Determinants of Maternity Leave Provisions in Australia and The Effects on Fertility: An Application of the Heckprobit Selection Model

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Abstract

The paper uses data from the HILDA Survey (Wave 3 2003) to examine the availability of maternity leave in the Australian labour force and the impact of maternity leave on fertility outcomes. The paper makes use of the fact that respondents who do not know whether they have access to maternity leave are identified in the data set rather than grouped with all other missing observations. The paper demonstrates the probit selection model (also called the Heckprobit) as a means of alleviating the problem of sample selection bias that may otherwise occur if the 'don't know' respondents – or other individuals for whom data on maternity leave is not observed – were excluded from the estimation sample.

The analysis finds statistical evidence that the provision of maternity leave and workers' knowledge of their maternity leave rights are significantly dependent on a range of workplace and demographic factors, the most significant being the type of employment contract (permanent or casual) and sector (public or private). The results offer support for the existence of a segmented labour market, negating claims that workers pay for maternity leave entitlements in the form of lower wages. It is found that maternity leave elevates the likelihood of pregnancy, although this effect is dependent on the recipient's age and whether maternity leave is paid or unpaid.

Keywords

maternity leave; fertility; women's labour force participation; segmented labour market; sample selection model; Heckprobit; HILDA Survey

1. Introduction

Maternity leave policy has developed as a key issue of public discussion in Australia, particularly with respect to the reconciliation of work and family roles, declining fertility rates and the ageing population. Yet it is widely noted that policy development is limited by the lack of research into maternity leave (Baird and Litwin 2005; Human Rights and Equal Opportunities Commission (HREOC) 2002a, 2002b; Whitehouse and Soloff 2005). Furthermore, current understanding about existing maternity leave provisions has been limited by a lack of knowledge among workers themselves (Baird and Litwin 2004; Burgess and Baird 2003; Earle 1999; Smyth, Rawsthorne and Siminski 2005). This paper helps to address this research deficit using data from the HILDA Survey[1] (Wave 3 2003), which is one of the most comprehensive data sets to include nationwide unit record information on workers' maternity leave entitlements. The paper makes use of an advantageous feature of the HILDA Survey: the fact that respondents who do not know whether they have maternity leave provisions are identified rather than grouped with all other missing observations. These features of the HILDA Survey allow for some under-researched questions to be addressed: Which women are most likely to have access to maternity leave? Which women do not know whether or not they are entitled to maternity leave? What is the effect of maternity leave on fertility outcomes?

[1] This paper uses confidentialised unit record file from the Household, Income and Labour Dynamics in Australia (HILDA) survey. The HILDA Project was initiated and is funded by the Commonwealth Department of Family and Community Services (FaCS) and is managed by the Melbourne Institute of Applied Economic and Social Research (MIAESR). The findings and views reported in this paper, however, are those of the author and should not be attributed to either FaCS or the MIAESR.

The paper demonstrates the application of the probit selection model (also called the Heckprobit) as a means of including the 'don't know' responses in the estimation and alleviating the potential problem of sample selection bias. The probit selection model is also applied to assess the impact of maternity leave on the incidence of pregnancy. This estimation technique allows for information on both working and non-working women to be included in the estimation sample, removing a potential source of selection bias that may arise if non-working women (for whom data on maternity leave is not observed) were excluded from the sample. The probit selection model may be a useful methodological tool for other HILDA Survey users dealing with variables where the exclusion of 'don't know' responses may create a non-random sample or where similar sources of selection bias may occur with discrete choice outcome variables.

Section 2 provides a brief descriptive background of maternity leave provisions and pertinent policy concerns in Australia. Previous studies are reviewed in Section 3 and the methodology of this study outlined in Section 4. Results and analysis are presented in Section 5, followed by concluding comments.

2. Maternity Leave Provisions in Australia

As an outcome of Australia's industrial relations history, and largely due to the collective bargaining power of the union movement, unpaid maternity leave is a legislated employment entitlement for all long-serving workers (Campbell and Charlesworth 2004). The *Workplace Relations Act* (1996) granted all permanent employees with at least 12

months' continuous service legal entitlement to a minimum of 52 weeks' unpaid parental leave. This entitlement has since been extended to long-serving casual employees covered by federal awards and in certain state public sectors[2]. Although Australia's industrial policy affords a relatively generous period of unpaid leave by international comparisons, Australia falls short of international standards set by the International Labour Organisation (ILO) and the United Nations (UN) which prescribe that paid maternity leave be made a legal entitlement for all workers[3]. In Australia, legal entitlement to paid maternity leave is restricted to public sector employees only, the conditions of which depend on the jurisdiction of employment, as listed in Table 1.

[TABLE 1 HERE]

According to the HILDA Survey (2003), 44% of women in Australia's workforce have access to paid maternity leave and 71% have access to unpaid maternity leave, based on the sample of respondents who know for certain whether or not they have this entitlement. When the sample is expanded to include 'don't know' respondents, it is computed that 23% of women in the workforce do not know whether or not they have access to paid maternity leave and 29% do not know whether or not they have access unpaid maternity leave, as listed in Table 2.

[TABLE 2 HERE]

[2] *Family Provisions Test Case (2001)*; *Industrial Relations Act 1999 (Queensland); Industrial Relations Amendment (Casual Employees Parental Leave) Act 2000 (New South Wales).*
[3] *Maternity Protection Convention (C103, 1052: C183, 2000) (ILO); Convention on the Elimination of all forms of Discrimination Against Women (CEDAW) (1979) (UN).*

A key reason why paid maternity leave has emerged as a highly relevant policy issue is the fact that Australia's aggregate fertility rates have been below the standard replacement rate of 2.1 since the late 1970s (ABS 2002a). As an outcome of falling fertility rates and lengthening life expectancies, Australia now faces the weighty economic consequences of an ageing population (Campbell and Charlesworth 2004; Costello 2002, 2005). The potential for paid maternity leave to elevate the birth rates of working women, and help ease the cost pressures of the ageing population, lies its potential to offset the private opportunity costs associated with having children. By providing job security and a continued income stream during the leave period, paid maternity leave policy serves to compensate women for the returns to employment that are forgone when they withdraw from the labour force to have children. Given its potential to help sustain population growth and aggregate labour supply, it can be argued that maternity leave policy delivers not only private benefits to working women, but also social benefits to the whole of the economy (Earle 1999; Goward 2005; HREOC 2002a, 2002b; Pocock 2005).

Given the social externalities that may be gained by the provision of maternity leave, there is theoretical justification for the government to extend paid maternity leave legislation to all workers. The Federal Government has argued, however, that it would prefer to rely on the free market's determination of employment conditions rather than mandate provisions for paid maternity leave across the total labour force (Grattan 2001; Howard 2002, 2003). Recent industrial reforms implemented in *Work Choices Act* (2005)

affirm this policy direction[4]. In the current climate of ongoing market liberalisation, there is good reason to investigate the conditions in which firms may be expected to voluntarily provide maternity beyond legislated requirements. Although the provision of maternity leave imposes obvious costs on firms, such as the costs of temporary replacements and payment of compensatory wages during the leave period, firms can also benefit by having a worker return to employment shortly after childbirth rather than having them resign and the firm forced to hire and train permanent replacements (HREOC 2002b; Whiteford 2005; Yasbek 2004). It can be hypothesised that firms are willing to provide maternity leave to workers who they seek to retain as long-term employees, particularly when they have invested strongly in workers' training and the costs of employee turnover are high. The hypothesis that more valuable workers are more likely to have access to maternity leave fits with institutional theory of segmented labour markets (Borjas 2005; Leontaridi 1998; McRae 1994). However, this premise can be contested against an alternative school of thought, the Neoclassical theory of compensating wage differentials which would prescribe that workers will trade workplace benefits in exchange for pecuniary wages (Brown 1980; Rosen 1986). This reasoning implies that workers on lower wage levels are more likely to be provided maternity leave, all other factors equal. These theoretical contentions will be investigated in the analysis.

