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Reservation wages, expected wages and unemployment

Sarah Brown *, Karl Taylor

Department of Economics, University of Sheffield, 9 Mappin Street, Sheffield, South Yorkshire, S1 4DT, UK

HIGHLIGHTS

- We examine wage expectations in a model of unemployment and reservation wages.
- We model unemployment, reservation wages and expected wages simultaneously.
- Wage expectations are identified via an exogenous policy shock.
- The policy shock increases expected wages.
- Expected wages are positively associated with reservation wages.

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ABSTRACT

We model unemployment duration, reservation and expected wages simultaneously for individuals not in work, where wage expectations are identified via an exogenous policy shock. The policy shock increased expected wages, which were found to be positively associated with reservation wages.

1. Introduction and background

The reservation wage, the lowest wage at which an individual is willing to work, plays a key role in labour market analysis. An extensive empirical literature exists on the relationship between reservation wages and unemployment, with seminal contributions by Lancaster and Chesher (1983) and Jones (1988). Empirical evidence supports a positive relationship between reservation wages and unemployment duration. More recently, Hogan (2004) focuses on the influence of previous wages on reservation wages. We expand this line of enquiry by incorporating 'forward-looking' information, namely wage expectations, into the reservation wage-setting process. The role of expected wages has not been the focus of empirical scrutiny yet expected wages arguably signal information regarding expected future labour market prospects.

2. Data

We use individual-level data from the British Household Panel Survey (*BHPS*), a nationally-representative random sample survey of each adult member from more than 5000 private households (www.iser.essex.ac.uk/survey/bhps). Given data availability, we focus on the 1996–2002 waves. [1] In the *BHPS*, if the respondent '*is not currently working but has looked for work or has not looked for work in last four weeks but would like a job*', he/she is asked: '*What is the lowest weekly take home pay you would consider accepting for a job*?' Individuals are then asked: '*About how many hours in a week would you expect to have to work for that pay*?' We construct hourly reservation wages.[2] Job seekers were asked: '*About how many hours*

* Corresponding author. Tel.: +44 0 114 2223404; fax: +44 0 114 2223458.
E-mail address: sarah.brown@sheffield.ac.uk (S. Brown).

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[1] Due to changes in the tax credit system in 2003, discussed further below, our sample ends in 2002.

[2] Given the reference to 'take home pay', we assume respondents refer to net (i.e. after tax) wages.

in a week do you think you would be able to work?' Individuals are then asked about expected wages: '*What weekly take-home pay would you expect to get (for that)*?' From the responses, we construct hourly expected wages.

The sample is unbalanced with 3034 observations, where, on average, individuals are in the panel for two years. The sample includes working age individuals (18–65) who satisfy the Lancaster and Chesher (1983) rationality restriction: unemployment benefit income is less than or equal to reservation wages, which are less than or equal to expected wages.[3] Out of the sample of individuals who are currently not working and who state that they have looked for work or have not looked for work in the last four weeks but would like a job, 62% are typically classified as 'economically inactive'.[4] We include these individuals in the sample if they report a reservation wage, since they are arguably signalling labour market attachment, which accords with the argument that the distinction between the unemployed and inactive may not be as clear-cut as previously assumed (Blackaby et al., 2007). The distributions of the natural logarithm of reservation wages and expected wages are presented in Fig. 1. The mean log hourly reservation wage and expected wage are 1.44 and 1.55, respectively.

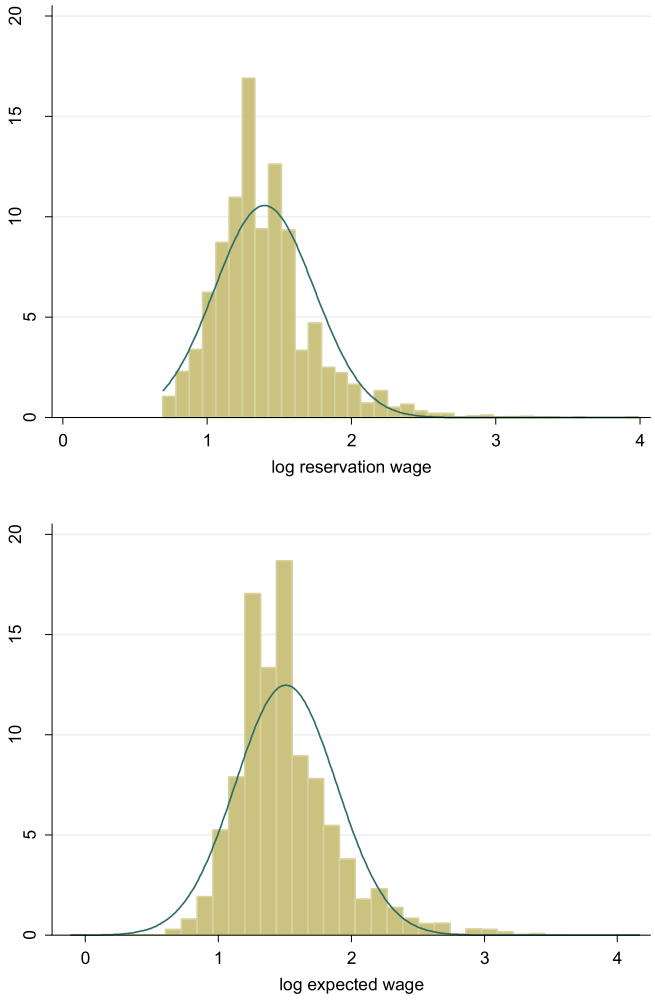

Fig. 1. Distributions of log reservation wages and log expected wages.

