Patterns of flexible retirement in Australia

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I. Introduction

Like most developed countries, Australia is facing considerable challenges by the fact that its population is ageing generating a downward trend on the proportion of working-age labour market participants. In 1960 the life expectancy of men was 67.9 years and that of women was 74.2 years. Just forty years on, the life expectancy foe men and women has increased to 77.2 and 82.6 respectively. This has added an unprecedented 9.3 years on the average lifetime of men and 8.4 years on that of women. Although labour market participation has increased between 1960 and 2000, this increase is not sufficient to counterbalance the rise in older people in the country. Men have reduced their participation from 83.8 percent to 72 percent and women have increased theirs by 35.3 to 54.8. The overall effect has been a modest increase of the national average from 59.4 percent in 1960 to 63.3 in 2000, a mere 3.9 percentage points.[1] Considering that a lot of the newly created female participation is part time, the net increase in hours worked is much lower than this 3.9 percent may suggest. The modest increase in labour market participation and the considerable average lifetime increases have to be seen within the context of the later incorporation into the labour market due to the increased prevalence of post-school education, the increased social costs and benefits from increased female participation and the more expensive health care provision for the later years in the lives of older people. Of course, these trends are not new. For almost the whole of the 20th century there have been increases in life expectancy with more and more people managing to reach the retirement age of 65 which was set at a time when this concerned only a minority of he working population. However, these trends have been more than counteracted by increases in productivity, which have allowed the economic development

[1] Source: ABS 3105.0.65.001

experienced in the 20th century. In many countries this was achieved whilst retaining the retirement a retirement age of 60 for women and 65 for men. Projections into the 21st century suggest very strongly that this trend cannot be sustained without the assumption of unrealistic productivity gains to be achieved in the next decades. As a result, governments in most developed countries are looking for policies to alleviate the problem. A major push in this direction has been the removal of the compulsory retirement age barrier and the introduction of tax and benefits changes surrounding the decision to retire. In a number of countries a freer framework has existed for long (e.g. the US and Australia have no compulsory retirement age) whilst in other countries change are beginning to happen (e.g. the UK is moving towards doing without treating retirement at the age of 65 as automatic and compulsory).

The question that arises from the introduction of policies that free individual retirement plans and surrounding regulations, is by whom and by how much this new freedom generated by a longer life in health and a more flexible retirement institutional framework will be used. This research territory is rather uncharted and the ramifications of getting the policy right or wrong are massive. There has been early research in this area (Honig and Hanoch 1985, Ruhm 1990) about retirement patterns, principally for the US. There has been little research in the area of retirement patterns and their determinants in Australia (see Borland 2005 for a recent review of the Australian and international literature). The objective of this paper is to study the decision to retire in a flexible way in Australia, and examine some of the differences in the observed patterns of flexible retirement alongside with the factors that are associated with them. In particular this

paper will concentrate on three possible pre-retirement stages and investigate the composition of those who choose to follow them. First will be the simple continuation of full labour market engagement, which we define as continued labour force particilation whilst not drawing a pension.[2] This is pretty well where every individual labour force participant starts from. Second comes the possibility that someone stops being a labour marlet participant but still does not draw their pension. Third will be the small proportion of individuals who choose to work whilst drawing their pension at the same time. Although this group is small in size it is of great importance for the understanding of the workings of the flexible retirement decision making. These are individuals who choose to continue work after they have the possibility to retire in receipt of their full entitlement of their pension. It is important that the composition of this group is well understood, as these are the people who are using the flexibility of retirement framework. These three groups will be contrasted against the absorbing state of not participating in the labour force and drawing a pension.[3] The paper concentrates on a number of factors associated with the retirement decision, namely on the age that this happens, the gender, the household wealth, the education level and the labour market status of the partner of the potential retiree. The paper uses the Household, Income and Labour Dynamics in Australia (HILDA) survey which allows the examination of a representative sample which contains a large amount of information on individuals and households alongside

[2] The literature has investigated the possibility of bridge jobs leading to retirement. This paper abstracts from this possibility and concentrates on the distinction between being a labour force participant or not. Further research is under way to enrich the analysis with the inclusion of different levels of engagement in the labour force and incorporate the possibility that a pre-retirement move can be from full time to part time or from a full responsibility job to a lesser responsibility one. Borland 2005 has given a useful account of these patterns, indicating the need for further analysis in that direction.

[3] This assumes that all labour force participants will reach the point of too low a productivity to continue with their employment and will be entitled to a minimal pension. Exceptions to this will result from people who are very wealthy and have no formal pension arrangements and/or those who die before they reach the stage of full retirement.

with a special module on wealth and another special module on retirement. The combination of these modules makes HILDA a very suitable data set, the only disadvantage being its relative shortness for a panel data set, as it only commenced in the year 2001. The paper is structured as follows. Section II contains a brief description of the data set. Section III describes the retirement decision and presents the relevant aspects of HILDA in detail. Section IV presents the econometric model and discusses the robustness of the estimation results. Section V discusses the meaning and implications of the estimation results Section VI concludes. An Appendix contains the description of variables and a detailed account of the estimation and the diagnostic tests that were performed.

II. The HILDA Survey data

II.1 General description of the data

The data used for this paper comes from the first four waves of the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Survey began in 2001 with a large national probability sample of Australian households occupying private dwellings.[4] The survey involved interviews with all household members over the age of 15 years. In the first wave, 7683 households representing 66 percent of all in-scope households were interviewed, generating a sample of 15,127 persons who were eligible for interviews, of whom 13,969 were successfully interviewed. Almost all of the wave 1 interviews were conducted during the period between 24 August 2001 and 21 December 2001.

The members of that initial sample of households then form the basis of the panel and are followed up in each subsequent wave, with each interview being approximately one year apart. There are three ways in which new respondents are added to the sample. First, some non-respondents in the first wave are successfully interviewed in later waves. Second, interviews are sought in later waves with household members who turn 15 years of age. Third, people are added to the sample as a result of 'split-offs' from original households. If, for example, a young person leaves home to set up his/her own household, all members of the new household aged 15 and over become part of the target group.

Attrition is a common problem with longitudinal survey data. The HILDA attrition rates for waves 2, 3 and 4 were 13.2 per cent, 9.6 per cent and 8.4 per cent respectively. For

[4] For a detailed description of the HILDA survey see Watson and Wooden (2002).

the group of people studied in this paper, attrition rates were lower than average (Melbourne Institute of Applied Economic and Social Research, 2005).

II.2 The Retirement and Wealth modules of HILDA

An important feature of the HILDA Survey data is the special wealth module which was included in wave 2 (2002). Detailed information was collected on individual and household level of wealth (assets and debts), including superannuation holdings which can be an important component of private retirement provisions. With the complete set of wealth information, HILDA is an excellent data source for the studying of the relationships between the available private financial support and retirement behaviour. A concern is raised by the high numbers of cases with a missing value of one or more wealth components: 14.5 percent of respondents have at least one personal wealth component missing and 39.3 percent of households have at least one component of household wealth missing. This is not surprising given the level of complexity of the wealth information that was collected. To help researchers dealing with this problem, HILDA provides imputed values for those missing cases. The data based on both imputed and not imputed values compare well with aggregate benchmarks, such as ratios of non-financial to financial assets, or gearing ratios (Watson 2004). In this paper, we use both samples with and without household wealth imputation to check the sensitivity of the missing problems on our analysis and find no significant differences in the results.

