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INSIDER POWER, OUTSIDER INEFFECTIVENESS AND PRODUCT MARKET COMPETITION: EVIDENCE FROM AUSTRALIA

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Insider-outsider theories have been advanced to explain a range of phenomena, principally the persistence of unemployment. This paper uses data from the Australian Workplace Industrial Relations Survey 1995, and regional labour force survey data, to test this model. The paper also examines how the extent of product market competition faced by a firm influences the ability of insiders to ignore outsiders in wage setting. The paper finds provisional support for the insider-outsider distinction, and for the idea that insider power is enhanced when product market competition is weak.

JEL classifications: *J3, J4, J6*

Keywords: *Insiders, outsiders, product market competition.*

INTRODUCTION

Insider-outsider models have been advanced to explain a range of phenomena, principally the persistence of unemployment. A considerable body of international evidence exists testing the insider-outsider theory. While the evidence is far from unidirectional, it is reasonable to say that there is considerable support for the insider-outsider distinction in the international evidence, particularly in the micro-data studies. The evidence from aggregate data studies is more mixed. One reason for this is that research based on aggregate data invariably has to rely on only a few observations. Several Australian researchers have found support, in various ways, for the theory using aggregate data. These studies include Gregory (1987), Watts and Mitchell (1990), Flatau *et al.* (1990), Flatau, Lewis and Rushton (1991), Kenyon (1990) and Groenewold and Taylor (1992).[1] The first purpose of this paper is to provide an empirical test of this theory using Australian micro-data. As such the research reported in this paper can be seen as complementing these aggregate data studies.

The second purpose of the paper is to examine whether insider power is influenced by the degree of product market competition faced by firms. Standard microeconomic theory suggests that the extent of product market competition may have an influence on wage outcomes by

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influencing the rents available to be divided between a firm and its employees. However, in an insider-outsider model, the influence of product market competition is unclear a priori. On the one hand, a decrease in product market competition should generate higher rents, and hence have a positive influence on wages. On the other hand, product market power reduces output and employment. In an insider dominated labour market this effect reduces the probability of insiders' employment, and hence should moderate the wage demands of insiders.

To the extent that an a priori expectation can be formed, it is that the effects of the probability of employment are likely to be small in comparison to the effect of lower product market competition. Lower product market competition is therefore likely to facilitate insider power. Evidence that this expectation is correct comes from Lever and van Werkhooven (1996) using data from Dutch manufacturing industry, and from Nickell, Vainiomaki and Wadhwani (1994) using British manufacturing data. Related work by Stewart (1990) also gives reason to believe that this expectation is valid. While not testing an insider-outsider model, Stewart finds that union wage effects are higher in British firms that face limited product market competition, compared with firms that face greater product market competition.

The paper is organised as follows. In the next section the insider-outsider model is outlined very briefly.[2] Section 3 discusses data and methodology. Section 4 contains a description and discussion of the key variables employed in the empirical analysis. Section 5 discusses an important issue to do with collinearity in this study. Section 6 discusses several econometric issues, including the estimation procedures employed. Section 7 presents and discusses the results. The evidence suggests that the insider-outsider model fits the Australian labour market. It is also found that insider influences are strongest, and outsider influences weakest, where product market competition is lowest. Section 8 contains the conclusion.

THE INSIDER-OUTSIDER THEORY

All insider-outsider models share the idea that insiders are protected, when wages are set, from competition by outsiders. Insiders are usually employed workers; outsiders are usually the unemployed. The main implication of this is that wage outcomes, particularly in the aftermath of negative employment shocks, may prevent a rapid return to the pre-shock employment level. Three broad approaches can be identified in the literature.

The first approach is most commonly associated with the names of Blanchard and Summers (1986, 1987). In this approach the ability of insiders to ignore outsiders in wage setting is simply assumed. This approach is best seen as an extension of the microeconomic trade union literature. In that literature the indifference curves of the union are negatively sloped in real wage and employment space. In the union literature, employed and unemployed union members have equal status. The main innovation in the Blanchard and Summers model is to assume that unemployed union members lose membership of the union (the insider group), and become outsiders. This means that the indifference curves become horizontal (employment is on the horizontal axis) at the employment level equal to the size of the insider group. In other words, employment gains beyond this level add nothing to union utility.

This emphasis on 'membership rules' creates the possibility of persistence in unemployment. This is so since unanticipated shocks, which cause a change in actual employment, will then

alter the size of the insider group in whose interest wages will be set in the future. Unanticipated contractions in employment tend to generate upward wage movements, since any future level of labour demand has to be divided between a smaller, and as such more secure, insider group. Of course this wage behaviour tends to make the original contraction in employment persistent. The basic Blanchard and Summers model incorporates what could be called an 'extreme' membership rule. Under this rule insider status is lost as soon as an insider becomes unemployed. This extreme membership rule is one of several strong assumptions required to generate hysteresis, the most severe form of persistence.[3]

The second approach is associated with the work of Lindbeck and Snower (1988, 2001). This approach is also capable, under the right assumptions, of generating the predictions of the Blanchard and Summers model. The major contribution of Lindbeck and Snower is to explain the source of insider power, rather than simply assuming it. They argue that insider power comes from a range of turnover costs. These costs mean that the firm's incumbent workforce cannot be costlessly exchanged for unemployed outsiders. These turnover costs create a rent to be bargained over, and therefore, the possibility of wage outcomes that make it unprofitable for employers to employ outsiders. These costs include hiring, training and firing costs. Firing costs include direct costs such as severance pay, but may also include more amorphous considerations, such as the negative morale impact of turnover on remaining employees. Models combining turnover costs and membership rules can explain unemployment persistence.

