

Factors Associated with Casual Employment: Evidence from the AWIRS

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Abstract

This article uses data from the Australian Workplace Industrial Relations Surveys conducted in 1989/90 and 1995 to examine the related questions of: (i) what are the characteristics of workers who accept casual employment; and (ii) what types of workplaces and firms are most likely to employ workers on a casual basis. The evidence presented suggests that while supply-side characteristics are not unimportant, demand-side factors appear to provide more likely explanations for changes in the overall level of casual employment.

1. Introduction

The apparent growth in non-permanent or casual employment has been widely touted as one of the most significant changes to the Australian labour market over the last decade or so (e.g., Campbell and Burgess, 1993; Norris, 1993; Campbell, 1996a; Norris and Wooden, 1996). As documented in Table 1, Australian Bureau of Statistics (ABS) data suggest that casual employees represented over a quarter of all wage and salary earners in August 1997. By comparison, only 15.8 per cent of employed wage and

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salary earners met the definition of casual employment in 1984, the first year for which data were available.¹

It is thus hardly surprising that labour market researchers in Australia have been taking an increasing interest in the nature of casual employment and the reasons for its growth (e.g., Dawkins and Norris, 1990; Romeyn, 1992; Sloan, Carson and Doube, 1992; Campbell, 1996a; Mangan and Williams, 1997; Simpson, Dawkins and Madden, 1997). This article seeks to add to this literature by using both individual-level data and workplace-level data from the Australian Workplace Industrial Relations Surveys conducted in 1989/90 and 1995 to examine the related questions of: (i) what are the characteristics of workers who accept casual employment; and (ii) what type of workplaces and firms are most likely to employ workers on a casual basis.

Table 1 Casual Employment (in main job) by Sex, 1984–1996 (% of employees)

Year (August)	Males	Females	Persons
1984 ^a	9.4	25.7	15.8
1985 ^a	9.4	28.2	16.1
1986 ^a	10.7	26.7	17.2
1987 ^a	11.5	27.9	18.3
1988 ^a	12.0	28.4	18.9
1989	13.1	29.3	20.0
1990 ^b	12.7	28.2	19.4
1991 ^c	13.5	29.0	20.3
1992	15.6	30.9	22.3
1993	16.4	30.6	22.7
1994	18.1	30.8	23.7
1995	18.5	30.8	24.0
1996	21.2	32.0	26.1
1997	20.9	31.7	25.8

Notes: a The published data for the years 1984 to 1988 do not enable the calculation of separate estimates for males and females. The figures reported in this table for these years are 'guesstimates' reported by Dawkins and Norris (1990) and should be treated with caution.

b The 1990 survey excluded persons aged 70 years and over and hence estimates for this year are not strictly comparable with those for other years.

c The 1991 data were collected in July.

Sources: 1984–1988: Dawkins and Norris (1990).

1988–1992: ABS, *Employment Benefits, Australia* (ABS cat. no. 6334.0).

1993, 1994: ABS, *Weekly Earnings of Employees (Distribution), Australia* & 1997: (ABS cat. no. 6310.0).

1995: ABS, *The Labour Force, Australia, December 1995* (ABS cat. no. 6203.0).

1996: ABS, *Trade Union Members, Australia, August 1996* (ABS cat. no. 6325.0).

The use of micro-data in this study sets it apart from other research into casual employment. Indeed, most accounts of casual employment have been primarily descriptive and have, for the most part, produced very little substantive evidence to support claims made about likely patterns of association and causation. Only Simpson, Dawkins and Madden (1997) and Mangan and Williams (1997) have attempted to identify whether characteristics of firms and/or workers vary with casual employment levels within a multivariate statistical framework, and both of these studies relied on aggregate time-series data (but pooled across industries). The present study is also significant in that it explicitly attempts to distinguish supply-side factors from demand-side factors. This is of large importance given widespread perceptions that supply-side factors dominate in determining the level of casual employment, even though the persistence of unemployment suggests that demand-side factors should be far more important in determining employment outcomes.

2. What is Casual Employment?

As Brooks (1985: 166) notes, within common law 'each engagement of a casual worker constitutes a separate contract of employment'. Consequently, a casual worker theoretically enters into the employment relationship knowing that the relationship can be terminated without notice. In addition, casual employees are likely to be confronted with highly variable working hours arrangements, both in terms of their length and their timing. This is reinforced in some awards with irregular hours being a requirement for casual employment.

In contrast, a worker hired on a permanent basis would enter the employment relationship expecting the employment relationship to continue indefinitely, and should termination be required, would expect a reasonable period of notice of that impending termination. Indeed, many awards and enterprise agreements explicitly contain termination provisions for permanent employees, while excluding or ignoring similar provisions for casual workers. Further, the conditions of employment specified for permanent employees will typically include regular and well defined hours of work.

It is, however, not easy to operationalise this definition of casual employment. Very few jobs are in fact permanent, and many so-called casual jobs appear to provide regular hours of work each week (Romeyn, 1992: 15-22). Indeed, following the passage of the *Industrial Relations Reform Act 1993* it became possible for casual workers (with job tenure of

six months or longer) to receive due process for unfair dismissal. According to Brooks (1985: 167), though, viewing casual employment as a series of short-term contracts precludes the casual employee from any statutory benefits available to other employees. Consequently, casual employees, irrespective of their job tenure, should be identifiable by their lack of entitlement to various employment benefits. This has been the approach taken by the ABS, which defines casual employees as wage and salary earners without entitlements to either paid annual leave or paid sick leave.² This definition underpins the data presented in Table 1 and has been widely adopted by other agencies and researchers, and is used again in this study.

It should be noted, however, that this definition is not without difficulties. Most obviously, and as both Brooks (1985) and Sloan et al. (1992: 8) have pointed out, industrial legislation does not necessarily preclude casual employees from receiving both paid annual holidays and paid sick leave.

