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Job Tenure in Australia and Britain: Individual Versus Workplace effects

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JOB TENURE IN AUSTRALIA AND BRITAIN: INDIVIDUAL VERSUS WORKPLACE EFFECTS*

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Abstract JEL # J2

The distribution of individual job tenure is a revealing measure of job stability. We consider differences in individual job tenure between Australia and Britain. We employ linked data for individual employee and workplace characteristics. This enables us to distinguish between the effects of demographic, education, job characteristics, occupation and work environment for the individual, as well as of the workplace in which they work. Whilst, the various individual characteristics are, as a group, found to be essentially uncorrelated with the workplace effect, this is not true for women and non-white employees. We find that the lower tenure rates associated with membership of these groups is predominantly captured by workplace effects suggesting some degree of labour market segmentation, especially so in Britain. We also find union membership to be strongly related to longer tenure in both countries, supporting the union-voice literature.

Key words: job tenure, individual, fixed-effects, voice, segmentation.

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1. Introduction

The issue of the stability of jobs has increasingly become a question of public and professional interest over the last two decades. A recent focus of this interest has been on the possible changes in the distribution of worker's tenure. In particular, authors have examined the question of whether jobs are less long lasting than they used to be. Whilst the results from these papers are far from uniform, they do suggest that in the US there has been some decrease in tenure (albeit modest) amongst those white males who had previously had relatively long tenure, amongst blacks and amongst young adults (Neumark *et al*, 1999). Similarly, the UK has seen some fall in the average male tenure (Gregg and Wadsworth, 1995), especially so amongst the lower paid (Burgess and Rees, 1996), although again these changes are not dramatic (Nickell, 1999). None of these papers, however, consider the cross-sectional distribution of tenure and it's determination. This is the focus of our paper.

Tenure is one of a number of measures of job stability. We could alternatively identify quit rates or total separations[1]. An advantage of tenure as a measure of stability is that it captures longer run, more permanent behaviour. A drawback, as Freeman (1980) notes, is that the job-related information we have from survey data relates primarily to current job conditions rather than to earlier periods of the relationship between worker and firm. This may especially affect the interpretation of the influence of attitudinal questions.

Much of the existing literature on job tenure has concentrated on the extent to which the presence of trade unions increases individual job tenure by providing a 'voice' for grievances as well as increased wages, both resulting in lower quit rates. The analysis in this literature, initiated by Freeman (1980) and Freeman and Medoff (1984) was restricted by the nature of the available datasets which provided little demographic and job-related information in addition to measures of individual tenure. In particular, none of the existing studies employ any substantive workplace information. In contrast, our paper employs datasets which are built on linked employee-workplace survey information.

In this paper we compare and explore the determinants of the distribution of job tenure amongst employees in both Britain and Australia. In so doing, we will consider differences in the

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[1]Gross and net worker turnover are also identified in Mumford and Smith (2000) as measures of employment change which can be meaningfully compared.

nature of the workplaces; the characteristics of the employees; and (to a limited extent) the nature of the regulatory systems across the two countries. This study is possible due to recently produced linked surveys of workplaces and their employees in the two countries (the Australian Workplace Industrial Relations Survey 1995, AWIRS95, and the British Workplace Employee Relations Survey 1998, WERS98). Whilst such a detailed study of tenure has not been carried out for these countries before, our paper follows a small but nevertheless important literature of previous comparisons and contrasts between the two countries' economic and industrial relations systems.

A more complete explanation of the distribution of individual and workplace tenure contains both labour supply and demand elements. Thus, the inclusion of workplace effects in addition to the labour supply determinants that feature in the work following Freeman (1980) may play an important role. We will explicitly consider the role of changes in workplace labour demand on job tenure by incorporating features of the Cabellero and Hammour (1994) model of job reallocation into our analysis at the workplace level. There is an obvious link between higher job reallocation rates and lower average tenure in a workplace since anything which increases new hires will decrease average tenure *ceteris paribus* as will anything which increases separations. Mumford and Smith (2000) explored this relationship more fully by considering job reallocation and average tenure as alternative dependent variables for Australia. They found that, with the exclusion of training, variables which were found to have a significant effect on job reallocation had a significant and opposite effect on average tenure.

In this study, we propose to extend these earlier papers by concentrating on the determination of individual worker tenure given knowledge of the average tenure and characteristics of the workplace where they are employed. In particular, we are interested in discovering if low tenure individuals are concentrated in workplaces which have low average tenure (and *vice versa*) and if this is true in both Australia and Britain. In so doing, we will explicitly consider the industrial relations practices within workplaces and the implications of these practices on tenure rates. We also want to know whether there are identifiable characteristics of individual employees which makes them more likely to have shorter tenure than their workplace average (and *vice versa*). We find that individual and workplace effects explain, on the margin, about equal amounts of the variation of individual tenure in both Britain and Australia. This result emphasises the importance of allowing for workplace effects. Furthermore, the two sets of variables are essentially uncorrelated with one another.

An important related issue is that of labour market segmentation. For example, it is possible that the labour market is in some ways divided into workplaces which offer better working conditions, are more attractive places of employment and are associated with longer tenure, and those that are not (Doeringer and Piore, 1971, and Taubman and Wachter, 1986). It has previously been shown that females and non-white employees have shorter tenure (Burgess 1998, and Neumark *et al*, 1999). Here we show that in our datasets this result is predominantly due to the nature of the workplace they are employed in. Important differences between Australia and Britain are clear here too. We find that the apparent segmentation of females and non-whites into workplaces characterised by shorter tenure is significantly stronger in Britain than in Australia. Indeed, in Britain the shorter individual tenure effects of females and non-whites disappear once workplace effects are allowed for.

In section 2 of the paper we examine and contrast the industrial relations environment in Britain and Australia. Having described the data sets in section 3, we go on to discuss the determination on individual and workplace tenure job tenure in section 4. Section 5 discusses econometric issues whilst section 6 evaluates the estimation results. We conclude in section 7.

2. The industrial relations environment in Britain and Australia.

Australia has a highly legalised and central system of industrial relations (including compulsory third party arbitration) which has been in place since the Conciliation and Arbitration Act of 1904. This Act encouraged the growth of large national based unions; agreements between the parties are ratified by the court as awards and are fully legal documents; and collective agreements have historically been fully facilitated by the system. In contrast, since the Trade Disputes Act of 1906, Britain has encouraged a non-legalistic industrial relations environment: parties could not claim damages resulted from disputes; agreements were rarely formalised in written contracts; there is not sweeping compulsory arbitration; and collective agreements have reflected union and management strategy rather than the structure of the system itself (Whitfield *et al*, 1994). Whilst both countries have seen recent changes in their political environments which have resulted in less collective action in Australia and greater legalism in Britain (Miller and Mulvey, 1991 and Whitfield *et al* 1994), the two systems are nevertheless poles apart.

Early empirical comparisons of the relative impact of the differing regulatory systems in Australia and Britain typically involved macro comparisons across countries and/or time. These

studies generated contradictory results depending on the labour market outcome being investigated. For example, Norris (1980) concluded that the Australian system does not affect the wage structure because the latter was found to be similar to the British wage structure, whereas Kuhn (1966), Iremonger *et al* (1973) and Mumford (1993) found that the regulatory system does impact on strike behaviour since Australian strikes are more frequent but are of shorter duration. These studies are inherently subject to criticism of their imprecision, however, predominantly due to aggregation and lack of control variables.

A more recent study comparing the impact of the industrial relations regulatory system on labour market outcomes in Britain and Australia avoided many of these difficulties by using cross section surveys of workplaces (but not employees) which were carried out in the two countries prior to those surveys examined in this paper. Whitfield *et al* (1994) found that the respective regulatory regimes led to differences in the levels of industrial action and the presence of a specialist manager consistent with their hypotheses. They also found significant dissimilarities in the behaviour of union density and voluntary labour turnover in the two countries, although the relationship between these variables and the regulatory system was not as they predicted. In particular, the measure of voluntary labour turnover in Australia was much higher than they expected.

There have been a series of studies of total labour turnover using the same, earlier, workplace industrial relations surveys which have documented the nature of job reallocation in Britain (Konings, 1995), in Australia (Mumford and Smith, 1996 and 2000) and comparing the two (Blanchflower and Burgess, 1998). It has been consistently found that the rate of job reallocation is greater in Australia than in Britain (OECD, 1994). Typically these studies have found that for both countries there are lower job reallocation rates in those workplaces which are older, larger, offering higher wages, facing greater competition in the product market, more labour intensive or using older technology. However, these studies made little of the different industrial relations regimes in the two countries nor did they explicitly consider tenure or dissimilarities in the individual characteristics of employees.

