Job Insecurity and Wages

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ABSTRACT

This paper examines whether subjective expectations of unemployment are reliable indicators of the probability of becoming unemployed, and investigates their association with wage growth. We find that workers' fears of unemployment are increased by their previous unemployment experience and by the unemployment experiences of a close friend, and are associated with other objective indicators of insecure jobs. We then show that unemployment fear predicts future unemployment, above and beyond observed objective variables. High fears of unemployment are found to be associated with significantly lower levels of wage growth for men, but to have no significant link with wage growth for women.

JEL Classification: J60, J30.

Keywords: Job Insecurity, Wages, Unemployment, Subjective Expectations.

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1. Introduction

There is considerable interest among economists in the usefulness of directly-collected data on expectations. Hurd and McGarry (2002) show, for example, that individuals' perceptions of their own survival probabilities are good predictors of subsequent survival. Manski (2004) reviews a small but growing body of evidence that expectations data are in some degree reliable, and that they help to predict behaviour. In this paper we consider data on expectations of a central economic variable, namely unemployment. We examine whether individuals' reported perceptions of unemployment risk are reliable and valid indicators of the probability of losing a job and becoming unemployed.

We also investigate whether these expectations matter. Psychological theory and evidence have established for some time that a sense of job insecurity is a major source of job dissatisfaction (e.g. Warr, 1987; Nolan et al, 2000; Wichert, 2002). If individuals do lose their jobs the economic consequences are also manifest (Nickell et al, 2002). There is virtually no evidence, however, about the economic consequences of insecurity for individuals who remain employed. If, because of reduced workers' bargaining power, insecurity is a source of slower wage growth, the quality of the job is lowered too for this reason. Moreover, the consequences potentially extend beyond the individual to the macroeconomy. Thus, it has been conjectured that high job insecurity in the mid 1990s might have been the reason for the apparent decline in the NAIRU in both the US and Britain. From the early 1990s, Britain witnessed a period of low inflation, while aggregate unemployment fell continuously through the decade, exceeding most forecasters expectations as based on the experience of the 1980s, when formal estimates of the NAIRU implied that unemployment rates of approximately 8% were the minimum that were sustainable without increasing inflation (Layard *et al*, 1991; Wadhwani, 1999). The experience of the US until the end of the 1990s was similar.

Several explanations were proposed, prominent among which was a conjecture by Alan Greenspan (Fed Chairman) in his address to the Economic Club of Chicago in October 1995, that increased perceptions of job insecurity, possibly arising from technological change, had restrained earnings growth. The conjecture remains unproven, and vies with alternative explanations, including compositional changes such as the maturing of the workforce, the doubling of the prison population (relevant to the US only), improved matching functions brought about by the development of the temporary help sector or by improved child-care facilities, reductions in out-of-work benefits, and declining energy prices (Katz and Krueger, 1999; Wadhwani, 1999; Barwell, 2000; Evans, 1998; Nickell, 1999). However, there is evidence that, relative to unemployment, workers' perceptions of job insecurity were high in the mid 1990s in both Britain and the US (Green et al, 2000; Schmidt, 1999; Aaronson and Sullivan, 1998; Green, 2006).[1] Since job insecurity implies uncertainty about future wealth, the consequences could extend beyond the labour market to savings and consumption behaviour.

The study of how expectations of unemployment are linked with wages growth has received relatively little attention in part because of the shortage of suitable data sets, and perhaps also because of economists' scepticism about the reliability of subjective expectations data. Among the exceptions are Aaronson and Sullivan (1998), who use regional data to estimate a Phillips curve equation for the US which is augmented with a measure of average perceptions of job insecurity. They find a negative point estimate for the relationship between nominal hourly wage growth and insecurity, although the effect is statistically insignificant. As stated by the authors, part of the reason for this imprecision may arise from using regionally averaged data. Blanchflower (1991) finds that the fear of redundancy or

[1] There is also evidence that the cost of losing a job in Britain has increased (Gregg and Wadsworth, 1996; Nickell et al, 2002; Dickens et al, 1999), though in the US this has been more stable (Gottschalk and Moffitt, 1999).

plant closure is associated with significantly lower pay. Blanchflower's findings relate to the 1980s, and he records that only a very small proportion of the sample (around 5%) reported that they expected to leave their employer through redundancy, and even less (1%) feared the closure of their plant.[2] It is possible that measuring insecurity in terms of the fear of redundancy or plant closure understates the extent of insecurity relative to a measure derived from the fear of becoming unemployed.

In neither of these two studies were the authors able to assess whether the expressed fears of unemployment helped to predict respondents' subsequent experience of unemployment. This lacuna is a serious problem if doubt remains about whether subjective unemployment expectations data carry information about the probability of job displacement. Closest in spirit to the current paper is the first part of the study by Stephens (2004), which finds that respondents' fears of job displacement were correlated with subsequent realised displacements. In this paper, we utilize data on unemployment expectations, drawn primarily from two British surveys, the British Household Panel Survey (BHPS) and the 2001 Skills Survey. Though unemployment expectations data are available in only two waves of the BHPS, the value of the panel lies in our ability to link these expectations both backwards to past individual and household experiences and forwards to subsequent labour market experience. Unlike Stephens (2004), whose analysis is confined to a 10-year age span of older American males, our analysis is applied to male and female workers of all ages in Britain. We are also able to link unemployment expectations data to previous experiences of unemployment and to objective indicators of job fragility which would be predicted to correlate with future job loss probabilities.[3] Finally, while Stephens' focus is on the predicted

[2] The latter variable is also the one that is reported for most of the findings.
[3] Stephens (2004) found that unemployment fears did not induce lower consumption expenditures as predicted by savings theory.

link between unemployment fears and increased saving, ours is exclusively on labour market behaviour where unemployment fears might be expected to have the most direct impact.

We find that data on unemployment expectations have an important role when analyzing the labour market. In particular we find, first, that in addition to the conventional and plausible set of personal and contemporary job characteristics which others have found to be linked with insecurity, current expectations of unemployment are also associated with prior experiences of unemployment and by the social encounter with unemployment through their friends' experience. Second, we find that the expectations of unemployment reported by workers help to predict their subsequent unemployment experience. These findings, derivable from both data sets, constitute the main justification for the usefulness of unemployment expectations data. Third, given that such data are to some extent reliable, we proceed to investigate the extent to which the growth of wages is linked with unemployment expectations. We find that high fears of unemployment are associated with lower rates of wage growth for men, but have no detectable link with wage growth for women.

In section 2, we describe subjective measures of job insecurity offered by the BHPS and the 2001 Skills Survey. We then present the results obtained from estimating models of the determinants of perceived insecurity, and analyse the relationship between perceived insecurity and subsequent spells of unemployment. Section 3 presents our analysis of the association between job insecurity and wages growth. Section 4 concludes.

2. Subjective Measures of Job Insecurity: Trends, Validity and Reliability

2.1 Data Sources and Insecurity Measures

The British Household Panel Survey (BHPS) is a continuing longitudinal annual survey of a nationally representative sample of adults within 5,000 households. The first wave was undertaken in 1991. One aspect of job insecurity is derived from a variable present only in waves 6 and 7 (1996 and 1997). Employed individuals were asked: "In the next twelve months how likely do you think it is that you will become unemployed?" Individuals could respond on a four-point scale, ranging from "very likely" to "very unlikely". This item generates a valid measure of unemployment fear. It is not, strictly speaking, a valid measure of the wider concept of job insecurity, which should also encompass the cost of job loss and other job-related uncertainties (Nickell et al., 2002); however, the risk of job loss is often taken, in loose parlance, to be synonymous with job insecurity.