Lindbeck and Snower extend the basic insider-outsider model by exploring asymmetric membership rules in which insider status is acquired and lost at different rates. The short-term unemployed for instance, may retain insider status. In contrast, the newly employed can be assumed to require several periods of continuous employment before they are considered insiders. Altering the rules that govern membership of the insider group in ways like this can produce interesting modifications to the predictions of the basic model.

The final approach is associated with Layard *et al.* (1991), and identifies the long-term unemployed as outsiders. A number of ideas make up this 'outsider ineffectiveness hypothesis'. Long-term unemployment could result in skill atrophy, and or, demoralisation. Either or both of these will diminish the ability of the long-term unemployed to compete in the labour market. In addition employers may use unemployment duration as a screening mechanism. Under this scenario employers interpret long-term unemployment as a signal that a potential employee has already been found wanting. These ideas lead to the conclusion that the long-term unemployed are marginalised in relation to wage outcomes.

Under these conditions past employment shocks could have a persistent impact on unemployment. This is so since the actual history of shocks to employment determines, in part, the current duration composition of unemployment, and hence the number of long-term unemployed in any given pool of unemployment. The larger the proportion of total unemployment that is long-term, all other things being equal, the more favourable are wage setting conditions for insiders. This may in turn generate wage outcomes that are inimical to future employment growth, thereby making the effect of past shocks persistent.

DATA AND METHODOLOGY

Data

This study uses data from two sources. The first data source is the 1995 Australian Workplace Industrial Relations Survey (AWIRS 1995). The second data source is unpublished Labour Force Survey data provided by the Australian Bureau of Statistics. The AWIRS 1995 data is described and summarised in Morehead *et al*. (1997). The primary task of AWIRS 1995 was '…to provide a comprehensive and statistically reliable database on workplace relations in Australia.' (Morehead *et al.*, 1997, p. 1). AWIRS 1995 is rich in information about the characteristics of the sampled workplaces and employees.

Workplaces from the Defence industry, as well as those from the Agriculture, Forestry and Fishing industry are not included in the survey. In addition, workplaces with less than five employees were excluded from the survey. AWIRS 1995 also contained a small workplace survey that collected information on workplace characteristics for workplaces with between 5-19 employees. However, no information on employees at these small workplaces was collected. As such these workplaces have been ignored in the analysis conducted in this paper.

The original sample consisted of 19155 employees and 2001 workplaces. All non-commercial and Public Sector workplaces and employees were eliminated from the sample. This was done in the belief that the insider-outsider model is meant to apply to workers and workplaces that are directly subject to market forces and the profit motive. This decision cost almost 40 per cent of the sample. In the case of some of the variables used in the study, 'missing' or 'no response' rates were as high as 50 per cent. Once all cases with missing observations are eliminated, the sample used in the analysis consists of 4001 employees spread across 444 workplaces.

This large loss of observations could raise questions as to the representativeness of the final sample. Appendix 1 presents the means and standard deviations of variables used in this study. With the exception of the unionisation rates, all variables reported in Appendix 1 have means and standard deviations that are reasonable, and consistent when applicable, with those obtained from other cross section data sets. The high unionisation rates in the samples used in this study is most likely due to the exclusion of small workplaces which tend to have relatively low unionisation rates.

As discussed below, various unemployment measures are used in this study to capture insider-outsider influences. These variables are constructed from unpublished Labour Force Survey data, provided by the Australian Bureau of Statistics. These data are used to construct a total unemployment rate, a short-term unemployment rate, and a long-term unemployment proportion for each state and territory cross-referenced on a metropolitan/non-metropolitan basis.[4] These unemployment variables are presented in Appendix 2.

Methodology

The empirical analysis is conducted by estimating a cross-section log wage equation that includes insider-outsider proxy variables among the regressors. The equation estimated has the following form:

$$lnW_{ij} = \beta + X_{ij}\beta_1 + Z_j\beta_2 + IO_j\beta_3 + \varepsilon_{ij} \quad (1)$$
$$i = 1, \ldots\ldots, N_j \; j = 1, \ldots\ldots, J$$

Where

W_{ij} = the wage of worker *i* at workplace *j*.

X_{ij} = a set of employee specific human capital and job characteristics. These include the following; potential experience, tenure at current workplace, whether the employee is from a non-English speaking home, whether the employee is disabled, occupation, education, whether the employee is casual, whether the employee is on a fixed term contract. These variables are fully defined in Appendix 1 under the heading 'Individual Variables'.

Z_j = a set of variables describing the workplace at which each individual is employed. The variables include the following; workplace size, union density, occupational composition of the workplace, industry, whether the workplace operates primarily in export markets, whether the workplace faces competition from imported goods, percentage of the workplace workforce that is female, a measure of labour intensity, whether the workplace is foreign or Australian owned. All these variables are fully defined in Appendix 1 under the heading 'Workplace Variables'.

IO_j = the insider-outsider proxy variables at each workplace. These variables are discussed in the next section, and are also fully described in Appendix 1 under the heading 'Insider-Outsider Variables'.

ε_{ij} = a disturbance term. N_j is the number of observations for workplace *j*, and *J* is the number of workplaces.

AWIRS 1995 contains a question in which the relevant manager is asked to indicate whether their workplace has 'many' product market competitors, or 'few or no' product market competitors. In the analysis undertaken in this paper the earnings equation (1) is estimated separately for workplaces that indicated 'many' product market competitors, and for those that indicated 'few or no' competitors. The former is the high product market competition group. The latter is the low product market competition group.