There have also been studies exploring average tenure as a measure of labour turnover, although these are surprisingly few for Britain and nonexistent for Australia (Burgess, 1998). Furthermore, none of these studies have used the workplace industrial relations surveys: most of

them are more aggregated and employ a severely limited array of explanatory variables leaving them open to aggregation bias, low fit and an inability to distinguish between important determinants of the distribution of tenure (Bromars and Famulari, 1997, and Bingley and Westergaad-Nielsen, 1998).

3. Data.

The data used in this study are drawn from the Australian WorkPlace Relations Survey 1995 (AWIRS95) and the British Workplace Employee Relations Survey 1998 (WERS98)[2]. The Australian survey was based on the British predecessor to WERS98 (the WIRS series, discussed below) so that AWIRS95 and WER98 have many overlapping questions and a very similar surveying approach. The extension AWIRS95 made (in common with WERS98) was to include a linked survey of employees. The two new surveys collect an extensive range of information on both employees and their workplaces, covering standard economic and industrial relations issues raised above.

AWIRS95 is the second in a series of large-scale surveys of workplaces in Australia (the first survey, AWIRS90, was carried out in 1990). Both AWIRS surveys were undertaken by what is now the Australian Commonwealth Department of Industrial Relations. Our study will concentrate on AWIRS95. Surveying for AWIRS95 was conducted between August 1995 and January 1996 (Morehead *et al*, 1997). The respondents were from 2001 workplaces which employed 20 or more employees. From each of these workplaces, the general manager, employee relations manager and trade union delegate (from the union with most members at the workplace) were asked to complete separate face-to-face surveys. The results from each of these three surveys are fully linkable. Furthermore, individual employees from these workplaces were also surveyed for a vast range of information including their personal characteristics, individual job characteristics, work environment, etc. This survey of individuals included 19,155 employees and is also fully linkable to the main surveys.

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[2]Department of Trade and Industry (1999). Workplace Employee Relations Survey: Cross-Section, 1998 (computer file). 4th ed. Colchester: The Data Archive (distributor), 22 December 1999. SN: 3955.

The British Workplace Employee Relations Survey 1998 (WERS98) is the largest, currently available, survey of its type and was conducted between October 1997 and June 1998 (Cully *et al*, 1998). It is the fourth in an on-going series of surveys: the first was the Workplace Industrial Relations Survey 1980 (WIRS80), the second and third were carried out in 1984 and 1990 (WIRS84 and WIRS90). The WERS98 is very similar in construction to AWIRS95: interviews were conducted with a manager (with day-to-day responsibility for employee relations) and with a worker representative[3] (if nominated) at 2191 workplaces (all of which had more than 10 employees). Employees in these workplaces were also randomly sampled (a sample size of 28,215). All of these surveys are all fully linkable.

The AWIRS95 was released in late 1997, the WERS98 was released in February, 1999 so there has been little time for studies to be undertaken using both data sets. There have been a limited number of comparative studies using earlier versions of these data sets (Millward *et al*, 1998). However, the linkable employee surveys add a major, and very valuable, component to existing studies of tenure: providing for the possibility of separating out individual from workplace effects on tenure.

4. Modelling job tenure.

At the individual level, the decision to seek and continue market employment has been well documented in the labour supply literature (Killingsworth, 1983). A useful set of organising principles for the analysis of individual worker tenure is laid out in Freeman (1980) in his discussion of the union-exit voice issue. These are the pecuniary and non-pecuniary benefits of the current job and, in addition, the personal characteristics affecting the transactions costs of job mobility.

The pecuniary benefits of the current job are clearly dominated by the wage. However, this is obviously endogenous in the determination of tenure. Freeman and numbers of other

[3]'The senior lay representative of the recognised union with the most members at the workplace or if there were no recognised unions, but a joint consultative committee operated, the senior employee representative on that committee' (Cully, 1998;9).

authors have subsequently attempted to adjust for the simultaneity of the wage in tenure regressions (Freeman and Medoff, 1984 and Miller and Mulvey, 1991). The workplace fixed effects that we allow for could influence wages and tenure, so we simplify the analysis by estimating a reduced form and leave the exit voice issue for further work.

Non-pecuniary work benefits are hard to identify but we extend the range of variables used in the exit voice tenure studies by including variables that identify job characteristics, occupation, and work environment. We expect that measures of education and occupation may be correlated with the value of outside opportunities. Finally, demographic information which includes family circumstances will be highly correlated with the transactions costs of job mobility. Each of the groups of variables is described in more detail below.

The most important difference between our estimates and the existing literature is the addition of workplace fixed effects. In terms of the classification above, we can anticipate that these workplace effects predominantly influence the pecuniary and non-pecuniary benefits of the current job and will be much less correlated with outside opportunities. To the extent that we find these fixed effects to be of statistical significance, this strengthens our belief in the relative importance of current-job-related information. In particular, this also raises the possible importance of the labour demand or firm initiated determinants of tenure. As discussed by Mumford and Smith (1996 and 2000), dynamic models of labour demand (such as that outlined by Cabellero and Hammour, 1994) can provide predictions of the likely impact of shocks to the demand for the firm's output. For example, if subject to a negative demand shock, the firm may choose to reduce tenure by increasing the rate of layoff whilst leaving the hiring rate unchanged. The costs of hiring and firing will play an important role here. In the current study, labour demand effects on individual tenure will be captured predominantly by the workplace fixed effects.

We essentially have data from surveys at two different levels: the individual employee, and the workplace. We will address these in turn.

4.1. At the individual level.

The individual employee survey asked respondents for demographic information about themselves (such as age, education, number of children), factual information about their jobs (hours worked, employer provided training, *et cetera*) and to a lesser degree attitudinal questions about their job and their work environment. The overlap between these categories, especially between job characteristics and work environment, is major and is accentuated by the attitudinal nature of many of the survey questions (such as the extent of job effort and/or insecurity). We have accordingly, somewhat arbitrarily, blocked the summary statistics for variables for British and Australian employees in Table 1a into demographic attributes; job characteristics; and attitudes to the work environment (with education and occupation controls listed separately).

Considering Table 1a in more detail, column one presents the name of the variable, columns two to seven present summary statistics and column eight provides the variable definition. The summary statistics for the British data (presented in columns 2 through 5) are for the entire data set (for workplaces of 10 or more employees). However, since the Australian data only includes workplaces with 20 or more employees, columns 6 and 7 provide the means and standard deviations for the British data excluding workplaces with less than 20 employees. The data have been weighted by inverse sampling probabilities and thus represent the sampling population.

It becomes immediately obvious that whilst the AWIRS95 and WERS98 are similar surveys, they are not identical. For example, with respect to tenure AWIRS95 asked for actual years at workplace, the longest period of tenure (*tenure total*) was 45 years with a mean value of 6.1 years. The WERS98 asked respondents to choose a band (5 available bands) with a maximum value of 10 years or more. If this latter band is coded at 10 years, the average tenure in Britain (*tenure*) is 5.3 years (5.38 at larger workplaces). Treating the Australian data similarly leads to a lower average tenure (*tenure*) of 4.8 years. It may also be insightful to consider tenure as a proportion of working life, especially in a new world country such as Australia where 23% of the workforce are foreign born (*foreign*) and may not have been resident in the country for all

of their working life. When we carry out this calculation (*ppnten*) we see that the average tenure value is now higher in Australia than Britain (22% of working life compared to some 18%). We will return to consider the implications of these alternative measures of tenure in the estimation below.

The demographic variables suggest that proportionally the Australian workforce is slightly younger, with fewer females, a similar distribution of children and more disabled members. The race variables are not very comparable. The Australian data does not provide information on race other than for Aborigines and Torres Strait Islanders (*race*). It does tell us, if people were born out of the country (*foreign*) , what country they were born. However, this is not necessarily revealing of race. We also know if English is usually spoken at home (*english*). We would expect from the literature on discrimination (Cain, 1986, Mumford, 1989 and Joshi and Paci, 1998) and segmented labour markets (Doeringer and Piore, 1971) that, if these variables did have an impact on tenure then being young, female (especially with children), disabled, non-white, foreign born and not natively english speaking would all lead to shorter tenure.

The education classifications also differ across the countries but 62% of both populations did not proceed with formal education beyond a maximum of the end of secondary school[4]. A very similar proportion did degrees in the two countries, whilst Australia has more post-graduates and England has many more 'others' probably quite a few of whom did not progress beyond primary education. The expected relationship between education and tenure is non-linear: poorer educated individuals may be clustered into low quality, short tenure employment; more highly educated individuals face a greater range of employment opportunities and are typically more mobile, both resulting in shorter tenure.

Considering job characteristics, the gross hourly pay in both countries is included in Table 1a mainly for information purposes (since, as discussed previously, it is not exogenous to tenure and it would not be valid to include it amongst the explanatory variables in regression analysis,

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[4]This calculation treats vocational training in Australia equivalent to secondary education.