II.3 The sample used in this study

In order to examine the retirement behaviour of the mature age population, an unbalanced panel sample of persons who were aged 50 years and over in 2001 and interviewed in at least one of the first four waves of the HILDA survey has been constructed. This gives a total of 17,206 observations from 4974 individuals. Whatever definition of retirement is used, it does not seem sensible to consider a person to be either retired or not retired from work if they have never been in paid work. For this reason, the sample was restricted to people who had been in paid work at some point in time since they left full-time education for the first time, leaving 16,892 observations. As education and marital status are important predictors of retirement behavior, people whose level of education or marital status was not able to be determined were also removed from the sample, leaving a total of 16879 observations. For regression analysis, observations with missing values for some variables are excluded, which further reduces the sample to 16835 observations. Variable definitions and detailed descriptive statistics can be found in the Appendix.

III. Defining retirement

The conventional economic model for defining retirement has been one resembling an optimal stopping rule. The individual works and accumulates pension entitlement until the expected utility from an extra day's work with their given income becomes less than the utility of a day's leisure in receipt of their accumulated pension. There are many ways in which this rule can be formalised, but its essence is a simple comparison of the expected benefits from continued work compared with the expected benefits from retirement. As productivity drops with age (sooner or later this happens to everyone) and as pension entitlements increase (rarely will pension entitlements decline with age, more than often they will either stay fixed or improve when one chooses to retire later) there will eventually be a point in time when it will pay to retire rather than continue work. Save the case of unanticipated death, this point in time will be reached by all labour market participants. A shortcoming with representing the decision to retire using this type of (optimal stopping rule) model is that it cannot accommodate with any ease either straightforward decision reversals, or any complex retirement decisions. Whereas this level of simplicity was fine when the institutional framework was one where retirement happened at the age of 65 and was practically irreversible, this is not any more the case as retirement decisions are becoming increasingly complex in their nature and motivation. In the deregulated Australian environment, retirement is not as straightforward to define anymore. There are two principal activities that can be used to define activity leading to retirement for older workers. First is their labour force participation and second is their source of income. Given that retirement is not compulsory at 65 and given that when it happens it can be reversed, the complexity of financial possibilities surrounding retirement at present requires a fresh look at the definition of retirement itself and the motivating forces behind it.

First, *labour force participation* is typically reduced with age, but this is not happening in the one-off way that used to happen in the past. Today, not only the hours of work can be a lot more flexible, but also the contractual nature of employment can be more flexible. Especially important is that the once irreversible status of retiree, can now be reversed as older individuals are free to return to the labour market if they so wish, without suffering

any financial penalties. Second, the *receipt of pension income* becomes more likely with age, but this is not happening in the one-off way that used to happen in the past. Today, receipt of pension income can commence whilst the older individual remains at work and, furthermore, it can happen simultaneously with the generation of employment income and in some occasions with the generation of further retirement income capacity as well. It is much more useful in today's context to refer to retirement as a process that is managed by the older individual over time and which allows an unprecedented degree of freedom and individual responsibility. All that can be said in this context is that in the majority of cases the retirement process starts with an individual working at their long-run adult life potential receiving zero pension income and ends with the same individual not working at all and drawing all their income from their pension entitlement. The period between these two points (the period leading to full retirement) varies in length and composition and is the subject of this paper.

III.1 Between Full Labour force participation and Full Retirement

Having made the distinction between labour force participation and receipt of pension income as the two main constituents of the period leading to full retirement, allows us to define the following four states in which any older worker may find themselves:

- Full labour market engagement (labour force participation and No Pension): Individual is a labour force participant and does not draw any pension.
- Partial labour market engagement (labour force participant and Draws Pension): Individual is a labour force participant and simultaneously draws pension
- Partial retirement (No labour force participation and not drawing pension): Individual is not a labour force participant but also does not draw any pension.
- Full retirement (No labour force participation and draws pension): Individual is not in paid employment and does not draw any pension.

It is clear that these are not precise definitions and that the threshold points that distinguish between the different categories cannot be defined in any unambiguous manner. Nonetheless, they are helpful in that they allow the distinction between the different underlying incentives for behaviour leading to full retirement.

Table 1 gives a brief overview of the proportions of people above the age of 50 who fall into each one of these four categories.

Table 1: Between Full Work and Full Retirement

Retirement status	*Percentage*	*Number*
1. Full labour market engagement (In the Labour Force and No Pension)	32.4	5470
2. Partial labour market engagement (In the Labour Force and Draws Pension)	4.6	777
3. Partial retirement (Not in the Labour Force and No Pension)	19.6	3320
4. Full retirement (Not in the Labour Force and Draws Pension)	43.4	7325

Note: HILDA pooled waves 1 to 4. All individuals aged 50 and above.

There are several points that have to be made around this Table. First, the ages included are from 50 to 85. Everyone above the age 85 has been excluded from the analysis as they are considered to all intents and purposes to be fully retired. Second, all those who declared to have had no previous labour market experience have been excluded. This implies that Row 1 includes many people who are full labour market participants and are not planning to retire for some years to come. These will be the youngest ones in the sample, closer to the minimum inclusion age of 50. Rows 3 and 4 include individuals who are not anymore considering themselves as labour market participants.

Table 1 shows the different retirement experiences confirming the view that the process leading into retirement is not anymore the conventional once-and-for-good transition from full time work to full retirement. The length of the data used in this paper does not lend itself to the examination of the timing element of these decisions. Consequently, this paper studies the patterns of observed behaviour within a specific length of time (in this case four years) and concentrates on the frequency in which they are observed and the factors that this frequency is associated with. The principal factors we concentrate on are age, gender, wealth, partner status, education and health.

III.2 Factors influencing the route into full retirement

The most influential factor regarding retirement is age. Table 2 describes the four different retirement positions as age progresses.