[4] Under *Work Choices* legislation workers are granted 52 weeks' unpaid maternity leave as a minimum condition of employment, but must privately negotiate for the right to paid maternity leave. The existing entitlements of workers on enterprise agreements or individual contracts, or any other non-award workers, are protected until the expiration of their agreements, at which time employers have the right to reduce entitlements to minimum conditions. Source*:* <https://www.workchoices.gov.au/>

3. Previous Studies

Little research into maternity leave has been conducted in Australia to date. Among one of the few studies to analyse the availability of maternity leave in Australia, Baird and Litwin (2005) offer statistical evidence that paid maternity leave is more likely to be made available to workers in larger firms, public sector employers and higher income-earners (up to a threshold), on the basis of data from a 2002 national household survey. The findings concur with data made available by HREOC (2002a) and ABS (2002b) which report that proportionally more higher-skilled, higher-earning professional employees have access to paid maternity leave than lower-skilled, lower-earning employees. The availability of maternity leave has been measured as a part of a collective package of family-friendly workplace policies (Bardoel, Moss, Smyrnios and Tharenou 1999; Whitehouse and Zetlin 1999). However, there are limitations in constructing a composite dependent variable of multiple workplace policies that have potentially different value to different types of employees and impose different costs and productivity effects on the firm. International studies highlight the impact of firm size in determining the likelihood that maternity leave is provided in the workplace (Bond, Galinsky, Kim and Brownfield 2005; Evans 2001; Even 1992; Kalleberg and Van Buren 1996; Lee 2000). It has been reasoned that larger firms can better afford to provide leave policies as they have more resources to handle organisational adjustments (Even 1992). In international research, workers' access to maternity leave beyond legislated provisions is also found to be affected by unionisation, employment status, type of contract, sector, occupation, industry, length of tenure, the existence of training programmes and workers'

demographic characteristics (Averett and Whittington 2001; Budd and Mumford 1998; Evans 2001; Glass and Fujimoto 1995). An aspect of maternity leave entitlements which has been overlooked in previous studies is workers' degree of knowledge of their entitlements, although this issue is cited as a matter for inquiry (Earle 1999; Smyth et al. 2005).

In analysing the relationship between maternity leave provisions and wages, previous studies produce mixed results. Several cross-sectional studies support the case that maternity leave is more likely to be made available to higher wage earners (Baird and Litwin 2005; Even 1992). The case for a positive relationship between wages and workplace provisions is backed by evidence that Australian labour markets are segmented along the lines of industry, unionisation, skill and job security (Drago 1992; Flatau and Lewis 1993). Time-series approaches, however, tend to suggest that the provision of maternity leave places downward pressure on average wage levels (Albrecht, Edin, Sundstrom and Vroman 1999; Edin and Gustavsson 2003; Kunze 2002). This disparity may be due to the fact that time-series studies tend to rely on aggregate data which may obscure the true nature of individualised responses, or due to the effects of unobserved dynamic factors that are captured only by time-series analysis. However, instances of this negative wage effect have been detected in cross-sectional studies (Edwards 2005; Gruber 1994; Mac 2003). Edwards' study (2005), which constructs wage equations using 2001 data from the HILDA Survey, finds evidence of compensating wage differentials. Yet, since the construction of the variables is largely streamlined according to state or territory, the results may primarily capture the effects of each state

or territory's legislation. Edwards treats the 'don't know' responses as missing observations even though these workers are potentially eligible to take maternity leave.

The lack of data on maternity leave in Australia means that there is also little statistical research available on the effect of maternity leave on birth rates in this country. International studies tend to suggest that maternity leave has limited impact on fertility rates (Castles 2002; Gauthier and Hatzius 1997; Winegarden and Bracy 1995; Zhang, Quan and Van Meerbergen 1994). However, many of these studies are limited by the estimation techniques. For example, Castles (2002) concludes that high levels of maternity leave entitlements are associated with lower fertility rates on the basis of measures of correlation. However, correlation measures do not necessarily capture casual effects: higher levels of provision of maternity leave may be a policy response to low fertility rates. Studies that employ more rigorous analysis using unit-record data find that the availability of maternity leave has a positive effect on fertility in particular circumstances (Averett and Whittington 2001; Ronsen 1999, 2004a, 2004b).

4. Methodology and Data

4.1 Estimation of Maternity Leave Provisions

Separate binomial probit models are constructed to test for the determinants of the provision of paid maternity leave (*PML*) and unpaid maternity leave (*UPML*), with the respective dependent variables are defined as:

$y_i = PML = 0$ if worker does not have access to paid maternity leave

$= 1$ if worker has access to paid maternity leave (1)

$y_i = UPML = 0$ if worker does not have access to unpaid maternity leave

$= 1$ if worker has access to unpaid maternity leave (2)

The respective dependent variables take the values[5]:

$PML_i = 1$ if $y_i^* > 0$

$= 0$ otherwise (3)

$UPML_i = 1$ if $y_i^* > 0$

$= 0$ otherwise (4)

where y_i^* represents the unobserved utility associated with each observed outcome for individual i. This underlying utility function takes the form:

$$y_i^* = \alpha + x_i'\beta + \varepsilon_i$$
$$\varepsilon_i \sim N[0,1] \quad (5)$$

where y^* represents the unobservable variable for individual i, α is a constant term, x refers to the set of observable independent variables that linearly determine y^*, β is a vector of coefficients associated with x, and ε is the error term, normally distributed with zero mean and unit variance.

On the assumption of a normal distribution, the probability is defined as:

[5] Notation for equations (3) to (8) based on Greene (2003).

$$Pr\,(y_i=1) = \int_{-\infty}^{\alpha + x_i'\beta} \phi(t)dt$$

$$= \Phi\,(\alpha + x_i'\beta) \tag{6}$$

where ϕ and Φ represent, respectively, the density function and cumulative distribution function of the standard normal distribution. Coefficients are estimated by means of maximum likelihood, where the log likelihood function is:

$$\ln L = \sum_{y_i=0} \ln\left[1 - \Phi\left(x_i'\beta\right)\right] + \sum_{y_i=1} \ln\Phi\left(x_i'\beta\right) \tag{7}$$

The effect of a unit change in the explanatory variable x_i on the probability that an individual has access to maternity leave is computed as:

$$\frac{\partial Pr(y_i = 1)}{\partial x_i} = [\phi(\alpha + x_i'\beta)]\beta \tag{8}$$

The models will test for the effects of the following explanatory variables in determining the provision of maternity leave: employment status (full-time or part-time), employment sector (public or private), employment type (permanent or casual), trade union membership, firm size, occupational level, tenure with current employer, wage, industry, state/territory, geographical remoteness, age, relationship status, dependent children and education level. Interaction terms are constructed between employment type and sector, state/territory and employment type, state/territory and sector, and education and occupation[6].

[6] Variable specification and descriptive statistics are provided in Appendices 1 and 2.

The functions defined in (6) can only be applied to workers for whom data is observed. The exclusion of the 'don't know' respondents, who constitute over 20% of the total sample, creates the potential risk of sample selectivity bias. If systematic differences exist between the observed data and the 'don't know' respondents, regressions based only on a non-random sample of the 'certain' respondents will be subject to specification error and generate biased and inconsistent estimates (Greene 2003, 2006; van de Ven and van Praag 1981). To circumvent the potential problem of sample selectivity bias, a two-step probit selection model is applied[7]. The technique is analogous to Heckman's (1979) two-step OLS sample selection model commonly used in linear wage regressions to overcome the problem that data for wages is observed only for labour force participants. Heckman's original two-step technique is designed for continuous dependent variables estimated by linear regression, but the technique has been adapted for discrete dependent variables where both the selection equation and the outcome equation are binary choices (van de Venn and van Praag 1981). The technique tests for the presence of sample selection bias and, if detected, allows for the 'don't know' respondents to be represented in the estimation sample. This amendment can improve the asymptotic properties of the estimates, in terms of consistency, efficiency and unbiasedness, by preserving the sample size (Ramanathan 1998).

[7] This technique is also known as the "Heckprobit" in reference to the adaptation of Heckman's technique to a probit equation (see for example Butler 1999). Examples of the application of the Heckprobit in labour market analysis are available in Albert, Garcia-Serrano and Hernanz (2005), O'Donnell (1998), Pastore (2005) and Trejo (1993). Liao (1995) applies the technique to 'don't know' responses in the context of attitudinal survey data.

