Housing over the Life Cycle for Migrants

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Preliminary Draft: Comments Welcome
September 2007

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Abstract

As individuals age they go through various phases in the labour market and the housing market. Younger Australians often begin their working life living at home with their parent(s) as part time workers in various service industries, some of them while they are studying at universities acquiring HECS debts, and then into more full time occupations. As they move into their late 20s and early 30s they begin buying properties on mortgages (some helped by their parents), as they approach their late forties and fifties they may begin to buy investment properties with a view to retirement incomes. Separation and divorce lead to an increased demand for housing, or perhaps different kinds of housing tenure. As they approach retirement they may move into part time work or some take early retirement and consider moving to lower priced housing away from city centres. As they get even older they may have to consider sheltered housing or move in with their children.

The aim of this research is to compare life cycle changes in and housing tenure for migrants with non-migrants: for the purposes of this paper we shall focus on people of 50 years or more. The main aspects of this research would be to compare the changes in household tenure for migrants with non-migrants over the latter part of their life-cycle. The research would focus on the impact of labour market status on the housing tenure of migrants and non-migrants over their life cycle. In addition we control for a range of other variables like family size and structure, household income, socio-economic disadvantage, and location (State). The data come from the ABS Household Expenditure Surveys Confidentialised Unit Record Files for 1998-99. We use Qualitative Response models (probit/multinomial logit/). Our results show some striking differences for the probabilities of owning or purchasing homes for different country groups when we control for a range of other important variables like household income, source of income, demographic characteristics of the household, etc. The results show that age clearly plays an important role in the tenure status of households and that migrants are always less likely than Australian born households to be owning outright at all ages, although the gap diminishes as the household gets older The results of this research would be useful for policy makers in providing assistance with appropriate housing for different age groups of migrants and non-migrants.

Housing over the Life Cycle for Migrants

1. Introduction

As individuals age they go through various phases in the labour market and the housing market. Younger Australians often begin their working life living at home with their parent(s) as part time workers in various service industries, some of them while they are studying at universities acquiring HECS debts, and then into more full time occupations. As they move into their late 20s and early 30s they begin buying properties on mortgages (some helped by their parents), as they approach their late forties and fifties they may begin to buy investment properties with a view to retirement incomes. Separation and divorce lead to an increased demand for housing, or perhaps different kinds of housing tenure. As they approach retirement they may move into part time work or some take early retirement and consider moving to lower priced housing away from city centres. As they get even older they may have to consider sheltered housing or move in with their children.

The aim of this research is to compare life cycle changes in and housing tenure for migrants with non-migrants. The main aspects of this research would be to compare the changes in household tenure for migrants with non-migrants over the latter part of their life-cycle. The research would focus on the impact of labour market status on the housing tenure of migrants and non-migrants over their life cycle. In addition we would control for a range of other variables like family size and structure, household income, socio-economic disadvantage, and location (State). The method of analysis would be to use Qualitative Response models (logit/probit). The results of this research would be useful for policy makers in providing assistance with appropriate housing for different age groups of migrants and non-migrants.

2. Background

Although there is much work done on housing tenure there is little work available on a comparison of the housing choices (whether actual or constrained) of migrants and Australian born households. In an earlier study, Junankar et al. (1993), studied the impact of immigrants on the housing market and pointed out the lack of microeconomic studies of housing choice of migrants compared to the Australian born. Given that migrants come from a very diverse background, at different stages in their life and with very different amounts of education, incomes, and wealth, it would be interesting to see to what extent they have comparable housing to the Australian born. In previous studies, much has been discussed about the falling trends in home ownership, see Yates (1998), Mudd et al. (2001). McDonald (2003) and Baxter and McDonald (2004) provide an interesting study of ownership using a new data set that provides information on the date at which ownership was first achieved. Most studies show the importance of age, income, marital status, and number of children.

3. Methodology

In this preliminary paper we shall use unit record data from the Household Expenditure Survey data for 1998-99 and in subsequent versions compare the results with a more recent HES, and subsequently use a panel data set, HILDA. There are important problems with using this data set for studying changes over a life time as we are only using one cross section which allows us to look at differences for different age groups, but does not explicitly allow us to assume that changes would follow a similar path. A major problem with studying housing tenure with most of the available data is that we do not have information about the date at which an individual or household achieved a particular status, e.g. *we do not have information about when an owner occupier first achieved that status*, when a purchaser of a property began that purchasing, and we do not have information about whether the household is renting a property while it owns another property in a different location[1]. Some of these issues are raised in an interesting Position Paper by McDonald (2003).

In this paper we use the early HES data set to estimate qualitative response models of the probability of being an owner or purchasing a property against all other forms of tenure using probit analysis. We then use a multinomial logit model to estimate the probability of different forms of tenures (owner, purchasing, public renting, private renting (furnished), private renting (unfurnished), and other.