DESCRIPTION AND DISCUSSION OF KEY VARIABLES

The dependent variable is the log hourly wage. The theory is tested by estimating three separate specifications that include different combinations of the insider-outsider proxy variables. Each of the three specifications includes an insider proxy variable that is drawn from the AWIRS 1995 data. This variable, called 'employment change' (*EC*), is a dummy variable equal to one if employment change at the workplace in the proceeding twelve months was positive, it equals zero if employment change was zero or negative. This variable attempts to capture the extreme membership rule of Blanchard and Summers (1986, 1987), whereby the insider group at a workplace consists solely of incumbent employees. It implies that insider status is lost as soon as an insider becomes unemployed. If this strict membership rule holds the coefficient on 'employment change' should be significant and negative. The first specification also includes a variable measuring the total unemployment rate (*TU*) in the region in which each worker is employed. If the unemployed are outsiders, then variation in the total unemployment rate will

not have a statistically significant impact on log hourly wages. Thus the first specification can be written as:

$$lnW_{ij} = \beta + X_{ij}\beta_1 + Z_j\beta_2 + EC_j\beta_3 + TU_j\beta_4 + \varepsilon_{ij}$$

A second specification of the model aims to test the outsider ineffectiveness hypothesis. This is done by including, along with the total regional unemployment rate, a variable to capture the proportion of total regional unemployment that is long-term (*LTUP*). The long-term unemployed have been unemployed for 52 continuous weeks or more. The expectation is that, in this specification, the coefficient on the variable for the total regional unemployment rate will be significant and negative. The coefficient on the long-term unemployment proportion is expected to be significant and positive. Such an outcome would be consistent with the idea that the long-term unemployed create more favourable wage setting conditions for insiders. In other words, insiders cannot ignore all of the unemployed, just those that are long-term unemployed. Flatau *et al.* (1990), Flatau, Kenyon, Lewis and Rushton (1991) and Kenyon (1990) use this approach to test the insider-outsider distinction in the 1980s with Australian aggregate data. Thus the second specification can be written as:

$$lnW_{ij} = \beta + X_{ij}\beta_1 + Z_j\beta_2 + EC_j\beta_3 + TU_j\beta_4 + LTUP_j\beta_5 + \varepsilon_{ij}$$

A third specification is employed in the analysis to test an alternative formulation of the outsider ineffectiveness hypothesis, and or, membership rules approach. In some versions of the insider-outsider model, insider status is not lost the instant a worker becomes unemployed. Rather it is assumed that an insider needs to be unemployed for a period of time before he or she becomes an outsider. Under this scenario it might be reasonable to assume that the short-term unemployed (*STU*) may remain attached to the insider group, while only those with longer unemployment durations are ignored in wage setting. The short term unemployed have been employed for 13 continuous weeks or less.

Alternatively, the short-term unemployed may not belong to the insider group as such. However, they may be actual, or perceived, substitutes for employed insiders. This could be the case if the short-term unemployed retain labour market contacts and skills, which longer durations of unemployment tend to erode. On either account, an increase (decrease) in the short-term unemployment rate may induce employed insiders to decrease (increase) wage demands. Thus the third specification can be written as:

$$lnW_{ij} = \beta + X_{ij}\beta_1 + Z_j\beta_2 + EC_j\beta_3 + STU_j\beta_6 + \varepsilon_{ij}$$

Three potentially important limitations of the unemployment variables used in the three specifications should be noted. First, it is a premise of this study that insider-outsider influences can manifest themselves at the regional level. In other words, it is assumed that regional variation in turnover costs, and or membership rules, and or the factors underpinning outsider ineffectiveness, can explain, at least in part, the variation observed in the regional unemployment data used in this study. This is a strong assumption given the nature of Australian industrial relations and labour market practices, which would tend to place a limit on the required variation.

Second, under the membership rules version of the insider-outsider model, it is implied that the short-term unemployed may be insiders because they have recently been part of the insider

group, i.e., recently employed. In reality most of the short-term unemployed have not been recently employed, but have come from outside the labour force. There is little that can be done about this except to acknowledge that it introduces the possibility of measurement error into the estimations.

On the other hand, the duration of unemployment based insider-outsider model is not subject to this limitation. In this version the short-term unemployed are insiders, not because they have recently been employed, but because they have not been unemployed for long. How they managed to arrive at this state of short-term unemployment (i.e., from employment or from outside the unemployment pool) is not relevant.

Third, as already noted, the AWIRS 1995 data employed in this study only enables the location of workplaces to be identified by state and territory cross-referenced on metropolitan non-metropolitan basis. This means that the size and nature of these regional dimensions is potentially problematic since the impact of unemployment on wages will be constrained to be the same for workers in geographically distinct regions such as Cape York and South West Queensland. The result of this is the potential introduction of measurement error, which could bias upwards the standard errors. Apart from acknowledging the potential problem, there is little that can be done about this. It is a problem imposed by the nature of the data set.[5]

This study finds in favour of the insider-outsider theory. It also finds that limited product market competition enhances insider power. Given the three limitations discussed in the previous paragraphs it is probably prudent to regard the results of this paper as offering provisional support for these ideas.

As noted previously, each regression also contains a large number of control variables. These variables control for a range of individual employee and workplace characteristics. They are, by and large, standard inclusions in wage equations of the kind estimated in this study. Appendix 1 includes a description of these variables. For efficiency of exposition these control variables are not reported or discussed in this paper.

REGIONAL DUMMIES, REGIONAL UNEMPLOYMENT RATES AND COLLINEARITY

The earnings regressions include three different unemployment measures. These are proxies for the insider-outsider influences that are central to this study. As just discussed, these unemployment rates are regional rates. In fact, there are 14 regions identifiable in AWIRS 1995, one for the metropolitan area of each state, one for the non-metropolitan area of each state, and one for each Territory. In addition to regional unemployment, other regional factors will influence wages. Regional influences on wages that are not directly related to unemployment, but which may be correlated with unemployment, need to be controlled for. Failure to do this may result in omitted variable bias. The estimated coefficients on the unemployment variables will register the impact on earnings of omitted but correlated regional influences, in addition to the impact of regional unemployment.