A preliminary binary-choice selection with dependent variable d_i is constructed to estimate the probability that a respondent knows their maternity leave entitlements. Separate equations are defined for paid and unpaid maternity leave as follows:

$$\begin{aligned} d_i = DK\_PML &= 0 \text{ if worker does not know whether or not they have access to} \\ &\quad \text{paid maternity leave } (PML \text{ missing}) \\ &= 1 \text{ if worker knows whether or not they have access to paid} \\ &\quad \text{maternity leave } (PML = 0 \text{ or } 1) \end{aligned} \tag{9}$$

$$\begin{aligned} d_i = DK\_UPML &= 0 \text{ if worker does not know whether or not they have access to} \\ &\quad \text{unpaid maternity leave } (UPML \text{ missing}) \\ &= 1 \text{ if worker know whether or not they have access to unpaid} \\ &\quad \text{maternity leave } (UPML = 0 \text{ or } 1) \end{aligned} \tag{10}$$

The dependent variable of the selection equation takes the following values:

$$\begin{aligned} d_i &= 1 \text{ if } d_i^* > 0 \\ &= 0 \text{ otherwise} \end{aligned} \tag{11}$$

where d_i^* represents the underlying utility associated with each outcome for individual i. Since the selection equation is also a probit model, it is also based on an underlying utility function expressed as:

$$\begin{aligned} d^*_i &= \theta + z_i'\delta + u_i \\ u_i &\sim \mathrm{N}[0,1] \\ \mathrm{corr}\,[\varepsilon_i\, u_i] &= \rho \end{aligned} \tag{12}$$

where d_i^* is the unobserved variable, θ is a constant, z_i refers to the set of independent variables that determine d_i^*, δ is a vector of coefficients associated with z_i, u_i is the error

term of the selection equation, normally distributed with zero mean and unit variance, and ρ denotes the correlation between the error terms of the selection and outcome equations[8].

In the instance of sample selection, the probability that a worker is entitled to maternity leave is now conditional on whether or not y_i is observed. The probability model is adjusted for these selection effects:

$$\begin{aligned} \mathrm{E}\,[y_i|\, x_i, y_i \text{ is observed}] &= \mathrm{E}\,[y_i^*|\, x_i, d_i=1] \\ &= (\alpha + x_i'\beta) + \mathrm{E}\,[\varepsilon_i|\, x_i, d_i=1] \\ &= (\alpha + x_i'\beta) + \mathrm{E}\,[\varepsilon_i|\, u_i > -\theta - z_i'\delta)] \end{aligned} \tag{13}$$

Assuming the error terms ε_i and u_i are correlated according to a bivariate standard normal distribution with correlation coefficient ρ, the probability model is expressed as[9]:

$$\begin{aligned} \mathrm{E}\,[y_i|\, x_i, y_i \text{ is observed}] &= (\alpha + x_i'\beta) + \rho\phi\,(-\theta - z_i'\delta) \,/\, [1-\Phi(-\theta - z_i'\delta)] \\ &= \alpha + x_i'\beta + \kappa\lambda_i \end{aligned} \tag{14}$$

where λ_i represents the inverse Mills ratio equal to:

$$\lambda_i = \phi(-\theta - z_i'\delta) / \Phi(-\theta - z_i'\delta) \tag{15}$$

and ϕ and Φ represent respectively the density and cumulative functions of the standard normal distribution[10].

[8] Equations (11) and (12) follow Montmarquette, Mahseredjian and Houle (2001).
[9] Normalisation $\sigma^2 = 1$
[10] Notation for equations (13) to (15) based on Greene (2006).

The probability model (14) is equivalent to the original probit model (5) but for the addition of a selection correction term (λ) with coefficient value κ, which is included to adjust for the non-random sample. This selection term allows for changes in the independent variables to affect both the probability that women are provided maternity leave and the probability that they know their maternity leave entitlements in the first place (Greene 2003). If it is proven that λ differs significantly from zero and that the error terms are correlated, a regression based only on observed data for y_i would be subject to an omitted-variable bias (Greene 2003, 2006; van de Venn and van Praag 1981).

The value of ρ is used to evaluate the risk of selection bias and assess whether it is necessary to employ the selection model. If ρ differs significantly from zero, there is reason to reject the null hypothesis that no correlation exists. Alternatively, if ρ is non-significant, there is no evidence of selection bias and no reason to apply the two-step selection model. In this circumstance, the standard probit will deliver the more consistent and unbiased estimates (Pastore 2005; van de Venn and van Praag 1981). In the output results, the values of both ρ and λ will be estimated and their level of significance assessed.

The log-likelihood function of the probability model with selection effects is defined as:

$$\ln L = \sum_{y_i=1, d_i=1} \ln\left[\Phi_2\left(x_i'\beta, z_i'\delta, \rho\right)\right] + \sum_{y_i=0, d_i=1} \ln\left[\Phi_2\left(-x_i'\beta, z_i'\delta, \rho\right)\right] + \sum_{d_i=0} \ln\left[1 - \Phi_1\left(z_i'\delta\right)\right] \qquad (16)$$

where Φ_1 is the univariate cumulative distribution function and Φ_2 is the bivariate cumulative distribution function[11]. The first term of equation (16) refers to the observations for which the outcome and selection equation are positive values (i.e. maternity leave entitlement is known and the worker has entitlement). The second term refers to the observations for which outcome is observed but takes a zero value (i.e. maternity leave entitlement is known and worker has no entitlement). The third term covers those observations for which the outcome equation is unknown (i.e. worker does not know whether or not they have access to maternity leave) (de Figueiredo 2005).

Workers' knowledge of their maternity leave entitlements (as defined in (9) and (10)) are regressed on following explanatory variables: employment status, employment type, sector, union membership, firm size, occupation, tenure, wage, industry, state or territory, geographical remoteness, age, number of children, education level and whether or not the women reports becoming pregnant in the past year. The probit selection technique requires that there be a variable included in the selection equation but not the outcome equation to function as an exclusion restriction (Dubin and Rivers 1990). For this purpose, the variable *PREG* (which denotes the incidence of pregnancy) is included as an explanatory variable in 'don't know' selection equation but not the outcome equation.

[11] Notation for equation (16) follows Montmarquette, Mahseredjian and Houle (2001) and Painter (2000).

4.2 Estimation of Pregnancy Rates

To assess whether the availability of paid and/or unpaid maternity leave affects the likelihood that a woman becomes pregnant[12], a probit model is constructed following equation (5). The dependent variable (*PREG*) is defined as follows:

$$y_i = PREG = 0 \text{ if worker has not become pregnant in past year}$$
$$= 1 \text{ if worker has become pregnant in past year} \quad (17)$$

Again, this model is subject to the problem of missing data since information on women's maternity leave entitlements can only be observed for working women. If the pregnancy decisions of working women differ systematically from those of non-working women, estimations based on observed data only will be subject to sample selection bias. To test for this potential source of bias, a probit selection model is constructed with a probit model for labour force participation status (*LFP*) applied as the selection equation, defined as:

$$d_i = LFP = 0 \text{ if individual is currently employed (}PML\text{ and }UPML\text{ missing)}$$
$$= 1 \text{ if worker is not currently employed (unemployed or non-participant)}$$
$$(PML\text{ and }UPML\text{ observed}) \quad (18)$$

Variables to denote workers' access to maternity leave (*PML* and *UPML*) are included as explanatory variables in the pregnancy probit. To test whether women of different ages respond differently to the provision of maternity leave, the maternity leave variables are

[12] Pregnancy rate, rather than birth rate, is used as the dependent variable, because it captures the childbearing intentions of women who are pregnant but yet to give birth, including those who may suffer miscarriage. Australia reports 7.1 fetal deaths (stillbirths) per 1000 births (based on 2003 data) (Laws and Sullivan 2005).

categorised according to the respondent's age-group: under 25 years, 25<35 years, and 35 years and over. This category design separates women in the peak-childbearing age group[13] (25<35) from younger women who are less likely to have started their families, and older women who are more likely to have completed the childbearing years. The following explanatory variables are also included in the pregnancy model: employment status, employment type, sector, union membership, firm size, occupation, tenure, wage, other household income, state or territory, remoteness, relationship status, dependent children and education level. The variable for 'number of children' serves as the exclusion restriction in the probit selection model.

5. Results and Analysis

5.1 Provision of Maternity Leave

Table 3 reports the coefficient results and marginal effects of the probit selection model. Since ρ is deemed non-significant, there is no statistically supportable evidence that the exclusion of the 'don't know' responses generates selection bias. The standard probit model based only on sure responses model will deliver the more consistent and unbiased estimates, as re-estimated in Table 4. Prediction rates are reported in Tables 5 and 6.

[TABLES 3, 4, 5, 6 HERE]

The models exhibit moderate predictive success, correctly classifying over three-quarters of all actual observations. For both models, the joint significance of all the variables is

[13] The highest incidence of pregnancy is reported by women aged 25<35 years (HILDA Survey 2003)

confirmed by the $\chi 2$ statistic. The results indicate that paid maternity leave is statistically more likely to be provided to women in permanent employment, the public sector, the unionised workforce, larger firms and highly-skilled occupations. The significant positive correlation between paid and unpaid leave indicates that both types of maternity leave are typically provided as complementary workplace benefits rather than as substitutes. The significance of firm size supports the hypothesis that economies of scale exist in the provision of paid maternity leave, such that larger firms can better afford to offer this policy.