Brown 1989). Given the exchange rates and inflation in the time period being considered, the average wage in Australia is some 12% higher. The variance amongst Australian employees is about 20% higher that that of Britain. An increasing tendency towards wage inequality in Australia has been discussed by Borland (1998). Its impact on relative tenure is multi-faceted, nevertheless, it may at least reflect a change in the types of employment individuals face. For this reason we include a range of variables which reflect the non-pecuniary quality of the job: fixed term contract, maternity/paternity leave available and if there is employer subsidised childcare. We believe that permanent jobs with parental leave and childcare would be more attractive to employees and be associated with longer tenure. Australians are three times more likely to be on fixed term contracts than Britons (9% versus 3%), although almost one in two Australians have maternity/paternity leave available compared to roughly one in four Britons, and the relatively rare provision of employer subsidised childcare in Australia (3%) is virtually unheard of in Britain (0.004%).

We also include variables measuring whether the individual is employed part time, their total hours worked and if they would would prefer to work more hours. Labour supply theory suggests that working generates disutility for the employee, thus the more hours demanded by the job the more likely the worker is to be discontent and to leave, resulting in shorter tenure (Killingsworth, 1983). This prediction needs to be tempered, however, by the constraints part-time contracts put on the labour supply choices of individuals. In total, Australian and British employees on average work much the same number of hours per week (39 in Australia compared to 37 in Britain) but there are substantially more part-time employees in Britain (25% relative to 18%). This is reflected in 29% of the British labour market wanting to work more hours whereas only 9% of Australians do so. The proportions of individuals receiving employer provided training are very similar across the two countries and are substantial at around 60%. Training funded in this way would be predominantly job specific in nature and is typically associated with longer tenure (Becker, 1975).

Occupational choice, at an individual level, is often treated in much the same way as

educational outcome since they both reflect a range of variables, especially individual ability and opportunity (Filer, 1986). Our data sets only cover those currently employed so these occupational choices may be also somewhat constrained. The relative size of occupational groupings across the two countries in our study are much the same, although Australia has larger numbers in the sales and professional categories and Britain has many more in the 'other' group (many of whom are probably labourers). We do not have strong priors concerning the impact of occupation on tenure. In general, we would expect less skilled occupations to be associated with shorter tenure. The occupation dummies will be included predominantly as control variables in the regression analysis and they may also help us to understand the impact of the variables capturing the work environment.

The work environment variables can be considered in three clusters: job related; management related; and trade union oriented. With the exception of whether the individual is a union member or an ex-member, these variables are all strongly attitudinal. More Australians report that their jobs are stressful (40% versus 23%), require a lot of effort (89% versus 76%) and feel insecure about the future of their job (29% versus 19%).

Union membership is substantially higher in Australia (50%) than in Britain (39% or 41% at larger workplaces) and this difference has largely arisen in the lifetime of the workforces since the proportion of individuals who are or have been a member are essentially the same (58% versus 59%). Once again we find that Australians are much more critical than are their British counterparts with 39% being satisfied with the union compared to 69% of the British. In terms of the impact of unionism on the individual, we would expect that the union would provide a voice mechanism for the individual thereby leading to less quits and longer tenure (Freeman, 1980)[5]. This voice effect would be hampered if the union was primarily providing a legal service external to the workplace, however, which may be indicated by the lower satisfaction levels in

[5]Unions may obviously also provide a range of other services to their members which would increase relative job satisfaction and lower the quit rate. One such service which has been found to have a significant positive impact on average tenure in the UK, but for which we do not have data, is the provision of a pension scheme (Shah, 1985 and Henley *et al*, 1994).

Australia.

4.2. At the workplace level.

At the aggregate, or macro, level of the workplace we believe that the main economic process determinating average tenure is one of varying labour demand which can be captured by the creative-destructive model of Cabellero and Hamour (1984). This model has been applied in a series of job reallocation papers (Blanchflower and Burgess, 1996, Mumford and Smith, 1996) and to job reallocation and tenure in Australia (Mumford and Smith, 2000). The latter paper develops the model and related arguments at length, a further more detailed exposition is available in an appendix from the authors.

Cabellero and Hamour (1984) argue that the processes of job creation and destruction are profit maximising responses of firms facing continuously advancing technology and exogenous changes in the demand for their output. Firms are assumed to introduce new technology by creating a new production unit (a new job) which is a bonding of a suitable worker, capital and state-of-the-art technology. New workers are more productive and output will be accordingly higher. Once created, the technological level of a job is fixed, consequently a gap between the worker's productivity and that of new employees emerges over time. If firms do not introduce new jobs, their production processes will eventually become outdated as the skills of the longer tenured members of the labour force become relatively obsolete. When a recession hits, the derived demand for the firm's employees falls. The firm can reduce the size of its labour force by either decreasing job creation or increasing job destruction. If it adjusts entirely via less creation, the incumbent employees are, at least partially, insulated from the recession and average tenure in the workplace will rise.

The course chosen by the firm will depend on the nature of the costs involved in creation and the necessity to smooth this flow over time. This analysis suggests that average tenure is asymmetrically related to expected changes in demand for the output of the workplace; falls in demand have a positive impact which is larger than the negative impact of increases in demand

on tenure (and *vice versa* for employment growth). Furthermore, tenure will be longer in workplaces that are larger, more capital intensive, and running training programs for their employees. These relationships will be discussed in more detail below.

The summary statistics for the workplace data are presented in Table 1b. Once again the data are clustered for descriptive purposes, this time into market (or economic) variables; workforce demographic variables; and industrial relations indicators. The data have again been weighted by inverse sampling probabilities and thus represent the sampling population. As with Table 1a, the summary statistics for the British data (presented in columns 2 through 5) are for the entire data set (for workplaces of 10 or more employees). However, since the Australian data only includes workplaces with 20 or more employees, columns 6 and 7 provide the means and standard deviations for the British data excluding workplaces with less than 20 employees.

Considering market characteristics[6], the two countries were at similar positions in the business cycles at the time of being surveyed. They had moved out of recession and were experiencing similar relative growth rates; each growing at 1% above their average rates for the period since 1980. Our data sets reveal a range of similarities and differences across the two countries: more Australian workplaces were experiencing either an increase or a decrease in the demand for their product; British workplaces are much likely to have a formal training program in operation (76% versus 64%); and labour costs as a proportion of total costs are slightly higher in Australia (50% compared to 47%).

The workplace characteristics reveal much more substantial differences: the vast majority of British workplaces are predominantly or totally domestically owned (94% of all, 91% of larger workplaces compared to 79% in Australia); there are many more multiple workplaces in Australia (83% compared to 70%); and Australian workplaces typically have twice as many employees (166.5 relative to 87).

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[6]The size of the alpha tenure measures (the dependent variables to be used in our final stage of estimation) do not have an obvious intuitive interpretation, they are derived from our first stage of estimation and will be discussed further below.

In the Cabellero and Hammour (1994) framework a larger workplace would facilitate potential alternative job opportunities for worker's whose jobs had become redundant, thereby lowering actual changes in the workforce but having little effect on average job tenure. The literature on labour market segmentation (Doeringer and Piore, 1971), however, suggests that larger workplaces have greater opportunity to develop internal job ladders and establish a system of workplace industrial relations (including grievance procedures) that increase job satisfaction and lead to lower quits, thereby increasing average tenure (Rebitzer, 1986). Furthermore, in terms of both the models, any institutional arrangement which would increase the provision of workplace training (such as internal job markets) would lower job destruction and increase average job tenure.

The workplace hours measures are not very comparable, in Australia they measure weekly operating hours at the workplace, in Britain they are the average hours worked by an employee in a week. The average full time wage is again similar across the two countries although the variances are now also similar: it would seem that the relative wage inequalities in Australia occur predominantly within (rather than across) workplaces.

On the basis of the predictions generated by the Cabellero and Hammour (1984) model it is not clear which of the two countries will in aggregate have longer tenure since neither country has a stronger uniform set of market and workplace characteristics which are positively predicted to be associated with tenure. We will, therefore, consider the application of the model to each country in the results section below.

The workforce demographics again capture the trends that we found with the individual data. These demographic indicators are included in both stages of estimation (discussed below) so that we can attempt to address effects such as being an employee of a minority group from the overall characteristics of the workforce (for example, is the tenure outcome of a female in a male dominated workplace going to be different than for a female in a female dominated workplace).