The percentage responses on the four-point scale for each of the two waves are presented in Table 1a. It can be seen that approximately 11% of workers in 1996 thought that it was either "likely" or "very likely" that they would become unemployed in the following year, while in 1997, this figure declines to around 10%.[4] This slight fall is in line with a similarly small decrease in the aggregate unemployment rate of about one percentage point between these two years. Within this small change, however, there is some considerable switching between levels of perceived insecurity between years. Among those in the largest two categories in 1996 ("very unlikely" or "unlikely") – what one might call the "low fear" workers – some 5.9% had switched to the other two categories with greatest insecurity, that is, became "high fear" workers in 1997. Conversely, among the much smaller number of "high fear" workers in 1996, two thirds (67.9%) had become "low fear" workers in 1997.

Table 1 The Distribution of Unemployment Expectations in Britain

1a BHPS Data, 1996 and 1997

[4] The test for independence of the 1996 and 1997 distributions is just rejected ($\chi^2(3)=9.10$, $p=0.03$).

Likelihood of Becoming Unemployed in Next 12 Months	*1996 (%)*	*1997 (%)*
Very unlikely	38.3	41.0
Unlikely	50.8	49.2
Likely	7.9	7.2
Very likely	3.0	2.6
N	5122	5962

Samples: all employed.
Source: British Household Panel Survey.

1b SCELI 1986 and Skills Surveys, 1997 and 2001

Likelihood of Losing Job and Becoming Unemployed in Next 12 Months	*1986 (%)*	*1997 (%)*	*2001 (%)*
No chance or very unlikely	81.3	78.4	84.4
Quite unlikely	3.5	5.2	3.7
Evens	6.6	9.2	5.9
Quite likely	4.0	3.5	3.1
Very likely	4.6	3.6	2.9
N	3812	2419	4364
National Unemployment Rate (ILO definition)	11.3	7.2	4.9

Samples: all employed, aged 20-60.
Source: Social Change and Economic Life Initiative (SCELI), 1986 and Skills Surveys, 1997 and 2001 (for details see Penn et al., 1994, Ashton et al., 1999, and Felstead et al., 2002); NOMIS.

To begin to motivate our use of this item as a valid and reliable measure of unemployment expectations, while also recognising its limitations, it is instructive first to note some trends derived from a series of cross-sectional data sources, using a similar measure to that used in the BHPS. Table 1b shows expectations of job loss and unemployment among British workers for three data points. The responses given in 1997 could be considered to be high, given the decline in the aggregate unemployment rate between 1986 and 1997 (Green et al, 2000). In fact, compared to 1986 the scale is somewhat compressed at both ends, with fewer recording “very likely” or “quite likely”, and fewer also recording “no chance” or “very unlikely”, to become unemployed. By 2001, however, perceptions of the risk of unemployment had fallen, along with a fall in aggregate

unemployment to 4.9 percent in that year.[5] It is of interest to note that the fear of job loss appears to have followed a similar pattern in the US. In the mid-1990s perceptions of the probability of job loss (measured in the General Social Survey, GSS) were high relative to aggregate unemployment (Schmidt, 1999), but had fallen substantially by the end of the decade (Green, 2006).

US data on unemployment expectations are also available as part of the Survey of Economic Expectations (SEE), another cross-sectional but brief data series with the difference that respondents are asked to quantify their subjective probabilities, rather than assign ordinal probability rankings. There are distinct potential advantages from using cardinal scales rather than the ordinal scales utilised in the British data. Not least, cardinal scales permit interpersonal probabilistic comparisons of the responses, and facilitate quantitative calculations of job loss probabilities. Reliable cardinal scales for the British longitudinal data on unemployment expectations would have been useful, and should be considered in future data collection exercises. According to the SEE data in the US, unemployment expectations fell from 1995 to 1998, consistent with the direction of change of the GSS measures in overlapping periods and of unemployment itself. Manski and Straub (2000) find that the distribution of perceived risk of job loss in the SEE data is highly skewed, similarly to the GSS data on risk of job loss and the British data on unemployment expectations.

We pose the questions here: are subjective measures reliable indicators of the probability of job loss facing individuals; and, if so, to what extent do the individuals who fear unemployment experience a lower wage growth than those who feel more secure (Section 3)? We focus exclusively on direct measures of the subjective expectations of

[5] The frequency distributions differ statistically ($\chi^2(8)=66.1$, p=0.00). Note that in boom times, more "at risk" individuals may be drawn into employment. This compositional effect would limit the decline in observed average insecurity.

unemployment that are available with a longitudinal element in Britain – the BHPS and the 2001 Skills Survey.

We would regard subjective reported expectations of unemployment as reliable to the extent that they accurately reflect the probability of becoming unemployed in the stated period. Our strategy in this section is to examine, first, the factors that affect the formation of unemployment expectations; second, to examine how far the expectations correspond to outcome frequencies and whether the expectations add predictive power to models of unemployment outcomes.

2.2 The Determinants of Unemployment Expectations

The reliability of measures of unemployment expectations will be supported if they are found to be related to personal experiences and job characteristics in a way that would be consistent with plausible models of expectations formation.[6] Previous studies have demonstrated associations of job insecurity fears with high regional unemployment rates, high job displacement rates, temporary job contracts and low human capital (Schmidt, 1999; Green et al., 2000; Manski and Straub, 2000; Naswall and De Witte, 2003). We contribute further to this reliability evidence by examining additional variables capturing the individuals' experience of unemployment.

We first investigate the correlates of unemployment fear reported by BHPS respondents. Table 2a presents ordered probit estimates of the factors determining the fear of unemployment. The dependent variable ranges from the value 1 (very unlikely) to 4 (very likely). We include five sets of potential correlates: the workers' personal unemployment experience and environment, the objective characteristics of the jobs they hold, educational

[6] Note that evidence of the reliability of the reports of unemployment expectations does not imply that the expectations formation process is strictly rational in the economic sense. Respondents might use some but not all the relevant and available information.

achievement indicators, the respondents' attitude towards unemployment in general, and demographic variables (age and gender).

Table 2 The Factors Determining Employees' Fear of Unemployment

2a Using BHPS 1996

				Robust		Marginal Effects			
	mean	sd	Coef.	Std. Err.	P>|z|	dP1/dx	dP2/dx	dP3/dx	dP4/dx
WEEKUP	7.164	22.403	0.002	0.001	0.002	-0.0009	0.0005	0.0003	0.0001
FRIENDUP	0.047	0.212	0.240	0.088	0.006	-0.0858	0.0392	0.0290	0.0176
HOUSEUP	2.396	9.329	0.001	0.002	0.741	-0.0002	0.0001	0.0001	0.0000
CONCERN	0.883	0.322	0.255	0.059	0.000	-0.0980	0.0602	0.0253	0.0125
REGUNEM	6.778	1.392	0.021	0.013	0.100	-0.0080	0.0044	0.0023	0.0013
SEASONAL	0.032	0.176	0.789	0.108	0.000	-0.2389	0.0376	0.1083	0.0931
CONTRACT	0.033	0.178	0.565	0.107	0.000	-0.1844	0.0539	0.0751	0.0553
PRIVATE	0.701	0.458	0.031	0.070	0.659	-0.0116	0.0064	0.0034	0.0018
TENURE	4.614	5.605	-0.005	0.004	0.207	0.0019	-0.0010	-0.0006	-0.0003
PART-TIME	0.187	0.390	0.123	0.051	0.017	-0.0452	0.0234	0.0140	0.0078
QUAL1	0.091	0.288	0.031	0.079	0.694	-0.0116	0.0063	0.0035	0.0019
QUAL2	0.222	0.416	-0.022	0.067	0.738	0.0084	-0.0046	-0.0024	-0.0013
QUAL3	0.139	0.346	0.052	0.074	0.480	-0.0194	0.0104	0.0058	0.0032
QUAL4	0.264	0.441	-0.014	0.066	0.838	0.0051	-0.0028	-0.0015	-0.0008
QUAL5	0.152	0.359	-0.163	0.076	0.033	0.0623	-0.0366	-0.0170	-0.0087
SIZE2	0.491	0.500	-0.001	0.041	0.987	0.0003	-0.0001	-0.0001	0.0000
SIZE3	0.167	0.373	-0.107	0.057	0.060	0.0406	-0.0233	-0.0114	-0.0059
AGE	36.971	10.903	0.010	0.002	0.000	-0.0039	0.0021	0.0011	0.0006
MALE	0.493	0.500	-0.020	0.042	0.639	0.0075	-0.0041	-0.0022	-0.0012
_cut1			0.639	0.243					
_cut2			2.306	0.245					
_cut3			2.949	0.249					
NOBS			4030						
Log Pseudo-likelihood			-925.05						
Wald $\chi^2(28)$			224.57						
Pseudo R^2			0.0289						
Industry dummies $\chi^2(9)$			11.89						