Table 2: Age, labour force participation and drawing pension

Age	*A=0 B=0* *1. In the labour force and not drawing pension*	*A=1 B=0* *2. Not in the labour force and not drawing pension*	*A=0 B=1* *3. In the labour force and drawing pension*	*A=1 B=1* *4. Not in the labour force and drawing pension*	*All*
50-54	2182	609	64	70	2925
	(39.96)	(18.34)	(8.24)	(0.96)	(17.34)
55-59	2103	1019	155	303	3580
	(38.46)	(30.69)	(20.08)	(4.14)	(21.21)
60-64	846	800	222	990	2858
	(15.50)	(24.19)	(28.70)	(13.52)	(16.95)
65-69	185	215	224	1716	2340
	(3.38)	(6.48)	(28.83)	(23.49)	(13.88)
70-74	99	192	84	1765	2140
	(1.81)	(5.78)	(10.81)	(24.10)	(12.67)
75-79	36	248	18	1332	1634
	(0.66)	(7.50)	(2.32)	(18.18)	(9.68)
80+	12	233	8	1143	1396
	(0.22)	(7.02)	(1.03)	(15.62)	(8.27)
Total	5463	3316	775	7319	16873
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

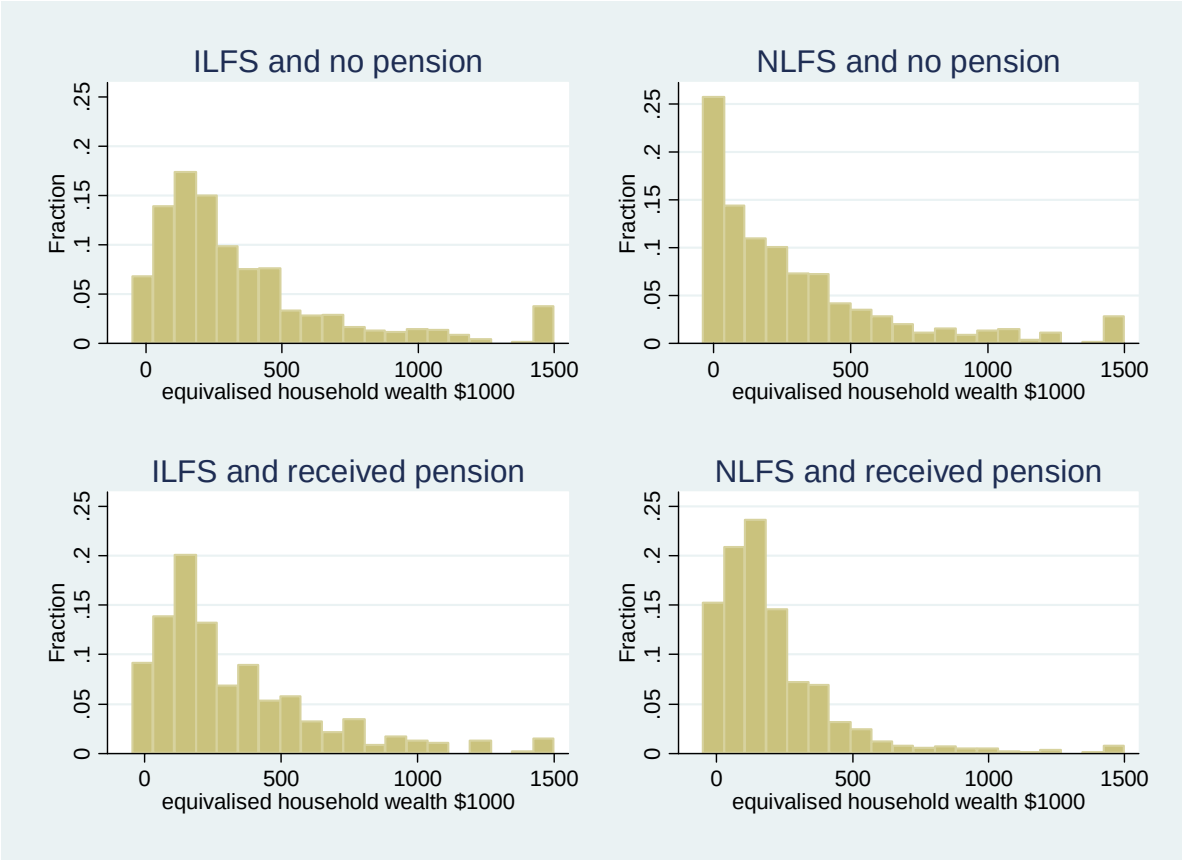
Note: A=1 is Not in Labour Force; A=0 is in Labour Force; B=1 is Drawing Pension; B=0 not drawing pension. The lower number of 50-54 year olds is due to the sampling of those who were aged 50 or more in wave 1 of the HILDA data. This needs to be changed to include all those who turned 50 in waves 2, 3 and 4. This we will do with the incorporation of the 5th HILDA wave in the analysis.

Table 2, Column 1 shows that the option of working and not drawing pension after the age of 65, as only 6 percent of those who choose it are over 64. This is a small proportion of the workforce. This observation can be read in two ways. On the one hand it could be said that this choice is of little empirical importance. On the other hand it should be recognised as a major policy target for change in labour market participation behaviour, especially with the present improvements in the health and longevity of older people. In the context of an ageing workforce with a lower proportion of active labour market participants, this is a voluminous and important group. Column 2 shows a large number of people who are not working and are not drawing any pension. This is not an easy group to interpret for two reasons. There is a possible data problem in that the HILDA data does not distinguish between those who simply have no pension entitlement and those who had a pension entitlement, stopped work and took their complete pension in the form of a one-off lump sum. This is a shortcoming of the data that must be borne in mind in further analysis and which makes the interpretation of this category rather difficult. Column 3 includes those who are still working and are drawing their pension. What is remarkable is that this is a popular choice for labour market participants well into their 70s, but one that peters out very sharply after the age of 74. Column 4 contains those who can be considered to be fully retired.

Another important factor of retirement decision is wealth. Figure 1 presents the distribution of household wealth by four different retirement states defined above. The wealth distributions of the two groups of individuals who stayed in the labour force are not very different. Those who are not in the labour force are more concentrated at low wealth. In particular, there is a large spike around zero wealth for individuals who are not

in the labour force and not drawing pension. However, the NLFS and no pension group do considerable numbers of individuals with high wealth which is in contrast of the NLFS and received pension group where much fewer individuals whose wealth are above $750,000.

Figure 1 Wealth distribution by retirement states



IV. Econometric estimations and results

IV.1 The model

Having established the economic relevance and having described the patterns of the choices involved in the transition from full labour market engagement to full retirement, this section investigates the determinants of these patterns in a multivariate context. To this purpose a model of discrete choice is used which allows the estimation of the choice from a number of competing and inter-related alternatives. In the present context, we observe the choice of type of labour market participation for pre-retirement individuals between the age of 50 and 85. We estimate the model

$$\Pr(Y_i = m) = \frac{e^{\beta_m' x_i}}{\sum_{n=0}^{3} e^{\beta_n' x_i}} \qquad (1)$$

Where m = 0, 1, 2, 3 for the four different retirement states defined in Table 1, Y_i is the choice outcome for individual i and x_i are the observed characteristics of individual i. The choices are normalised around one of the four possible choices, which in this paper is the choice of remaining fully engaged in the labour market and drawing no pension. It is important to note that the choices are not ordered in any way, so all that is assumed is that the four choices are perceived to be different from each other, but not in an ordered way. As coefficients are very difficult to interpret in the multinomial logit model, we report marginal effects, which are defined as follows. The marginal effect of a continuous explanatory variable x_k on the probability outcome m, for a person with characteristics $\mathbf{x}^i$ is given by:

$$ME^{i}_{m,k}\ \frac{\partial \Pr\left(y=m\,|\,\mathbf{x}^{i}\right)}{\partial x^{i}_{k}} = \Pr\left(y=m\,|\,\mathbf{x}^{i}\right)\left[\beta_{k,m|J} - \sum_{j=1}^{J}\beta_{k,j|J}\ \Pr\left(y=j\,|\,\mathbf{x}^{i}\right)\right] \qquad (2)$$

The *mean* marginal effect is given by $MME_{m,k} = \left(1/n\right)\sum_{i=1}^{n} ME^{i}_{m,k}$

The marginal effect for a dummy explanatory variable x_k on the probability outcome m, for a person with characteristics $\mathbf{x}^{i}$ is given by

$$ME^{i}_{m,k} = \Pr\left(y=m\,|\,\mathbf{x}^{i}_{-k}, x_k=1\right) - \Pr\left(y=m\,|\,\mathbf{x}^{i}_{-k}, x_k=0\right) \qquad (3)$$

The interpretation of these marginal effects should be noted. Take a single dummy variable which can either take the value 1 or 0. The marginal effect of this dummy taking the value 1 (on the probability of a specific choice outcome) is the difference in the predicted probability that a choice is made when the dummy variable is 1 and the predicted probability that a choice is made when the dummy variable is 0. With a set of dummy variables the interpretation has to be extended to account for the same benchmark category for a number of dummies.