The rationale for including regional dummies to control for regional fixed effects in addition to unemployment is clear enough. Including 14 regional dummies, corresponding to the 14

regions for which unemployment rates have been defined, along with 14 regional unemployment rates would however result in perfect collinearity. On the other hand omitting the regional dummies may result in omitted variables bias. These issues have been dealt with as follows in this study. Along with 14 regional unemployment rates, 8 regional dummy variables have been included, one for each state and territory. This eliminates perfect collinearity, enabling the coefficients to be estimated. It does not of course eliminate collinearity as such.

To gauge the impact of collinearity and omitted variables bias on the results the following strategy has been adopted. For each model, an 'a priori preferred specification' is estimated. This specification includes the eight regional dummies as defined above, along with the relevant regional unemployment measure(s) used to proxy insider-outsider influences. This is referred to as the a priori preferred specification since it is the specification that is most consistent with the relevant underlying theoretical and empirical knowledge.

Each time a model with regional dummy variables is estimated, it is re-estimated without those regional dummy variables. This is done as an attempt to gauge whether the results from the a priori preferred specification are quantitatively or qualitatively affected by collinearity. If for instance, both sets of results tell the same qualitative story, this is taken as evidence that collinearity is not a serious problem. It is possible that the two specifications could tell different, even conflicting stories. It may not be possible to conclude whether the difference in the results is due to collinearity in the a priori preferred specification, or omitted variables bias in the specification the omits regional dummies?

In an attempt to obtain additional information a third specification is estimated. Kennedy and Borland (2000) argue that property values are a major source of interstate cost of living differences in Australia. After conducting a number of experiments estimating wages curves they conclude that:

> '…estimates of the wage curve relation in Australia which do not include controls for state-level explanatory variables apart from the rate of unemployment may be affected by omitted variables bias, and the main source of the bias is correlation between the state-level rate of unemployment and housing prices' (Kennedy and Borland, 2000, p. 789).

Thus the third specification includes the 14 regional unemployment rates and a variable measuring real median house prices in each state and territory. The house price data used is described in Appendix 3. This specification omits full controls for regional specific fixed effects, but does control for one potentially major source of regional variation in earnings.

ESTIMATION AND OTHER ECONOMETRIC ISSUES

In order to estimate equation (1) using ordinary least squares (OLS) it must be assumed that the random disturbances are independently distributed. As discussed in Wooden (2001) and Wooden and Bora (1999), this may be appropriate in a sample in which individuals are selected at random from the population of employees. But in the case of AWIRS 1995, the employee sample was not drawn at random from the population of employees. Rather, a random sample of workplaces was taken, and then the employee sample was drawn from these workplaces.

A group of individuals from the same workplace are likely to have characteristics that are more similar, than a group of individuals sampled from the population at large. This could result from any of a number of factors. Workers from a given workplace, for instance, could share a slightly unique 'workplace culture' which impacts on their productivity. Many of these common characteristics are unlikely to be measurable, and hence controlled for. As a result they will be registered in the error term with the result that there will be a correlation in the errors. Greene (1991) shows that, under the circumstances just described, the error structure is given as follows:

$$\varepsilon_{ij} = \mu_{ij} + \lambda_j$$
$$i = 1,\ldots, N \quad j = 1,\ldots.., J$$

This error term has two components. The first component μ_{ij} varies independently across individuals both within and across workplaces. The second component λ_j varies across workplaces but is constant for workers within the same workplace. This error structure describes the random effects model and the efficient estimator is feasible Generalised Least Squares (Wooden, 2001; Wooden and Bora, 1999; and Greene, 1991).

Given that much of the data in AWIRS 1995 are grouped, it was expected that heteroscedasticity could be a problem in the regressions. An examination of residual plots, and the Breusch-Pagan-Godfrey test (neither reported in this paper) indicate that this is indeed the case. The presence of heteroscedasticity means that the standard errors from the random effects regressions are not efficient. An estimator using a procedure such as White's (1980) is not available for the random effects model. In an attempt to compensate for this, OLS regressions with the t-ratios corrected using White's (1980) procedure are also estimated and reported. If the results from the OLS and random effects regressions are qualitatively similar, the conclusion is drawn that the econometric difficulties just discussed are not of practical importance. The results suggest that this is the case. The OLS and random effects estimates, reported in Tables 1 and 2 below are quantitatively and qualitatively very similar. It is acknowledged that this discussion of the random effects model, the problem of heteroscedasticity and the decision to estimate OLS regressions using White's (1980) procedure follows Wooden (2001) and Wooden and Bora (1999).

Measurement error also results from the fact that the employee earnings variable reported in AWIRS 1995 is grouped into 23 categories. The usual practice of allocating midpoints to each earnings category has been followed in this research. The top and bottom pay categories are open-ended. They have been closed somewhat arbitrarily. Sensitivity tests show that the findings are not sensitive to the end points chosen.

DISCUSSION OF RESULTS

The research undertaken in this paper has generated a large volume of regression output. Most of this output is not directly relevant to the task of testing the insider-outsider theory. Accordingly, the coefficient estimates and t-ratios for the insider-outsider variables have been extracted from the regression output and reported in Tables 1 and 2. The focus of this section is on discussing the estimates for these insider-outsider variables. As already noted above, for the sake of brevity the estimates relating to all the other individual and workplace variables are not

reported or discussed in this paper. I note that the results for the non insider-outsider variables, available on request from the author, are reasonable, and consistent with expectations. It is also apparent from Tables 1 and 2 that the OLS and random effects estimates are qualitatively similar. For the sake of brevity in what follows, only the OLS results are discussed.

The results reported in Table 1 are for workplaces with 'few or no' product market competitors. The results in Table 2 are for workplaces with 'many' product market competitors. The contrast between the results reported in Tables 1 and 2 is stark. The results presented in Table 1 are consistent with the presence of insider power and outsider ineffectiveness when product market competition is weak. In contrast, Table 2 indicates that there is little evidence that the distinction between insiders and outsiders is relevant when product market competition is high.