2a (Continued) Using BHPS 1997

				Robust		Marginal Effects			
	mean	sd	Coef.	Std. Err.	P>|z|	dP1/dx	dP2/dx	dP3/dx	dP4/dx
WEEKUP	6.851	21.532	0.003	0.001	0.002	-0.0012	0.0007	0.0003	0.0001
FRIENDUP	0.044	0.206	0.367	0.086	0.000	-0.1326	0.0679	0.0456	0.0191
HOUSEUP	1.737	8.143	0.000	0.002	0.819	0.0002	-0.0001	0.0000	0.0000
CONCERN	0.888	0.315	0.180	0.066	0.006	-0.0703	0.0476	0.0172	0.0056
REGUNEM	5.006	1.418	0.028	0.014	0.042	-0.0106	0.0068	0.0029	0.0010
SEASONAL	0.022	0.148	0.726	0.139	0.000	-0.2368	0.0781	0.1033	0.0554
CONTRACT	0.027	0.161	0.723	0.118	0.000	-0.2364	0.0792	0.1025	0.0547
PRIVATE	0.702	0.457	0.116	0.072	0.107	-0.0451	0.0293	0.0118	0.0040
TENURE	4.928	5.695	-0.007	0.004	0.084	0.0026	-0.0017	-0.0007	-0.0002
PART-TIME	0.170	0.376	0.132	0.056	0.019	-0.0500	0.0304	0.0144	0.0052
QUAL1	0.088	0.284	0.030	0.088	0.733	-0.0116	0.0073	0.0032	0.0011
QUAL2	0.215	0.411	0.012	0.072	0.870	-0.0045	0.0029	0.0012	0.0004
QUAL3	0.140	0.347	0.080	0.080	0.313	-0.0306	0.0189	0.0086	0.0031
QUAL4	0.285	0.451	-0.010	0.071	0.886	0.0040	-0.0025	-0.0011	-0.0004
QUAL5	0.152	0.359	-0.092	0.082	0.265	0.0356	-0.0233	-0.0092	-0.0031
SIZE2	0.489	0.500	0.011	0.044	0.812	-0.0040	0.0026	0.0011	0.0004
SIZE3	0.178	0.382	0.002	0.059	0.973	-0.0008	0.0005	0.0002	0.0001
AGE	37.773	10.832	0.015	0.002	0.000	-0.0058	0.0037	0.0016	0.0005
MALE	0.503	0.500	-0.059	0.045	0.187	0.0227	-0.0144	-0.0061	-0.0021
_cut1			0.503	0.250					
_cut2			2.217	0.252					
_cut3			2.962	0.259					
NOBS			3637						
Log Pseudo-likelihood			-3373.99						
Wald $\chi^2(28)$			204.86						
Pseudo R2			0.0310						
Industry dummies $\chi^2(9)$			11.34						

Notes:

1. The dependent variable ranges from 1 (very unlikely), which is the base category, to 4 (very likely) to become unemployed in the next 12 months. Estimation is by ordered probit maximum likelihood.
2. *WEEKUP* is the number of weeks spent in unemployment from 1991 until the relevant survey for the individual. *HOUSEUP* is the number of weeks spent in unemployment in the year leading up to the relevant survey for other members within the household. *FRIENDUP* equals one if first closest friend was unemployed in 1996. *REGUNEMP* is the regional unemployment rate at the month of interview (using the 11 standard regions).
3. *SEASONAL* and *CONTRACT* equal one if the worker is employed seasonally or on a fixed term contract, with permanent contract workers being the excluded category.
4. *TENURE* is the number of years in the current job; *PART-TIME* indicates a part-time worker.
5. Highest educational attainment dummies are: *QUAL0* (no qualifications, excluded category), *QUAL1* (Commercial qualification/CSE grade 2-5/Scottish grade 4-5), *QUAL2* (O-levels), *QUAL3* (A-levels), *QUAL4* (teaching/nursing/other higher qualification), and *QUAL5* (first degree/higher degree).
6. Establishment size dummies are: *SIZE1* (1-24 employees, excluded category), *SIZE2* (25-499 employees) and *SIZE3* (500+ employees). All regressions also include one digit industry level dummies.

7. *CONCERN* equals one if individual reports being concerned about unemployment at 1996. This variable is unavailable in 1997, so the 1996 variable is also used for the determinants of fear at 1997.
8. The marginal effects columns give the impact of marginal changes in the independent variable on the probabilities of respondents falling into each of the four fear categories, evaluated at the mean values of the variables. In the case of dummy variables, the columns give the impact of the change from 0 to 1 on the probabilities.

2b: Using the 2001 Skills Survey

				Robust		Marginal effects				
	mean	sd	Coef.	Std. Err.	P>|z|	dP1/dx	dP2/dx	dP3/dx	dP4/dx	dP5/dx
Unemployment experience	0.179	0.383	0.199	0.077	0.010	-0.0479	0.0089	0.0181	0.0106	0.0103
TTWA unemployment rate	3.029	1.513	0.018	0.019	0.326	-0.0041	0.0008	0.0016	0.0009	0.0008
Temporary (Fixed-term)	0.038	0.192	1.293	0.120	0.000	-0.4378	0.0386	0.1148	0.1010	0.1835
Temporary (Other)	0.017	0.128	0.649	0.200	0.001	-0.1936	0.0276	0.0650	0.0451	0.0560
Private	0.674	0.469	0.105	0.105	0.318	-0.0232	0.0046	0.0090	0.0050	0.0046
Part-time	0.228	0.420	-0.030	0.089	0.738	0.0067	-0.0013	-0.0026	-0.0015	-0.0013
Large establishment (>=25)	0.677	0.468	0.007	0.065	0.910	-0.0017	0.0003	0.0006	0.0004	0.0003
Tenure (months)	8.398	8.378	-0.001	0.004	0.815	0.0002	0.0000	-0.0001	0.0000	0.0000
Age	40.986	10.145	0.010	0.003	0.002	-0.0022	0.0004	0.0009	0.0005	0.0004
Q1 (lowest)	0.090	0.286	0.112	0.123	0.364	-0.0265	0.0050	0.0101	0.0058	0.0056
Q2	0.218	0.413	-0.105	0.104	0.312	0.0230	-0.0046	-0.0089	-0.0050	-0.0045
Q3	0.220	0.414	-0.118	0.103	0.253	0.0257	-0.0052	-0.0100	-0.0055	-0.0050
Q4 (highest)	0.344	0.475	-0.154	0.099	0.121	0.0338	-0.0067	-0.0131	-0.0073	-0.0067
MALE	0.494	0.500	0.146	0.073	0.046	-0.0330	0.0065	0.0127	0.0072	0.0067
_cut1			1.252	0.395						
_cut2			1.440	0.395						
_cut3			1.882	0.396						
_cut4			2.270	0.398						
NOBS			2781							
Log Pseudo-likelihood			-1705.58							
Wald $\chi^2(27)$			248.05							
Pseudo R^2			0.0644							
Industry dummies $\chi^2(13)$			47.43							

Notes
1. The dependent variable ranges from 1 (no chance of becoming unemployed) to 5 (very likely to become unemployed).
2. *Unemployment experience* is 1 if experienced a spell of unemployment over 5 years prior to interview.
3. Highest qualification levels range from *Q1* (equivalent to NVQ1) to *Q4* (all qualifications beyond A-level or equivalent).
4. Remaining variables are defined as in Table 2a.