The following two Tables (3a and 3b) contain the estimation results for all four choices for males and females separately. In both tables Column 1 presents the Mean Marginal

Effects (MMEs) for the choice of being “in the labour force and not drawing a pension”. Given that all subjects in this study have had a labour market experience (remember that all those with no labour market experience in their lives have been excluded from the sample) this should be looked at as the starting point for all individuals. Column 2 presents the estimates for the choice of “not in the labour force and not drawing a pension”. As we discuss below, this is a very diverse group which consists of those with either very little (not even a pension) or very much (the top household wealth households). Column 3 presents the estimates for the choice to be “in the labour force and draw a pension at the same time”. This is an important category that we want to know more about, as they appear to be the group that are using the available pre-retirement institutional flexibility. Finally, Column 4 presents the estimates of having chosen to be “not in the labour force and drawing a pension” the conventional picture of a retired person. The estimations abstract from the possibility that someone who is currently “not in the labour force and drawing a pension”, may in the future change into being “in the labour force and drawing a pension”. Instead they concentrate on the frequency of appearance of each chosen state within four years of data and the association between this frequency with all observed individual characteristics.

IV.2 Estimation results and diagnostics

The results for all four possible combinations of labour force participation and pension status are presented in Table 3 below. Detailed results are in the Appendix.

Table 3a: mean marginal effect (Male)

	In the LFS, No Pension		*Not in the LFS, No Pension*		*In the LFS, Draw pension*		*Not in the LFS, Draw pension*	
	Effect	*Std err*	*Effect*	*Std err*	*Effect*	*Std err*	*Effect*	*Std err*
Age (omitted=age 50-54)								
age 55-59	-0.125	0.012	0.012	0.015	0.001	0.013	0.112	0.021
age 60-64	-0.297	0.017	0.107	0.017	0.008	0.012	0.182	0.018
age 65-69	-0.526	0.020	-0.024	0.016	0.044	0.018	0.506	0.021
age 70-74	-0.632	0.024	-0.018	0.019	0.004	0.018	0.646	0.024
age 75-79	-0.716	0.027	0.039	0.026	-0.033	0.020	0.710	0.028
age 80+	-0.793	0.029	0.074	0.031	-0.059	0.027	0.778	0.032
Education (omitted=degree+)								
Certificate	-0.074	0.018	0.077	0.021	-0.040	0.013	0.037	0.020
year 10 – 12	-0.058	0.019	0.066	0.019	-0.045	0.015	0.037	0.020
not complete year 10	-0.069	0.022	0.078	0.019	-0.074	0.019	0.064	0.021
Work experience and attitude								
years working experience	0.016	0.001	-0.010	0.001	0.004	0.001	-0.010	0.001
years unemployment	0.012	0.003	-0.005	0.002	0.000	0.002	-0.008	0.002
work attitude-enjoy	0.006	0.003	-0.007	0.003	0.007	0.002	-0.007	0.003
work attitude-happy	0.006	0.003	-0.001	0.003	-0.003	0.002	-0.002	0.003
Country of birth (omitted=Australian)								
main English speaking country	-0.005	0.015	-0.004	0.015	-0.012	0.011	0.021	0.016
Non English speaking country	0.024	0.015	0.042	0.014	-0.019	0.012	-0.047	0.014
Father's occupation at age 14 (omitted=father unemployed)								
unskilled workers	-0.057	0.058	0.002	0.034	0.055	0.113	0.000	0.053
skilled workers	-0.024	0.037	0.026	0.027	0.047	0.036	-0.050	0.032
Others (not live with father… etc)	-0.065	0.040	0.031	0.030	0.029	0.026	0.005	0.033
Partner's status								
Partnered	0.094	0.024	-0.058	0.030	0.059	0.017	-0.095	0.034
Partner age 50+	0.048	0.019	0.022	0.019	-0.017	0.020	-0.053	0.028
Partner age<50 & NLFS	-0.108	0.035	0.076	0.036	-0.042	0.032	0.075	0.047
Partner age>50 & NLFS, no pension	-0.141	0.017	0.099	0.018	-0.033	0.014	0.075	0.020
Partner age>50 & in LFS, with pension	-0.109	0.034	-0.074	0.033	0.125	0.033	0.058	0.033
Partner age>50 & NLFS, with pension	-0.279	0.024	-0.031	0.020	0.004	0.018	0.307	0.025
Children (omitted=no child)								
youngest child 0-4	0.153	0.070	-0.030	0.082	-0.030	0.052	-0.092	0.120
youngest child 5-15	0.059	0.028	-0.002	0.026	0.004	0.025	-0.061	0.035
youngest child 16-20	0.022	0.023	0.001	0.023	0.003	0.022	-0.026	0.031
youngest child 20+	0.007	0.017	-0.006	0.017	-0.012	0.016	0.011	0.017
Wealth (omitted=bottom decile)								
Wealth decile 2	-0.031	0.040	0.015	0.033	-0.008	0.035	0.025	0.030
Wealth decile 3	-0.040	0.044	-0.042	0.034	0.032	0.044	0.049	0.036
Wealth decile 4	-0.028	0.047	-0.057	0.035	0.016	0.042	0.069	0.035
Wealth decile 5	0.015	0.041	-0.073	0.031	0.001	0.035	0.056	0.034
Wealth decile 6	0.025	0.043	-0.065	0.035	0.005	0.036	0.036	0.031
Wealth decile 7	0.018	0.038	-0.022	0.035	-0.002	0.035	0.005	0.035
Wealth decile 8	-0.031	0.041	-0.018	0.040	-0.015	0.033	0.064	0.037
Wealth decile 9	0.009	0.039	0.002	0.038	-0.011	0.031	0.000	0.036
Wealth decile 10	-0.007	0.039	0.097	0.040	-0.030	0.033	-0.060	0.035
Home equity-wealth ratio	-0.015	0.026	-0.002	0.026	0.003	0.025	0.014	0.024