The industrial relations measures are also commensurate with the individual data: the level of union recognition is considerably higher in Australia (87%) than in Britain (37%). It is arguable that recognition is a better measure of workplace unionism (than, for example, union density) impacting as it does on the union's ability to provide an aggregate voice in negotiations with management. Having a written grievance procedure is much more common in Australian workplaces (77% versus 50%) as was industrial action in the previous 12 months (27% compared to 5%). Whilst both of these last two findings may merely reflect a more formal and legalistic approach to industrial relations in Australia than Britain, it may also be that Australian workplaces are displaying greater levels of conflict which are symptomatic of more fundamental industrial relations problems.

5. Estimation.

The presence of linked employee and employer workplace information allows us to estimate models of tenure differentials across workplaces, conditional on characteristics of individual workers. The linked nature of the datasets to be employed can thus be used to good effect. Typically individual-based datasets, whilst they may include some workplace information, do not identify where more than one individual in the data is employed in any given workplace. Individual-based datasets also, typically, have limited workplace information.[7] The model to be estimated is:

$$T_{ik} = \alpha_k + X_{ik}\beta_i + \mu_{ik} \qquad (1)$$

where the tenure of worker i in workplace k (T_{ik}) is explained by a set of individual characteristics (X_{ik}) and a workplace fixed effect (α_k), μ_{ik} is an iid error term. As Bromars and Famulari (1997), Bingley and Westergaad-Nielsen (1998), and Abowd *et al* (1999) show, this equation can be estimated with the within estimator employed usually in panel data problems (see Greene, 1997). Workplace and individual effects are not assumed to be uncorrelated and it is possible to recover the proportional contributions of the two types of effect. We expect both types of effect to be important.

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[7] Two recent studies of linked datasets on wages, tenure and employment dynamics (Bromars and Famulari, 1997, and Bingley and Westergaad-Nielsen, 1998) also have very limited workplace information.

If one is prepared to go a step further and assume that the determinants of the workplace fixed effects and the individual characteristics are uncorrelated, it is possible to estimate the determination of the workplace fixed effects. Estimation of:

$$\hat{\alpha}_k = a + Z_k \Upsilon + \epsilon_k \qquad (2)$$

where the $\hat{\alpha}_k$ are generated from equation (1), Z_k are workplace characteristics and ϵ_k is an iid error term.

It is not possible with our datasets with single cross-sections of linked worker and workplace information to allow for completely general, unconstrained estimation employing individual and workplace characteristics. Abowd *et al* (1999) show that under some quite restrictive assumptions, more progress can be made if the dataset has a panel format (ie., at least two cross-sections over time).[8]

In evaluating the estimation results we will measure the relative explanatory contribution of individual and workplace effects. We can also compare estimates which omit the workplace fixed effects (entitled OLS in the tables) and the full estimates (entitled fixed effects or FE). An issue that we can address by this comparison is that of segmentation.

Among our demographic and occupational groupings we have groups who, in variety of different papers, have been identified as more likely to be in a different labour market segmented from the remainder (such as females and non-whites, see Doeringer and Piore, 1971, Taubman and Wachter, 1986, and Joshi and Paci, 1998). A test of this idea can be carried out by comparison of the coefficients between the OLS and the fixed effects results. If a demographic identifier is significant in the OLS estimates but not in the fixed effect estimates, then we can attribute the impact of membership of that demographic group to the workplace rather that to the worker's individual characteristic. This would be evidence suggesting segmentation.

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[8]The methods we employ could therefore be extended at a later date if, and when, another wave of WERS and/or AWIRS become available.

The form of tenure model we use here is linear in the individual characteristics and workplace fixed effects. In common with Freeman (1980) and subsequent authors, we adopt this first-order Taylor approximation to a more complicated hazard function. Freeman (1980) provides evidence in favour of this approach relative to a constant hazard model.

6. Estimation Results

The estimation results for models of individual worker tenure and tenure as a proportion of working life are given in Tables 2 and 3. For each country there are four sets of estimates. The first set, in columns 1 to 4 of Tables 2 and 3 are for raw job tenure. Columns 1 and 3 contain the basic results. These are estimates using OLS allowing for the individuals effects (demographic, job characteristics, workforce environment, occupation and education) in column 1 and additionally allowing for fixed workplace effects in column 3. The Australian results are given in Table 2, those for Britain in Table 3.

Analysis of the fit of these models is given in summary at the bottom of Tables 2 and 3. A more detailed analysis of variance is carried out in Table 4. Comparison of columns 1 and 2 in both Tables 2 and 3 shows that both individuals' and workplace effects are important in explaining the variation in individual worker tenure. Table 4 shows us that, for Australia the two sets explain 43.9% of the variation in tenure. Individuals' characteristics explain 26.6% by themselves and workplace effects 27.7%. On the margin the two sets explain roughly equal amounts; 16.2 and 17.3%, respectively. Comparison with the results for Britain in Table 3 indicates a remarkable similarity in the overall level of fit and the relative contribution, both on average and on the margin, of the two groups of characteristics. If anything, the relative importance of workplace effects is a little greater in Britain than in Australia.

In the worker tenure regressions we have identified distinctions between individual human capital and demographic characteristics; features of the particular job that the worker has; and their work environment. Previous studies (eg Bromars and Famulari, 1997) have only had access to demographics. All three groups of variables can be seen to be important in explaining

job tenure. Education, gender and race are all significant as are occupation, full or part-time status, hours worked and a number of job related and work environment related attitudinal variables. All three groups of explanatory variables interact with the impact of the workplace in which the worker is.

The education effects demonstrate that educational attainment is broadly negatively related to tenure. The impact of gender and race on tenure provides an interesting comparison between the OLS and fixed effects results. The OLS results for both Australia and Britain indicate a significant negative female gender effect on tenure. They also show shorter tenure for those from a non-Australian or Aboriginal and Torres Straight Island background for Australia and non-white background for Britain. Part-time workers also have shorter tenure. These effects are all much reduced in size and significance in the fixed effects results. Controlling for the workplace fixed effects shows that analysis of data on individuals alone would mistakenly attribute the negative impact of the type of workplace where any member of either of these groups works to their gender or racial background or whether they are part-time. Indeed, for those with an Aboriginal and Torres Straight Islands background, the impact of racial background is insignificant once the workplace fixed effect is included. Similar arguments could be made for the impact of some occupational groupings. These results provide some support for the idea of segmented labour markets discussed above.

As with any analysis of a specific regression model, questions of robustness arise. The first concerns worker age. There is a strong relationship in the estimation results between tenure and age (this is commonly found in the literature, see Burgess 1998). The coefficients over-estimate the behavioural impact of age given the obvious direct functional relationship between the two. In addition, this effect is further confused for those who have shorter tenure solely because they were adult migrants into the country concerned. This is of most importance for Australia where 23% of the sample were not born in the country. We attempt to allow for these two effects by defining a new dependent variable which is current job tenure as a proportion of working life beyond the age of 15 or arrival as a migrant. Results for our OLS and fixed-effects regression

models are given in columns 5 and 7 in Tables 2 and 3 with analysis of variance in Table 4. Many of the results are similar to those for the raw definition of tenure. A strong positive relationship with age remains, suggesting that it is behavioural. Also the impact of race and origin are of similar orders of magnitude and significance.

Considering Table 4, which contains further analysis of variance, in more detail. The results for the two measures of tenure are examined for each of the two countries. In each case we distinguish between the contributions of worker and job characteristics on the one hand, and workplace effects, on the other. For Australia, the fixed effects estimation results show that some 44% of the variation in raw job tenure across workers is explained by worker and job characteristics and workplace effects together. This falls to 33% for the measure of tenure as a proportion of working life. The individual contributions to the overall fit of these two groups are similar for the raw measure of tenure at about 27%. They are also similar on the margin at around 17%.[9] The similarity of these figures with the results for Britain is striking. Of a slightly lower overall level of fit, the workplace fixed effects are a little more important for Britain. Unsurprisingly, the fit of the equations for the alternative measure of tenure are lower than for the raw measure as we have offset much of the impact of the individual's age. The relative importance of the workplace fixed effects is increased, although more for Britain than for Australia. Comparison with results for the US in Bromars and Famulari (1997) shows a somewhat greater relative contribution of worker characteristics. However, they only have a sample of 240 establishments which may explain the reduced relative role of establishment fixed effects in their results.

According to our results in Table 4, tenure is positively correlated across workers in any given workplace, conditional on the individual characteristics of the workers and the jobs they are in. Also, conditional differences in tenure across workplaces are quite large. In Australia (Britain) workplaces with average tenure one standard deviation above the overall mean, conditional on worker characteristics, have tenure rates 1.7 (1.6) years longer than the average of 4.8 (5.3) years.

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[9]The degrees of freedom of these two regressions are very similar making them comparable.