3. The AWIRS Data

The data used in this analysis were collected during 1989/90 and 1995 as part of the Australian Workplace Industrial Relations Surveys (AWIRS), from here on referred to as AWIRS90 and AWIRS95, respectively. Described in more detail in Callus et al. (1991) and Morehead et al. (1997), both surveys involved a suite of structured questionnaires administered by a variety of methods to managers (and union delegates) at representative samples of Australian workplaces. The workplace samples for the surveys were randomly selected from the business register of the ABS, after stratification by location, size and industry, and hence should be reasonably representative of the population of workplaces in Australia. The survey covered all industry sectors with the exception of Agriculture, Forestry and Fishing and Defence. The scope of the survey was also restricted to workplaces with at least five employees, though in this research, workplaces with 5 to 19 employees are ignored since: (i) the use of telephone interview methods meant that comparable data on all items of interest in this study were not available from the small workplace sample; and (ii) no data were collected from employees at these small workplaces.

At each of these workplaces with 20 or more employees, face-to-face interviews using structured questionnaires were conducted with the most senior manager at the workplace, the manager most responsible for employee relations and, where appropriate, the senior delegate of the union with most members represented at the workplace. In addition, management were asked to arrange for the completion of a form (the Workplace Char-

acteristics Questionnaire, or WCQ) seeking numerical data on, for example, the composition of employment, including the number of persons employed on a casual basis. Finally, in 1995, but not in 1989/90, self-administered questionnaires were distributed to samples of employees at all of the workplaces where the senior manager agreed to employee involvement.³

For the large workplace sample, the aim in both 1989/90 and 1995 was to achieve a target sample size of approximately 2000 workplaces. This was achieved from 2300 contacts in AWIRS90 and 2547 contacts in AWIRS95, giving response rates of 87 and 79 per cent, respectively. Some additional non-response was associated with the administration of the WCQ. While this form was mailed to the workplaces prior to interview, many firms had, at the time of the interviewer's arrival, yet to complete the WCQ. Managers at these workplaces were requested to return the form by mail. In total, 1747 of these forms were returned in 1989/90 (87 per cent of workplaces where interviews were conducted) and 1836 returned in 1995 (92 per cent of workplaces where interviews were conducted).

As noted above, AWIRS95 also involved an employee survey. Permission to survey employees was granted at 1896 of the participating workplaces (95 per cent of the large workplace sample). Employees to be surveyed were randomly selected by the interviewers from a list of all persons working at the workplace. Completed questionnaires were either collected by the interviewer about a week after distribution or returned directly by mail. A total of 30,005 questionnaires were distributed, with 19,155 returned in a form suitable for analysis.

The AWIRS thus provides two different methods for measuring the incidence of casual employment: one based on management responses and the other based on responses from employees. The management data relate to the pay period ended on or before 30 September 1989 in AWIRS90, and the pay period ended on or before 18 August 1995 in AWIRS95. The employee data relate to the time at which the questionnaire was completed (some time between August 1995 and May 1996).

As reported in Table 2, the AWIRS data suggest a much lower incidence of casual employment than do the labour force survey data reported by the ABS, with casuals as proportion of total employees estimated to be 16.6 per cent in the workplace sample and only 12.3 per cent when using the employee data. By comparison, ABS data for August 1995 suggest a casual employment share of 24 per cent.⁴

Table 2 Casual Employment as a % of Total Employment by Sex, 1995 AWIRS (workplaces with 20 or more employees)

Sample	Men	Women	Persons
Workplaces	14.8	19.4	16.6
Employees	9.0	16.2	12.3

Note: Data are weighted to the population of employees.

Sources: AWIRS95 Large Workplace Survey and Employee Survey.

In part, the differential between the AWIRS and ABS data reflects exclusion of both the agriculture sector and small workplaces from the AWIRS main sample. Nevertheless, neither of these exclusions appear sufficient to explain the difference. ABS data, for example, suggest that excluding the agriculture sector would only reduce the casual employment share by just over half a percentage point. Similarly, data from the small workplace survey in AWIRS95 indicate that inclusion of workplaces with 5 to 19 employees would see the estimated casual employment share in the workplace sample rise only slightly – from 16.6 per cent to 17.3 per cent. While inclusion of data on workplaces with fewer than five employees (were such data available) would undoubtedly see this figure rise further, the estimate is still likely to fall well short of ABS estimates.

Overall, these findings suggest that use of the AWIRS data, and especially the employee component, is likely to lead to an understatement of the level of casual employment. There is, however, at least one reason for believing that ABS estimates may overstate the level of casual employment. The ABS treats owner managers of incorporated businesses as employees of their own businesses. Many of these so-called ‘employees’, however, are likely to respond that they do not receive paid sick leave or paid annual leave and hence would be classified by the ABS as casual employees. As a result, labour force survey estimates of casual employment will be biased upwards.⁵

4. Characteristics of Workers Who Accept Casual Employment

It is widely recognised that casual employment is concentrated among specific groups in the labour force, suggesting that observed levels of casual employment may reflect worker preferences. As indicated in Table 1, casual employment is much more common among women than men, a consequence of the fact that the majority of casual work involves part-time hours (Dawkins and Norris, 1990), and that women, on average, have stronger

preferences for part-time work than do men. This, in turn, reflects the much greater responsibility that women, on average, assume for family duties, such as caring for children and aged relatives, and housework (Romeyn, 1992: 40).

Table 3 Casual Share of Employment by Age and Sex, AWIRS95 Employee Sample (%)

Age group	Males	Females	Persons
15-24	26.2	34.0	30.2
25-34	7.1	12.4	9.6
35-44	4.9	12.6	8.2
45-54	4.4	10.4	7.1
55 or over	10.3	14.5	11.6

Source: AWIRS95 Employee Survey.

The incidence of casual employment also varies with age. As shown in Table 3, the incidence of casual employment is particularly high among young people, with 30.2 per cent of employed persons under the age of 25 estimated to be working on a casual basis in 1995. Such trends are also discussed by Wooden (1998) who, using unpublished ABS data, produces further evidence which indicates that the high incidence of casual employment (and part-time employment) among young people, and especially teenagers, is a function of the large numbers of young people who are unavailable for full-time work because they are involved in study.

At the opposite end of the age spectrum, the oldest members of the workforce are also often argued to have relatively strong preferences for casual employment. Romeyn (1992: 40), for example, argues that casual employment may 'allow employees nearing retirement to gradually ease out of the workforce'. The data presented in Table 3 are consistent with such claims.