Table 3a continued

	In the LFS, No Pension		*Not in the LFS, No Pension*		*In the LFS, Draw pension*		*Not in the LFS, Draw pension*	
	Effect	*Std err*	*Effect*	*Std err*	*Effect*	*Std err*	*Effect*	*Std err*
Income from other family members (omitted= negative or no income)								
low income (<5000 equvalised)	-0.029	0.018	0.006	0.019	-0.034	0.013	0.056	0.022
medium income (5000~10000)	-0.005	0.020	0.023	0.021	-0.026	0.015	0.008	0.023
high income (10000+)	-0.016	0.020	0.017	0.021	-0.028	0.018	0.027	0.024
Has Caring responsibilities	-0.062	0.037	0.059	0.032	-0.022	0.025	0.025	0.024
General Health (omitted=bad health)								
average health	0.071	0.014	-0.070	0.010	0.008	0.011	-0.008	0.013
Good health	0.093	0.017	-0.102	0.016	0.005	0.013	0.004	0.015
Mental Health (omitted=bad health)								
average mental health	0.007	0.013	0.006	0.011	0.012	0.011	-0.025	0.012
Good mental health	-0.007	0.014	-0.019	0.013	0.011	0.010	0.015	0.013
SF-36 social functioning (omitted=bad)								
Average health	0.074	0.012	-0.034	0.010	-0.003	0.010	-0.036	0.012
Good health	0.078	0.015	-0.035	0.013	-0.004	0.013	-0.038	0.015
Numbers of observations	3,081		1,178		490		3,299	
Wald chi2(168)				2045.7				
Pseudo R-squared				0.4732				

Note: for dummy variable, mean marginal effect is the changes in probability of category A in comparison with the omitted variable of each set of dummies, except for partners' status. For Partners status, Partnered is the average marginal effect for partnered vs. single; Partner age 50+ is compared to Partnered age less than 50; Partner age<50 & NLFS is compared to Partner age <50 & in the labour force. The three variables, Partner age>50 & NLFS & no pension, Partner age>50 & in LFS with pension and Partner age>50 & NLFS with pension are compared to Partner age>50 & not retired (ie. in LFS and no pension).

Table 3b: mean marginal effect (Female)

	In the LFS, No Pension		*Not in the LFS, No Pension*		*In the LFS, Draw pension*		*Not in the LFS, Draw pension*	
	Effect	*Std err*	*Effect*	*Std err*	*Effect*	*Std err*	*Effect*	*Std err*
Age (omitted=age 50-54)								
age 55-59	-0.083	0.010	-0.015	0.019	-0.005	0.007	0.103	0.023
age 60-64	-0.206	0.013	-0.064	0.014	0.012	0.007	0.258	0.013
age 65-69	-0.331	0.019	-0.160	0.020	0.032	0.010	0.459	0.019
age 70-74	-0.418	0.022	-0.142	0.025	0.000	0.008	0.560	0.022
age 75-79	-0.501	0.023	-0.038	0.032	-0.017	0.008	0.556	0.027
age 80+	-0.559	0.026	-0.035	0.038	-0.019	0.010	0.613	0.031
Education (omitted=degree+)								
Certificate	-0.032	0.017	0.049	0.028	-0.027	0.006	0.009	0.026
year 10 – 12	-0.046	0.016	0.047	0.024	-0.019	0.009	0.018	0.024
not complete year 10	-0.081	0.019	0.066	0.026	-0.026	0.010	0.042	0.024
Work experience and attitude								
years working experience	0.006	0.000	-0.006	0.000	0.001	0.000	-0.001	0.000
years unemployment	0.004	0.002	-0.005	0.003	0.002	0.001	-0.001	0.004
work attitude-enjoy	0.011	0.003	-0.008	0.004	0.002	0.001	-0.004	0.003
work attitude-happy	0.002	0.003	-0.005	0.003	-0.001	0.001	0.005	0.003
Country of birth (omitted=Australian)								
main English speaking country	-0.031	0.014	0.006	0.017	-0.004	0.008	0.029	0.016
Non English speaking country	-0.037	0.015	0.036	0.019	-0.009	0.008	0.010	0.016
Father's occupation at age 14 (omitted=father unemployed)								
unskilled workers	0.020	0.049	-0.016	0.044	-0.014	0.122	0.010	0.064
skilled workers	0.020	0.034	-0.016	0.036	-0.002	0.039	-0.001	0.037
Others (not live with father… etc)	0.008	0.038	0.003	0.041	-0.005	0.030	-0.006	0.038
Partner's status								
Partnered	0.036	0.032	0.168	0.046	-0.010	0.038	-0.194	0.062
Partner age 50+	0.047	0.028	-0.063	0.052	-0.009	0.017	0.025	0.060
Partner age<50 & NLFS								
Partner age>50 & NLFS, no pension	-0.156	0.023	0.146	0.033	-0.018	0.008	0.028	0.034
Partner age>50 & in LFS, with pension	-0.093	0.025	-0.116	0.033	0.042	0.014	0.167	0.037
Partner age>50 & NLFS, with pension	-0.251	0.023	-0.075	0.028	-0.008	0.008	0.334	0.030
Children (omitted=no child)								
youngest child 0-4	-0.199	0.255	0.001	0.353	-0.034	0.008	0.232	0.350
youngest child 5-15	0.076	0.041	0.008	0.071	-0.025	0.010	-0.060	0.078
youngest child 16-20	0.126	0.030	-0.023	0.039	-0.020	0.010	-0.082	0.047
youngest child 20+	0.058	0.017	-0.021	0.022	-0.003	0.009	-0.034	0.019
Wealth (omitted=bottom decile)								
Wealth decile 2	0.105	0.037	-0.089	0.035	-0.004	0.019	-0.012	0.025
Wealth decile 3	0.134	0.040	-0.141	0.032	0.001	0.021	0.006	0.031
Wealth decile 4	0.139	0.037	-0.158	0.035	0.021	0.025	-0.002	0.034
Wealth decile 5	0.155	0.040	-0.158	0.035	0.007	0.024	-0.003	0.035
Wealth decile 6	0.141	0.041	-0.135	0.039	-0.004	0.020	-0.002	0.034
Wealth decile 7	0.134	0.036	-0.078	0.041	-0.009	0.016	-0.046	0.034
Wealth decile 8	0.135	0.035	-0.078	0.039	0.001	0.020	-0.058	0.033
Wealth decile 9	0.144	0.035	-0.067	0.044	-0.005	0.017	-0.072	0.038
Wealth decile 10	0.135	0.035	0.017	0.048	-0.005	0.017	-0.147	0.040
Home equity-wealth ratio	-0.066	0.027	0.052	0.033	-0.015	0.016	0.028	0.028