There does not, however, appear to be significant evidence that long tenure workers sort themselves into long tenure workplaces in either country. The simple correlation between workplace average worker and job characteristics and workplaces fixed effects is 0.082 for the raw measure of tenure in Australia and 0.195 in Britain. These figures are much smaller than that found for the US by Bromars and Famulari of 0.221. The largest correlations between individual worker and job characteristics and workplace fixed effects are those for gender, racial background, and some occupations. These results indicate some labour market segmentation.

Next we consider models of the workplace fixed-effects, that is average tenure in the workplace conditioning on the demographic and job characteristics of the workers concerned. The estimates are given in Table 5. The determination of the workplace fixed effects show interesting differences to the estimates for raw average tenure. As we would expect, many of the workforce-specific variables are much less significant. However, the corollary of the results in Table 3 for individual workers tenure is that workplaces with higher numbers of female, foreign born, younger or part-time workers have shorter average tenure.

Output demand effects have a significant impact on workplace average tenure[10]. Conditional and unconditional estimates of these effects are very similar, for both countries. In all results, the impact of positive demand changes is to reduce average tenure. As the model evaluated by Mumford and Smith (2000) shows; positive demand shocks will result in reduced average tenure if workplaces predominantly choose to adjust the level of labour demand upwards by increasing hiring rather than reducing hiring.

Conversely, it appears from our results that reduced demand also results in lower average tenure in Britain whilst having no significant effect in Australia. This suggests that in downturns, workplaces employ both reduced hiring and increased firing in both countries with some evidence that insulation of the incumbent workers is greater in Australia than in Britain. This is consistent

[10]For the British results, increased demand means that the workplaces financial performance was better or a lot better than average. For the Australian results, increased demand means demand for wp main product is expanding. Whilst not identical, these variables both capture changes in workplace product market performance.

with the view that the industrial relations systems in Australia places a higher cost on firing than the more heavily reformed system in Britain.

Our results show that larger more capital intensive workplaces have longer tenure, although size has a less significant impact on average tenure in British workplaces. This may be related to the size distribution of workplaces in the respective datasets. If the positive impact of size on tenure only appears above a given size, the larger average size of the Australian workplaces in the sample may allow this effect to be significant in the Australian data.

Union activity is an important feature of workplace average tenure. Without conditioning on worker characteristics such as union membership, union recognition adds significantly to average tenure as does the existence of workplace grievance procedures. Again, these effects are much reduced in size in the conditional workplace tenure results (especially for Australia) but they remain significant for Britain. This results suggests that the union voice mechanism works to increase tenure at both the worker and workplace level in Britain. In Australia, the voice effect is strong at the worker level but not impacting at the workplace level perhaps due to the more legalistic industrial relations process replacing the role of the union at this level.

Finally, in common with Bromars and Fumulari (1997), we find that workplace average tenure (both conditional and unconditional) is significantly affected by the industry in which the workplace operates. From Table 5 it can be seen that there are some country differences between sectors[11]. In Australia, some industries have significantly longer tenure than the missing public sector category: in particular, manufacturing, education, electricity and gas, and the retail sectors. In Britain, however, several industries have significantly lower tenure than the missing public sector category. Workplaces in the transport and health sectors have the lowest average tenure, whilst non are significantly higher than the public sector

[11]F-tests for the exclusion of industry effects for Australia (15) and Britain (11) across the column of Table 5 are: 2.78, 11.43, 4.97, all distributed F(15, 1036) and 3.17, 4.47, 4.60 all distributed F(11, 1254). All are signficant at the 1% level.

7. Conclusion

This paper has examined the determination of individual and workplace tenure employing two new datasets. These datasets provide linked employee-workplace data which has allowed for a much more complete analysis of the determinants of job tenure.

Using a fixed effects estimator, we find that a range of demographic and educational, job related, occupation and work environment variables are important for explaining individual job tenure. In addition, workplace fixed effects explain as much of the variation in individual tenure as the individual characteristics. These two groups of variables are essentially uncorrelated. However, we do find that the negative impact of gender and race on tenure that is well documented in the existing literature and appears strongly significant in OLS estimates excluding workplace effects, is offset when workplace effects are included. We interpret this as evidence in favour of job segmentation.

We find that there are important differences between Britain and Australia in this regard. Whilst the impact of both gender and race on tenure are fully offset in the British fixed effects results, this is not true in the Australian results. Despite the much larger gender and race effects on tenure found in the Australian OLS results, these are only partially offset by the workplace effects. This result may be related to continuing differences in the respective industrial relations systems. The more formal and legalistic Australian system may have limited the extent of the segmentation which appears to occur in Britain.

We find strong evidence of a positive impact of union membership on individual job tenure. This is consistent with the union voice literature, although our approach is different to those studies. Analysis of average workplace tenure unconditionally and conditional on the individual effects in the individual tenure models (ie the fixed effects) suggests that the impact of unions is predominantly through individual membership. Our unconditional results show significant effects from union recognition and the existence of written grievance procedures. These effects reduce in size and significance in the conditional analysis. This is true for Australia

and Britain, although there is a remaining effect of union recognition in Britain, again reflecting differences in the industrial relations systems.

Our results also demonstrate the extent of the missing variable problem in the initial analyses of individual job tenure exemplified by the union voice literature. The impacts of gender and race being the most important effects incorrectly estimated. Equally, however, the apparent near orthogonality of the remaining variables with the firm fixed effects means that the impact of the remaining individual variables is not altered. In particular, the union membership effect is robust which suggests support for the union voice effects on job tenure. A structural estimation of this model using linked data is clearly an avenue for future research.

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Table 1a. Summary statistics for the employee data.

Variable	Mean	Std. Dev.	Min	Max			Definition
Dependent Variable					>19 employees		
Australian							
tenure total	6.12	6.23	0.50	45.00			total years at workplace
ppnten total	0.25	0.24	0.01	1.00			total tenure as proportion of working life
tenure	4.84	3.64	0.5	10			years at workplace, max 10 years
ppnten	0.22	0.19	0.01	1.00			tenure (max 10) as proportion of working life
British							
tenure	5.32	3.64	0.5	10	5.38	3.63	years at workplace (mid points 5 bands) max 10 years
ppnten	0.18	0.13	0.01	1.00	0.19	0.13	tenure as proportion of working life
Demographics							
Australian							
age	37.37	11.41	17.5	57.5			midpoints of individuals age bands (9 bands)
female	0.45	0.5	0.00	1.00			female
child04	0.14	0.35	0.00	1.00			dep child aged 0-4
child512	0.21	0.41	0.00	1.00			dep child aged 5-12
child13	0.19	0.39	0.00	1.00			dep child aged13-18
disabled	0.1	0.31	0.00	1.00			health problem or disability likely to last more 6 months
race	0.02	0.13	0.00	1.00			Aboriginal or Torres Strait Islander
foreign	0.23	0.42	0.00	1.00			not born in Australia
English speaking	0.94	0.24	0.00	1.00			English language usually spoken at home
British							
age	39.64	11.63	20	60	39.72	11.55	midpoints of individuals age bands (7 bands)
female	0.49	0.5	0.00	1.00	0.49	0.5	female
child04	0.14	0.35	0.00	1.00	0.14	0.35	dep child aged 0-4
child511	0.2	0.39	0.00	1.00	0.2	0.4	dep child aged 5-11
child12	0.19	0.4	0.00	1.00	0.19	0.4	dep child aged12-18
disabled	0.06	0.24	0.00	1.00	0.06	0.24	long standing health problem or disability
race	0.04	0.2	0.00	1.00	0.04	0.2	not white

Table 1a. Summary statistics for the employee data.

Variable	Mean	Std. Dev.	Min	Max			Definition
Education					>19 employees		
Australian							
primary	0.03	0.16	0.00	1.00			primary school, highest education level attained ...
some secondary	0.28	0.45	0.00	1.00			some secondary school education
secondary	0.19	0.39	0.00	1.00			completed secondary school
vocational	0.15	0.36	0.00	1.00			skilled or basic vocational qualifications
diploma/certificate	0.09	0.29	0.00	1.00			assoc diploma or advanced certificate
degree	0.14	0.35	0.00	1.00			undergrad degree/diploma,
post grad	0.11	0.31	0.00	1.00			postgrad degree or diploma
other educ	0.02	0.15	0.00	1.00			have other educ qual
British							
CSE	0.12	0.33	0.00	1.00	0.12	0.33	CSE or equiv, GCSE (grades D-G), highest education ...
O-level	0.26	0.44	0.00	1.00	0.26	0.44	O level or equiv, GCSE (grades A-C)
A-level	0.15	0.35	0.00	1.00	0.15	0.35	A level or equiv
degree	0.16	0.36	0.00	1.00	0.16	0.36	degree or equiv
post grad	0.05	0.23	0.00	1.00	0.05	0.23	post grad degree or equiv
other educ	0.26	0.44	0.00	1.00	0.26	0.44	have other educ qual
Job characteristics							
Australian							
ghpay	15.82	15.39	0.53	875			gross hourly pay (23 bands)
fixed term	0.09	0.28	0.00	1.00			on a fixed term contract
matern/patern avail	0.48	0.5	0.00	1.00			maternity or paternity leave available
kidcare	0.03	0.17	0.00	1.00			employer subsidised childcare available
part time	0.18	0.38	0.00	1.00			work < 30 hours per week
total hours	0.39	13.75	0.5	168			total hours worked in norm week, incl overtime
prefer more hours	0.09	0.29	0.00	1.00			prefer more hours
employer job train	0.61	0.49	0.00	1.00			employer has provided job training
British							
ghpay	7.26	7.17	0.83	610.01	7.03	7.18	gross hourly pay (12 bands)
fixed term	0.03	0.02	0.00	1.00	0.03	0.18	job is fixed term

Table 1a. Summary statistics for the employee data.