In collaboration with ABS data (2002c), the results lend weight to the hypothesis that firms rely on maternity leave as a retention strategy. It appears that the conditions in which workers are more likely to have access to maternity leave are also the conditions in which firms undertake greater investment in the training of their workers. Large firms – which are more likely to provide maternity leave than small firms – spend almost double the amount than small firms on training expenditure per employee[14]. Those industries which are most likely to provide paid maternity leave – finance and insurance and communication services – record the highest levels of training expenditure per employee. Those industries which are statistically less likely to provide paid maternity leave – accommodation, cafés and restaurants, and cultural and recreational services – spend less than half the economy-wide average expenditure on employee training[15]. Similarly, statistical differentials observed between states or territories may be attributed to investment returns. Compared all other permanent workers in Australia, paid maternity

[14, 15, 16] ABS (2002) *Employer Training Expenditure and Practices 2001-02,* Cat. No. 6362.0

leave is less likely to be available to permanent workers in Qld, SA and Tasmania where employers spend the least in employee training out of all Australian states and territories. Compared to all other public sector workers, paid maternity leave is more likely to be provided to public sector workers in NSW and ACT where employers record the top and third-highest investment levels[16]. A relatively larger share of public sector employees may be eligible for paid maternity leave than elsewhere in Australia due to the relatively less stringent eligibility requirements of NSW legislation[17] and the large proportion of Commonwealth employees who constitute the ACT residency population.

Indications that firms which invest heavily in training their workers are more likely to offer maternity leave may also be a signal that firms are relying on family-friendly workplace policies as a means of further improving the productivity of their workers. The strategy of enhancing workers' productivity by offering benefits that boost their morale and job satisfaction is akin to the principle of efficiency wages (Baughman, DiNardi and Holtz-Eakin 2003; Clifton and Shepard 2004). Firms may have greater reason to offer such productivity incentives to workers have already undergone extensive training because there are fewer alternative ways to improve the productive capacities.

Aside from employment factors, demographic factors also prove to influence the likelihood of access to paid maternity leave. Women with children are less likely to have jobs that offer paid maternity leave compared to women without children, the effect magnifying as the number of children increases. This finding may be a sign of hiring

[17] See Table 1

discrimination; employers may be less willing to offer paid maternity leave to women with children because they assume these workers are more family-oriented and more likely to use this workplace benefit at the employers' cost. Alternatively, it may be that women with children no longer need maternity leave policy, having completed their family formation, while women without children are yet to begin childbearing and therefore seek out jobs which offer this provision.

Unpaid maternity leave is statistically more likely to be made available to women employed in the permanent workforce, large firms, highly-skilled occupations or in high-earning jobs. Industry effects are detected; women working in agriculture, forestry, fishing and mining, health and community services, cultural and recreational services, and personal or other services are relatively unlikely to be provided unpaid maternity leave. Permanent employees in ACT are more likely to have access to unpaid maternity leave compared to all other permanent employees in Australia. All other ACT employees, as well as private-sector employees in SA and Tasmania, are significantly less likely to have this entitlement. Women in relationships are more likely to have jobs that offer unpaid maternity leave compared to single women. Women in relationships – who may be assumed to be more family-oriented than single women – may purposely seek out jobs which offer family-friendly policies. The finding that women in relationships have higher access to unpaid leave, but not necessarily to paid leave, suggests that women with intentions of having children may be more concerned about the length of leave entitlement rather than the financial compensation, given the fact that unpaid leave is generally provided for a longer period than paid leave (HREOC 2002b).

In concurrence with previous studies of the Australian labour market (Baird and Litwin 2005), there is no statistical support for the existence of compensating wage differentials in the provision of either type of maternity leave. Evidence of a statistically significant positive relationship between wages and the provision of unpaid maternity leave instead supports the theory of labour market segmentation: high wage earners are more likely to have access to this benefit than low wage earners. The detection of statistically significant divisions in the provision of both types of maternity leave across the labour force can itself be treated as evidence of segmentation effects; identifiable sectors of the labour market are statistically more likely to be provided maternity leave than others, on the basis of their individual workplace or demographic characteristics.

5.2 'Don't Know' Responses Probit

The factors which determine whether or not women know if they have access to maternity leave are identified in the probit models reported in Table 7. Prediction rates are reported in Tables 8 and 9.

[TABLES 7, 8, 9 HERE]

Both models demonstrate moderate predictive success based on the correct-classification rates, and the $\chi 2$ values affirm the joint significance of all variables. Women who do not know whether or not they have access to paid maternity leave are more likely to be permanent, private sector or non-unionised employees, working in small firms or in low-

skilled occupations, or relatively recently hired by their current employer. On the other hand, women who are certain of their paid maternity leave entitlements are more likely to be casual, public sector or unionised employees, working in large firms or in highly-skilled occupations, or have long records of tenure with their current employer. Women in the finance and insurance industry express greater certainty of their paid maternity leave entitlement than all other women. Demographic factors also affect workers' knowledge of their entitlements. Women with higher educational qualifications, women with dependent children, women who report a pregnancy in the past year and older women are more certain of their entitlement to paid maternity leave, although age and number of children have diminishing effects.

Women's knowledge of their unpaid maternity leave provisions largely parallels the results of the paid maternity leave model, although some differences emerge. Although worker's knowledge of paid maternity leave entitlements is unaffected by employment status or wage level, these factors are significant with respect to unpaid maternity leave. Women who do not know whether they have access to unpaid maternity leave are likely to be part-time, permanent or private sector employees, employed by small firms or in low-ranked occupations, low wage earners, employed in the finance and insurance industry or recently hired by their current employer. Demographic factors exert highly significant effects; women's knowledge of their entitlement to unpaid leave is positively dependent on their age (up to a threshold), the incidence of pregnancy within the past year, the number of dependent children and level of educational.

The results suggest that potential informational deficiencies exist in certain sectors of the labour market. Workers with the poorest knowledge of their maternity leave entitlements are found in the permanent, private-sector, short-term labour force and low-skilled occupational groups[18]. Part of this finding may be attributable to legislation: given the definition of casual employment, most casual workers are likely to know that their employment contract does *not* entail entitlement to paid benefits such as maternity leave, which makes permanent workers the ones who are relatively more uncertain. Similarly, entitlement to paid maternity leave is specified in public-sector legislation, leaving private-sector employees as the ones who are relatively more uncertain. In terms of demographic characteristics, a relative lack of knowledge is expressed among younger, lower-educated women, with no dependent children. It may be assumed that young, childless women are more concerned with establishing labour market ties rather than raising a family, and therefore have little interest in their maternity leave rights at this age. At the same time, women with no dependent children also includes older women who have completed their family formation and are no longer concerned about their maternity leave rights. Lower-educated women may have less interest in their maternity leave rights because their lower earning potential implies they face lower opportunity cost of having children. They may form only a weak attachment to the labour force, with the intention of later permanently withdrawing from the labour force to have children. Educational levels may also be indicative of workers' capacity to seek information about their general employment rights.

[18] Factors significant at 1% critical level for both the *'Don't Know PML'* and *'Don't Know UPML'* probit models.

5.3 Effect of Maternity Leave on Pregnancy Rates

Estimation of the determinants of pregnancy rates are reported in Table 10. The significance test for ρ verifies the need to apply the selection equation to control for sample bias. The $\chi 2$ test statistic validates the joint significance of all the variables.

[TABLE 10 HERE]

The results indicate that the availability of maternity leave can elevate pregnancy rates but the effect depends on a woman's age and whether maternity leave is paid or unpaid. Young women (<25 years) are positively influenced by the availability of paid or unpaid maternity leave. Women in the peak childbearing age-group (25<35 years) are positively influenced by the availability of unpaid maternity leave, but unaffected by paid maternity leave. Women in the third age-group (≥35 years) are unresponsive to any form of maternity leave entitlement. It may be understandable that women in this older age-group, who are closer to their fertility expiration dates, have less choice in the timing of their pregnancies. They are more likely to be more influenced by personal preferences rather than by employment policies.

The finding that the younger age-groups are responsive to maternity leave – while older women are not – may indicate that the availability of maternity leave provides incentive for women to have children sooner rather than later in life. The proposition that maternity leave can bring forward the timing of children has important implications for the role of maternity leave policy as a fertility policy, as research indicates that women who have

children sooner in life have more children in total (Gauthier and Hatzius 1997). Even if maternity leave policy simply encourages women to have children sooner rather than later without affecting their total lifetime fertility rate, it can help to ease the costs pressures of the ageing population by helping the economy to replenish its labour supply sooner.