The discussion turns first to column 1A in Table 1. The total unemployment rate is significant at the ten per cent significance level in the specification that includes regional dummies. In addition, three of the regional dummy variables are significant. When the regional dummy variables are dropped in column 1A of panels B and C, the total unemployment rate becomes insignificant. It is reasonable to conclude that the omission of regional dummy variables in panels B and C has resulted in omitted variable bias, which could account for the changed result on the total unemployment rate. This conclusion is given support by the fact that the house price variable in panel C is significant and signed as expected.

The results presented in column 2A of all three panels indicate that the coefficient estimates on the total unemployment rate, and the long-term unemployment proportion, are signed as predicted by the insider-outsider model. Moreover these variables are statistically significant in all three panels. Thus this support for the outsider ineffectiveness hypothesis is robust to the inclusion or exclusion of regional dummies. The magnitudes of the estimated coefficients on long term unemployment proportion are sensitive to the specification adopted in the three panels. Given that two of the regional dummy variables are significant in panel A, it is reasonable to conclude that the estimates from the specifications which omit the regional dummy variables are affected by omitted variable bias. The estimated coefficient on the long term unemployment proportion in panel A suggests that for each one per cent rise in the long term unemployment proportion, insider wages increase by just over one third of one per cent. Given that high rates of unemployment are often associated with long term unemployment proportions of 30 per cent, this coefficient estimate is economically as well as statistically significant.

The coefficient on the short-term unemployment rate is statistically significant and negatively signed in all three panels of Table 1. In this study this is taken as evidence that the short-term unemployed are insiders, or viable substitutes for insiders. In panel A, two of the regional dummy variables are significant. Omission of these probably results in omitted variable bias in panels B and C. Evidence that this is so comes from the fact that the house price variable in panel C is significant and correctly signed. Table 1 shows that the R squared statistics are all quite high considering that cross-section data is used. The F statistics indicate that the models are overall significant. Moreover the Ramsey RESET statistics suggest that specification error is not a significant issue. Overall the results presented in Table 1 provide strong evidence in favour of the insider-outsider model.

Table 1
Low Product Market Competition
OLS and Random Effects Estimates. Dependent Variable is Log Hourly Wage. Number of observations = 1694

	OLS 1A	RE 1B	OLS 2A	RE 2B	OLS 3A	RE 3B
			PANEL A			
Insider-Outsider Variables						
Total unemployment rate	-0.180#	-0.178	-0.330**	-0.328*		
	(-1.902)	(-1.371)	(-3.119)	(-2.167)		
Long-term unemployed proportion			0.352**	0.356#		
			(2.731)	(1.896)		
Short-term unemployed rate					-0.181**	-0.186*
					(-3.010)	(-2.236)
Employment change	0.0005	-0.002	-0.002	-0.003	0.001	-0.001
	(0.025)	(-0.089)	(-0.093)	(-0.142)	(0.005)	(-0.047)
Region (VIC omitted)						
NSW	-0.031	-0.019	-0.033	-0.022	-0.009	0.001
	(-1.196)	(-0.548)	(-1.267)	(-0.638)	(-0.370)	(0.040)
ACT	-0.152	-0.166	0.074	0.067	-0.085	-0.095
	(-1.220)	(-0.871)	(0.504)	(0.296)	(-0.692)	(-0.508)
TAS	-0.054	-0.047	-0.090#	-0.087	-0.102*	-0.098
	(-1.252)	(-0.675)	(-1.952)	(-1.203)	(-2.255)	(-1.419)
NT	NA	NA	NA	NA	NA	NA
QLD	-0.066*	-0.060	0.079	0.084	-0.011	-0.006
	(-2.055)	(-1.542)	(1.201)	(0.981)	(-0.335)	(-0.161)
SA	-0.113**	-0.092*	-0.109**	-0.090*	-0.137**	-0.118**
	(-3.396)	(-2.081)	(-3.283)	(-2.069)	(-3.898)	(-2.621)
WA	-0.071*	-0.069	0.097	0.101	-0.030	-0.026
	(-1.969)	(-1.461)	(1.299)	(0.996)	(-0.923)	(-0.603)
R-squared	0.404		0.406		0.405	
Adjusted R-squared	0.378		0.380		0.380	
RESET	0.396		0.289		0.287	
Model F	26.79**		26.60**		26.76**	
	OLS 1A	RE 1B	OLS 2A	RE 2B	OLS 3A	RE 3B
			PANEL B			
Insider-Outsider Variables						
Total unemployment rate	-0.130	-0.123	-0.261**	-0.265*		
	(-1.624)	(-1.104)	(-2.589)	(-2.017)		
Long-term unemployed proportion			0.109*	0.119*		
			(2.441)	(2.016)		
Short-term unemployed rate					-0.087#	-0.097
					(-1.947)	(-1.473)
Employment change	-0.0003	-0.003	0.0006	-0.001	-0.002	-0.005
	(-0.018)	(-0.139)	(0.031)	(-0.055)	(-0.113)	(-0.199)
R-squared	0.398		0.400		0.399	
Adjusted R-squared	0.375		0.377		0.375	
RESET	0.284		0.177		0.169	
Model F	27.71**		28.01**		27.88**	

contd.