The first three variables relate to the respondents' personal encounters with unemployment. Previous experience of unemployment is predicted to raise the subjective perception of unemployment risk according to psychological theories relating to how individuals compute subjective probabilities (Tversky and Kahneman, 1982). Previous personal experiences of an event are one of the factors that may be thought to heighten the "availability" of that option to the individual. From the economic perspective, previous unemployment experience may imply skills obsolescence (leading to state dependence); it may also carry information about worker characteristics which reduce labour market prospects, of which the workers themselves are quite aware but the researchers are not (that is, unobserved heterogeneity). Accordingly, we computed the variable *WEEKUP*, as the total number of weeks in unemployment since 1991.[7] The table shows modest positive and significant coefficient estimates on the level of reported fear in both waves. An additional 100 weeks of previous unemployment raises by 4 percentage points the probability of an employee feeling that future unemployment is "likely" or "very likely". We also tested whether more recent experience of unemployment has a closer association with perceptions of insecurity than a more distant experience. The point estimate of the impact of a week's unemployment in the last year was greater than the estimated impact of a week's unemployment in any of the prior years; but the difference between these was not statistically significant.

Psychological evidence also suggests that other close experiences of an event, such as via friends or family, can raise perceptions of risk. It is found, for example, that a person's estimate of the chances of having a motor cycle accident is found to be greater, other things being equal, if a friend has recently been involved in an accident (Rutter et al, 1998). To

[7] The variable is defined in the same way for all cases. For a small number (<5%) of individuals, mainly those less than 21 years old and with more education, the potential maximum number of weeks of unemployment is

investigate the analogous response in the case of unemployment risk, we include a dummy variable *FRIENDUP* to indicate whether the respondent's closest friend in 1996 was unemployed. The results confirm that having a close friend in unemployment significantly raises the respondent's own expectations of unemployment. The "likely" and "very likely" categories are together raised in 1996 by 4.7 percentage points, and in 1997 by 6.5 percentage points; the "very unlikely" category is lowered by 9 percentage points in 1996 and by 13 percentage points in 1997. After controlling for the economic status of a close friend we find, however, no evidence to support the idea that recent unemployment experience of other members of the individual's household affects their own expectations of future unemployment. The variable *HOUSEUP*, which gives the number of weeks spent in unemployment by other household members in the previous year, has no significant correlation with the fear of unemployment in the anticipated direction. So the hypothesis that close encounters with other people's unemployment affects perceived risk receives mixed support.

Next, it is hypothesised that estimates of unemployment risk may also be associated with individuals' attitudes towards unemployment and insecurity. One key attitudinal variable in the data set is pertinent to this argument. Respondents were asked to what extent they were concerned about unemployment in society generally, using a four-point scale. The variable *CONCERN* is set equal to one if the individual's response was in either of the top two categories. It is hypothesized that respondents who are concerned about unemployment in general may be more aware of their own personal risk of unemployment. The causation could, however, run in the opposite direction in that the fear of personal unemployment extends to a general concern regarding unemployment. It may be seen that the variable *CONCERN* is positively associated with unemployment fear in both years.

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limited by when they entered the survey; rather than standardise for differences in this potential maximum, we

Other variables with predicted associations with unemployment that have been included in previous studies were also entered here. First, we include the rate of regional unemployment (*REGUNEMP*) as a possible determinant of unemployment fear. This would be expected to positively affect fear if individuals take into consideration regional labour market conditions when assessing their chances of unemployment. Consistent with Green et al (2000), Table 2a shows a positive and significant coefficient estimate at the 10% level in 1996 and at the 5% level in 1997. Second, the estimated coefficients on dummy variables for fixed term contracts (*CONTRACT*) and seasonal workers (*SEASONAL*) are positive and substantial, as expected.[8] There is some evidence, consistent with Manski and Straub (2000) and with Naswall and De Witte (2003) of a link with human capital. In 1996 (though not in 1997), degree-holders had a significantly lower fear of unemployment. Other variables representing sector, job tenure, part-time status, age, gender and industry are included as controls.

Table 2b presents confirmatory findings from the similar unemployment expectations data in the 2001 Skills Survey. The analysis in Table 2b is enabled by a follow-up survey, undertaken approximately 15 months after the date of interview in 2001, covering the majority but not all respondents.[9,10] The purpose of the follow-up postal survey was primarily to re-establish contact with respondents, but the opportunity was taken to ask questions on recent unemployment experiences. These data are used to construct a dummy variable for whether respondents had experienced a spell of unemployment in the five years prior to interview in 2001, and a further dummy variable capturing whether an

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have included controls for age and education.

[8] Though these coefficients are positive, these objective characteristics are not dominant in the determination of high and low fear. For example, 77 percent of high fear workers have permanent contracts.

[9] Some respondents refused permission to make re-contact at the time of the 2001 interview, others failed to respond to the postal questionnaire; altogether 3244 respondents replied at this follow-up stage.

[10] The number of observations in Table 2 differs from that in Table 1 due to missing values on some variables. However, the missing values are apparently random and the distribution of unemployment fear in the estimation samples is very similar to that in Table 1.

unemployment spell was experienced between that interview and the postal follow-up in 2002. We include similar explanatory variables to those used in the BHPS analysis of Table 2a.

Table 2b shows that prior unemployment experience has a positive association with unemployment fear, after controlling for other factors. Compared with someone who had not experienced unemployment, the probability that the person who had experienced prior unemployment was in one of the top two fear categories ("quite likely" or "very likely" to become unemployed) was 2 percentage points higher; the probability of being in the lowest fear category ("no chance" or "very unlikely") was 5 percentage points lower. This conclusion is consistent with that found with the BHPS data set. The fear of unemployment is also found to be significantly greater for those on temporary as opposed to permanent job contracts.

How robust are the above estimates? Given the ordinal ranking of the unemployment expectations variable, the results in Tables 3a and 3b were obtained using the ordered probit estimator. However, this model can give misleading estimates if the error term does not conform to the model's assumption of a normal distribution. Semi-nonparametric estimates allow more flexible distributions to be considered. In order to obtain yet more robust evidence of the reliability of the subjective expectations data, we therefore computed alternative semi-nonparametric estimates.[11] They confirm the association of high unemployment fears with previous unemployment experience, friend's unemployment experience, general concern about unemployment, the regional unemployment rate, low human capital and non-permanent contracts. We also considered whether, in this part of the analysis, the samples should be split by gender, as is conventional in some labour market

[11] The findings are available on request from the authors.

analyses. In the case of Table 2a the pooled specifications which are shown are not rejected against separate specifications for each sex, either in 1996 (p=0.44) or in 1997 (p=0.61); and there were no substantial differences between the point estimates of the coefficients for females and males. In the case of Table 2b, however, pooling was rejected (p=0.00). Although for both sexes temporary contracts were associated with insecurity, the association of previous unemployment experience with unemployment fear was significant for men but not for women. For brevity, the separate-gender estimates are omitted, but are available from the authors on request.

In sum, one reason for believing that respondents' stated expectations of unemployment are reliable and valid is that they vary as predicted with variables associated with the objective probability of job loss. Yet, despite this conclusion, a good deal of the variation in the expressions of unemployment fear in both data sets remains unexplained. In part, this residual variation may reflect unobserved personal traits affecting their awareness of risk; but our general presumption is that the data on unemployment expectations also carry information about risk-related job circumstances or personal characteristics not otherwise captured in conventional objective variables available to researchers. Next, therefore, we examine this presumption.

2.3 *Are Unemployment Expectations Warranted?*

Two questions are raised at this stage. First, are the expectations "correct" (in the sense that they bear a plausible relation to objective outturns)? Second, do the respondents' expectations reveal information about future unemployment prospects not otherwise available from objective variables in these or any conventional data sets?