7. Conclusions

This paper has helped to answer the need for greater research into maternity leave provisions in the Australian labour force, using some advantageous features of the HILDA Survey. The fact that 'don't know' respondents are specifically identified in the data set allows for a deeper analysis of maternity leave provisions in the workplace. A feature of this paper has been the application of the probit selection model as a method of evaluating the risk of sample selection bias in the analysis of discrete choice outcome variables or in circumstances where the exclusion of 'don't know' responses creates a non-random sample.

This paper finds evidence of statistically significant divisions in maternity leave entitlements within Australia's female labour force. The strongest division are detected on the basis of employment type and sector: permanent employees are 36% more likely to have access to paid maternity leave and 25% more likely to have access to unpaid maternity leave than casual employees. Public sector employees are 23% more likely to have access to paid maternity leave and 12% more likely to have access to unpaid

maternity leave to leave than private sector employees. The collective finding that the provision of maternity leave depends on workers' employment conditions and demographic characteristics may be interpreted as a signal of labour market segmentation. With respect to the correlation between maternity leave and wages, this paper finds no evidence of compensating wage differentials. Rather, the finding that higher wage earners are more likely to have access to unpaid maternity leave supports evidence of labour market segmentation.

It is inferred from the results that firms in free market conditions offer maternity leave as a profit-maximising retention strategy. Maternity leave can be used by firms as a means of maximising employees' length of tenure, in order to extract the fullest returns on their investment in their employees. The significance of firm size also lends weight to the theory that economies of scale exist for the firm in the provision of maternity leave policies. In light of the finding that non-unionised and private-sector workers are less likely to be offered paid maternity leave than unionised or public sector workers, it may be predicted that the movement towards greater liberalisation and decentralisation of the workforce will see a decline in the proportion of workers with access to this workplace benefit.

Although it was found that the exclusion of the 'don't know' responses generates no risk of sample selection bias, the paper did find that workers who express uncertainty concerning their maternity leave entitlements can be identified by employment and demographic variables. Strong differentials are detected between the private and public

sectors and between the permanent and casual workforces, although unsurprisingly the most significant factor affecting workers' knowledge of their maternity leave entitlements is the recent incidence of pregnancy.

Lastly, this paper contributes to discussion about fertility policies with evidence that the availability of maternity leave elevates the likelihood of pregnancy, although this effect depends on a woman's age and whether maternity leave is paid or unpaid. It is inferred that the overall effect of maternity leave on pregnancy decisions is the inducement to bring forward the timing of children to earlier in women's lives.

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Appendix 1

Table A1: Specification of Variables

Variable Name	*Description*	*Specification*
Paid Maternity Leave (PML)	Respondent has access to paid maternity leave (sure responses only)	0 = No 1 = Yes
Unpaid Maternity Leave (UPML)	Respondent has access to unpaid maternity leave (sure responses only)	0 = No 1 = Yes
Don't Know PML	Respondent knows if they have access to paid maternity leave	0 = Don't Know 1 = Do Know
Don't Know UPML	Respondent knows if they have access to unpaid maternity leave	0 = Don't Know 1 = Do Know
Labour Force Participation Status (LFP)	Employed in labour force	0 = No 1 = Yes
Full-Time	Employment status	0 = Employed part-time 1 = Employed full-time
Permanent	Type of employment contract	0 = Casual 1 = Permanent
Public Sector	Sector of employment	0 = Private 1 = Public
Occupation	Occupational level	0 = Elementary workers & Labourers 1 = Intermediate workers 2 = Advanced workers & Tradespersons 3 = Associate Professionals 4 = Professionals, Managers & Administrators
Union	Member of trade union	0 = No 1 = Yes
Firm Size	Size of workplace	0 = Less than 100 workers 1 = 100 workers or more
Tenure	Length of tenure with current employer	Years
Wage	Personal weekly gross wage	Log of personal weekly gross wage ($)
Agriculture/Forestry/Fishing	Employed in industry	0 = No 1 = Yes
Mining	Employed in industry	0 = No 1 = Yes
Manufacturing	Employed in industry	0 = No 1 = Yes
Electricity, Gas & Water Supply	Employed in industry	0 = No 1 = Yes
Construction	Employed in industry	0 = No 1 = Yes
Wholesale Trade	Employed in industry	0 = No

		1 = Yes
Retail Trade	Employed in industry	0 = No 1 = Yes
Transport/Storage	Employed in industry	0 = No 1 = Yes
Accommodation/Cafes/ Restaurants	Employed in industry	0 = No 1 = Yes
Communication Services	Employed in industry	0 = No 1 = Yes
Finance/Insurance	Employed in industry	0 = No 1 = Yes
Property/Business Services	Employed in industry	0 = No 1 = Yes
Government Administration/ Defence	Employed in industry	0 = No 1 = Yes
Education	Employed in industry	0 = No 1 = Yes
Health & Community Services	Employed in industry	0 = No 1 = Yes
Cultural & Recreational Services	Employed in industry	0 = No 1 = Yes
Personal & Other Services	Employed in industry	0 = No 1 = Yes
NSW	Resident of New South Wales	0 = No 1 = Yes
VIC	Resident of Victoria	0 = No 1 = Yes
QLD	Resident of Queensland	0 = No 1 = Yes
WA	Resident of Western Australia	0 = No 1 = Yes
SA	Resident of South Australia	0 = No 1 = Yes
TAS	Resident of Tasmania	0 = No 1 = Yes
NT	Resident of Northern Territory	0 = No 1 = Yes
ACT	Resident of Australian Capital Territory	0 = No 1 = Yes
Remoteness	Geographical region	0 = City or Regional 1 = Rural or Remote
Age	Age of respondent	Years
Age Squared	Age squared of respondent	Years squared
Education Level	Highest educational qualification	0 = Below Year 12 1 = Year 12 2 = Vocational or Trade certificate 3 = Undergraduate Degree 4 = Postgraduate Degree

Relationship Status	Relationship status	0 = Single (Separated/Divorced/ Widowed or Never Married) 1 = Couple (De facto or Married)
Number of Children	Number of dependent children (0<15 years)	Number of children
Number of Children Squared	Number of dependent children (0<15 years) squared	Number of children squared
Presence of Children	Presence of dependent children (0<15 years)	0 = No 1 = Yes
Pregnant in Past Year	Pregnant within last year	0 = No 1 = Yes
Other Household Income	Other weekly household income	Log of other weekly household income ($)
PML <25	Respondent is provided paid maternity leave	0 = No 1 = Yes (and respondent aged <25 years)
PML 25<35	Respondent is provided paid maternity leave	0 = No 1 = Yes (and respondent aged 25<35 years)
PML ≥35	Respondent is provided paid maternity leave	0 = No 1 = Yes (and respondent aged ≥35 years)
UPML <25	Respondent is provided unpaid maternity leave	0 = No 1 = Yes (and respondent aged <25 years)
UPML 25<35	Respondent is provided unpaid maternity leave	0 = No 1 = Yes (and respondent aged 25<35 years)
UPML ≥35	Respondent is provided unpaid maternity leave	0 = No 1 = Yes (and respondent aged ≥35 years)

Appendix 2

Table A2: Descriptive Statistics of Variables

Variable	*Number of observations*	*Mean*	*Standard Deviation*	*Min*	*Max*
Paid Maternity Leave (PML)	2589	0.4376	0.4962	0	1
Unpaid Maternity Leave (UPML)	2427	0.7099	0.4539	0	1
Don't Know PML	3328	0.7779	0.4157	0	1
Don't Know UPML	3324	0.7301	0.4440	0	1
Labour Force Participation (LFP)	6694	0.5593	0.4965	0	1
Full-Time	3744	0.5003	0.5001	0	1
Permanent	3252	0.6787	0.4671	0	1
Public Sector	3736	0.2628	0.4402	0	1
Union	3744	0.2543	0.4355	0	1
Firm Size	3744	0.2714	0.4447	0	1
Tenure	3739	5.9627	7.5002	0.0192	70
Occupation	3744	2.0809	1.5663	0	4
Wage	6603	3.0972	3.0928	0	8.7598
Other Household Income	6642	6.2829	1.6014	0	9.4700
Agriculture/Forestry/ Fishing	3744	0.0334	0.1797	0	1
Mining	3744	0.0035	0.0588	0	1
Manufacturing	3744	0.0526	0.2233	0	1
Electricity, Gas & Water Supply	3744	0.0024	0.0490	0	1
Construction	3744	0.0160	0.1256	0	1
Wholesale Trade	3744	0.0278	0.1644	0	1
Retail Trade	3744	0.1533	0.3603	0	1
Transport/Storage	3744	0.0612	0.2397	0	1
Accommodation/Cafes/Restaurants	3744	0.0203	0.1410	0	1
Communication Services	3744	0.0155	0.1235	0	1
Finance/Insurance	3744	0.0371	0.1891	0	1
Property/Business Services	3744	0.1084	0.3110	0	1
Government Administration/ Defence	3744	0.0449	0.2071	0	1
Education	3744	0.1397	0.3467	0	1
Health & Community Services	3744	0.2027	0.4021	0	1
Cultural & Recreational Services	3744	0.0329	0.1783	0	1
Personal & Other Services	3744	0.0483	0.2145	0	1
NSW	6694	0.3109	0.4629	0	1
VIC	6694	0.2477	0.4317	0	1
QLD	6694	0.1969	0.3977	0	1
WA	6694	0.0977	0.2970	0	1
SA	6694	0.0947	0.2928	0	1
TAS	6694	0.0294	0.1690	0	1
NT	6694	0.0055	0.0741	0	1
ACT	6694	0.0172	0.1299	0	1
Remoteness	6694	0.3802	0.4855	0	1
Age	6694	44.1331	18.1824	15	90
Age Squared	6694	2278.28	1766.37	225	8100