	OLS 1A	RE 1B	OLS 2A	RE 2B	OLS 3A	RE 3B
			PANEL C			
Insider-Outsider Variables						
Total unemployment rate	-0.116	-0.104	-0.224*	-0.223		
	(-1.460)	(-0.932)	(-2.189)	(-1.618)		
Long-term unemployed proportion			0.085#	0.094		
			(1.853)	(1.462)		
Short-term unemployed rate					-0.109*	-0.118#
					(-2.337)	(-1.782)
Employment change	0.004	0.002	0.003	0.001	0.004	0.001
	(0.207)	(0.047)	(0.166)	(0.042)	(0.200)	(0.070)
Regional control						
House Prices	0.082*	0.088#	0.053	0.054	0.103**	0.108*
	(2.305)	(1.680)	(1.459)	(0.951)	(2.721)	(2.047)
R-squared	0.400		0.401		0.401	
Adjusted R-squared	0.376		0.377		0.377	
RESET	0.318		0.215		0.192	
Model F	28.14**		28.00**		28.37**	

Notes: **, *, #, indicates significance at 1%, 5% and 10% respectively. The t-ratios (in brackets) in the OLS regressions have been corrected for heteroscedastic error structures using White's (1980) procedure. Each regression reported in this table contains approximately 50 other control variables. NA means there are no observations for this variable in this sample.

Table 2
High Product Market Competition
OLS and Random Effects Estimates. Dependent Variable is Log Hourly Wage. Number of observations = 2307

	OLS 1A	RE 1B	OLS 2A	RE 2B	OLS 3A	RE 3B
			PANEL A			
Insider-Outsider Variables						
Total unemployment rate	-0.036	-0.049	-0.145	-0.143		
	(-0.417)	(-0.414)	(-1.184)	(-0.767)		
Long-term unemployed proportion			0.165	0.144		
			(1.157)	(0.653)		
Short-term unemployed rate					-0.049	-0.039
					(-0.774)	(-0.451)
Employment change	-0.009	-0.014	-0.008	-0.014	-0.008	-0.014
	(-0.687)	(-0.815)	(-0.657)	(-0.799)	(-0.657)	(-0.821)
Region (VIC omitted)						
NSW	0.022	0.006	0.019	0.004	0.027#	0.012
	(1.243)	(0.277)	(1.085)	(0.177)	(1.675)	(0.556)
ACT	0.023	0.004	0.126	0.093	0.039	0.020
	(0.337)	(0.047)	(1.111)	(0.570)	(0.566)	(0.235)
TAS	0.0002	-0.025	-0.002	-0.030	-0.002	-0.032
	(0.005)	(-0.411)	(-0.066)	(-0.489)	(-0.068)	(-0.547)
NT	0.103	0.067	0.177	0.132	0.119	0.084
	(0.678)	(0.390)	(1.080)	(0.662)	(0.786)	(0.483)
QLD	0.017	-0.003	0.083	0.054	0.031	0.009
	(0.824)	(-0.101)	(1.417)	(0.586)	(1.231)	(0.256)

Table 2 continued ...

SA	0.015	0.002	0.030	0.015	0.012	-0.0006
	(0.642)	(0.075)	(1.184)	(0.370)	(0.525)	(-0.017)
WA	0.002	-0.025	0.074	0.038	0.011	-0.013
	(0.062)	(-0.537)	(1.050)	(0.357)	(0.355)	(-0.319)
R-squared	0.485		0.485		0.485	
Adjusted R-squared	0.469		0.469		0.469	
RESET	1.041		1.089		1.014	
Model F	42.45**		41.91**		42.11**	

	OLS 1A	RE 1B	OLS 2A	RE 2B	OLS 3A	RE 3B
			PANEL B			
Insider-Outsider Variables						
Total unemployment rate	-0.068	-0.055	-0.076	-0.086		
	(-1.019)	(-0.582)	(-0.990)	(-0.786)		
Long-term unemployed proportion			0.007	0.029		
			(0.193)	(0.564)		
Short-term unemployed rate					-0.008	-0.023
					(-0.162)	(-0.332)
Employment change	-0.011	-0.016	-0.011	-0.015	-0.013	-0.017
	(-0.889)	(-0.910)	(-0.878)	(-0.885)	(-1.038)	(-0.986)
R-squared	0.485		0.485		0.485	
Adjusted R-squared	0.470		0.470		0.470	
RESET	0.618		0.571		0.481	
Model F	46.16**		45.47**		46.04**	

	OLS 1A	RE 1B	OLS 2A	RE 2B	OLS 3A	RE 3B
			PANEL C			
Insider-Outsider Variables						
Total unemployment rate	-0.045	-0.034	-0.021	-0.061		
	(-0.622)	(-0.340)	(-0.219)	(-0.449)		
Long-term unemployed proportion			-0.016	0.018		
			(-0.354)	(0.293)		
Short-term unemployed rate					-0.005	-0.020
					(-0.104)	(-0.301)
Employment change	-0.010	-0.015	-0.010	-0.015	-0.011	-0.015
	(-0.810)	(-0.867)	(-0.807)	(-0.866)	(-0.871)	(-0.896)
Regional control (VIC omitted)						
House Prices	0.026	0.025	0.034	0.016	0.034	0.029
	(0.811)	(0.568)	(0.880)	(0.298)	(1.130)	(0.725)
R-squared	0.485		0.485		0.485	
Adjusted R-squared	0.470		0.470		0.470	
RESET	0.625		0.750		0.546	
Model F	45.65**		45.03**		45.42**	

Notes: **, *, #, indicates significance at 1%, 5% and 10% respectively. The t-ratios (in brackets) in the OLS regressions have been corrected for heteroscedastic error structures using White's (1980) procedure. Each regression reported in this table contains approximately 50 other control variables.

This conclusion stands in stark contrast to those in Table 2. The only evidence in favour of the insider-outsider model in this sample comes from the fact that the total unemployment rate is never significant in this set of results. While the estimated coefficients of the other insider-outsider variables generally have the expected signs, none are statistically significant. Moreover

the magnitude of the estimated coefficients on all the insider-outsider variables is small in comparison to those reported in Table 1. This is additional evidence that the distinction is not relevant for this section of the labour market. It is possible that the problems of collinearity and omitted variables bias mean that a Type II error is being committed in relation to the results in Table 2. Nevertheless, the finding that insider power is less apparent for workers in workplaces with more intensive competition in the product market is consistent with expectations.