3. The determinants of reservation wages

Following Jones (1988), we estimate a system of two simultaneous equations to allow for the joint determination of reservation wages and unemployment duration[5]:

$$\begin{aligned} \log(t)_{it} &= X_{1it}\beta + \gamma \log(rw)_{it} + \varepsilon_{1it} \\ \log(rw)_{it} &= X_{2it}\phi + \lambda \log(t)_{it} + \varepsilon_{2it} \end{aligned} \tag{1}$$

where i and t denote the individual and time period, respectively, $\log(t)$ is the log duration of the number of days not being in work, $\log(rw)$ is log hourly reservation wages, X_1 and X_2 are vectors of explanatory variables, β and ϕ are parameters to be estimated, γ and λ measure the elasticity of unemployment duration with respect to reservation wages and the elasticity of reservation wages with respect to unemployment duration, and the ε's are random error terms. Following the existing literature, X_1 and X_2 include: gender, ethnicity, marital status, educational attainment, regional unemployment rate, age, being currently unemployed rather than 'economically inactive', year, interview month, and job search intensity.[6] To identify unemployment duration, X_2 also includes: log unemployment benefit, the log of all other types of benefit, the log of pay in last job, working spouse, number of children under 16, and number of dependent children aged 16–19. Our set of over-identifying instruments follows the existing literature (e.g. Jones, 1988) and satisfies the standard instrument validity tests.[7]

The results are summarised in Table 1, where we only show the key coefficients. Column 1 (2) presents the unemployment duration (reservation wage) equation. Unemployment duration is positively related to the regional unemployment rate, although only at the 10% level. The results also suggest that job search decreases the length of time not in work. The elasticity of unemployment duration with respect to reservation wages is positive and statistically significant and is similar in magnitude to that reported in existing studies. A higher regional unemployment rate is associated with lower reservation wages. Whilst the elasticity of unemployment duration with respect to reservation wages is elastic, the elasticity of reservation wages with respect to unemployment duration, in accordance with the existing literature, is inelastic and negative at −0.84.

Table 1
2SLS model of unemployment duration and reservation wages.

	Duration		Res. wage	
	COEF	TSTAT	COEF	TSTAT
Log(unemployment duration)			−0.836	(*2.46*)
Log(reservation wage)	1.948	(*2.97*)		
Regional UE rate	0.053	(*1.61*)	−0.012	(*1.95*)
Job search	−0.154	(*4.00*)	0.001	(*0.07*)
Log(UE benefits)			−0.327	(*1.84*)
Log(other benefits)			−0.065	(*1.83*)
Log(pay last job)			0.080	(*2.39*)
Chi squared [*p value*]	1128.33	[*0.000*]	532.47	[*0.000*]
Observations		3034		

[3] 4% of the sample fail to meet this condition.

[4] The 'economically inactive' include: individuals involved in family care, full time students, the long term sick/disabled, and individuals in government training. In the *BHPS*, 20% of those typically classified as 'economically' inactive specify a reservation wage.

[5] In the *BHPS*, unemployment duration reflects a current rather than completed spell of unemployment as recorded at the interview date.

[6] Job search is an index of the number of types of search activity undertaken.

[7] Following Mundlak (1978), to allow for individual time-invariant, i.e. fixed effects, we include individual-level mean characteristics of time varying covariates throughout.

Table 2
3SLS model of unemployment duration, reservation wages and expected wages.