The focus of interest in qualitative response models are those variables which condition the outcome. However, unlike the analysis of continuous dependent variables, where interest is in the conditional expected value, the analysis of qualitative response variables is usually through the conditional probability of outcomes. The conditional probability for the observation (realisation) i of outcome j, and where there are K conditioning variables, is:

[1] Baxter and McDonald (2004) use the Negotiating the Life Course Survey that provides, unusually, information on when a property was purchased.

$$p\left[y_i = j\middle|\mathbf{x}\right]\ p\left[y_i = j\middle|\mathbf{x}\right] \qquad \{j = 0,2,\ldots J\},\ \{i = 1,2,\ldots N\} \text{ and } \mathbf{x} = [x_1, x_2, \ldots x_K]$$

As the $J+1$ outcomes to event i are mutually exclusive and exhaustive then the usual probability conditions apply, and $p[y_i = j|\mathrm{x}]$ for all j falls in the unit interval and:

$$\sum_{j=0}^{j=J} p\left[y_i = j\middle|\mathbf{x}\right] = 1$$

If J=1 then the discrete random variable y is associated with two mutually exclusive states and such binary choice is characterised by the probabilities:

$$y_i = \begin{cases} 1 & \Pr \quad p_i \\ 0 & \Pr \quad 1 - p_i \end{cases} ;$$

The Probit Model, Woodridge (2002), is

$$p_i = F_{NORM}\left(\mathbf{x}_i'\boldsymbol{\beta}\right) = \Phi\left(z\right) = \int_{-\infty}^{\mathbf{x}_i'\boldsymbol{\beta}} \left(2\pi\right)^{-1/2} \exp\left(-\frac{z^2}{2}\right) dz \quad .$$

where $\Phi(\ )$ is the cumulative density function (CDF) for the standard normal distribution, so that:

$$0 \le \Phi\left(z\right) \le 1 \qquad \left\{-\infty < z < \infty\right\} \quad .$$

In a multinomial model the probability of an outcome j for observation i is:

$$p_{ij} = \Pr\left[y_{ij} = j\right],\ \{j = 0, 1, 2, \ldots, J\}$$

Giving J+1 binary variables

$$y_{ij} = \begin{cases} 1 \text{ if } y_i = j \\ 0 \text{ if } y_i \ne j \end{cases}$$

The multinomial density for such a qualitative response variable is Mittelhammer *et al* (2000):

$$f(y_i) = \prod_{j=0}^{j=J} p_{ij}^{\,y_{ij}}$$

The multinomial logit model uses $\Lambda(\mathbf{x}'_i\boldsymbol{\beta})$ as the density governing the probability p_{ij} of an outcome j for observation I, where $\Lambda(\ )$ is the cumulative density function for the logit distribution (Mittelhammer *et al*). Following Greene (2003), in order to estimate a unique set of parameter vectors $\boldsymbol{\beta} = [\boldsymbol{\beta}_0\ \boldsymbol{\beta}_1 \ldots\ \boldsymbol{\beta}_J]$ one of the parameter vectors must be normalised. The usual normalisation is $\boldsymbol{\beta}_0 = \mathbf{0}$, leading to the normalised probabilities, Wooldridge (2002):

$$p_{ij} = \frac{e^{\mathbf{x}'_i\boldsymbol{\beta}_j}}{1+\sum_{l=1}^{J} e^{\mathbf{x}'_i\boldsymbol{\beta}_l}}$$

with

$$p_{i0} = \frac{1}{1+\sum_{l=1}^{J} e^{\mathbf{x}'_i\boldsymbol{\beta}_l}} \quad \text{for } j=0$$

4. Some Descriptive Statistics

As people get older they are more likely to own housing outright, less likely to be purchasing their house, and less likely to be renting in the private sector, but more likely to be renting in the Government sector after they reach 60 years of age. Table 1 provides further details.

Table 1: Tenure by Age

	Owned Outright	Being Bought	Renting Government	Private Renting Furnished	Private Renting Unfurnished	Other
15-24	4.96	14.10	6.53	11.75	58.49	4.18
25-44	14.89	46.34	6.08	2.69	27.80	2.20
45-59	45.91	33.61	5.33	1.42	11.50	2.22
60-74	76.19	6.89	7.43	0.98	6.45	2.06
75+	81.28	2.20	7.49	0.22	5.07	3.74
Total	37.17	31.75	6.21	2.41	20.07	2.39

Source: Household Expenditure Survey, 1998-99.
(Percentages are of row totals).