Variable	Mean	Std. Dev.	Min	Max			Definition
					>19 employees		
matern/patern avail	0.27	0.44	0.00	1.00	0.28	0.45	parental leave available
kidcare	0.004	0.06	0.00	1.00	0.004	0.06	wp nursery or employer subsidised childcare available
part time	0.26	0.44	0.00	1.00	0.25	0.43	work < 30 hours per week
total hours	36.59	12.92	0.5	125	36.98	12.65	total hours worked in norm week, incl overtime
prefer more hours	0.28	0.45	0.00	1.00	0.29	0.45	work extra hours because enjoy or need money
employer job train	0.59	0.49	0.00	1.00	0.6	0.49	employer paid for or organised job training
Occupation							
Australian							
labourer	0.16	0.35	0.00	1.00			labourer and related workers
operator	0.08	0.27	0.00	1.00			plant & machine operator and drivers
sales	0.14	0.35	0.00	1.00			sales and personal service workers
clerk	0.18	0.38	0.00	1.00			clerical and secretarial
trades	0.08	0.27	0.00	1.00			tradespersons and apprentices
assoc profs	0.11	0.32	0.00	1.00			para (associate) professional
profs	0.17	0.38	0.00	1.00			professionals
managers	0.07	0.26	0.00	1.00			managers
other occup	0.01	0.09	0.00	1.00			other occupational groups
British							
operative	0.13	0.34	0.00	1.00	0.14	0.35	operative and assembly
sales	0.1	0.3	0.00	1.00	0.09	0.29	sales operator, sales assistant
personal	0.08	0.28	0.00	1.00	0.08	0.27	personal and protective services
craft	0.1	0.31	0.00	1.00	0.1	0.3	craft and skilled service
clerk	0.16	0.37	0.00	1.00	0.16	0.36	clerical and secretarial
assoc prof	0.09	0.29	0.00	1.00	0.09	0.29	associate professional and technical
profs	0.13	0.34	0.00	1.00	0.13	0.34	professionals
managers	0.09	0.28	0.00	1.00	0.08	0.28	managers and senior administrators
other occup	0.12	0.33	0.00	1.00	0.12	0.33	other occupational group

Table 1a. Summary statistics for the employee data.

Variable	Mean	Std. Dev.	Min	Max			Definition
Work environment					>19 employees		
Australian							
job stress	0.4	0.49	0.00	1.00			job is very stressful
job effort	0.89	0.32	0.00	1.00			put a lot of effort into job
job insecurity	0.29	0.45	0.00	1.00			feel insecure about future at this workplace
union member	0.5	0.5	0.00	1.00			still a union member at this wp
exunion	0.08	0.26	0.00	1.00			was a union member at this wp
satunion	0.39	0.49	0.00	1.00			overall satisfied with the service union provides at this wp
British							
job stress	0.23	0.42	0.00	1.00	0.23	0.42	worry a lot about job outside working hours
job effort	0.76	0.43	0.00	1.00	0.76	0.43	job requires respondent to work very hard
job insecurity	0.19	0.4	0.00	1.00	0.2	0.4	feel job is insecure at this wp
union member	0.39	0.49	0.00	1.00	0.41	0.49	is a union (or staff association) member
exunion	0.18	0.39	0.00	1.00	0.18	0.39	has previously been a union member
satunion	0.69	0.46	0.00	1.00	0.69	0.46	union makes a difference to what it is like to work here
no. of observations	British	28215	Aus	19155	British	26927	weighted by inverse sampling probabilities.

Table 1b. Summary statistics for the workplace data.

Variable	Mean	S.Dev.	Min	Max	Mean	S.Dev.	Definition
					>19 employees		
Dependent variables							
Australian							
alpha tenure	-1.63	1.71	-7.71	5.06			from the fixed effect tenure regression
alpha ppnten	0.15	0.09	-0.12	0.89			from the fixed effect ppn tenure regress
British							
alpha tenure	-3.17	1.55	-7.79	1.12	-3.17	1.55	from the fixed effect tenure regression
alpha ppnten	0.17	0.07	-0.01	0.38	0.17	0.06	from the fixed effect ppn tenure regress
Market characteristics							
Australian							
inc demand	0.53	0.50	0.00	1.00			demand for wp main product expanding
dec demand	0.11	0.32	1	0.00			demand for wp main product contracting
training	0.64	0.48	0.00	1.00			formal training scheme operates
labour cost	0.50	0.26	0.10	0.90			labour costs as proportion of total costs
British							
inc demand	0.49	0.50	0.00	1.00	0.51	0.50	wp financial performance better/a lot better than ave
dec demand	0.02	0.14	1	0.00	0.03	0.16	wp financial performance worse/a lot worse than ave
training	0.76	0.43	0.00	1.00	0.81	0.40	formal training scheme operates
labour cost	0.46	0.28	0.13	0.88	0.47	0.28	labour costs as proportion of total costs (4bands)
WP characteristics							
Australian							
Aus own	0.79	0.41	0.00	1.00			predominantly or totally Australian owned
multi wp	0.83	0.38	0.00	1.00			wp is one of multiple wps in enterprise
wp size	166.53	304.47	6.00	3979.00			employees on pay 12 months previously
wp hours	81.96	50.01	17.50	168.00			hours per week wp operates
ave full time wage	33816.20	11039.12	13000	104000			average annual full time wp earnings
British							
UK owned	0.94	0.24	0.00	1.00	0.91	0.28	predominantly or totally UK owned
multi wp	0.68	0.47	0.00	1.00	0.70	0.46	wp is one of multiple wps in enterprise

Table 1b. Summary statistics for the workplace data.

Variable	Mean	S.Dev.	Min	Max	Mean	S.Dev.	Definition
					>19 employees		
wp size	60.49	233.61	10	30995	87.15	289.95	employees on pay 12 months previously
wp hours	38.52	8.51	1.00	97.00	38.67	8.44	total normal weekly hours worked
ave full time wage	16116	7734	2600	35361	16221	7725	average annual full time wp earnings
Demographics							
Australian							
female	0.45	0.28	0.00	1			proportion of the workforce female
race	0.02	0.05	0.00	0.75			proportion of the workforce aboriginal or TSI
no eng	0.12	0.18	0.00	0.75			proportion not speaking English at home
part	0.27	0.31	0.00	1			proportion of the workforce part time
disabled	0.03	0.06	0.00	0.75			proportion of the workforce disabled
youth	0.10	0.16	0.00	0.75			proportion of the workforce below 21
old	0.14	0.17	0.00	0.75			proportion of the workforce over 50
British							
female	0.54	0.31	0.00	1.00	0.53	0.30	proportion of the workforce female
ethnic	0.04	0.10	0.00	0.89	0.05	0.11	proportion of the workforce ethnic
part	0.32	0.30	0.00	1.00	0.31	0.29	proportion of the workforce part time
disabled	0.01	0.02	0.00	0.86	0.01	0.02	proportion of the workforce disabled
youth	0.08	0.14	0.00	0.89	0.08	0.13	proportion of the workforce below 21
old	0.15	0.12	0.00	0.86	0.14	0.11	proportion of the workforce over 50
IR measures							
Australian							
union recognised	0.87	0.34	0.00	1.00			union recognised in negotiation
grievance procedure	0.77	0.42	0.00	1.00			written grievance procedure
industrial action	0.27	0.44	0.00	1.00			industrial action in previous 12 months
British							
union recognised	0.39	0.49	0.00	1.00	0.43	0.5	union recognised in negotiation
grievance procedure	0.50	0.50	0.00	1.00	0.54	0.50	written grievance procedure
industrial action	0.05	0.22	0.00	1.00	0.05	0.22	industrial action in previous 12 months

Table 1b. Summary statistics for the workplace data.