	Specification 1						Specification 2					
	Duration		Res. wage		Exp. wage		Duration		Res. wage		Exp. wage	
	COEF	TSTAT	COEF	TSTAT	COEF	TSTAT	COEF	TSTAT	COEF	TSTAT	COEF	TSTAT
Log(unemployment duration)			−0.805	(*3.68*)					−0.517	(*3.52*)		
Log(reservation wage)	1.858	(*2.94*)					1.841	(*1.93*)				
Log(expected wage)			1.479	(*5.34*)					1.488	(*8.62*)		
WFTC eligible					0.047	(*3.18*)						
WFTC eligible year 1											0.046	(*3.11*)
WFTC eligible year 2											0.051	(*1.71*)
WFTC eligible year 3											0.017	(*0.31*)
Regional UE rate	0.026	(*0.78*)	0.016	(*3.17*)			0.025	(*0.75*)	0.015	(*3.58*)		
Job search	−0.161	(*4.19*)	−0.009	(*0.97*)			−0.161	(*4.19*)	−0.005	(*0.72*)		
Log(UE benefits)			0.414	(*2.71*)					0.260	(*2.36*)		
Log(other benefits)			0.009	(*3.53*)					0.056	(*3.48*)		
Log(pay last job)			0.077	(*3.56*)	0.004	(*2.09*)			0.051	(*3.52*)	0.005	(*2.12*)
Chi squared [*p value*]	1067.53	[*0.000*]	5209.43	[*0.000*]	754.70	[*0.000*]	1064.35	[*0.000*]	7970.17	[*0.000*]	744.87	[*0.000*]
AIC (BIC)			16,335.65 (16,979.54)						14,469.28 (15,119.19)			
Observations						3034						

4. Reservation wages and expected wages

Arguably, reservation wages, expected wages and unemployment duration are jointly-determined outcomes: Lancaster and Chesher (1983) argue that job seekers might revise reservation wages as expected wages fluctuate. We now allow for such joint determination by allowing expected wages to influence reservation wages directly and unemployment duration indirectly via reservation wages. To identify the three-equation system, we argue that the introduction of an unexpected change in labour market policy acts as an exogenous shock, impacting on expected wages. We focus on the introduction of Working Family Tax Credits (WFTCs).[8] If the policy change is unexpected then a shift in the expected net income distribution is predicted.

We estimate a three-equation system as follows[9]:

$$\begin{aligned}\log(t)_{it} &= X_{1it}\beta + \gamma \log(rw)_{it} + \varepsilon_{1it}\\ \log(rw)_{it} &= X_{2it}\phi + \lambda \log(t)_{it} + \varepsilon_{2it}\\ \log(ew)_{it} &= X_{3it}\eta + \varphi \mathrm{WFTC}_{it} + \varepsilon_{3it}.\end{aligned} \tag{2}$$

X_3 contains covariates associated with Mincerian wage equations: gender, ethnicity, marital status, educational attainment, age, and wages from their last job. We also condition on WFTC eligibility in the expected wage equation, which acts as an exclusion restriction to identify the parameters of the reservation wage equation. Initially, we define the exogenous policy shock as a binary indicator denoting eligibility in any year from 1999 onwards ('specification 1'); and second, as three binary indicators capturing the first, second, or third year of eligibility ('specification 2'). From an economic perspective, 'specification 2' is our preferred specification given that we expect the effect of WFTC eligibility to differ across the first, second and third year of eligibility with its effect expected to be largest at the first year of eligibility and dissipating thereafter, in accordance with individuals becoming more informed about labour market conditions once WFTC eligibility is taken into account. The exclusion restrictions used to identify the parameters of the unemployment duration equation are as in Eq. (1).

Table 2 presents the results: column 1 presents the unemployment duration equation and columns 2 and 3 present the reservation wage equation and expected wage equation, respectively. In 'specification 1', WFTC eligibility has a statistically significant positive influence on expected wages, of approximately 5% points.[10] The elasticity of reservation wages with respect to expected wages is positive and elastic. Benefit income has a positive impact on reservation wages. A one percent increase in unemployment benefits is associated with a higher reservation wage of 0.4% points. This finding is similar to the upper range found by Addison et al. (2010).

There has been a moderate decrease in the elasticity of unemployment duration with respect to reservation wages from 1.95 to 1.86 and an increase in the elasticity of reservation wages with respect to unemployment duration from −0.84 to −0.81. An increase in reservation wages by 1% reduces the duration of unemployment by around 1.9% points. The key elasticities between reservation wages and unemployment duration are robust to the alternative definition of WFTC eligibility in specification 2. Both the Akaike's and Schwarz's Bayesian information criteria, AIC and BIC respectively in Table 2, reveal that specification 2 is the preferred model statistically. WFTC eligibility only has a statistically significant association with expected wages during the first year of eligibility, consistent with individuals becoming more informed about labour market conditions once the 'surprise' element of the policy change has been taken into account.

5. Conclusion

Although expected wages play an important role in labour market analysis, to our knowledge, this is the first paper to explicitly incorporate expected wages into an empirical framework, which jointly models unemployment duration and reservation wages. Our empirical results suggest that the introduction of WFTC had a positive influence on expected wages, which in turn were positively associated with reservation wages suggesting that it is important for policy-makers to take account of the effects of changes in labour market policy on wage expectations.

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[8] WFTCs almost doubled the generosity of previous in-work benefits associated with Family Credits, encouraging individuals on benefit into employment. Eligibility depends on hours of work, the number of dependent children and capital (Brewer et al., 2006). In 2003, the WFTC system changed, hence our sample ends in 2002.

[9] We incorporate Mundlak fixed effects as in Section 3.

[10] The WFTC control is statistically insignificant in the reservation wage equation, endorsing its validity as an instrument.

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