CONCLUSION

Previous Australian research, using aggregate data, indicates that the insider-outsider distinction is a relevant one for the Australian labour market. The results reported in this paper, using micro-data, concur with the findings from these previous studies. In addition, the results suggest that the insider-outsider distinction is strongest where product market competition is weak. This is consistent with underlying theory and with the findings from other research into the issue.

The results from the low product market competition sample are robust to the exclusion of regional dummy variables. For the low product market competition sample the results reported in panels A, B and C tell the same story. The results for the high product market competition sample suggest that the insider-outsider distinction is not relevant where product market competition is high. It is of course possible that the insignificance of the insider-outsider variables is due to collinearity in the specification reported in panel A, and due to omitted variables bias in the specifications reported in panels B and C. Several limitations to the regional unemployment variables used in this study were discussed in the paper. Given this, and the potential Type II error in the high competition results, it is perhaps prudent to consider the results presented in this paper as offering provisional support for the insider-outsider theory, and for the impact of product market competition on insider power in regional labour markets.

NOTES

1. Indeed Gregory (1987) is considered to be one of the first tests of this theory.
2. Sanfey (1995) provides a detailed survey of the theory. The outline given in this paper is both brief and informal.
3. See Roed (1998) for a detailed discussion of the meaning and implication of hysteresis and persistence as used in this literature.
4. There is no metropolitan/non-metropolitan split for the Australian Capital Territory and the Northern Territory.
5. I am grateful to Bruce Chapman for pointing out the second and third of these limitations in relation to the unemployment variables used in this study.

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APPENDIX 1
Variable definitions; Means and Standard Deviations
(The first number in each cell = mean, number beneath = standard deviation)

Variable	*Definition*	*Low Comp*	*High Comp*
Log hourly pay	Log of Gross pay per week divided by hours worked each week.	2.76 0.40	2.69 0.40
Workplace Variables			
Active union	Dummy variable: Equals 1 if the senior delegate from the union with most members spends one hour or more each week on union activities, and either a general meeting of members is held at least once every six months, a union committee exists and meets regularly with management, or delegates meet with management at least once a month.	0.48 0.49	0.49 0.50
Unionisation Rate	Proportion of employees at workplace who are union members.	0.60 0.29	0.62 0.29
Workplace size			
20-49 (omitted category)	Dummy variable: equals 1 if 20-49 employees at workplace.	0.18 0.38	0.09 0.29
50-99	Dummy variable: equals 1 if 50-99 employees at workplace.	0.22 0.41	0.20 0.40
100-199	Dummy variable: equals 1 if 100-199 employees at workplace.	0.24 0.43	0.28 0.45
200-499	Dummy variable: equals 1 if 200-499 employees at workplace.	0.21 0.41	0.26 0.44
500-1000	Dummy variable: equals 1 if 500-1000 employees at workplace.	0.13 0.34	0.10 0.30
1000+	Dummy variable: equals 1 if 1000 or more employees at workplace.	0.02 0.16	0.04 0.21
Labour intensity	Labour costs as a proportion of total costs. The variable is measured as a scale going from 1 to 6 representing less to more labour intensive.	2.47 1.06	2.34 1.14
Foreign	Dummy variable: Equals 1 if workplace is majority foreign owned.	0.16 0.36	0.27 0.44
Import competing	Dummy variable: Equals 1 if workplace faces import competition for it's major product or service.	0.37 0.48	0.42 0.49
Export	Dummy variable: Equals 1 if more than 50% of main product or service is exported.	0.09 0.29	0.13 0.34
Occupational compositionof workplace			
% Managers	Managers as a percentage of total employment at workplace.	5.33 5.06	5.78 4.44
% Professionals	Professionals as a percentage of total employment at workplace.	5.53 9.33	3.57 6.52
% Tradespeople	Tradespeople as a percentage of total employment at workplace.	17.14 21.08	12.50 17.87
% Clerical	Clerical as a percentage of total employment at workplace.	13.79 16.95	10.46 15.19
% Salespeople	Salespeople as a percentage of total employment at workplace.	10.19 22.04	25.21 35.22