Table 3b continued

	In the LFS, No Pension		*Not in the LFS, No Pension*		*In the LFS, Draw pension*		*Not in the LFS, Draw pension*	
	Effect	*Std err*	*Effect*	*Std err*	*Effect*	*Std err*	*Effect*	*Std err*
Income from other family members (omitted= negative or no income)								
low income (<5000 equvalised)	-0.008	0.018	0.004	0.022	0.020	0.014	-0.015	0.020
medium income (5000~10000)	-0.019	0.019	0.021	0.023	0.027	0.014	-0.029	0.021
high income (10000+)	-0.032	0.019	0.092	0.025	0.006	0.011	-0.067	0.023
Has Caring responsibilities	-0.059	0.024	0.019	0.030	-0.012	0.010	0.053	0.024
General Health (omitted=bad health)								
average health	0.077	0.012	-0.053	0.013	0.007	0.006	-0.032	0.012
Good health	0.098	0.015	-0.078	0.017	0.005	0.007	-0.024	0.015
Mental Health (omitted=bad health)								
average mental health	0.024	0.011	-0.013	0.012	-0.005	0.006	-0.006	0.012
Good mental health	0.025	0.012	0.000	0.014	-0.005	0.006	-0.020	0.013
SF-36 social functioning (omitted=bad)								
Average health	0.002	0.012	-0.003	0.013	0.013	0.008	-0.011	0.011
Good health	0.000	0.012	-0.012	0.014	0.012	0.006	0.000	0.012
Numbers of observations	2,376		2,127		285		3,999	
Wald chi2(168)				4137.8				
Pseudo R-squared				0.4379				

Note: for dummy variable, mean marginal effect is the changes in probability of category A in comparison with the omitted variable of each set of dummies, except for partners' status. For Partners status, Partnered is the average marginal effect for partnered vs. single; Partner age 50+ is compared to Partnered age less than 50; Partner age<50 & NLFS is compared to Partner age <50 & in the labour force. The three variables, Partner age>50 & NLFS & no pension, Partner age>50 & in LFS with pension and Partner age>50 & NLFS with pension are compared to Partner age>50 & not retired (ie. in LFS and no pension).

Before we discuss the economic interpretation of the results in Tables 3a and 3b, we briefly discuss the results of a set of diagnostic tests to indicate the statistical robustness of our analysis. Hausman tests of IIA assumption cannot reject the null that odds (outcome *i* versus base outcome) are independent of other alternatives. We also performed Wald tests for combining outcome categories (ie. all coefficients are the same between two outcome categories) and the results indicates that any combination of two outcome categories cannot be combined. We also perform Hotelling test to test whether mean marginal effect are equals between male and females for each set of variables (for a single variable, t tests are performed) and the results shows that marginal effects for all sets of variables are significantly different between men and women.

V. Discussion

Age is one of the key determining factors for retirement. It is interesting that once we have conditioned for people who are in the labour force and after controlling for many individual characteristics, women leave the state of "in the labour force and not drawing pension" later than men. This could be due to many reasons. First, women may need to work longer in order to build what they consider to be an adequate pension provision. Second, it could be simply the result of a considerably longer expected lifespan than men, which presumably will be reflected in better health at a mature age. Finally, there is some evidence below that women, perhaps through the pre-existing self selection, are more keen to stay in the labour force because they enjoy work itself. There choice of working and drawing pension is concentrated in the age group of 65-69 for man and 60-69 for women.

Education at the degree level increases the chances of men to stay in the labour market, either drawing or not drawing their pension. The same effect is found for women, but to a lesser extent. Longer work experience keeps people more engaged in the labour market (presumably due to higher demand for their human capital), more so for men. Years in unemployment also keeps people more engaged in the labour market (this time presumably due to their need to build adequate retirement funds), more so for men. Results suggest that women who report that they enjoy having a job (over and above the pay) stay fully engaged in the labour force for longer both drawing or not drawing a pension. Regarding the choice to work and draw a pension, men do so more when they have longer work experience and when they enjoy work (over and above the pay). People seem to state that they follow the flexible retirement route of working and drawing their

pension more for the enjoyment of the job and less for the money this job earns them. Ethnicity and migrant status is only associated with a faster withdrawal from the labour force for migrant women from non-English speaking countries of origin. No effects are discerned for men.

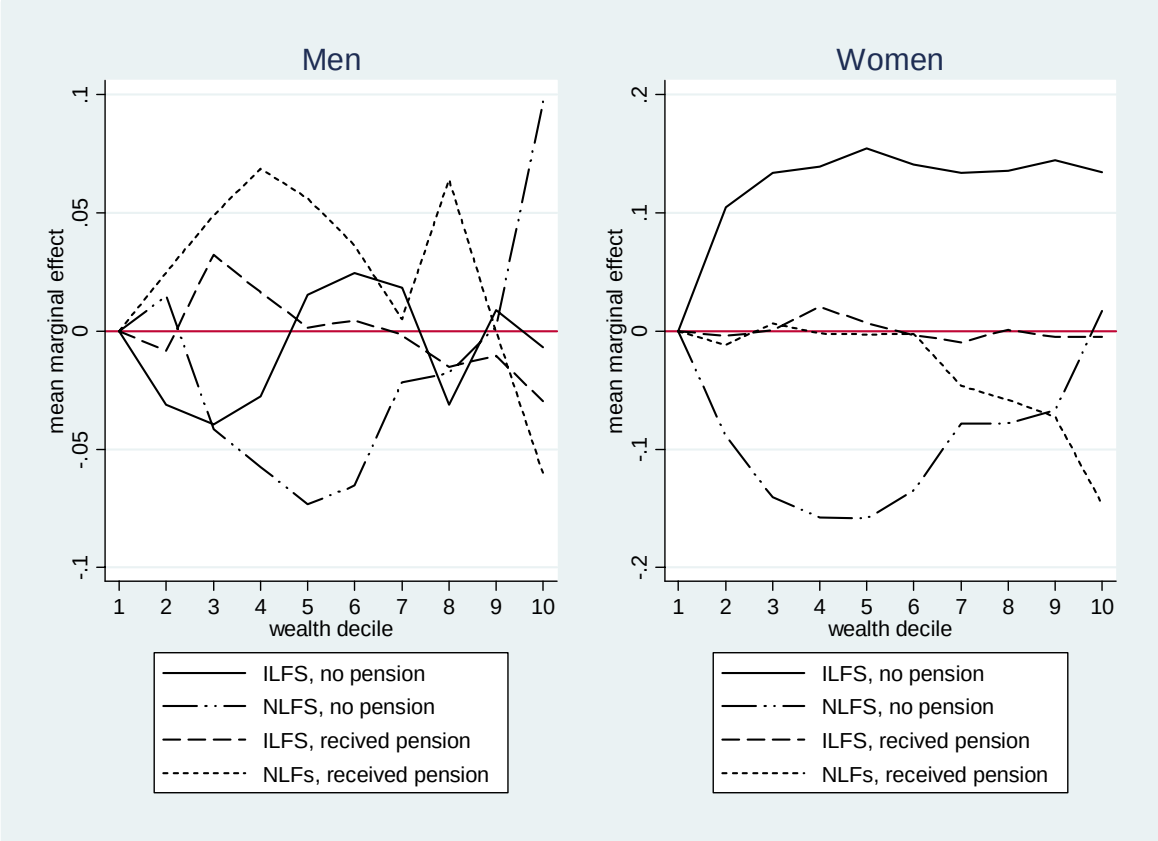
Results on the association between the choices of two partners both older than 50 suggest strongly that they plan jointly and they follow joint routes. This effect is particularly so for the choice of complete withdrawal (not in the labour force and drawing pension, where the MME is 0.307 for men and 0.334 for women). The asymmetry of the same result for Columns 3 (in the LF and drawing pension) is interesting. It is clear that partners plan in a complementary way and they build their lives into retirement together. This may be of interest from the policy perspective as it would imply that a household-based policy would work better than an individual. There are clear but not surprising differences in the effect of having children on the decision to remain fully engaged in the labour market. Men with kids aged 4 or less are far less likely to leave the labour market. After they grow above that age there is no effect for males. The effect on females is the opposite for the age group 0 to 4 and reverses for 5-15, increases for age group 16-20 and drop afterwards (always, however, statistically significant). It is interesting that women with children are shown to be less likely to be in the labour force and drawing pension (presumably because they need to build their pension entitlement typically delayed by childbirth). Looking at the results of Columns 1 and 3 for women and children age, we are probably looking at the manifestation of women going back to work after children start growing older, with a lower pension entitlement and a higher need to build future

pension. It is interesting that the age variables give also a similar message about women labour market participants staying longer than their male counterparts.