Relationship Status	6694	0.5771	0.4941	0	1
Pregnant in Past Year	6116	0.0522	0.2224	0	1
Number of Children	6290	1.8463	1.5518	0	12
Number of Children Squared	6290	5.8164	8.5260	0	144
Presence of Children	6694	0.3021	0.4592	0	1
Education Level	6690	1.3985	1.2947	0	4
Public Sector_Permanent	3244	0.2608	0.4391	0	1
Education Level_Occupation	3742	4.7357	5.3400	0	16
NSW_Permanent	3252	0.2085	0.4063	0	1
VIC_Permanent	3252	0.1768	0.3816	0	1
QLD_Permanent	3252	0.1387	0.3457	0	1
WA_Permanent	3252	0.0609	0.2392	0	1
SA_Permanent	3252	0.0538	0.2257	0	1
TAS_Permanent	3252	0.0181	0.1335	0	1
NT_Permanent	3252	0.0062	0.0782	0	1
ACT_Permanent	3252	0.0157	0.1243	0	1
NSW_Full-Time	3736	0.0792	0.2701	0	1
VIC_Full-Time	3736	0.0656	0.2476	0	1
QLD_Full-Time	3736	0.0530	0.2241	0	1
WA_Full-Time	3736	0.0198	0.1394	0	1
SA_Full-Time	3736	0.0219	0.1465	0	1
TAS_Full-Time	3736	0.0094	0.0963	0	1
NT_Full-Time	3736	0.0037	0.0611	0	1
ACT_Full-Time	3736	0.0102	0.1004	0	1
PML <25	2589	0.0510	0.2200	0	1
PML 25<35	2589	0.0989	0.2986	0	1
PML ≥35	2589	0.2878	0.4528	0	1
UPML <25	2427	0.0874	0.2824	0	1
UPML 25<35	2427	0.1722	0.3777	0	1
UPML ≥35	2427	0.4504	0.4976	0	1

Figures rounded to 4 decimal places
Variation in 'number of observations' due to exclusion of invalid and other missing responses

Table 1: Legislative Paid Maternity Leave Entitlements for Public Sector Employees, According to Jurisdiction (as at July 2002 unless otherwise stated)

Jurisdiction	*Duration of Paid Maternity Leave*	*Eligibility Requirements*
Commonwealth	12 weeks	12 months continuous service
NSW	9 weeks	At least 40 weeks of service before birth
VIC	12 weeks	12 months continuous service
QLD	6 weeks (12 weeks from July 2005)	12 months continuous service[1]
WA	None[2] (6 weeks from July 2003)	n/a 12 months continuous service
SA	4 weeks (12 weeks from May 2005)	12 months continuous service
TAS	12 weeks	12 months continuous service
NT	12 weeks	12 months continuous service
ACT	12 weeks	12 months continuous service

[1] Excludes employees of departments and statutory authorities which operate as trading enterprises
[2] Up to 6 weeks can be negotiated through the bargaining process of local Certified Agreements
Source: Senate Employment, Workplace Relations and Education Legislation Committee (2002) except for updated amendments for Qld, WA and SA made by author sourced from
Qld: <http://www.psier.qld.gov.au/circular/docs/05/circ05_05.pdf>;
WA: <www.docep.wa.gov.au/lr/Labour Relations/Media/cir03_03.pdf>;
SA:<http://www.cpsu.asn.au/webnews/050505_HISTORIC_MATERNITY_LEAVE_DECISION_050504.html>

Table 2: Share of Women in the Labour Force with Access to Paid or Unpaid Maternity Leave [a] (Includes 'Don't Know' Responses)

	Paid Maternity Leave	*Unpaid Maternity Leave*
Yes	33.8%	50.1%
No	42.6%	20.8%
Don't Know	23.6%	29.1%
Total	100%	100%

[a] Cross-sectional sampling weights applied to all figures
Source: HILDA Survey 2003

Table 3: Probit Results – Paid or Unpaid Maternity Leave with 'Don't Know' Selection Equation

Variable	*Paid Maternity Leave*		*Unpaid Maternity Leave*	
	Coefficient	*Marginal Effect*	*Coefficient*	*Marginal Effect*
Paid Maternity Leave			0.3867 ***	0.1049
Unpaid Maternity Leave	0.4110 ***	0.1526		
Full-Time	0.1025	0.0380	– 0.0974	– 0.0264
Permanent	0.8081 ***	0.2713	0.8126 ***	0.2478
Public Sector	0.5946 ***	0.2253	0.4234 *	0.1071
Union	0.3125 ***	0.1181	0.0126	0.0034
Firm Size	0.2237 ***	0.0841	0.2539 ***	0.0660
Occupation	0.1021 **	0.0379	0.0482	0.0131
Tenure	0.0157 *	0.0058	0.0055	0.0015
Wage	– 0.0034	– 0.0013	0.1687 ***	0.0458
Industry				
Agriculture/Forestry/Fishing	0.0518	0.0194	– 0.9811 **	– 0.3497
Mining	0.2889	0.1117	– 1.3209	– 0.4708
Manufacturing (base group)				
Electricity/Gas/Water Supply	0.4084	0.1593		
Construction	– 0.2599	– 0.0910	0.4355	0.0959
Wholesale Trade	0.0763	0.0287	– 0.3480	– 0.1073
Retail Trade	– 0.1117	– 0.0408	– 0.0575	– 0.0159
Accommodation/Cafes/Restaurants	– 0.3887	– 0.1325	– 0.2605	– 0.0776
Transport/Storage	– 0.1176	– 0.0426	– 0.0493	– 0.0137
Communication Services	0.6157 **	0.2410	0.1425	0.0363
Finance/Insurance	0.6880 ***	0.2686	– 0.1675	– 0.0485
Property/Business Services	– 0.0002	– 0.0001	– 0.1856	– 0.0536
Gov Administration/Defence	0.2998	0.1156	0.0532	0.0141
Education	0.2026	0.0768	– 0.3918 *	– 0.1177
Health/Community Services	– 0.0225	– 0.0083	– 0.3631 *	– 0.1070
Cultura & Recreational Services	– 0.3892	– 0.1320	– 0.2899 **	– 0.1944
Personal & Other Services	– 0.0098	– 0.0036	– 0.4722 *	– 0.1506
State/Territory				
NSW	– 0.1133	– 0.0417	– 0.0206	– 0.0056
VIC (base group)				
QLD	0.2056	0.0779	– 0.0708	– 0.0196
WA	– 0.0106	– 0.0039	– 0.3263	– 0.0985
SA	0.1554	0.0590	0.2037	0.0511
TAS	0.5335	0.2086	0.3103	0.0733
NT	– 5.1229	– 0.3687	0.4062	0.0907
ACT	– 0.4198	– 0.1409	– 1.8987 ***	– 0.6574
Remoteness	0.0279	0.0104	0.0632	0.0170
Age	0.0290	0.0108	0.0290	0.0079
Age Squared	– 0.0004	– 0.0002	– 0.0006 *	– 0.0001
Relationship Status	0.0149	0.0055	0.1489 *	0.0408
Number of Children	– 0.0999	– 0.0371	– 0.0168	– 0.0046
Number of Children Squared	0.0178	0.0066	0.0132	0.0036
Education Level	– 0.0427	– 0.0159	0.0443	0.0120