Other worker characteristics that have been argued to influence preferences for casual employment include poor health or disability, low levels of education and migrant status. Romeyn (1992), for example, argues that like old age, poor health and disability may make full-time work difficult, and hence part-time casual employment may represent an attractive alternative form of employment for workers suffering from long-term illness conditions and disabilities. Very differently, Simpson (1994: 38) has suggested that casual employment may provide a source of entry into the workforce for low skilled or poorly educated persons that would not otherwise exist if permanent full-time employment was the only type of

employment on offer. Finally, Mangan and Williams (1997) have argued that migrants may have preferences for casual employment, especially illegal immigrants who may have preferences for anonymity, and female migrants who, for cultural reasons, may have preferences for working off-site (assuming that casual employment is conducive to home-based employment).

In the remainder of this section the question of whether or not worker characteristics are systematically associated with casual employment is investigated further. In particular, a multivariate probit model of casual employment is estimated using the employee data collected as part of AWIRS95. The dependent variable is a discrete binary variable which takes the value one if the worker is employed on a casual basis and zero otherwise. As discussed above, casual employment status has been determined on the basis of responses to questions about eligibility to entitlements for paid holiday and sick leave.

The key worker characteristics utilised in this analysis are sex, age, country of birth, Aboriginality, whether usually speaks English at home, the presence of a health condition or disability likely to last for more than six months, the number of dependent children interacted with the age of those children, the presence of other (adult) dependent family members, and educational attainment. Means and standard deviations for all these variables are reported in Appendix Table A1. Employment-specific characteristics, such as industry or occupation, are excluded from this stage of the analysis since these factors are assumed to bear more strongly on demand for different types of workers rather than the supply of casual workers.⁶ These employment-specific variables are the focus of the analysis presented in Section 5.

Results from the probit estimation are reported in Table 4. A key feature of these results is their relatively low explanatory power. While the pseudo R-squared measures reported are not necessarily bounded in the usual 0 to 1 range, the low values suggest that only a small fraction of the variation in the probability of employment on a casual basis can be explained by observable worker characteristics. This is consistent with arguments that supply-side factors are likely to be relatively unimportant when it comes to determining employment outcomes (e.g., Dawkins and Norris, 1995).

Table 4 Probit Analysis of Characteristics of Casual Employees

	Persons		Men		Women	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
Female	0.383**	13.34				
Age (years)						
15-20	1.435**	22.74	1.401**	14.38	1.487**	17.50
21-24	0.484**	8.10	0.657**	7.31	0.356**	4.37
25-29	0.136*	2.38	0.265**	3.02	0.036	0.46
30-34	0.058	1.05	0.058	0.68	0.029	0.38
40-44	-0.094	1.65	-0.074	0.81	-0.096	1.27
45-49	-0.025	0.42	0.013	0.13	0.007	0.09
50-54	-0.137	1.90	-0.141	1.29	-0.082	0.83
55+	0.246**	3.44	0.233*	2.32	0.266*	2.47
Birthplace						
OS – English-speaking	0.002	0.04	0.121	1.79	-0.121	1.80
OS – other	0.065	1.27	0.211**	2.81	-0.061	0.87
Aboriginal / Torres St Islander	0.017	0.14	-0.091	0.50	0.052	0.30
Non-English language speaker	0.139*	2.12	0.118	1.23	0.136	1.51
Disability / health condition	-0.143*	2.46	-0.134	1.55	-0.129	1.63
No. of dep children 0-4 years	0.024	0.77	-0.111*	2.45	0.219**	4.65
No. of dep children 5-12 years	0.102**	4.72	-0.019	0.55	0.231**	7.49
No. of dep children 13 years +	-0.064**	2.79	-0.083*	2.06	0.147**	4.73
Adult dependents	0.065	1.26	0.023	0.29	0.109	1.52
Educational attainment						
Post-grad degree	-0.186**	3.18	-0.047	0.54	-0.305**	3.69
Degree / diploma	-0.061	1.28	-0.080	1.07	-0.016	0.25
Associate diploma	-0.077	1.41	-0.051	0.62	-0.079	1.07
Skilled vocational qual.	-0.142*	2.52	-0.209**	2.84	-0.022	0.23
Basic vocational qual.	-0.135	1.85	-0.299*	2.17	-0.069	0.79
Some secondary school	0.112**	2.88	0.021	0.34	0.173**	3.34
Primary school	0.064	0.65	-0.120	0.84	0.279*	1.99
Constant	-1.731**	30.34	-1.663**	19.87	-1.424**	19.47
Log-likelihood	-4934.05		-2090.97		-2756.79	
Likelihood ratio (chi-squared)	1311.81**		547.00**		691.31**	
McFadden's R-squared	0.117		0.116		0.111	
Cragg-Uhler R-squared	0.154		0.143		0.156	
Prediction success (%)	90.1		93.0		86.4	
Reduction in prediction error (%)	46.4		46.2		44.7	
No. of observations	16880		9342		7538	

Notes: ** and * indicate significance at the one and five per cent levels, respectively, in a two-tailed test.

The general pattern of the results, however, is broadly consistent with what previous research leads us to expect. In particular, the results for all persons indicate a high probability of casual employment among both women and young workers. There is also evidence that casual employment is relatively more likely at the upper end of the age distribution (55 years

and over). Further, among women, the presence of dependents (including both dependent children and adults) is found to be associated with a markedly higher incidence of casual employment. Among men, on the other hand, the presence of children appears to be associated with a reduced likelihood of casual employment. These results point to the importance of household labour supply decisions in determining individual labour supply and presumably reflect the tendency in Australian society for men to leave caring responsibilities to the female members of the family.

In contrast to general expectations, however, there is no evidence that the presence of a long-term illness or disability increases the likelihood of casual employment. Further, the estimated relationships with education suggest that if there is a propensity for lowly educated workers to be concentrated in casual jobs, it only exists among women. For men there is no difference in the incidence of casual employment among workers with tertiary qualifications and those without post-school qualifications. Finally, with one exception, there is no evidence that the probability of casual employment is greater among ethnic minorities (i.e., persons of non-English speaking backgrounds) or among Aboriginals. The exception here is male immigrants from a non-English speaking background.