It is interesting that for men the level of income from other family members is not associated with their probability of being in the labour force and not drawing pension (the state that we have called loosely, being fully engaged in the labour market). The same holds for women with the exception of the highest income category which suggests that women in such households are more likely to be out of the labour force without drawing a pension and less likely to be out of the labour force drawing a pension. Caring responsibilities do not alter the route to retirement for men. By contrast, women with caring responsibilities will retire sooner and will also do so moving straight from full labour market engagement (Column 1) to full retirement (Column 4).

Different measures of health have been included in the regression the overall message is that the presence of bad health (predominantly the measure of general health for women and the measure of SF-36 social functioning for men) is associated with people leaving labour force participation earlier and enter a state of non-participation with or without drawing a pension (presumably the split between receiving a pension or not is more likely to be a forced choice in this case).

Figure 2 mean marginal effects of wealth



Results on the association between household wealth and retirement flexibility are of high policy interest, primarily because the level of wealth of households can be predicted fairly well for a large part of the population and also because wealth is a clear determinant of the choice to work or retire (flexibly or not). We concentrate on two main results. First, regarding the choice to work and draw a pension (Column 3), it is clear that only men in the 3rd and 4th household wealth deciles are likely to want to work and draw their pension. These are clearly not the better off labour market participants, who are using the flexibility of the pension legislation in order to delay having to make do with only their pension income. As it is possible (indeed this is tax efficient) to draw pension,

work and build further pension entitlement, these may be people who are also improving their future pension position. No similar effect is estimated for women. Second, regarding the choice to not be in the labour force and not draw a pension, a group that the data does not allow us to specify as well as we would desire, the wealth variables shed some useful light. The bottom two wealth deciles and the top two wealth deciles are more likely to belong to this choice category. The lowest deciles will be there because they cannot do otherwise. They belong to the poorest households and at the same time, very worryingly, they neither work nor do they have a pension income. Remembering that these are individuals that have been labour force participants, this category reveals how the past arrangements about the accumulation of pension may have been at fault. It is clear that further research is needed in this direction. The top two deciles will be there because they have enough other funding sources to have been able to plan their retirement without the need of formal pension income. Their household wealth reveals that there should be no social policy concern for the retirement routes of these people. The picture is similar for man and women.

VI. Conclusion

This paper has investigated the patterns of the years leading to retirement with the objective to establish what the most prevalent routes are in the transition from full labour market participation and drawing to pension to no labour market participation and drawing full pension. The paper used the first four waves of the HILDA survey in order to estimate multinomial logit models for a number of pre-retirement choices which

decomposed the retirement decision into the decision to (i) participate in the labour force and (ii) draw a pension. In principle all labour market participants start with drawing no pension. As they age, the probability that they will cease to participate in the labour market and that they will start drawing a pension increases. The paper argued that ceasing to participate in the labour market and drawing a pension are two distinct choices which have different economic policy implications. The data shows that there is a sizeable number of older individuals that move from work to full retirement through intermediate stages which involve either not drawing their pension or remaining in the labour force. A considerable proportion of labour market participants aged 50 or over are also drawing their pension (13.7percent of men and 10.7 percent of women). A number of factors associated with the choice of route to full retirement have been investigated in a multivariate context..

The paper found that a large number of factors are associated with the route into full retirement, such as age, human capital characteristics, personal and family circumstances and preferences, wealth and health. Age is a crucial part of the story, but that the 65 years old age barrier is often not observed. The paper found that women aged 50 and over with a labour force participation history, take longer to start drawing their pension and stay fully engaged longer than their male counterparts. Principally, better human capital induces people to stay in the labour force longer and increases the chances that they will work and draw a pension at the same time. Bad health is associated with people skipping any intermediate stages and moving directly from full labour force engagement into full retirement. There are clear indications that couples plan together and follow similar paths

into retirement. This is indirect evidence that, subject to the marriage dissolution selection, couples still like the company of one another when they reach retirement age. The effect of household wealth on the retirement decision is a hotly disputed area in Australia, in particular due to recent legislative changes regarding superannuation. The paper finds that for men those in the lower wealth deciles (3rd and 4th lowest deciles) are most likely to go to full retirement through an intermediate spell of working and drawing their pension. The same does not hold for women, where the level of household wealth does not seem to influence their choice of working and drawing their pension. For both men and women we find that the poorest and the richest are both more likely to not be in the labour force and not draw a pension. This is obviously for different reasons for the two groups. The evidence presented in this paper suggests that there is considerable incidence of flexible retirement in Australia.

References

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Watson, N. and Wooden, M. (2002). "The Household, Income and Labour Dynamics in 34 Australia (HILDA) Survey: Wave 1 Survey Methodology." HILDA Project Technical Paper Series No 1/02. Melbourne Institute of Applied Economics and Social Research, University of Melbourne.

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Appendix

Description of variables

Exclusion of those who have never been labour market participants: The question about 'never in paid work' asked of people 45 and over is generally not consistent across waves, people seem to swap between retired, not retired and never in paid work. For this reason, people are excluded based on their work history since leaving school for the first time (variables aehtjbyr, aehtjbmt and so on). If there is no evidence of work since leaving school, individuals are considered to have never been in paid work and excluded from the sample.

However, there are some cases where people have only ever worked for one year in their lives (mostly older women). These people are currently included in the data file, and can be identified by the "number of years in paid work since left full-time education" variable (*yrswrk*).

Variables	
Work attitude-happy	Attitudes toward work: "In order to be happy in life it is important to have a paying job" (1-7) 1 = "strongly disagree" 7 = "strongly agree" (only asked in wave 1)
Work attitude-enjoy	Attitudes toward work: "I would enjoy having a job even if I didn't need the money" (1-7) 1 = "strongly disagree" 7 = "strongly agree" (only asked in wave 1)
Has caring responsibilities	1 if currently receive carer pension or carer allowance, or said in SCQ that they care for a sick or disabled family member for 20 hours or more per week
fathers occupation (status) at age 14 (4 categories)	Low skilled workers are those whose ANU4 occupational status scale are 40 or less, high skilled workers are the rest. Others are those who don't know or father deceased when they aged 14.
General health	Group individuals into three equal sized groups, good health, average health and bad health based on the average scores of SF-36 role-physical, SF-36 bodily pain, SF-36 general health, SF-36 vitality.
Mental health	Group individuals into three equal sized groups, good health, average health and bad health based on average of SF-36 role-emotional and SF-36 role-emotional
Social functioning	Group individuals into three equal sized groups, good health, average health and bad health based on SF-36 social functioning.