Sector_Permanent	0.1850	0.0696	– 0.3269	– 0.0940
Education Level_Occupation	0.0157	0.0058	0.0097	0.0026
NSW_Permanent	0.1199	0.0450	0.0485	0.0130
QLD_Permanent	– 0.4037	– 0.1398	0.1128	0.0295
WA_Permanent	0.0427	0.0160	0.1040	0.0271
SA_Permanent	– 0.5218 *	– 0.1714	0.3035	0.0724
TAS_Permanent	– 1.1120 **	– 0.2902	0.0765	0.0201
NT_Permanent	6.1140	0.6637		
ACT_Permanent	0.3863	0.1504	1.8266 **	0.1950
NSW_Public Sector	0.4234 **	0.1641	– 0.0833	– 0.0233
QLD_Public Sector	0.3032	0.1169	0.0964	0.0252
WA_Public Sector	– 0.2627	– 0.0921	0.5007	0.1073
SA_Public Sector	– 0.0382	– 0.0141	– 0.6243 *	– 0.2080
TAS_Public Sector	0.6181	0.2420	– 0.8194 *	– 0.2853
NT_Public Sector	– 0.7495	– 0.2234	0.0038	0.0010
ACT_Public Sector	0.9657 *	0.3694	0.6261	0.1248
Constant	– 2.4202 ***		– 1.3674 *	
'Don't Know' Selection Equation				
Full-Time	0.1397 *		0.2164 ***	
Permanent	– 0.3691 ***		– 0.2679 ***	
Public Sector	0.3174 ***		0.2059 ***	
Union	0.1202		0.0259	
Firm Size	0.1330 *		0.1422 **	
Occupation	0.0952 ***		0.0900 ***	
Tenure	0.0378 ***		0.0408 ***	
Wage	0.0594		0.0749 *	
Industry				
Agriculture/Forestry/Fishing	0.2405		– 0.0226	
Mining	– 0.2814		– 0.1221	
Manufacturing (base group)	– 0.1608		– 0.2593	
Electricity/Gas/Water Supply	– 0.4816		0.1220	
Construction	0.4839		0.0708	
Wholesale Trade	0.0789		– 0.0289	
Retail Trade	0.2081		0.1658	
Accommodation/Cafes/Restaurants	0.1406		0.1046	
Transport/Storage	0.1713		– 0.0926	
Communication Services	0.1843		0.2569	
Finance/Insurance	0.3895 *		0.3438 *	
Property/Business Services	0.0275		0.0370	
Gov Administration/Defence	0.1586		0.1231	
Education	0.2131		0.1182	
Health/Community Services	0.0258		0.0985	
Cultural & Recreational Services				
Personal & Other Services	0.3546		0.2411	
State/Territory				
NSW	0.0922		0.0275	
VIC (base group)				

QLD	0.1614 *	0.1216
WA	0.0791	0.0924
SA	– 0.0134	0.0251
TAS	– 0.0854	0.0961
NT	– 0.0230	0.0876
ACT	0.3119	0.2599
Remoteness	0.0606	0.0218
Age	0.0535 ***	0.0569 ***
Age Squared	– 0.0008 ***	– 0.0009 ***
Pregnant in last year	0.6160 ***	0.4813 ***
Number of Children	0.2754 ***	0.2000 ***
Number of Children Squared	– 0.0492 ***	– 0.0248 *
Education Level	0.0570 *	0.0500 *
Constant	– 1.2175 ***	– 1.5048 ***
λ (Selectivity correction term)	0.6425	– 0.1814
ρ (Error correlation coefficient)	0.5666	– 0.1794
Predicted Probability	*Pr* (PML=0) = 0.6479	*Pr* (UPML=0) = 0.8101
	Pr (PML=1) = 0.3521	*Pr* (UPML=1) = 0.1899
Model Criteria		
Total number of observations	2419	2558
Censored observations	584	722
Uncensored observations	1835	1835
Log Likelihood	– 2006.54	– 2110.36
Wald $\chi 2$	581.11 (55 df)	253.63 (53 df)
$Pr > \chi 2$	0.0000	0.0000
AIC	4205.08	4408.72
BIC	4761.03	4958.30
Selectivity Test ($\rho = 0$)		
χ^2 (1 df)	1.25	0.27
$Pr > \chi^2$	0.2627	0.6064

**** 1 % significance*
*** 5 % significance*
** 10 % significance*

Table 4: Probit Results – Provision of Paid or Unpaid Maternity Leave (Sure Responses Only)

Variable	*Paid Maternity Leave*		*Unpaid Maternity Leave*	
	Coefficient	*Marginal Effect*	*Coefficient*	*Marginal Effect*
Paid Maternity Leave			0.3925 ***	0.1053
Unpaid Maternity Leave	0.4488 ***	0.1749		
Full-Time	0.0748	0.0298	– 0.0792	– 0.0213
Permanent	0.9775 ***	0.3613	0.8026 ***	0.2470
Public Sector	0.5850 **	0.2301	0.4564 *	0.1169
Union	0.3004 ***	0.1194	0.0108	0.0029
Firm Size	0.2060 ***	0.0820	0.3659 ***	0.0691
Occupation	0.0881 *	0.0351	0.0593	0.0160
Tenure	0.0087	0.0035	0.0081	0.0022
Wage	– 0.0177	– 0.0070	0.1762 ***	0.0475
Industry				
Agriculture/Forestry/Fishing	– 0.0285	– 0.0113	– 0.9700 **	– 0.3446
Mining	0.3886	0.1527	– 1.3307 *	– 0.4838
Manufacturing (base group)				
Electricity/Gas/Water Supply	0.5234	0.2024		
Construction	– 0.4186	– 0.1602	0.4685	0.1007
Wholesale Trade	0.0069	0.0026	– 0.3327	– 0.1017
Retail Trade	– 0.2201	– 0.0087	– 0.0225	– 0.0061
Accommodation/Cafes/Restaurants	– 0.5054 *	– 0.1916	– 0.2315	– 0.0680
Transport/Storage	– 0.2135	– 0.0839	– 0.0321	– 0.0088
Communication Services	0.5581 *	0.2151	0.1848	0.0459
Finance/Insurance	0.5794 ***	0.2233	– 0.1197	– 0.0338
Property/Business Services	– 0.0608	– 0.0242	– 0.1738	– 0.0497
Gov Administration/Defence	0.2147	0.0854	0.0832	0.0217
Education	0.1075	0.0429	– 0.3680	– 0.1086
Health/Community Services	– 0.0895	– 0.0356	– 0.3340	– 0.0971
Cultural & Recreational Services	– 0.4801 *	– 0.1823	– 0.5716 **	– 0.1870
Personal & Other Services	– 0.1513	– 0.0598	– 0.4330 *	– 0.1359
State/Territory				
NSW	– 0.0906	– 0.0360	– 0.224	– 0.0061
VIC (base group)				
QLD	0.1917	0.0763	– 0.0600	– 0.0164
WA	0.0073	0.0029	– 0.3165	– 0.0948
SA	0.1814	0.0723	0.2105	0.0523
TAS	0.5835	0.2245	0.3239	0.0756
NT	0.7246	0.2713	0.4246	0.0934
ACT	– 0.4594	– 0.1749	– 1.8832 ***	– 0.6536
Remoteness	0.0163	0.0065	0.0660	0.0177
Age	0.0162	0.0064	0.0337	0.0091
Age Squared	– 0.0002	– 0.0001	– 0.0006 **	– 0.0002
Relationship Status	0.0083	0.0033	0.1530 *	0.0419
Number of Children	– 0.1765 **	– 0.0704	0.0048	0.0013
Number of Children Squared	0.0320 *	0.0128	0.0101	0.0027

Education Level	– 0.0643	– 0.0256	0.0496	0.0134
Public Sector_Permanent	0.1726	0.0687	– 0.3471 *	– 0.0981
Education Level_Occupation	0.0179	0.0071	0.0090	0.0024
NSW_Permanent	0.0617	0.0246	0.0492	0.0131
QLD_Permanent	– 0.4554 *	– 0.1759	0.1126	0.0293
WA_Permanent	– 0.0119	– 0.0047	0.1041	0.0269
SA_Permanent	– 0.5940 *	– 0.2220	0.3107	0.0735
TAS_Permanent	– 1.1870 **	– 0.3758	0.0741	0.0194
ACT_Permanent	0.3437	0.1357	1.8284 **	0.1950
NSW_Public Sector	0.4705 **	0.1846	– 0.0761	– 0.0211
QLD_Public Sector	0.3384	0.1339	0.1012	0.0263
WA_Public Sector	– 0.2678	– 0.1047	0.5018	0.1070
SA_Public Sector	– 0.0358	– 0.0143	– 0.6370 *	– 0.2116
TAS_Public Sector	0.6520	0.2476	– 0.8261 *	– 0.2868
NT_Public Sector	– 0.5313	– 0.1991	– 0.0100	– 0.0027
ACT_Public Sector	1.0130 *	0.3560	0.6225	0.1238
Constant	– 1.8207 ***		– 1.6625 ***	
Predicted Probability	*Pr* (PML=0) = 0.5328		*Pr* (UPML=0) = 0.1883	
	Pr (PML=1) = 0.4762		*Pr* (UPML=1) = 0.8117	
Model Criteria				
Number of observations	1838		1838	
Log Likelihood	– 8826.01		– 752.30	
LR χ^2	895.04 (54 df)		543.66 (53 df)	
Prob > LR χ^2	0.0000		0.0000	
Pseudo R^2	0.3514		0.2654	
McKelvey and Zavoina's R^2	0.559		0.414	
AIC	1762.01		1612.59	
BIC	2065.42		1910.48	
Correct Classification	78.89%		82.05%	