5. What Types of Workplaces and Firms Employ Casual Workers?

Although supply-side characteristics of casual employees are of interest, in terms of determining the level of casual employment, firm and workplace characteristics are likely to be far more important. In the presence of excess supply of labour (as reflected in high and persistent levels of unemployment) and downward rigidity in wages (due to institutional constraints such as awards and National Wage Case decisions), the supply of casual workers is likely to be highly elastic. Employment outcomes for casual workers are, therefore, likely to be largely determined by decisions made by employers – that is, the demand side of the labour market.

Following Dawkins and Norris (1990), firms can be thought of as choosing between employing casual labour and permanent labour, with this choice dependent upon the relative cost of casual and permanent labour and upon their relative productivity. In simple neo-classical formulations of the demand for labour, with declining marginal productivity of labour, and where labour is the only variable input, demand is inversely related to the cost of labour. If two different types of labour – casual labour and permanent

labour, which are substitutes – are allowed for, it follows that in choosing between the two different types of labour, it is the relative cost that matters.

The very basis for the distinction between casual and permanent labour, however, is that they are not perfect substitutes. Permanent workers, for example, will have longer average tenure which will have positive consequences for training and human capital accumulation (relative to casuals). This longer average tenure is reinforced by legislative protections which make it both difficult and costly for firms to dismiss permanent workers. Moreover, as a result of conditions specified in many awards, employers are often constrained to employing permanent workers on a regular basis over a limited range of working hours, with only limited ability to adjust these arrangements. Casual workers, on the other hand, may be required to work different hours, both in terms of length and timing, and employment can generally be terminated with little or no notice.

The relative productivity of casual labour will thus vary across firms and industries. Some factors which are likely to influence these differences include the importance of skills and training, the importance of labour flexibility in responding to changes in output demand, and the way in which work is organised. These factors, in turn, impact on the relative demand for casual workers. In jobs which require high skill levels (i.e., skills that are acquired only after substantial investments in formal education and training, or through long periods of on-the-job learning), casual labour will be relatively unattractive to employers. On the other hand, in firms facing market characteristics which involve a high degree of variability in demand over the course of a day or a week (such as in retail trade or restaurants), or even a year (such as in agriculture), casual labour may be highly sought after by employers. Use of permanent labour in such situations, for example, is likely to involve hoarding labour, at considerable cost, during periods of low demand. In contrast, casual labour can be hired to work only during the times of peak demand.

Method

The approach adopted in this section again involves isolating determinants of casual employment within a multivariate regression framework, though this time the dependent variable is the share of casual employment in total employment. Further, the data were drawn from both AWIRS90 and AWIRS95 and are pooled.

While not a discrete variable, the dependent variable still possesses a number of properties which render ordinary least squares methods of

estimation inappropriate. In particular, the variable is truncated (since it is constrained to lie between 0 and 1), its distribution is highly skewed, and there is a spike in the data at zero (approximately 35 per cent of the unweighted number of workplaces reported zero employment of casuals). Since the conditional mean function is clearly far from linear, OLS will no longer provide unbiased consistent estimates. In contrast, the tobit model, which was designed specifically to handle truncated dependent variables will produce consistent estimates.

A major problem with the tobit model, however, is that it assumes that the probability of a non-limit outcome and the level of that non-limit outcome are determined together. In the case of casual employment we suspect that this may not be so. For example, consider the relationship between establishment size and casual employment. As discussed below, there are good reasons to expect that the proportion of casual workers employed will be larger in small workplaces. The probability of a large workplace employing any type of worker, including casuals, however, will by definition, be greater in large workplaces. To allow for such distinctions, a two-stage sample selection model was employed. In the first stage, a probit model is used to estimate the probability of a workplace employing casuals and, at the second stage, linear regression methods are used to estimate the incidence of casual employment conditional on positive levels of casual employment, but including a term that corrects for any self-selection bias arising from omitting the limit outcomes.

Note that the possibility of predictions from the model lying outside the range of feasible values at the second stage is handled by applying the log-odds transformation to the dependent variable (but after correcting for bias). The dependent variable at the second stage thus takes the form:

$$\ln [(CE_i + 0.5/N_i)/(1 - CE_i + 0.5/N_i)]$$

where CE_i is the share of casual employment in total employment at workplace i , and N_i is the number of persons employed at workplace i .

An alternative and arguably preferred model in this instance would be the two-part model for censored data proposed by Cragg (1971). This model is analogous to the sample selection model, but with a truncated tobit model employed at the second stage. With these data, however, this model was only computable with censoring at zero, and not at both zero and one. Further, interpreting the size of the coefficients from such models is difficult. Nevertheless, as a check on the sample selection results, results from this model are also reported.

Explanatory Variables

The explanatory variables used in this analysis can be clustered into seven main groups – size, market characteristics, skills requirements, technology, corporate culture, union influence and industry controls. A brief description of each of the variables within each of these groups is provided below. In addition, a dummy variable identifying the AWIRS cohort from which the observation is drawn is included. Means and standard deviations for all of the variables used are provided in Appendix Table A2.

Size. Size is measured in terms of the total number of employees at both the workplace and the enterprise (six dummy variables, with firms with 20,000 employees or more providing the control group). It is hypothesised that due to the ‘lumpier’ nature of employment within small firms and workplaces, the demand for more flexible employment conditions will be commensurably greater in small workplaces and firms.

Market characteristics. Several variables are included in an attempt to capture the effect of the nature of output demand. Specifically, dummy variables are included which indicate: (i) whether demand for the principal output is subject to seasonal variation; (ii) whether the demand for the main good or service produced by the workplace is subject to unpredictable variations; and (iii) whether demand for the main product or service was rising or falling. Seasonal demand is likely to be associated with a demand for labour requirement that is variable over the course of the year, and hence can be expected to be positively associated with casual employment. More generally, the more variable the output demand, the greater the comparative advantage of casual employees over more permanent types of employment, and hence a positive relationship between unpredictability of demand and casual employment is expected. The likely impact of changing levels of demand on casual employment is less obvious. Positive associations, however, might be expected if changing levels of demand are associated with more volatile product markets.

In addition, a number of variables are included to measure the degree of competition in the product market. Given the use of casual employees allows employers to adjust labour inputs more rapidly in response to production needs, it follows that pressures to employ this more flexible type of labour will be greatest where competitive forces in the product market are greatest. It is, therefore, hypothesised that the extent of casual employment will be positively related to the extent of product market competition. In this analysis, the level of competition is represented by a simple binary variable indicating whether the market for the workplace’s major product or service is one with many competitors or not. In addition, also included

are two dummy variables to indicate whether the nature of the market for the workplace's major product or service is primarily export based and whether the workplace faces import competition in the domestic market.