Variable	Mean	S.Dev.	Min	Max	Mean	S.Dev.	Definition
					>19 employees		
Industry							
Australian							
mining	0.01	0.12	0.00	1.00			mining
manufacturing	0.17	0.37	0.00	1.00			manufacturing
electrical	0.01	0.11	0.00	1.00			electrical gas
construction	0.03	0.16	0.00	1.00			construction
wholesale	0.04	0.20	0.00	1.00			wholesale
retail	0.13	0.33	0.00	1.00			retail
accommodation	0.08	0.27	0.00	1.00			accommodation
transport	0.04	0.19	0.00	1.00			transport
communications	0.02	0.14	0.00	1.00			communications
finance	0.04	0.19	0.00	1.00			finance
property	0.08	0.27	0.00	1.00			property
government	0.10	0.30	0.00	1.00			government services
educ	0.11	0.31	0.00	1.00			education
health	0.09	0.29	0.00	1.00			health
sport	0.03	0.17	0.00	1.00			sport and recreation
pers	0.03	0.17	0.00	1			personal services
British							
manufacturing	0.13	0.34	0.00	1.00	0.15	0.36	manufacturing
construction	0.04	0.20	0.00	1.00	0.03	0.18	construction
electrical	0.01	0.05	0	1	0.00	0.06	electrical
wholesale	0.19	0.39	0.00	1.00	0.19	0.40	wholesale
hotels	0.08	0.27	0.00	1.00	0.07	0.26	hotels
transport	0.05	0.21	0.00	1.00	0.05	0.22	transport
finance	0.03	0.17	0.00	1.00	0.03	0.17	finance
other business	0.11	0.32	0.00	1.00	0.10	0.29	other business
education	0.13	0.34	0.00	1.00	0.14	0.34	education
public	0.05	0.21	0	1	0.05	0.22	public services
health	0.14	0.35	0.00	1.00	0.14	0.34	health
other	0.05	0.22	0.00	1.00	0.04	0.2	other
no. of observations	British	2192	Aus	2001	British	2016	data weighted by inverse sampling probabilities.

Table 2. Australian employee tenure.

	OLS		Fixed Effect		OLS		Fixed Effect	
tenure	Coef.	t	Coef.	t	Coef.	t	Coef.	t
	tenure				proportion tenure			
Demographics								
age	0.218	11.55	0.221	11.94	0.010	9.61	0.011	10.03
age^2 *100	-0.115	-4.69	-0.130	-5.49	-0.014	-10.37	-0.015	-11.10
female	-0.431	-6.31	-0.303	-4.40	-0.015	-3.92	-0.011	-2.66
child04	0.214	2.24	0.215	2.42	0.020	3.74	0.021	4.07
child512	-0.020	-0.29	-0.047	-0.71	-0.006	-1.57	-0.006	-1.67
child13	-0.028	-0.38	-0.048	-0.70	-0.006	-1.40	-0.007	-1.70
female*child04	0.030	0.18	-0.027	-0.18	-0.001	-0.09	-0.004	-0.50
disabled	0.242	2.71	0.260	3.12	-0.000	-0.05	-0.000	-0.10
Aborigine (race)	-0.447	-1.77	-0.098	-0.40	0.018	1.25	0.025	1.73
Aus born	0.242	3.76	0.184	2.95	-0.152	-42.42	-0.148	-41.32
Eng speaking	0.100	0.90	0.198	1.79	-0.021	-3.39	0.006	1.00
Education								
some secondary	-0.390	-2.02	-0.383	-2.11	-0.008	-0.77	-0.001	-0.12
secondary	-0.595	-2.99	-0.511	-2.72	-0.007	-0.60	0.002	0.19
vocational	-0.814	-4.04	-0.802	-4.20	-0.004	-0.38	0.001	0.12
diploma/certificate	-0.745	-3.53	-0.808	-4.03	0.002	0.13	0.005	0.46
under graduate	-1.224	-5.76	-1.259	-6.25	-0.010	-0.87	-0.009	-0.73
post graduate	-1.364	-6.21	-1.429	-6.80	0.001	0.05	0.001	0.10
other education	-0.830	-3.12	-1.000	-4.01	0.009	0.60	0.006	0.42
Job characteristics								
fixed term	-1.220	-12.73	-1.301	-13.68	-0.048	-8.90	-0.045	-8.27
parental leave avail	0.532	8.92	0.489	8.39	0.020	5.91	0.020	5.87
kidcare	-0.226	-1.39	0.081	0.52	0.021	2.32	0.032	3.60
part time	-0.404	-2.90	-0.277	-2.02	-0.030	-3.88	-0.027	-3.49
total hours*10	-0.083	-1.03	-0.083	-0.98	0.002	0.48	-0.001	-0.25
total hours2*1000	0.065	0.01	0.065	0.89	-0.005	-1.28	-0.000	-0.11
prefer more hours	-0.592	-5.68	-0.602	-6.10	-0.013	-2.26	-0.012	-2.12
training	-0.369	-6.61	-0.434	-7.90	-0.018	-5.80	-0.017	-5.43

Table 2. Australian employee tenure.

	OLS		Fixed Effect		OLS		Fixed Effect	
tenure	Coef.	t	Coef.	t	Coef.	t	Coef.	t
	tenure				proportion tenure			
Occupation								
operator	0.401	3.36	0.189	1.56	0.008	1.24	0.006	0.90
sales	0.067	0.60	0.153	1.27	-0.007	-1.17	-0.002	-0.22
clerk	0.197	1.90	0.298	2.71	-0.007	-1.26	0.001	0.23
trades	0.978	7.65	0.874	6.70	0.032	4.46	0.035	4.65
assoc professional	0.429	3.70	0.630	5.13	-0.002	-0.35	0.013	1.80
professional	0.415	3.22	0.407	3.08	-0.019	-2.62	-0.009	-1.15
managers	0.370	2.75	0.586	4.38	-0.007	-0.93	0.007	0.96
other occupation	0.079	0.25	0.120	0.40	0.001	0.05	0.012	0.72
Work environment								
job stress	0.486	8.57	0.534	9.90	0.019	5.97	0.022	7.04
job effort	-0.116	-1.38	-0.047	-0.60	-0.012	-2.53	-0.009	-2.04
insecure	0.103	1.72	-0.035	-0.61	0.002	0.51	-0.004	-1.05
union member	1.026	18.13	0.923	14.34	0.032	10.05	0.034	9.06
constant	-1.405	-3.14			0.198	7.92		
Number of obs		15742		15742		15742		15742
	F(38, 15703)	149.40	F(38, 13885)	104.92	F(38, 15703)	85.62	F(38, 13885)	66.01
Prob > F		0.00		0.00		0.00		0.00
R-squared		0.27		0.44		0.17		0.33
Adj R-squared		0.26		0.37		0.17		0.24
Root MSE		3.30		2.89		0.18		0.17

Table 3. British employee tenure.

tenure	OLS		Fixed Effect		OLS		Fixed Effect	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
	tenure				proportional tenure			
Demographics								
age	0.321	18.03	0.303	17.84	0.004	5.17	0.003	4.16
age^2 *100	-0.256	-11.64	-0.245	-11.72	-0.007	-8.13	-0.007	-7.80
female	-0.111	-1.94	0.043	0.74	-0.004	-1.80	0.001	0.22
child04	-0.003	-0.04	-0.021	-0.25	0.005	1.42	0.003	1.02
child512	-0.047	-0.75	-0.058	-0.98	-0.002	-0.95	-0.003	-1.36
child13	-0.293	-4.71	-0.316	-5.40	-0.012	-4.79	-0.013	-5.37
female*child04	0.467	3.50	0.492	3.94	0.021	3.95	0.022	4.43
disabled	0.257	2.50	0.227	2.36	0.007	1.84	0.005	1.31
race	-0.486	-3.94	-0.174	-1.42	-0.026	-5.33	-0.012	-2.51
Education								
olevel	-0.121	-1.42	-0.118	-1.48	-0.006	-1.89	-0.006	-1.96
alevel	-0.315	-3.36	-0.310	-3.50	-0.014	-3.68	-0.013	-3.68
degree	-1.003	-10.12	-0.932	-9.80	-0.047	-11.96	-0.043	-11.34
postgrad	-1.479	-11.73	-1.367	-11.23	-0.062	-12.49	-0.056	-11.63
other education	0.012	0.13	0.001	0.01	-0.007	-1.90	-0.007	-2.08
Job characteristics								
fixed term	-1.447	-10.76	-1.624	-12.34	-0.058	-10.93	-0.066	-12.53
parental leave avail	0.688	2.19	0.563	1.86	0.024	1.91	0.019	1.56
kidcare	0.185	3.53	0.114	2.24	0.007	3.55	0.005	2.24
part time	-0.466	-6.42	-0.380	-5.28	-0.019	-6.56	-0.016	-5.52
total hours*10	0.163	2.42	-0.067	-0.96	0.006	2.33	-0.002	-0.80
total hours2*1000	-0.199	-2.18	0.121	1.30	-0.009	-2.45	0.004	1.00
prefer more hours	0.065	1.12	-0.002	-0.04	0.002	0.91	-0.001	-0.24
training	-0.370	-7.18	-0.392	-7.58	-0.015	-7.56	-0.016	-7.84