The first question is addressed directly in Table 3, which assesses whether respondents' unemployment fears are consistent with their actual unemployment experiences occurring in the subsequent year. The first column of Table 3a reports the percentage of workers who

experienced a spell of unemployment between their 1996 and 1997 interviews, or who were unemployed at the time of the 1997 interview, according to the level of fear expressed at the time of their 1996 interview. The second column presents the corresponding figures for actual unemployment experiences between the 1997 and 1998 interviews.[12] It can be seen that subsequent unemployment experience is monotonically related to the level of reported fear in both years. For example, approximately 18% of workers claiming to be "very likely" to become unemployed at the time of their 1996 interview actually experienced unemployment by the time of their interview in 1997. This compares to only 2% of workers in the "very unlikely" category who actually went on to experience unemployment between their 1996 and 1997 interviews.

Table 3 Unemployment Expectations and Realized Unemployment Experience

3a: Using BHPS Data; all in employment

Expectation of unemployment	***% experiencing unemployment between 1996 and 1997 interviews***	***% experiencing unemployment between 1997 and 1998 interviews***
Very Unlikely	2.3 (0.3)	1.9 (0.3)
Unlikely	2.8 (0.3)	4.0 (0.4)
Likely	8.3 (1.4)	9.5 (1.5)
Very Likely	17.6 (3.2)	11.4 (2.7)

3b: Using 2001 Skills Survey data; all in employment

Expectation of unemployment	***% experiencing unemployment between 2001 interview and 2002 follow-up***
No chance or very unlikely	5.3 (0.4)
Quite unlikely	4.9 (2.0)
Evens	12.8 (2.4)
Quite likely	19.1 (4.0)

[12] This analysis is slightly inconsistent with the responses given by individuals to the insecurity question. Individuals are asked to express the chances of them becoming unemployed within the next 12 months. The time between interviews, however, is not exactly 12 months for all individuals. As a check, we repeated the analysis in Table 3, calculating the proportions becoming unemployed within 12 months of the relevant interview date, but this made little difference to the results. We therefore interpret the insecurity question as the chances of becoming unemployed by the time of the next interview.

Very likely	32.9 (5.2)

Note: standard errors are in parentheses.

Table 3b reports the equivalent findings from the 2001 Skills Survey. The only difference is that the period between interview and the follow-up was rather more than a year, and averaged closer to 15 months, thus giving longer for unemployment to be experienced. The pattern is similar. Among those predicting that unemployment was "evens", just 13 percent in fact became unemployed; however, the greater the expectation of unemployment the higher the frequency: among those in the "very likely" category, almost 33% experienced unemployment.[13]

From this pattern, confirmed in the two separate years of the BHPS and in the entirely separate 2001 Skills Survey, we conclude that respondents do possess useful information concerning their own unemployment prospects: the rank order of their perceptions closely matches that of the *ex post* frequencies of becoming unemployed.[14]

Before proceeding, it is worth noting the possibility that respondents' perceptions of the level (rather than the rank order) of the risk of job loss are nevertheless biased. This possibility cannot properly be checked in the absence of items using cardinal probability scales. However, in normal language one might take the response "very likely" to indicate at least an above-evens chance of the event happening. Since in practice the chances are much less in both data sets it would imply that workers are prone to overestimate the unemployment risks they face. Similarly, those in the "evens" category have also apparently exaggerated the risk. Even in the absence of cardinal scales, one might conclude that the

[13] As indicated by the standard errors in Table 3a and 3b, the probability of experiencing unemployment does differ significantly between the expectation categories (with the single exception for the BHPS data between 1997 and 1998 for the *likely* and *very likely* categories).

[14] As an additional reliability check, expectations of unemployment are also quite closely correlated with expectations about future financial position. For example, in 1996 32% of those who thought unemployment

reliability of the expectations data is impaired because the perceptions of unemployment risk are upward biased. However, what Table 3 implies is a sensible ranking of perceptions. As long as we only consider the differing relative degrees of perceived risk, we can have some confidence that these reflect relative degrees of objective risk. It is of interest that for several other forms of uncertainty there is known to be a tendency to underestimate risk. An important factor, however, is said to be the "illusion of control", which allows individuals to downplay their chances of experiencing, say, a traffic accident (Rutter et al, 1998). By contrast, respondents tend to overestimate accident risk in situations where they sense a lack of control, such as in air transport. One might speculate, accordingly, that individuals feel that they have little control over their chances of becoming unemployed. Stephens (2004) finds a similar overestimate of job loss probabilities with his smaller sample of older American males. He finds little evidence to support the possibility that this overestimation could be due to strategic voluntary quitting ahead of displacement.

We next address the further question, as to whether the expectations data are additionally informative. It might be argued that a researcher could be equally proficient at predicting subsequent unemployment experiences given an appropriate set of objective indicators about the worker's previous unemployment history and current job characteristics. We therefore wish to assess whether the information provided in the unemployment expectations data is additional to that available in conventional objective data. If the subjective measure of insecurity captures private information held by workers relating to their job prospects, the inclusion of this measure should add explanatory power to a model that predicts future unemployment from objective variables alone. Accordingly, we estimate probit models of the determinants of unemployment, and the results are presented in Table 4.

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was "very likely" also expected their financial situation to deteriorate, compared with only 7% of those who thought unemployment was "very unlikely".

In each wave, the dependent variable is one if the individual experiences a spell of unemployment in the year following the interview, zero otherwise.

Table 4 Determinants of Unemployment Experience

4a. BHPS 1996-7

	mean	sd	Coef.	Robust Std. Err.	P>|z|	Marginal Effect	Robust Std. Err.
Unlikely	0.530	0.499	-0.024	0.098	0.806	-0.001	0.004
Likely	0.075	0.263	0.430	0.141	0.002	0.026	0.012
Very likely	0.031	0.173	1.024	0.172	0.000	0.113	0.037
WEEKUP	7.041	21.996	0.005	0.001	0.000	0.000	0.000
CHNGUNEM	-1.763	0.416	0.024	0.128	0.852	0.001	0.005
SEASON	0.030	0.169	0.368	0.180	0.041	0.022	0.015
CONTRACT	0.033	0.178	0.641	0.150	0.000	0.050	0.019
PRIVATE	0.700	0.458	0.313	0.107	0.004	0.012	0.003
TENURE	4.696	5.665	-0.077	0.017	0.000	-0.003	0.001
PART-TIME	0.190	0.392	-0.056	0.134	0.678	-0.002	0.005
NOBS			3886				
Wald $\chi^2(20)$			196.38				
Log Pseudo-likelihood			-488.40				
Pseudo R^2			0.1807				

4a. (Continued) BHPS 1997-8

	mean	sd	Coef.	Robust Std. Err.	P>|z|	Marginal Effect	Robust Std. Err.
Unlikely	0.513	0.500	0.373	0.091	0.000	0.020	0.005
Likely	0.071	0.258	0.649	0.142	0.000	0.059	0.020
Very likely	0.022	0.148	0.924	0.191	0.000	0.112	0.040
WEEKUP	7.776	25.175	0.006	0.001	0.000	0.000	0.000
CHNGUNEM	-0.506	0.312	-0.237	0.118	0.045	-0.012	0.006
SEASON	0.036	0.187	0.520	0.148	0.000	0.044	0.019
CONTRACT	0.033	0.179	0.174	0.186	0.349	0.011	0.013
PRIVATE	0.715	0.451	0.232	0.112	0.037	0.011	0.005
TENURE	4.683	5.687	-0.034	0.014	0.014	-0.002	0.001
PART-TIME	0.188	0.391	-0.330	0.130	0.011	-0.014	0.005
NOBS			4384				
Wald $\chi^2(20)$			180.29				
Log Pseudo-likelihood			-585.40				
Pseudo R^2			0.1556				