Note that the question on the number of competitors was only asked of managers at workplaces operating on a commercial basis (i.e., on a for profit basis). In such cases it has been assumed that many competitors do not exist. Since this has the potential to lead to measurement bias, a separate dummy variable is included to control for non-commercial workplaces.

Skill requirements. As noted earlier, an important influence on the relative productivity of casuals vis-à-vis permanent workers is likely to be the importance of skills and training. To capture the effects of inter-firm variation in skills requirements, two dummy variables were constructed based on the length of time it was expected that a new employee would take to achieve the standard expected of other longer established employees. One variable took the value 1 where on-the-job training requirements are relatively minimal (less than one month on-the-job learning expected), while the other took the value 1 where on-the-job training requirements are relatively large (more than one year on-the-job learning expected).

Skill requirements are also likely to be reflected in the occupational composition of the workforce and hence a series of variables are included measuring the share of each of seven major occupation groups in total employment. An eighth group – labourers and related workers – is omitted and hence represents the control group.

Technology. The type of technology adopted is also likely to have ramifications for the relative productivity of casual labour compared with permanent labour. Continuous production methods, for example, are likely to be conducive to relatively constant labour demand which, in turn, will mitigate against the employment of casual labour. A dummy variable indicating whether the workplace operates around the clock is, therefore, included and is expected to be inversely associated with casual employment.

The adoption of new technology can also be expected to impact on the demand for casual workers. Mangan and Williams (1997) claim that technological change provides increased opportunities for the use of non-standard types of labour. That is, new technology may lead to the development of new areas of work which although largely undertaken by machines, require relatively unskilled labour and, by implication, casual labour, to tend and service. In our view such one-sided arguments are very simplistic. For example, by automating production processes, new technology may reduce the need for unskilled labour and casual jobs. The ultimate impact

of new technology on the demand for casual labour is thus indeterminate and can only be resolved empirically. In this study, the effects of technological change are represented by a simple dummy variable indicating whether any major new technology or plant and equipment had been introduced at the workplace during the preceding two years.

Corporate culture. Obtaining comparable data items from both AWIRS90 and AWIRS95 which reflect on corporate culture, and thereby provide some indication of preferences for casual labour among employers, proved difficult. One factor, however, which may reflect the attitudes management have towards the employment of casuals is organisational change. According to Drago (1996), firms seeking improved workplace flexibility can follow two distinctly different routes – placing increased emphasis on the use of contingent workers (which includes casual employees), or focusing on transforming work systems in order to promote high commitment among workers. While identifying the characteristics of so-called ‘transformed workplaces’ is not straightforward, it seems plausible that workplaces which have been undergoing major structural re-organisation might be expected to be less likely to be employers of casual labour. A dummy variable is, therefore, included to represent the effects of organisational change.

‘Transformed workplaces’ can also be expected to be more likely to require their managers to undergo extensive training in human resource management. While the AWIRS does not identify management involvement in training programs in human resource and labour relations skills, it does identify those workplaces where managers were involved in formal training programs. A binary dummy representing this involvement is included.

A further factor which might be expected to reflect differences in corporate culture is foreign ownership. In particular, preferences for casual employment are expected to be stronger in foreign-owned workplaces than in Australian-owned workplaces. Over time, Australian managers are more likely to have adjusted their management practices to the existing institutional constraints on employment, including that associated with casual employment (deriving from, for example, provisions in awards and the operation of trade unions). Workplaces which are foreign-owned, on the other hand, are less likely to be influenced by these historical factors, and more likely to have instituted management practices which improve workplace performance, including removing restrictions on the type of labour that can be employed.

Differences in the incidence of casual employment within private sector organisations as compared with public sector organisations may also reflect differences in corporate culture. Mangan and Williams (1997), for example, reported evidence of markedly lower rates of casual employment within the public sector even after controlling for other factors such as unionisation, firm size and the age and sex composition of the workforce. While Mangan and Williams offer no explanation for their finding, in our view the basis for this result might lie in public sector employment rules that have traditionally militated against the utilisation of 'non-standard' types of employment.

Finally, given a degree of inertia in management practices, and that the widespread use of casual employment is a relatively recent phenomenon, it seems reasonable to expect that the incidence of casual employment will be greatest in new workplaces. This effect is controlled for through the inclusion of a series of dummies indicating the length of time the workplace has been undertaking its main activity. The control group represents the newest workplaces (less than five years old) and hence these dummies are expected to be negatively signed.

Union influence. Previous research, including both Simpson et al. (1997) and Mangan and Williams (1997), report negative associations between casual employment and the level of union membership, which they then claim provides evidence of the success of trade unions in opposing casual employment. It is, however, not clear that inverse associations between union membership levels and the share of casual employment in total employment necessarily reflect the causal process assumed. Indeed, it is often claimed that the growth in casual employment has been an important contributor to the decline in unionisation levels in this country (e.g., Peetz, 1990).

In any case, it is not obvious that the level of union membership is a good measure of union influence. As Drago and Wooden (1991) have argued with respect to the impact of unions on quits, it cannot be automatically assumed that the presence of union members implies union influence at the workplace. Instead, what is needed are more direct measures of union activity. In this analysis the degree of union influence is represented by a simple binary indicating the presence of 'active unions'. Created by the AWIRS team (see Morehead et al., 1997: 326), the variable assumes that a workplace is actively unionised if:

- (i) the senior delegate from the union with most members spends one hour or more each week on union activities; and

(ii) at least one of the following conditions is met:

- a general meeting of members is held at least once every six months;
- a joint or single union committee exists and meets regularly with management; or
- delegates meet with management at least once a month.

Industry. Finally, series of 15 industry dummies were included, with manufacturing acting as the control group. These dummy variables should control for any remaining unobserved differences across industries, but can be expected to capture differences in many of the factors already discussed. Most obvious here are technology and management philosophy.