Table 3. British employee tenure.

tenure	OLS		Fixed Effect		OLS		Fixed Effect	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
	tenure				proportional tenure			
Occupation								
sales	-0.167	-1.33	0.230	1.50	-0.011	-2.25	0.004	0.63
personal services	-0.567	-4.52	0.165	1.09	-0.024	-4.75	0.002	0.31
skilled/crafts	0.572	5.01	0.593	4.83	0.022	4.81	0.021	4.31
clerk	0.034	0.32	0.491	4.12	0.004	0.86	0.018	3.76
assoc professional	0.303	2.63	0.669	5.24	0.011	2.36	0.023	4.50
professional	0.512	4.31	0.877	6.78	0.017	3.61	0.029	5.56
manager	0.144	1.21	0.771	6.13	0.007	1.51	0.028	5.69
other occupation	-0.405	-3.54	0.040	0.32	-0.015	-3.23	0.000	0.08
Work environment								
job stress	0.192	3.49	0.302	5.84	0.007	3.12	0.012	5.75
job effort	0.169	2.95	0.166	3.06	0.005	2.32	0.005	2.33
insecure	0.056	0.98	-0.006	-0.10	0.003	1.38	0.000	0.01
union member	1.356	27.16	1.206	20.31	0.049	24.75	0.044	18.50
constant	-3.327	-9.01			0.161	11.04		
Number of obs		20554		20554		20554		20554
	F(34, 20519)	192.74	F(34, 18898)	128.54	F(34, 20519)	75.11	F(34, 18898)	58.79
Prob > F		0.00		0.00		0.00		0.00
R-squared		0.24		0.4		0.11		0.27
Adj R-squared		0.24		0.34		0.11		0.21
Root MSE		3.28		2.93		0.13		0.12

Table 4. Variance decomposition.

	Tenure		Proportion Tenure	
	Aus	**Britain**	**Aus**	**Britain**
Fraction of variance explained				
worker and job characteristics and workplace fixed effects	0.439	0.395	0.328	0.274
worker and job characteristics	0.266	0.242	0.172	0.111
(number)	38	34	38	34
workplace effects	0.277	0.255	0.206	0.198
(number)	1819	1622	1819	1622
Marginal fraction of variance explained				
worker and job characteristics	0.162	0.14	0.122	0.076
workplace fixed effects	0.173	0.153	0.156	0.163
Standard deviations				
worker and job characteristics				
across workers	0.980	0.859	0.037	0.020
across workplaces	1.110	0.942	0.043	0.021
workplace fixed effects	1.74	1.53	0.09	0.059
Correlations				
worker and job characteristics across workplaces and workplace fixed effects	0.082	0.195	0.05	0.015

Table 5. Workplace tenure

	Australian						Britain					
	OLS tenure		FE tenure		FE Ppn tenure		OLS tenure		FE tenure		FE Ppn tenure	
	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t
Market characteristics												
increasing demand	-0.258	-1.53	-0.239	-2.11	-0.014	-2.57	-0.387	-3.99	-0.345	-4.11	-0.016	-4.77
decreasing demand	-0.352	-1.3	0.069	0.38	0	-0.26	-0.618	-1.96	-0.589	-2.16	-0.026	-2.36
training	-0.044	-0.27	0.183	1.66	0.011	2.14	-0.158	-1.21	-0.033	-0.29	0.001	0.17
labour cost	0.618	1.61	-0.334	-1.29	-0.028	-2.23	-0.002	-0.84	-0.004	-1.85	-0.000	-1.39
WP characteristics												
foreign owned	-0.168	-0.62	0.097	0.54	-0.003	-0.36	-0.141	-0.77	0.015	0.10	-0.000	-0.07
multiple workplaces	-0.032	-0.12	0.053	0.29	-0.001	-0.11	0.112	0.96	0.038	0.38	-0.002	-0.39
workplace size*1000	-0.063	-0.25	0.478	2.83	0.020	2.40	0.253	1.56	0.252	1.79	0.009	1.61
wp hours *100	0.164	0.86	0.049	0.38	0.009	1.36	0.009	1.56	0.006	1.12	0.000	1.17
Demographics												
ppn female	-1.391	-3.10	-0.574	-1.90	-0.010	-0.65	0.256	0.90	0.038	0.16	0.017	1.69
race	-2.214	-1.48	-3.180	-3.16	-0.097	-1.99	-2.072	-4.52	-1.612	-4.07	-0.080	-5.05
no English at home	0.085	0.18	0.317	0.99	0.054	3.49						
ppn part time	-0.648	-1.48	-0.137	-0.47	-0.001	-0.07	-0.920	-3.26	-0.376	-1.54	-0.020	-2.06
ppn disabled	6.332	3.80	2.469	2.20	0.059	1.09	-0.572	-0.32	0.640	0.41	0.038	0.61
ppn < 20	-5.906	-7.32	-1.235	-2.27	-0.066	-2.51	-1.843	-3.86	1.024	2.48	0.029	1.76
ppn > 50	4.164	7.25	0.662	1.71	0.036	1.92	5.489	12.03	2.866	7.27	0.133	8.44
Industrial relations												
union recognition	0.504	2.27	-0.152	-1.02	-0.006	-0.83	0.847	6.37	0.275	2.39	0.009	1.87
grievance procedure	0.518	2.34	0.112	0.75	-0.008	-1.05	0.445	4.00	0.233	2.43	0.011	2.95
industrial action	0.499	2.84	-0.048	-0.40	-0.006	-1.02	0.558	2.66	0.432	2.39	0.014	1.87

Table 5. Workplace tenure

	Australian						Britain					
	OLS tenure		FE tenure		FE Ppn tenure		OLS tenure		FE tenure		FE Ppn tenure	
	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t
Industry												
manufacturing	0.885	2.57	0.529	2.29	0.030	2.69	0.087	0.31	0.111	0.46	-0.004	-0.36
construction	0.838	1.60	-0.567	-1.61	-0.022	-1.30	-0.020	-0.06	0.018	0.06	-0.001	-0.05
electrical	2.391	3.93	1.349	3.30	0.053	2.65	0.132	0.14	0.219	0.27	-0.001	-0.04
wholesale	-0.013	-0.02	-0.182	-0.51	0.008	0.48	-0.163	-0.58	-0.079	-0.32	-0.011	-1.16
transport	-0.005	-0.01	-0.422	-1.36	-0.014	-0.90	-0.660	-2.03	-0.714	-2.54	-0.038	-3.34
finance	-0.279	-0.66	-0.412	-1.45	-0.012	-0.87	-0.023	-0.07	-0.012	-0.04	-0.008	-0.68
education	0.239	0.70	0.472	2.06	0.005	0.48	0.138	0.54	0.075	0.34	-0.012	-1.34
health	-0.003	-0.01	0.398	1.40	0.011	0.78	-0.724	-2.72	-0.738	-3.21	-0.038	-4.10
hotels							-0.314	-0.97	-0.255	-0.91	-0.027	-2.44
other business							-0.399	-1.40	-0.242	-0.98	-0.020	-1.98
UK other							0.111	0.33	0.287	0.99	0.001	0.06
retail	0.770	1.68	0.818	2.66	0.033	2.21						
accommodation	-0.162	-0.33	-0.564	-1.70	-0.042	-2.63						
communications	0.513	1.08	-0.935	-2.92	-0.037	-2.37						
property	-0.351	-0.85	0.080	0.29	0.024	1.79						
sport and recreation	0.485	0.90	0.219	0.61	0.011	0.64						
personal services	-0.702	-1.51	-0.308	-0.98	-0.018	-1.18						
mining	0.490	0.69	0.717	1.50	0.016	0.70						
constant	5.289	10.22	-1.513	-4.34	0.154	9.10	3.949	9.12	-3.494	-9.33	0.159	10.61
No. of obs		1070		1070		1070		1283		1283		1283
	F(33, 1036)	11.17	F(33, 1036)	5.12	F(33, 1036)	5.46	F(28, 1254)	23.37	F(28, 1254)	7.84	F(28, 1254)	8.86
Prob > F		0.00		0.00		0.00		0.00		0.00		0.00
R-squared		0.26		0.14		0.15		0.34		0.15		0.17
Adj R^2		0.24		0.11		0.12		0.33		0.13		0.15
Root MSE		2.42		1.63		0.08		1.65		1.43		0.06