4b. Skills Survey 2001-2

	mean	sd	Coef.	Robust Std. Err.	P>|z|	Marginal Effect	Robust Std. Err.
Quite unlikely	0.038	0.191	-0.191	0.234	0.414	-0.016	0.017
Evens	0.064	0.244	0.579	0.135	0.000	0.087	0.028
Quite likely	0.031	0.173	0.847	0.166	0.000	0.154	0.045
Very likely	0.028	0.166	1.366	0.162	0.000	0.324	0.059
TTWA unemployment rate	3.023	1.512	0.022	0.027	0.420	0.002	0.003
Unemployment experience	0.178	0.383	0.506	0.093	0.000	0.066	0.015
Temporary (Fixed-term)	0.039	0.193	0.150	0.162	0.354	0.017	0.020
Temporary (Other)	0.017	0.130	0.085	0.246	0.729	0.009	0.028
Private	0.675	0.468	0.376	0.098	0.000	0.034	0.008
Tenure (months)	8.429	8.413	-0.012	0.007	0.060	-0.001	0.001
Part-time	0.227	0.419	0.151	0.102	0.139	0.016	0.012
NOBS			2792				
Wald $\chi^2(19)$			222.41				
Log pseudo-likelihood			-597.99				
Pseudo R^2			0.1542				

Notes to Tables 4a and 4b

In both 4a and 4b the dependent variable equals one if the worker experienced a spell of unemployment which they completed between interview dates, or is observed as being unemployed at the subsequent interview. Estimation is by maximum likelihood probit. The specifications also include additional controls for human capital, age, age-squared, gender, establishment size, and highest educational attainment. For variable descriptions, see notes to Table 2. The marginal effects for the dummy variables give the change in the probability of experiencing unemployment, as the variable switches from 0 to 1, evaluated at the mean for the other variables; other coefficients are marginal effects.

4c. Predictive Power of the Expectations Variables

	BHPS 1996-7			**BHPS 1997-8**			**Skills Survey 2001-2**		
	all variables	fear vars only	other vars only	all variables	fear vars only	other vars only	all variables	fear vars only	other vars only
Wald test*	47.18 (3) p=0.00			36.47(3) p=0.00			99.19(4) p=0.00		
Pseudo R^2	0.1807	0.0531	0.1414	0.1556	0.0427	0.1295	0.1542	0.0869	0.0851
AIC	1018.8	1137.0	1059.7	1212.8	1335.3	1243.0	1236.0	1301.2	1325.7
BIC	1150.4	1162.1	1172.5	1346.9	1360.8	1358.0	1354.7	1330.9	1420.6

Note: * Wald test for inclusion of the dummy variables representing unemployment expectations in the full model; in parentheses are the relevant degrees of freedom.

In addition to the unemployment expectations variables, we include in the model of unemployment experience in the ensuing year variables relating to previous unemployment

experiences since 1991, the change in regional unemployment over the subsequent year, the characteristics of the job held at the time that the worker reports their level of fear, human capital and demographic controls. In both waves of the BHPS and the 2001 Skills Survey samples, the dummy variables show that higher levels of unemployment expectation are conditionally associated with a higher probability of becoming unemployed. For the two BHPS waves, being in the highest fear category is associated with an extra 11 percentage points risk of unemployment, compared to being in the lowest fear category. For the 2001 Skills Survey, the conditional difference in unemployment probability between the highest and lowest fear categories is 32 percentage points.

Table 4a also shows that the probability of becoming unemployed in the following year is positively related to the total number of weeks spent in unemployment since 1991 (*WEEKUP*), seasonal contracts (*SEASONAL*), fixed term contracts (*CONTRACT*) and being in the private sector (*PRIVATE*). Longer job tenure (*TENURE*) and working part-time (*PART-TIME*) lowers the chances of becoming unemployed, although the latter association is insignificant for unemployment between 1996 and 1997. The conditional association of unemployment probability with age is U-shaped. These variables were shown in Table 2a to be determinants of the level of unemployment fear and so may be seen as having a direct link with unemployment experience and an indirect link operating through unemployment expectations. Finally, the change in the regional unemployment rate between 1997 and 1998 is correlated with unemployment experiences occurring within that period. In an approximately similar pattern, Table 4b shows that the probability of becoming unemployed in the period following 2001 is positively related to prior unemployment experience, to being in the private sector and having relatively short tenure, while the relationship with age is again U-shaped.

Table 4c examines the predictive power of the unemployment expectations variables, by comparing the models shown in 4a and 4b with benchmark models containing either the fear variables only or the other explanatory variables only. The Wald statistics reported in the table, which test the full model against the restricted versions that do not include the fear dummies, reveal that including the fear dummies does significantly raise the explanatory power of the model in all three models. This suggests that the workers' perceptions of insecurity do contain useful private information for predicting future unemployment, which is not otherwise available to the researcher. Including the fear dummies increases the pseudo-R^2 by around one fifth for the two waves of the BHPS, and by almost one half for the Skills Survey data. While the pseudo-R^2 is not additively decomposable, this is a large increase in all cases. When the unemployment expectations variables are included, not only are they collectively highly significant, but the magnitudes and significance of the coefficients on the other control variables are robust to their inclusion.[15] Finally, the standard BIC model selection criterion (which penalises additional variables more heavily than the AIC) indicates that the specification with the unemployment expectations variables on their own is preferred to the model with just the other explanatory variables for the 1996-7 BHPS wave and the Skills Survey data. For the 1997-8 BHPS wave, there is little to choose between the two specifications.

3. Job Insecurity and the Growth of Wages

It appears from the foregoing analysis that instruments for capturing unemployment expectations can be both valid and to some extent reliable. The fear of unemployment has been shown to be related in a plausible way to objective economic and attitudinal variables,

[15] The full set of model results (with fear variables only, and with other controls only) is available on request. While Stephens (2004) adopts a similar approach, and similarly confirms data reliability, he was able only to control for demographic and some human capital variables. The conclusion here is stronger because the estimates also condition on job characteristics and personal experiences that have a direct effect on unemployment expectations.

and it has been shown to have predictive power about the chances of experiencing unemployment. For the rest of this paper we turn to the question of whether and how far the perceived risk of job loss is associated with the extent to which workers are able to secure wage rises. We investigate the conventional hypothesis that there will be greater downward pressure on the bargained wage if workers and employers perceive excess labour supply, capturing the latter both by variables representing the labour market environment and by the individuals' perceptions of the risk of job loss.

Table 5 Median Change in Hourly Pay by Fear of Unemployment

	1996-1997 (£)		1997-1998 (£)	
	Low Fear	**High Fear**	**Low Fear**	**High Fear**
Men	0.45	0.14	0.50	0.26
	(2.91)		(2.18)	
Women	0.27	0.24	0.30	0.22
	(0.31)		(1.17)	
All	0.35	0.22	0.38	0.25
	(2.32)		(1.82)	
N	3241	319	3819	341

Notes:
The figures give the median change in gross hourly pay according to those with High Fear and Low Fear. High Fear consists of those who report being "very likely" or "likely" to become unemployed in the next year, while Low Fear individuals are those who report being "unlikely" or "very unlikely" to become unemployed. The figures in parentheses are t-statistics for the test that the median changes in hourly pay for High and Low Fear workers are the same. The t-statistics are computed using the method proposed by Koenker and Bassett (1982), which assumes homoscedasticity. Alternative bootstrap estimates yielded a similar pattern of significance. The median change was used instead of the mean change as it is less affected by outliers at both the high and low ends of the change in pay. The overall tenor of the median change results is not much different from the mean change results, but the point estimates on the smaller sample, high fear case are more robust when the influence of the outliers is removed.

We begin with a look at the raw data. Table 5 shows that, among men, there is a significant difference between the median change in wages experienced by high fear and low fear workers in both years. In the case of the 1996-97 results, high fear workers experienced a

rise in hourly pay averaging 14p, while those with low fear benefited from a rise of 45p. However, there is no significant statistical difference observed for women in either year.