Table A1: mean marginal effect (all persons)

	In the LFS, No Pension		Not in the LFS, No Pension		In the LFS, Draw pension		Not in the LFS, Draw pension	
	Effect	Std err	Effect	Std err	Effect	Std err	Effect	Std err
Male	-0.030	0.009	-0.012	0.011	0.003	0.005	0.039	0.011
Age (omitted=age 50-54)								
age 55-59	-0.090	0.008	-0.006	0.012	0.000	0.007	0.096	0.017
age 60-64	-0.226	0.010	0.003	0.011	0.013	0.007	0.210	0.011
age 65-69	-0.401	0.015	-0.103	0.013	0.048	0.010	0.455	0.015
age 70-74	-0.481	0.018	-0.093	0.017	0.011	0.009	0.564	0.018
age 75-79	-0.562	0.020	-0.014	0.022	-0.020	0.010	0.595	0.023
age 80+	-0.635	0.021	0.007	0.027	-0.032	0.011	0.659	0.026
Education (omitted=degree+)								
Certificate	-0.041	0.011	0.068	0.017	-0.028	0.007	0.001	0.017
year 10 – 12	-0.036	0.012	0.060	0.016	-0.025	0.008	0.002	0.016
not complete year 10	-0.053	0.013	0.071	0.015	-0.042	0.010	0.024	0.016
Work experience and attitude								
years working experience	0.007	0.000	-0.007	0.000	0.002	0.000	-0.003	0.000
years unemployment	0.004	0.002	-0.002	0.002	0.001	0.001	-0.003	0.002
work attitude-enjoy	0.009	0.002	-0.008	0.002	0.004	0.001	-0.005	0.002
work attitude-happy	0.004	0.002	-0.004	0.002	-0.002	0.001	0.002	0.002
Country of birth (omitted=Australian)								
main English speaking country	-0.021	0.010	-0.001	0.012	-0.008	0.006	0.030	0.011
Non English speaking country	-0.016	0.010	0.043	0.012	-0.015	0.007	-0.012	0.011
Father's occupation at age 14 (omitted=father unemployed)								
unskilled workers	-0.002	0.030	-0.016	0.025	0.014	0.042	0.005	0.028
skilled workers	0.014	0.026	-0.006	0.025	0.021	0.020	-0.030	0.024
Others (not live with father… etc)	-0.018	0.028	0.009	0.028	0.012	0.019	-0.003	0.026
Partner's status								
Partnered	0.073	0.019	0.013	0.028	0.015	0.013	-0.102	0.033
Partner age 50+	0.038	0.016	0.039	0.023	-0.019	0.014	-0.058	0.031
Partner age<50 & NLFS	-0.122	0.030	0.087	0.043	-0.031	0.023	0.066	0.052
Partner age>50 & NLFS, no pension	-0.157	0.018	0.118	0.022	-0.020	0.008	0.059	0.020
Partner age>50 & in LFS, with pension	-0.105	0.024	-0.078	0.022	0.068	0.020	0.115	0.027
Partner age>50 & NLFS, with pension	-0.277	0.022	-0.042	0.017	-0.006	0.009	0.326	0.024
Children (omitted=no child)								
youngest child 0-4	0.171	0.054	-0.065	0.066	-0.027	0.026	-0.079	0.085
youngest child 5-15	0.082	0.022	-0.005	0.027	-0.007	0.013	-0.071	0.033
youngest child 16-20	0.078	0.016	-0.021	0.020	-0.001	0.013	-0.056	0.026
youngest child 20+	0.044	0.011	-0.027	0.014	-0.002	0.008	-0.014	0.013
Wealth (omitted=bottom decile)								
Wealth decile 2	0.052	0.026	-0.044	0.024	-0.006	0.016	-0.003	0.019
Wealth decile 3	0.065	0.027	-0.099	0.024	0.013	0.021	0.021	0.022
Wealth decile 4	0.078	0.028	-0.123	0.024	0.018	0.021	0.028	0.022
Wealth decile 5	0.100	0.028	-0.122	0.024	0.002	0.018	0.020	0.021
Wealth decile 6	0.100	0.028	-0.111	0.027	-0.002	0.017	0.014	0.022
Wealth decile 7	0.095	0.025	-0.059	0.028	-0.007	0.015	-0.029	0.023
Wealth decile 8	0.066	0.025	-0.050	0.028	-0.008	0.016	-0.007	0.023
Wealth decile 9	0.096	0.025	-0.042	0.032	-0.006	0.015	-0.048	0.026
Wealth decile 10	0.077	0.026	0.053	0.033	-0.015	0.015	-0.114	0.027
home equity-wealth ratio	-0.041	0.018	0.029	0.022	-0.007	0.014	0.019	0.018

Table A1 continued

	In the LFS, No Pension		Not in the LFS, No Pension		In the LFS, Draw pension		Not in the LFS, Draw pension	
	Effect	Std err	Effect	Std err	Effect	Std err	Effect	Std err
Income from other family members (omitted= negative or no income)								
low income (<5000 equvalised)	-0.015	0.013	-0.007	0.015	0.005	0.010	0.017	0.015
medium income (5000~10000)	-0.010	0.014	0.013	0.016	0.013	0.012	-0.015	0.017
high income (10000+)	-0.028	0.015	0.058	0.018	0.002	0.011	-0.031	0.017
Has Caring responsibilities	-0.065	0.020	0.044	0.022	-0.016	0.011	0.037	0.016
Physical Health (omitted=bad health)								
average health	0.080	0.009	-0.060	0.008	0.006	0.006	-0.026	0.009
good health	0.102	0.012	-0.088	0.012	0.005	0.007	-0.018	0.011
Mental Health (omitted=bad health)								
average mental health	0.017	0.009	-0.004	0.009	0.000	0.006	-0.013	0.009
good mental health	0.010	0.009	-0.011	0.010	0.000	0.006	0.001	0.009
General Health (omitted=bad health)								
Average health	0.038	0.009	-0.021	0.008	0.008	0.006	-0.025	0.009
good health	0.038	0.010	-0.027	0.010	0.008	0.006	-0.019	0.010
Numbers of observations	5,457		3,305		775		7,298	
Wald chi2(168)	3757.4							
Pseudo R-squared	0.4393							

Note: for dummy variable, mean marginal effect is the changes in probability of category A in comparison with the omitted variable of each set of dummies, except for partners' status. For Partners status, Partnered is the average marginal effect for partnered vs. single; Partner age 50+ is compared to Partnered age less than 50; Partner age<50 & NLFS is compared to Partner age <50 & in the labour force. The three variables, Partner age>50 & NLFS & no pension, Partner age>50 & in LFS with pension and Partner age>50 & NLFS with pension are compared to Partner age>50 & not retired (ie. in LFS and no pension).