Results

The results of the multivariate analysis are provided in Table 5. Since we are predominantly interested in the factors that influence the level of casual employment, attention is focussed on the second-stage estimates. Overall, the model estimated appears to perform very well in explaining variation in the level of casual employment across workplaces. Certainly the reported R-squared value for the selection model is very high (though again the goodness of fit measure in this instance does not necessarily possess the desirable feature of lying in the range 0 to 1). Note further, that the patterns of significance on the explanatory variables do not vary much with the estimator used at the second stage.

Table 5 Determinants of the Demand for Casual Employment

	Stage I Probit		Stage II			
	Coeff	T-ratio	Selection model		Truncated tobit	
	Coeff	T-ratio	Coeff	T-ratio	Coeff	T-ratio
<i>Size</i>						
Workplace size (x 1000)	0.465**	5.23	0.032	0.28	-0.007	0.24
Firm size [control = 20,000+]						
<100 employees	0.157	1.52	0.392**	2.91	0.081*	2.38
100-499	0.325**	3.36	0.177	1.25	-0.002	0.06
500-999	0.464**	4.12	0.255	1.45	-0.006	0.13
1000-4999	0.338**	3.44	0.184	1.29	-0.009	0.24
5000-9999	0.089	0.76	0.019	0.12	0.023	0.51
10000-19999	-0.045	0.36	0.028	0.17	0.045	1.01
<i>Market characteristics</i>						
Seasonal demand	0.145*	2.51	0.229**	2.88	0.046*	2.32
Unpredictable demand	-0.102	1.65	-0.060	0.70	0.015	0.63
Demand expanding	0.025	0.46	0.042	0.59	0.012	0.60
Demand contracting	0.040	0.51	-0.112	1.05	-0.041	1.20
Number of competitors	0.018	0.29	0.093	1.15	0.025	1.11
Exporter	-0.103	0.71	-0.456*	2.25	-0.174	1.80
Import competition	0.042	0.58	-0.223*	2.40	-0.081**	3.07
Non-commercial	-0.150	1.42	-0.294*	2.06	-0.078	1.90

Table 5 (cont'd)

	Stage I Probit		Stage II			
			Selection model		Truncated tobit	
	Coeff	T-ratio	Coeff	T-ratio	Coeff	T-ratio
<i>Skill requirements</i>						
Training period >1 year	0.093	1.62	-0.0008	0.00	0.031	0.68
Training period <1 month	0.015	0.18	0.299**	4.03	-0.069**	3.65
<i>Occupational composition</i>						
% managers	-1.605**	4.45	-3.733**	5.50	-1.547**	8.19
% professionals	0.279	1.30	-2.127**	6.93	-0.767**	7.08
% para-professionals	-0.455*	2.34	-1.205**	4.12	-0.341**	4.38
% tradespersons	-0.845**	5.03	-2.749**	8.13	-0.734**	7.18
% clerks	0.339*	2.13	-0.590*	2.45	-0.464**	6.14
% sales & personal service	0.381*	2.18	1.102**	5.52	0.116**	2.83
% plant & mach. operators	-0.238	1.53	-1.042**	4.61	-0.379**	4.35
<i>Technology</i>						
Continuous production	-0.007	0.09	-0.363**	3.39	-0.119**	3.79
Technological change	0.116*	2.31	0.081	1.12	-0.010	0.54
<i>Management philosophy</i>						
Organisational change	-0.033	0.61	-0.135	1.95	-0.055**	2.91
Management training	-0.012	0.23	-0.048	0.69	0.002	0.10
Foreign ownership	0.024	0.31	0.052	0.50	-0.001	0.03
Public ownership	-0.521**	5.65	-0.762**	4.45	-0.174**	4.39
<i>Workplace age [control = <5 years old]</i>						
5-10 years	0.081	0.66	0.162	1.01	0.025	0.61
10-20 years	0.035	0.31	-0.063	0.44	-0.042	1.15
20-50 years	0.015	0.15	-0.263	1.91	-0.095**	2.63
50 or more years	0.081	0.75	-0.168	1.17	-0.081*	2.07
<i>Union influence</i>						
Active union present	0.049	0.82	-0.211**	2.60	-0.117**	4.25
Year = 1995	-0.020	0.37	0.094	1.35	0.005	0.25
<i>Industry [control = Manufacturing]</i>						
Mining	-0.003	0.02	-0.083	0.40	-0.261*	1.96
Electricity, gas & water	0.124	0.84	0.161	0.73	-0.207	1.65
Construction	0.157	1.25	0.169	0.91	0.044	0.51
Wholesale trade	0.016	0.13	-0.070	0.42	-0.070	0.91
Retail trade	0.991**	7.04	1.754**	6.58	0.497**	9.81
Accommodation, cafes, etc.	1.176**	6.17	2.731**	9.79	0.696**	13.79
Transport & storage	0.080	0.64	0.388*	2.26	0.274**	4.24
Communication	0.204	1.19	-0.357	1.26	0.135	1.07
Finance & insurance	-0.643**	5.72	-0.821**	3.37	-0.131	1.88
Property & business services	0.297*	2.56	1.155**	6.49	0.552**	9.06
Government administration	0.433**	2.88	1.021**	4.50	0.212*	2.40
Education	1.062**	5.80	2.525**	7.50	0.707**	8.45
Health & community services	1.317**	7.97	2.211**	6.48	0.473**	7.54
Cultural & recreational services	0.917**	4.92	2.866**	10.17	0.774**	13.80
Personal & other services	0.070	0.42	0.639**	2.77	0.361**	4.72
Constant	0.045	0.26	-2.647**	6.37	0.090	1.30
Lambda			1.624**	3.33		
Sigma					0.248**	34.32
<hr/>						
Log-likelihood	-1814.91		-3426.83		2025.89	
Likelihood ratio (chi-squared)	773.79**		1834.53**		1981.25**	
Adjusted R-squared	0.281 ^a		0.550 ^b			
Prediction success (%)	71.7					
Reduction in prediction error (%)	38.5					
No. of observations	3375		2166		2166	

Notes: ** and * indicate significance at the one and five per cent levels, respectively, in a two-tailed test.

a Cragg-Uhler pseudo R-squared.

b In sample selection models the R-squared value is not bounded in the range 0,1.

Significant associations between the level of casual employment and a number of variables (and groups of variables) are uncovered. The key findings are now summarised.