Job insecurity is not confined to any particular education group, gender, occupation or industry. Nevertheless, other factors are likely to be relevant, and the differences in wage growth evident in Table 5 are merely suggestive. In Table 6 we estimate conventional reduced form equations for wages growth and augment them with the indicators of insecurity. We captured unemployment expectations by a set of dummy variables covering each of the four possible responses to the question relating to insecurity. The excluded category in these estimations is "very unlikely" to become unemployed. In Section 2, it was seen how a significant proportion of workers fearing unemployment in 1996 (1997) actually become unemployed during the following year. If these workers find a new job by 1997 (1998), then a negative coefficient associated with fear may simply reflect the cost of losing the initial job. There is evidence for the existence of an initial wage penalty from becoming unemployed in Britain, in the range 10 to 20% (Nickell et al, 2002). For this reason, we include in the wages growth equations a dummy variable (*UNEMPSPELL*) that is set equal to one if the worker experiences a spell of unemployment between the previous and current waves of interviews. We also control for unemployment in the local environment, establishment size and age.

In this part of the paper we present separate results for men and women. This separation is common in the case of individual wage equations because there is evidence from many studies that the wage determining process differs according to gender. It is here supported by F-tests which reject the pooling of the male and female samples in all specifications shown in the table (with p=0.00).

Table 6 Job Insecurity and Wage Growth

6a Men

	(1)		*(2)*		*(3)*		*(4)*	
Chance of unemployment	***1996***		***1997***		***Random Effects***		***Fixed Effects***	
(base category= Very unlikely)								
Unlikely	-0.021	(0.014)	-0.013	(0.013)	-0.017	(0.010)	-0.020	(0.020)
Likely	-0.059	(0.026)	-0.015	(0.032)	-0.037	(0.020)	-0.042	(0.043)
Very likely	-0.159	(0.073)	-0.070	(0.042)	-0.119	(0.035)	-0.166	(0.064)
Change in regional unemployment	-0.012	(0.018)	-0.009	(0.022)	-0.011	(0.013)	-0.015	(0.022)
Unemployment spell	-0.016	(0.075)	-0.105	(0.080)	-0.067	(0.032)	0.020	(0.063)
R^2	0.0244		0.0134		0.0175		0.0101	
Specification test ~N(0,1)	0.70	(p=0.49)	1.63	(p=0.10)				
LM-test for RE ~$\chi^2(1)$					153.2	(p=0.00)		
Hausman test RE vs FE ~$\chi^2(9)$							7.56	(p=0.58)
Number of observations	1776		2009		3785		3785	
Number of individuals	1776		2009		2242		2242	

6b Women

	(1)		*(2)*		*(3)*		*(4)*	
Chance of unemployment	***1996***		***1997***		***Random Effects***		***Fixed Effects***	
(base category= Very unlikely)								
Unlikely	-0.021	(0.016)	0.007	(0.014)	-0.006	(0.010)	-0.028	(0.023)
Likely	-0.026	(0.037)	0.014	(0.026)	-0.004	(0.020)	-0.020	(0.044)
Very likely	-0.091	(0.051)	0.043	(0.052)	-0.031	(0.034)	-0.050	(0.075)
Change in regional unemployment	-0.016	(0.018)	0.015	(0.019)	-0.003	(0.014)	0.003	(0.027)
Unemployment spell	0.024	(0.109)	-0.058	(0.065)	-0.014	(0.042)	0.015	(0.087)
R^2	0.0149		0.0121		0.0105		0.0073	
Specification test ~N(0,1)	0.89	(p=0.37)	0.07	(p=0.94)				
LM-test for RE ~$\chi^2(1)$					283.4	(p=0.00)		
Hausman test RE vs FE ~$\chi^2(9)$							2.39	(p=0.98)
Number of observations	1775		1979		3754		3754	
Number of individuals	1775		1979		2248		2248	

Notes

1. The dependent variable is the change in log deflated hourly pay (approximately the growth in hourly pay). Other control variables include the change in establishment size, age in the year that fear is recorded, and, for columns (3) and (4) a year dummy for 1997.
2. Robust standard errors are given in parentheses.
3. The specification test for the cross-sectional regressions is a RESET-type test due to Pregibon (1980). It is distributed as standard normal under the null of no misspecification.
4. The LM-test is the Breusch and Pagan (1980) Lagrange multiplier test for random effects.

In Table 6a, which applies to men, columns (1) and (2) shows that higher expectations of unemployment are associated with significantly lower wage growth. As can be seen, the point estimates indicate that wages growth declines monotonically according to the scale of unemployment expectations in both 1996 and 1997. In 1997, the effect is only just statistically significant at the 10% level for the "very likely" category, while in 1996 the coefficients on both the "likely" and the "very likely" categories are somewhat larger than in 1997 and are significant at the 5% level. In columns (1) and (2) the numbers in the high fear categories remain relatively small, and it is not surprising that the precision of the estimates is not very high. Column (3) utilises the panel nature of the data to generate more efficient estimates. It presents the Random Effects estimator, which allows for correlations between the error terms for individuals in the two waves, while maintaining the assumption that the error terms are not correlated with the covariates. As can be seen, with this more efficient estimator, it is estimated that being in the "very likely" ("likely") category lowers the rate of wage growth for men by 12% (4%), compared with the majority of individuals for whom unemployment is perceived to be "very unlikely". By contrast, for women, using either the same wave-by-wave or the Random Effects estimator, there is no significant association between wage growth and the fear of unemployment (Table 6b).

These findings are not affected substantially by whether or not the objective unemployment variables are included. In an alternative specification (not shown) we also control for the change in hours. Arguably the change in hours may be endogenous, which is why it is excluded from the specifications shown in Table 6. Hours change does have a significant impact on hourly wages when included; but the relationship between insecurity and hourly wages is not substantively different, and remains significant for men.

It is possible that correlation between the unobserved individual heterogeneity and the covariates is generating the observed association between high unemployment fear and low

wages growth for men. For example, low-productivity individuals might have both high insecurity and low wage growth, in which case the low wage growth could not be attributed to the insecurity, even though the two variables are associated.[16] This possibility would negate the maintained assumption of the Random Effects estimator. In column (4) we control for such unobserved heterogeneity, by presenting results of the standard Fixed Effects panel estimator. It can be seen that the magnitudes of the point estimates of the coefficients on unemployment fear are somewhat higher than in the case of the Random Effects estimator. Since the standard errors are higher, in this specification only the highest fear category has a statistically significant negative relationship with wages growth. Higher standard errors are to be expected, since many individuals did not switch levels of unemployment expectation between 1996 and 1997 (see Section 2.1). Nevertheless, the Fixed Effects estimates do not suggest that the net effect of unobserved heterogeneity in the pooled-wave estimates was to generate unacceptable bias. Moreover, a Hausman test does not reject the Random Effects model in favour of the Fixed Effects model (p=0.58 for men, p=0.98 for women), and we therefore treat the findings from the more efficient Random Effects estimator as our preferred estimates.

