1.829**	-1.286	2.738***	4.534***	-2.911
	[0.368]	[0.291]	[0.776]	[0.758]	[0.811]	[0.604]	[1.492]	[2.067]
Leisure, travel and related personal service occupations	-3.670***	3.216***	-0.835	0.262	-1.812*	-1.033	-0.382	-1.502
	[0.716]	[0.567]	[1.392]	[1.768]	[0.979]	[0.729]	[1.815]	[2.866]
Sales occupations	-4.043***	4.003***	2.387***	4.533***	4.903***	4.448***	0.734	-3.606**

	[0.405]	[0.320]	[0.812]	[0.962]	[0.706]	[0.526]	[1.380]	[1.752]
Customer service occupations	0.739	0.795*	-1.460	1.124	-0.520	0.088	1.748	-1.703
	[0.530]	[0.420]	[1.123]	[1.059]	[0.708]	[0.528]	[1.525]	[1.446]
		-						
Skilled Trades Occupations	-2.342***	2.136***	1.252	0.905	1.479***	0.668	3.812***	0.231
	[0.766]	[0.606]	[1.443]	[1.880]	[0.549]	[0.409]	[1.086]	[1.172]
Process, plant and machine operatives	1.512**	1.255**	1.329	0.697	-0.222	-0.810**	3.471***	-3.041**
	[0.754]	[0.597]	[1.370]	[1.797]	[0.541]	[0.403]	[1.034]	[1.294]
		-						
Elementary occupations	-5.404***	5.160***	1.485*	4.109***	2.809***	2.730***	1.435	-4.068***
	[0.423]	[0.334]	[0.851]	[1.101]	[0.549]	[0.409]	[1.045]	[1.433]
		-						
<b>Log (Hourly Wage)</b>	-4.228***	3.719***	7.556***	3.272***	3.380***	3.437***	5.288***	4.187***
	[0.120]	[0.095]	[0.272]	[0.242]	[0.127]	[0.094]	[0.275]	[0.282]
Observations	37,625	37,625	37,625	37,625	27,921	27,921	27,921	27,921
Number of Individuals	8,362	8,362	8,362	8,362	6,247	6,247	6,247	6,247

Robust standard errors in brackets

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1