- i) As expected, larger workplaces are associated with a greater probability of employing casuals. However, the incidence of casual employment does not appear to vary with workplace size. There is, however, a much larger casual employment share in small firms (less than 100 employees) – about 50 per cent larger, other things equal.
- ii) Workplaces confronted by seasonal variations in demand are more likely to employ casuals, with the average casual employment share being about 25 per cent higher than in workplaces where demand is not seasonal. No significant associations with other market characteristics were discerned.
- iii) Evidence on the relationship between product market competition and casual employment levels were extremely mixed. On the assumption that casual employment is constrained, it was hypothesised that the more competitive the market, the greater the incidence of casual employment. The only support for this hypothesis is provided by the negative coefficient on the non-commercial workplace variable. Indeed, the firms that arguably face the most intense competitive pressures, those competing in international markets or facing import competition, emerge as relatively low users of casual labour. One explanation for this finding might lie in the possibility that exporters and importers are compelled to compete on quality rather than price. This explanation, however, relies upon the assumption that casual work is associated with relatively lower labour costs (*despite in most cases attracting a wage premium*). Implicitly, casual work must therefore be seen as relatively more flexible but of lower quality than more permanent forms of labour.
- iv) As expected, low skill requirements are associated with greater utilisation of casuals. This is reflected in both a large positive coefficient on the variable measuring short training periods, and in a highly significant occupation effect. With respect to the latter, the likelihood of casual employment is highest in low-skill occupations (especially sales and personal service workers and labourers) and lowest in high-skill occupations (managers, tradespersons and professionals).
- v) As hypothesised, continuous production is associated with lower levels of casual employment, with the estimated effect again being very large – workplaces with continuous production are estimated to have casual employment shares which are only 70 per cent that of other comparable workplaces which do not operate around the clock.

- vi) Consistent with the findings of Mangan and Williams (1997), the results indicate that, other things held constant, rates of casual employment within the public sector are less than half that in the private sector.
- vii) Of the other controls for corporate culture, there is evidence (especially when using the tobit estimator) that the incidence of casual employment is relatively low at workplaces which have recently undergone major organisational restructuring and at long established workplaces. Both of these outcomes are consistent with predictions.
- viii) Again, as hypothesised, the presence of 'active' unions in the workplace appears to impede the use of casual employment, and again the magnitude of this effect is quite large, with the estimated probability of hiring casuals at such workplaces about 80 per cent that at comparable workplaces where unions are either absent or not active.
- ix) Despite the large number of controls included in the model, highly significant inter-industry differences remain. Indeed, the joint contribution of the industry variables exceeds that of all the other variables combined.

6. Concluding Remarks

The results reported in this article suggest that the major source of variations in the incidence of casual employment across workplaces and workers lies not so much in differences between individuals, but in differences between workplaces, firms and industries. While the likelihood of casual employment does vary significantly with worker characteristics, and especially sex and age, ultimately these observable worker characteristics are only able to explain a small fraction of the total variation in the distribution of worker across employment categories. In contrast, the attempt at estimating models of casual employment using workplace-level data appears to have been more successful, revealing significant associations between the casual employment share of workplaces and the nature of the product market, skill requirements, technology (i.e., production method employed), public sector ownership and union presence.

The suggestive nature of these conclusions, however, requires reinforcing. The techniques used to analyse the individual-level and workplace-level data, for example, are not directly comparable. Further, the major source of the explanatory power of the workplace-level model lies not in the factors highlighted above, but in unexplained inter-industry differentials. That is, even despite the inclusion of an extensive array of controls, very large differences between industries remain. While such differences

may well reflect differences across industries in the demand for casuals (due, for example, to differences in technology), they may also reflect supply-side factors as workers sort themselves into different firms and jobs.

Finally, while this analysis has not focused on the issue of growth in casual employment, it is of interest that the evidence from the workplace analysis suggests that there is no residual growth in casual employment not explained by the model. This finding thus suggests that the main sources of growth in casual employment must lie in factors such as declining union presence, increasing skill requirements and changing industry structure. In fact, a better explanation for the lack of difference between the two AWIRS cohorts is that in the AWIRS data there has been very little growth in casual employment. Such conclusions stand in marked contrast to those that would be drawn on the basis of an examination of the ABS data reported in Table 1. While such findings may be symptomatic of weaknesses in the AWIRS data, we are also drawn to the possibility that the ABS measures of casual employment may not be as reliable as widely assumed. As noted earlier, ABS estimates may be biased upwards, and increasingly so over time, as a result of treating owner managers of incorporated businesses as employees. Moreover, these measurement difficulties can be expected to increase given the gradual shift towards individual- and enterprise-based bargaining arrangements. Under such arrangements, for example, it is possible for award conditions, including leave entitlements, to be 'cashed-in' for wage increases. One consequence of such developments would be to make it difficult (if not impossible) to identify casual employees simply on the basis of their access to sick leave and annual leave entitlements.

Notes

- 1 Dawkins and Norris (1990) reported an upper bound estimate for 1982 of 13.3 per cent based on data from the Alternative Working Arrangements Survey conducted by the ABS in that year. The figure is an upper bound estimate because data were not collected from persons who work less than ten hours each week, and Dawkins and Norris assumed that all workers in this category were casuals.
- 2 Persons who are unsure of their entitlements are treated as not having any.
- 3 The 1995 AWIRS also included a panel component. That is, a sub-sample of workplaces participating in the 1989/90 survey (N=698) were re-surveyed.
- 4 The lower estimate in the employee data may reflect the presence of a large number of missing observations on the questions concerning entitlements to paid sick leave and paid holiday leave. Treating all missing cases as casuals would

cause the casual share of employment in the employee data to rise to 14.8 per cent.

- 5 This problem also means that the ABS has been increasingly overstating casual employment over time. According to ABS labour force data, owner managers of incorporated enterprises represented just 1.8 per cent of all employed persons in February 1978. By 1997 this proportion had increased to 5.6 per cent, or 6.7 per cent of employees. (See ABS, *The Labour Force Australia, July 1997*, ABS cat. no. 6203.0.)
- 6 Though conventional economic analysis would suggest that worker preferences for specific work characteristics may be associated with specific industries and/or occupations.