% Plant and mach operators	Plant and machine operators as a percentage of total employment at workplace.	20.01 25.30	17.53 24.36
% Labourers	Labourers as a percentage of total employment at workplace.	17.81 22.43	18.92 24.32
% Para-prof (omitted category)	Para-professionals as a percentage of total employment at workplace.	10.17 17.16	5.99 12.31
% Female	Percentage of workplace workforce which is female.	29.29 26.79	39.1 27.22
Individual Variables			
Male	Dummy variable: Equals 1 if employee is male.	0.69 0.46	0.57 0.49
Experience	Age–(years at school + 5),	20.35 11.64	18.46 12.13
Tenure	Years employed at workplace.	7.51 7.60	6.22 6.62
Non-English Speaking home	Dummy variable: Equals 1 if employee comes from a non-English speaking home.	0.05 0.22	0.07 0.26
Disabled	Dummy variable: Equals 1 if a health condition or disability exists which is likely to last beyond six months.	0.08 0.27	0.07 0.26
Occupation			
Plant and machine operators	Dummy variable: Equals 1 if employed in occupational group, Plant and Machine Operators and Drivers.	0.16 0.37	0.15 0.35
Sales	Dummy variable: Equals 1 if employed in occupational group, Sales and Personal Services.	0.10 0.30	0.22 0.41
Clerks	Dummy variable: Equals 1 if employed in occupational group, Clerks.	0.15 0.35	0.13 0.33
Tradesperson	Dummy variable: Equals 1 if employed in occupational group, Tradesperson and Apprentices.	0.17 0.38	0.12 0.32
Para-prof	Dummy variable: Equals 1 if employed in occupational group, Para-professionals.	0.10 0.30	0.06 0.24
Professional	Dummy variable: Equals 1 if employed in occupational group, Professionals.	0.08 0.27	0.06 0.24
Manager	Dummy variable: Equals 1 if employed in occupational group, Managers.	0.06 0.25	0.07 0.26
Other occupation	Dummy variable: Equals 1 if not able to be classified in the other occupational categories.	0.01 0.09	0.01 0.07
Labourers (omitted category)	Dummy variable: Equals 1 if employed in occupational group, Labourers and Related Workers.	0.16 0.36	0.17 0.38
Educational level			
Primary education	Dummy variable: Equals 1 if attended primary school but not secondary school.	0.02 0.17	0.02 0.16
Some secondary	Dummy variable: Equals 1 if attended, but did not complete secondary school.	0.32 0.47	0.36 0.48
Skilled vocational	Dummy variable: Equals 1 if highest educational level is skilled vocational qualification.	0.19 0.39	0.15 0.35
Associate diploma	Dummy variable: Equals 1 if highest educational attainment is Associate diploma /advanced certificate.	0.08 0.28	0.08 0.28
Degree	Dummy variable: Equals 1 if highest educational attainment is undergraduate degree or a diploma.	0.09 0.29	0.09 0.29
Postgraduate	Dummy variable: Equals 1 if highest educational attainment is a Postgraduate degree or diploma.	0.04 0.19	0.03 0.18

Basic vocational	Dummy variable: Equals 1 if highest educational level is basic vocational qualification.	0.03 0.19	0.03 0.19
Completed secondary school (omitted category)	Dummy variable: Equals 1 if completed not higher than secondary school.	0.19 0.39	0.21 0.41
Fixed term contract	Dummy variable: Equals 1 if employment contract ends on a fixed date.	0.07 0.25	0.06 0.24
Casual	Dummy variable: Equals 1 if not entitled to both paid holiday or sick leave.	0.11 0.31	0.14 0.35
School* Experience	Years of formal schooling times potential experience	243.6 136.1	220.2 141.9
Insider-OutsiderVariables			
Short-term unemployed	Log short-term unemployment rate. Regional unemployed for less than or equal to 13 weeks, as a percentage of regional labour force.	1.39 0.15	1.39 0.15
Total unemployed	Log regional unemployment rate. Regional unemployed as a percentage of regional labour force.	2.29 0.10	2.29 0.10
Long-term unemployed	Proportion of regional unemployment that is long-term. Log of regional long-term unemployment, expressed as a percentage of total unemployment in the region.	3.49 0.22	3.49 0.22
Employment change	Dummy variable: Equals 1 if employment change at workplace was positive in proceeding 12 months.	0.46 0.49	0.58 0.49
Location Dummies			
NSW	Dummy variable: Equals 1 if workplace is in New South Wales.	0.30 0.45	0.34 0.47
ACT	Dummy variable: Equals 1 if workplace is in the Australian Capital Territory.	0.00! 0.05	0.01 0.09
TAS	Dummy variable: Equals 1 if workplace is in Tasmania.	0.03 0.19	0.02 0.16
NT	Dummy variable: Equals 1 if workplace is in the Northern Territory.	NA	0.00# 0.04
QLD	Dummy variable: Equals 1 if workplace is in Queensland.	0.21 0.41	0.15 0.36
SA	Dummy variable: Equals 1 if workplace is in South Australia.	0.11 0.31	0.06 0.25
WA	Dummy variable: Equals 1 if workplace is in Western Australia.	0.10 0.30	0.06 0.23
VIC (omitted category)	Dummy variable: Equals 1 if workplace is in Victoria.	0.22 0.41	0.34 0.47
House Prices	Real Median House Prices in each capital city (log)	4.86 0.21	4.86 0.21

Notes: Unweighted means and standard deviations for workplaces with 20 or more employees. NA means no observations for this variable in this sample. ! = 0.003, #= 0.002

Appendix 2
Regional Unemployment Rates Used in this Study

Region	*Total Unemployment Rate (per cent)*	*Short-term Unemployment Rate (per cent)*	*Long-Tern Unemployment Proportion (per cent)*
NSW MET	9.07	3.88	34.63
NSW NON MET	10.76	4.23	40.05
VICTORIA MET	10.49	3.68	38.61
VICTORIA NON MET	9.87	4.00	34.89
QUEENSLAND MET	8.58	4.75	21.60
QUEENSLAND NON MET	10.73	4.86	26.41
SOUTH AUSTRALIA MET	11.29	3.93	35.38
SOUTH AUSTRALIA NON MET	8.07	2.00	43.24
WESTERN AUSTRALIA MET	9.34	4.74	22.60
WESTERN AUSTRALIA NON MET	7.59	2.66	20.46
TASMANIA MET	13.25	5.45	41.45
TASMANIA NON MET	11.09	2.78	44.09
NORTHERN TERRITORY	8.89	4.72	21.78
AUSTRALIAN CAPITAL TERRITORY	8.83	4.59	17.33

Notes: Short-term unemployment is 13 weeks or less. Long-term unemployment is 52 weeks or more. The data were provided by the Australian Bureau of Statistics and are based on unpublished *Labour Force Survey (6203.0)* data.

Appendix 3
Real Median House Prices, Capital Cities, September 1995

CITY	$1000s
Sydney	170.85
Melbourne	118.24
Brisbane	111.67
Adelaide	90.92
Perth	107.96
Hobart	85.28
Canberra	128.84
Darwin	135.98

Source: Unpublished data supplied by the Real Estate Institute of Australia Ltd. Deflated using Australian Bureau of Statistics *Consumer Price Index*, Catalogue no. *6401.0*.