*** *1 % significance*
** *5 % significance*
* *10 % significance*

Table 5: Prediction Rates – Provision of Paid Maternity Leave (Sure Responses Only)

Predicted Values	***Actual Values***		
	PML=0	PML=1	Total
PML=0	760	208	968
PML=1	180	690	870
Total	940	898	1838

Table 6: Prediction Rates – Provision of Unpaid Maternity Leave (Sure Responses Only)

Predicted Values	*Actual Values*		
	UPML=0	UPML=1	Total
UPML=0	229	108	337
UPML=1	222	1279	1501
Total	451	1387	1838

Table 7: Probit Results – 'Don't Know' Responses Paid or Unpaid Maternity Leave

Variable	*'Don't Know' PML*		*'Don't Know' UPML*	
	Coefficient	*Marginal Effect*	*Coefficient*	*Marginal Effect*
Full-Time	0.0875	0.0237	0.2056 ***	0.0644
Permanent	– 0.3539 ***	– 0.0894	– 0.2566 ***	– 0.0773
Public Sector	0.3050 ***	0.0784	0.1886 **	0.0576
Union	0.1343 *	0.0354	0.0048	0.0015
Firm Size	0.1138 *	0.0302	0.1304 **	0.0401
Occupation	0.0835 ***	0.0226	0.0890 ***	0.0279
Tenure	0.0757 ***	0.0093	0.0399 ***	0.0125
Wage	0.0757	0.0204	0.0891 **	0.0279
Industry				
Agriculture/Forestry/Fishing	0.2248	0.0548	– 0.0521	– 0.0166
Mining	– 0.3807	– 0.1190	0.0214	0.0066
Manufacturing	– 0.1408	– 0.0401	– 0.2423	– 0.0813
Electricity/Gas/Water Supply	– 0.5759	– 0.1906	0.2174	0.0627
Construction	0.4994	0.1058	0.0306	0.0095
Wholesale Trade	0.0680	0.0178	– 0.0611	– 0.0195
Retail Trade	0.2009	0.0508	0.1743	0.0522
Accommodation/Cafes/Restaurants	0.1875	0.0469	0.1170	0.0353
Transport/Storage	0.1746	0.0436	– 0.1078	– 0.0349
Communication Services	0.1141	0.0293	0.2597	0.0738
Finance/Insurance	0.3764 *	0.0860	0.3505 *	0.0697
Property/Business Services	– 0.0013	– 0.0003	0.0320	0.0099
Gov Administration/Defence	0.1552	0.0394	0.1182	0.0356
Education	0.2134	0.0540	0.1276	0.0387
Health/Community Services	0.0280	0.0075	0.1341	0.0409
Cultural & Recreational Services (base group)				
Personal & Other Services	0.3327	0.0776	0.2304	0.0666
State/Territory				
NSW	0.0994	0.0264	0.0026	0.0008
VIC (base group)				
QLD	0.1385	0.0360	0.0784	0.0241
WA	0.0523	0.0139	0.0577	0.0178
SA	0.0263	0.0070	0.0035	0.0011
TAS	– 0.1014	– 0.0285	0.1212	0.0364
NT	0.0545	0.0144	0.0752	0.0229
ACT	0.2783	0.0663	0.2364	0.0680
Remoteness	0.0564	0.0151	0.0188	0.0059
Age	0.0470 ***	0.0127	0.0590 ***	0.0185
Age Squared	– 0.0008 ***	– 0.0002	– 0.0009 ***	– 0.0003
Pregnant in past year	0.6118 ***	0.1245	0.4410 ***	0.1173
Number of Children	0.2539 ***	0.0386	0.1843 ***	0.0577
Number of Children Squared	– 0.0454 ***	– 0.0123	– 0.0223	– 0.0070
Education Level	0.0538 *	0.0145	0.0484 *	0.0151

Constant	– 0.9960 ***	– 1.5446 ***
Predicted Probability	*Pr* (DK_PML=0) = 0.1886 *Pr* (DK_PML=1) = 0.8114	*Pr* (DK_UPML=0) = 0.2432 *Pr* (DK_UPML=1) = 0.7568
Model Criteria		
Number of observations	2683	2680
Log Likelihood	– 1262.33	– 1400.46
LR χ^2	286.80 (38 df)	322.17 (38 df)
Prob > χ^2	0.0000	0.0000
Pseudo R^2	0.1020	0.1032
McKelvey and Zavoina's R^2	0.215	0.211
AIC	2602.66	2878.91
BIC	2832.55	3108.76
Correct Classification	78.31%	73.73%

*** *1 % significance*
** *5 % significance*
* *10 % significance*

Table 8: Prediction Rates – 'Don't Know' Responses Paid Maternity Leave

Predicted Values	*Actual Values*		
	DK_PML=0	DK_PML=1	Total
DK_ PML=0	34	32	66
DK_PML=1	550	2067	2617
Total	584	2099	2683

Table 9: Prediction Rates – 'Don't Know' Responses Unpaid Maternity Leave

Predicted Values	*Actual Values*		
	DK_UPML=0	DK_UPML=1	Total
DK_UPML=0	132	114	246
DK_UPML=1	590	1844	2434
Total	722	1958	2680

Table 10: Probit Results – Pregnancy Rates with 'Labour Force Participation' Selection Equation

Variable	*Coefficient*	*Marginal Effect*
PML <25yrs	0.3261 *	0.1241
PML 25<35 yrs	0.0672	0.0256
PML ≥35yrs	– 0.0190	– 0.0072
UPML <25yrs	0.3414 **	0.1299
UPML 25<35 yrs	0.3827 ***	0.1456
UPML ≥35 yrs	– 0.0053	– 0.0020
Full-Time	0.0309	0.0117
Permanent	– 0.1103	– 0.0420
Public Sector	0.1318	0.0501
Union	0.0269	0.0102
Firm Size	0.0153	0.0058
Occupation	– 0.0092	– 0.0035
Tenure	– 0.0138	– 0.0052
Wage	– 0.1251 **	– 0.0476
Other Household Income	0.0299	0.0114
State/Territory		
NSW	– 0.0187	– 0.0071
VIC (base group)		
QLD	0.0787	0.0301
WA	0.1667	0.0646
SA	0.2811 **	0.1097
TAS	– 0.0825	– 0.0310
NT	– 0.1407	– 0.0522
ACT	– 0.0260	– 0.0098
Remoteness	– 0.0296	– 0.0113
Relationship Status	0.4133 ***	0.1544
Presence of children	0.3876 ***	0.1495
Education Level	– 0.1259 ***	– 0.0149
Constant	– 0.4166	
Selection Equation LFP		
State/Territory		
NSW	– 0.0563	
VIC (base group)		
QLD	– 0.0332	
WA	– 0.1735 **	
SA	– 0.1525 *	
TAS	0.0333	
NT	0.3036	
ACT	0.2976 *	
Remoteness	0.0340	
Age	0.1515 ***	
Age Squared	– 0.0020 ***	
Relationship Status	0.0236	
Number of Children	– 0.2903 ***	
Number of Children Squared	0.0190 ***	

Education Level	0.2480 ***
Other Household Income	– 0.0914 ***
Constant	– 1.9585 ***
λ (Selectivity correction term)	– 1.3539 ***
ρ (Error correlation coefficient)	– 0.8750 ***
Model Criteria	
Total number of observations	4585
Censored observations	2763
Uncensored observations	1822
Log Likelihood	– 2472.34
Wald χ^2	124.43 (26 df)
Prob > χ^2	0.0000
AIC	5032.68
BIC	5315.62
Selectivity Test (ρ = 0)	
χ^2 (1 df)	15.81
Prob > χ^2	0.0001

*** *1 % significance*
** *5 % significant*
* *10 % significance*