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Appendix Table A1: Summary Statistics, Employee Data

	Persons		Men		Women	
	Mean	SD	Mean	SD	Mean	SD
<i>Dependent variable</i>						
Casual employee	0.103	0.304	0.070	0.255	0.144	0.351
<i>Independent variables</i>						
Female	0.447	0.497				
Age (years)						
15-20	0.054	0.225	0.043	0.202	0.067	0.251
21-24	0.100	0.300	0.085	0.278	0.118	0.323
25-29	0.138	0.345	0.121	0.326	0.161	0.367
30-34	0.148	0.355	0.152	0.359	0.143	0.350
35-34 [control group]	0.146	0.353	0.158	0.365	0.131	0.338
40-44	0.144	0.351	0.149	0.356	0.139	0.345
45-49	0.125	0.331	0.126	0.332	0.124	0.329
50-54	0.083	0.276	0.091	0.288	0.074	0.261
55+	0.062	0.241	0.076	0.265	0.044	0.205
Birthplace						
OS – English-speaking	0.112	0.316	0.117	0.322	0.107	0.309
OS – other	0.128	0.334	0.125	0.330	0.131	0.337
Aboriginal / Torres St Islander	0.012	0.107	0.012	0.111	0.011	0.103
Non-English language speaker	0.062	0.241	0.061	0.239	0.064	0.245
Disability / health condition	0.078	0.268	0.083	0.276	0.072	0.258
No. of dep children 0-4 years	0.191	0.502	0.250	0.572	0.117	0.386
No. of dep children 5-12 years	0.341	0.721	0.399	0.778	0.270	0.637
No. of dep children 13 years +	0.304	0.705	0.322	0.720	0.282	0.685
Adult dependents	0.086	0.280	0.092	0.290	0.077	0.267
Educational attainment						
Post-grad degree	0.101	0.302	0.099	0.299	0.104	0.305
Degree / diploma	0.143	0.350	0.135	0.341	0.153	0.360
Associate diploma	0.095	0.294	0.095	0.293	0.096	0.295
Skilled vocational qual.	0.118	0.323	0.174	0.379	0.049	0.216
Basic vocational qual.	0.043	0.202	0.028	0.166	0.060	0.238
Compl secondary school [control]	0.187	0.390	0.172	0.377	0.2305	0.404
Some secondary school	0.270	0.444	0.253	0.435	0.290	0.454
Primary school	0.023	0.150	0.027	0.163	0.018	0.132

Appendix Table A2: Summary Statistics, Workplace Data

	Total Sample		Conditional on $CE_i > 0$	
	Mean	SD	Mean	SD
<i>Dependent variables</i>				
Casual employment dummy (=1 if $CE_i > 0$)	0.642	0.480	1.000	0.000
Share of casual employment in total employment (CE)	0.145	0.232	0.226	0.257
<i>Size</i>				
Workplace size	208.9	402.9	238.9	452.1
<i>Firm size</i>				
<100 employees	0.202	0.402	0.202	0.401
100-499	0.202	0.401	0.210	0.407
500-999	0.098	0.297	0.107	0.309
1000-4999	0.184	0.388	0.190	0.392
5000-9999	0.075	0.263	0.066	0.248
10000-19999	0.059	0.235	0.050	0.218
20000+ [control group]	0.181	0.385	0.176	0.381
<i>Market characteristics</i>				
Seasonal demand	0.281	0.450	0.306	0.461
Unpredictable demand	0.204	0.403	0.185	0.389
Demand expanding	0.543	0.498	0.550	0.498
Demand contracting	0.121	0.326	0.121	0.326
Number of competitors	0.354	0.478	0.382	0.486
Exporter	0.030	0.171	0.028	0.164
Import competition	0.200	0.400	0.205	0.404
Non-commercial	0.271	0.445	0.266	0.442
<i>Skill requirements</i>				
Training period >1 year	0.098	0.298	0.080	0.272
Training period <1 month	0.324	0.468	0.361	0.480
<i>Occupational composition</i>				
% managers	0.072	0.075	0.067	0.064
% professionals	0.104	0.193	0.104	0.193
% para-professionals	0.102	0.189	0.095	0.169
% tradespersons	0.109	0.187	0.090	0.154
% clerks	0.175	0.215	0.164	0.200
% sales & personal service	0.151	0.268	0.193	0.300
% plant & mach. operators	0.108	0.208	0.098	0.194
% labourers [control group]	0.178	0.236	0.190	0.234
<i>Technology</i>				
Continuous production	0.178	0.383	0.197	0.398
Technological change	0.477	0.500	0.492	0.500
<i>Management philosophy</i>				
Organisational change	0.647	0.478	0.635	0.482
Management training	0.426	0.495	0.425	0.494
Foreign ownership	0.129	0.335	0.133	0.340
Public ownership	0.327	0.469	0.269	0.444

Appendix Table A2 (cont'd)

	Total Sample		Conditional on $CE_i > 0$	
	Mean	SD	Mean	SD
<i>Workplace age</i>				
<5 years old	0.068	0.252	0.065	0.247
5-10 years	0.095	0.294	0.102	0.303
10-20 years	0.193	0.394	0.202	0.401
20-50 years	0.357	0.479	0.355	0.479
50 or more years	0.287	0.453	0.276	0.447
<i>Union influence</i>				
Active union present	0.315	0.465	0.312	0.463
Year = 1995	0.511	0.500	0.511	0.500
<i>Industry</i>				
Mining	0.031	0.172	0.025	0.157
Manufacturing [control group]	0.227	0.419	0.216	0.411
Electricity, gas & water	0.039	0.193	0.027	0.163
Construction	0.044	0.206	0.033	0.179
Wholesale trade	0.045	0.208	0.045	0.207
Retail trade	0.094	0.292	0.134	0.341
Accommodation, cafes, etc.	0.049	0.216	0.072	0.259
Transport & storage	0.047	0.213	0.041	0.199
Communication	0.033	0.178	0.016	0.126
Finance & insurance	0.079	0.270	0.052	0.222
Property & business services	0.060	0.237	0.053	0.224
Government administration	0.064	0.245	0.059	0.235
Education	0.070	0.255	0.079	0.269
Health & community services	0.077	0.267	0.108	0.310
Cultural & recreational services	0.030	0.171	0.041	0.198
Personal & other services	0.039	0.194	0.024	0.153