3.2 Estimation concerns and robustness checks

One potential problem with the results presented in Table 6 is that the estimations require that individuals are employed in successive waves, in order for wage growth to be recorded. Yet it is possible that some of the workers who are employed in one year, and respond to the insecurity question, are unemployed at the time of the subsequent survey. These individuals will not appear in the sample used for estimating the wage equation. The analysis in Section 2 suggests that the probability of being unemployed at some time in the year following

[16] Note, however, that other unobserved characteristics might generate an opposite association, for example workers' preferences towards risk. Especially risk-averse workers might opt for high security at the expense of low wages growth.

interview is greatest for those with the greatest level of perceived job insecurity. When estimating the wage growth equations, therefore, we may be excluding a disproportionately high number of individuals from the highest fear category relative to the lower categories of fear. This may bias the results since we are unable to observe the wages growth that some of those with the most fear of unemployment would have received had they remained in employment. Following this concern, we re-estimated the wage growth equations using Heckman's two-step procedure to correct for the bias arising as a result of our sampling restrictions. For the first stage of this procedure, a probit was estimated for the probability of being in employment in 1997 (or 1998), given that the worker was also employed in 1996 (or 1997). In this selection equation we included the covariates from the wage growth equation, and some further variables. First, we include a dummy variable capturing whether the respondent has any children during the year, since this is likely to affect the decision to continue working. Next, the amount of time spent in unemployment since 1991 is included, since unemployment scarring might affect the current skills and hence the probability of being in employment (Arulampalam et al., 2001). Similarly, we include highest educational attainment, as another indicator of skills. Finally, the level of overall job satisfaction is included, because there is evidence that low satisfaction is a robust predictor of job quitting (Clark, 2001).[17] The residuals from this probit are used to generate a selectivity term, which is then included in the wages growth equation. However, we acknowledge that, in the absence of a formal structural model, excluding these variables from the wage growth equation can be seen as essentially arbitrary, and that these may be weak instruments. The outcome of this procedure is that the results were not found to differ greatly from those

[17] Results of the selection equation are available on request to the authors.

reported in Tables 6 for our preferred specification, the Random Effects model.[18] The estimated coefficients on the unemployment fear variables showed the same monotonic pattern and significance levels. Moreover, the coefficient on the selection term is found to be insignificant (p=0.46 for men, p=0.36 for women). We further investigated the appropriateness of our exclusion restrictions and found that not only did the additional variables significantly add to the determination of selection into employment in the second wave, but that they were exogenous to the wage growth process as required.

In the regressions described previously, we included a dummy variable indicating whether an individual experienced a spell of unemployment between the time that their insecurity is recorded and the year for which the wage equation is estimated. This is done to ensure that any negative coefficient associated with fear is not simply capturing the fact that insecure workers become unemployed and are forced into taking a new job with a relatively low wage. An alternative approach is to focus solely on the wage behaviour of those workers who do not switch jobs, and who therefore do not experience any spell of unemployment. For the pooled sample of 3785 males used in Table 6, 75 percent (2854) are observed as not switching jobs between the time of reporting their insecurity in 1996 and when their earnings are observed in the 1997 wave of the BHPS. Using this sample, the equivalent regression to that in column 3 of Table 6a yields a coefficient for the "very likely" category of –0.069 (with a *t*-ratio of 3.38), which is somewhat smaller than the estimate in Table 6a using the full sample. For women, the relationship between insecurity and wages growth remains small and insignificant.

Finally, to be confident of our findings about the role of subjective unemployment expectations, controlling adequately for objective unemployment variables has been an

[18] For example, the coefficient on the "very likely" dummy variable was -0.127 (0.036), close to the equivalent Random Effects estimate given in Table 6a for men.

important aim in the analyses above. As an additional check we therefore experimented with using a more disaggregated measure of the unemployment rate within the local labour market. Instead of measuring unemployment at the regional level, we included the unemployment rate within each individual's Travel To Work Area (TTWA).[19] This was found, however, to make little difference to the estimated coefficients presented in Table 6. The pattern of coefficients associated with TTWA unemployment was found to be similar to those of the regional unemployment measure, and there were no substantial changes in any of the estimated coefficients for the variables capturing insecurity.

4. Conclusions

In both Britain and the US, series of data on average unemployment expectations broadly track the economic cycle. Nevertheless there can be periods, such as the mid 1990s, when the fear of unemployment is unusually high in relation to aggregate unemployment (Schmidt, 1999; Green et al, 2000). In 1995, a senior British politician once referred to job insecurity as just a "state of mind". In this paper, we have investigated whether this state of mind has a real basis, by examining whether workers' perceptions of unemployment risk are associated with a set of objectively measured variables. In addition, we have investigated whether such subjective measures of unemployment risk convey additional information for predicting whether workers actually experience unemployment in the future. We have also considered whether such perceptions of insecurity matter for the individuals concerned, by investigating their association with wage growth.

The first key finding is that the level of unemployment fear reported by workers is related to a set of plausible objective variables: past personal experiences of unemployment,

[19] In a similar way to regional unemployment, monthly TTWA unemployment data was matched to individuals according to their TTWA and the month of their interview.

the experiences of a close friend, and those characteristics of the job currently held which are typically associated with fragile employment. Despite this there remains a variation in the fear of unemployment that is not explained by past unemployment and characteristics of the present job. This unexplained variation could be entirely attributable to an unpredictable "state of mind", or it could reflect the fact that individuals hold private information, not otherwise available to researchers, relating to their chances of becoming unemployed in the near future.

The second finding is that the evidence supports the latter interpretation, in that the probability of becoming unemployed in the subsequent period is found to be significantly greater for those reporting higher levels of insecurity. This result holds even after controlling for a range of conventional variables predicting unemployment. It would seem, therefore, that workers do possess valuable private information relating to the probability of becoming unemployed and that this information is partly captured by their reported perceptions of unemployment.

The third main finding is that the fear of unemployment does matter, at least in so far as it is associated with lower wage growth for men. Both the single-year and the panel estimates imply that the association is substantial for those men in the highest category of unemployment fear. Our preferred estimator implies that men in this highest category experienced a 12 percentage point lower wage growth compared to those facing very little risk of unemployment. However, it should be noted that only around 3% of the male workforce fell into this category in the mid 1990s. For the 7% of the male workforce who saw unemployment as "likely", their wage growth was lowered rather less, by some 4 percentage points. For women, we could find no evidence that insecurity was associated with lower wage growth.

These findings suggest a number of areas where understanding of the role of unemployment expectations would benefit from further research. Though we have surmised that a quantitative probabilistic scale of expectations would be preferable, it would be useful to know whether and how far employees' responses on such a scale would prove to be superior predictors of unemployment experience compared to the ordinal scales utilised here. At the same time, further light could usefully be shed on why employees appear to overestimate the risk of unemployment.

The different effects of men's and women's unemployment fears on wages growth also merits further investigation. A possible explanation consistent with bargaining theory is that on average women in Britain may face a lower cost of job loss than men. If they do, women at risk of job loss may feel in a stronger bargaining position than men at similar risk to resist wage cuts or to gain wage rises. Consistent with this hypothesis, the impact of becoming unemployed on well-being is found to be substantially lower for women than for men (Theodossiou, 1998). Though no comprehensive measures of the cost of job loss are available, Britain is relatively unusual in having lower unemployment rates for women than for men. This distinction is in part due to women in Britain having significantly higher transition rates from unemployment back into employment. Moreover, as in other countries, women also have higher transition rates from unemployment into being formally economically inactive (Azmat et al, 2004). These differences are reflected in the duration of unemployment in Britain being greater for men than for women.[20] A further component of the cost of job loss is the extent of financial loss while unemployed. Women receive lower average wages than men, and this difference holds true for individuals at risk of unemployment. Among single persons, the absolute wage loss while unemployed therefore is

[20] In 1996 some 45% of unemployed men, but only 28% of unemployed women, had remained unemployed for at least 12 months (National Statistics Online, at www.statistics.gov.uk).

likely to be less for women than for men, though the proportionate loss would be indeterminate. In multi-adult households, the financial impact of job loss is likely to be less for women than for men, both in absolute terms and relative to total household income.

These issues would repay further investigation both in Britain and also in other labour markets where the implications of becoming unemployed are related to gender in different ways. It is disappointing that the series of BHPS questions on unemployment expectations was curtailed after just two waves. Nevertheless a question on unemployment expectations could with little cost and great benefit be asked in any regular labour force survey. For macroeconomic purposes, the unemployment fear indicator could serve as a predictor of wage restraint (or lack of it); for labour analysts the indicator could assist in identifying groups liable to unemployment. Our analysis suggests that the information would be additional to that recorded in objective measures, and that this information would carry substantive implications about subsequent economic experience.

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