Diagram 1: Housing Tenure by Age

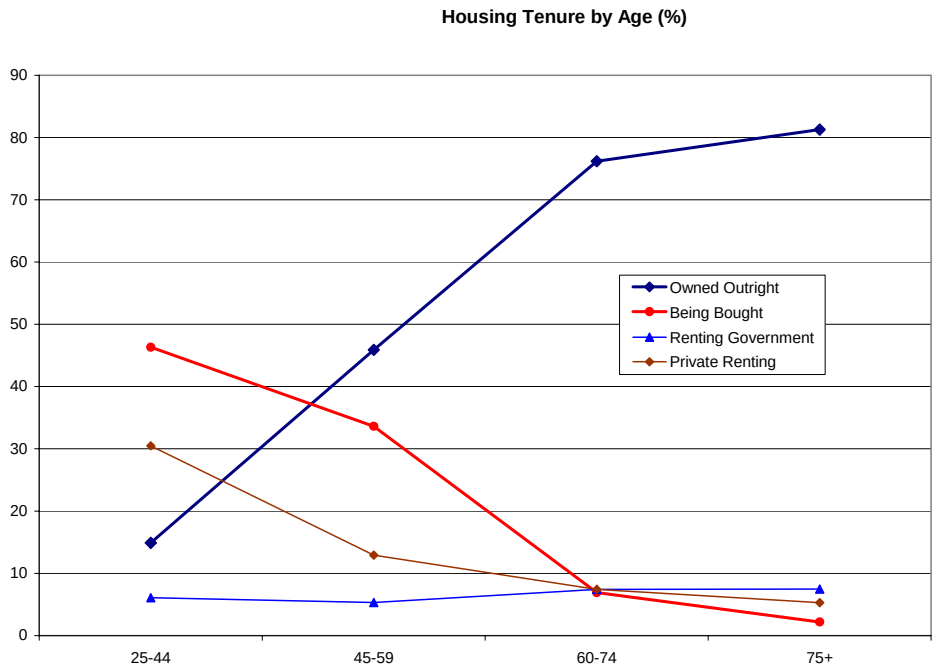
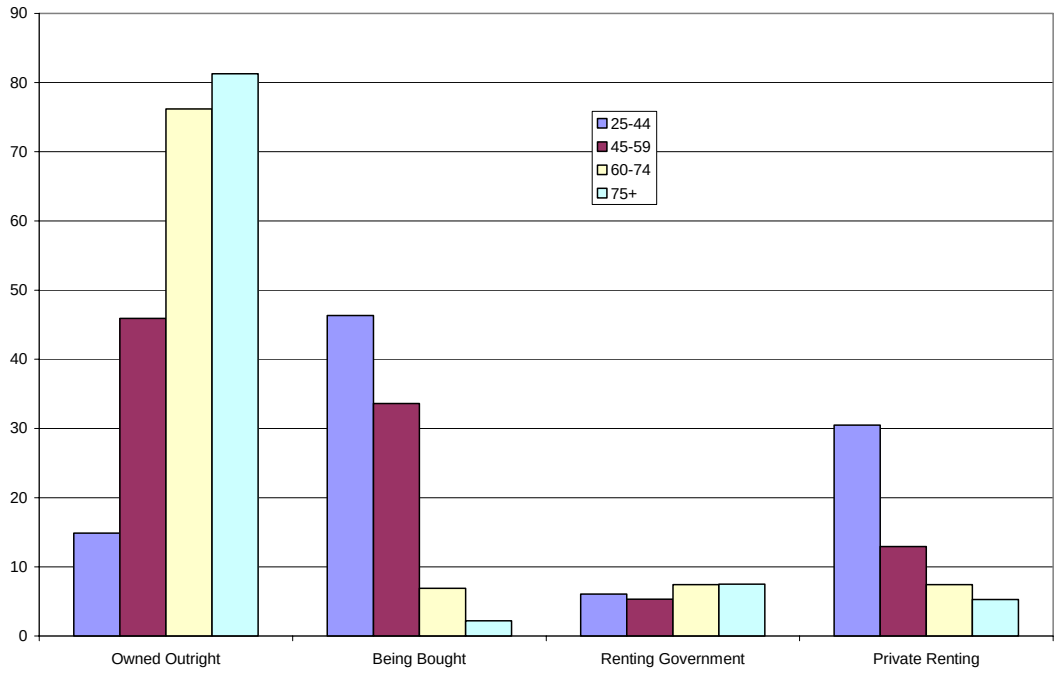


Diagram 2: Tenure Status by Age



Housing tenure is obviously related to labour market status. Full time employed people have higher incomes and are more likely to be purchasing or owning a house of their own. Table 2 provides details of labour force status: Very young people (15-24) are more

likely to be in education and working part time, but as they age they move into full time employment. Unemployment rates are also high for the very young. A very high proportion of people over 60 retire and then live off their superannuation or part time earnings. Table 2 provides further details

Table 2: Labour Force Status by Age

	Employee F/T	Employee P/T	Self Employed	Unemployed	NILF	Total
15-24	61.10	14.36	2.09	5.22	17.23	100.00
25-44	67.07	11.07	7.72	3.48	10.65	100.00
45-59	60.26	10.71	10.55	3.27	15.20	100.00
60-74	8.77	7.34	6.45	0.27	77.17	100.00
75+	0.22	0.66	1.98	0.00	97.14	100.00
Total	51.02	9.87	7.60	2.77	28.74	100.00

Source: Household Expenditure Survey, 1998-99.
(Percentages are of row totals).

Tenure is obviously affected by the income source: those who are on social security benefits as young people do not have access to the mortgage market and are more likely to be renting property. Table 3 provides details of the different sources of income for people by age: wage and salary earners decrease substantially for the over 60s.

Table 3: Source of Income by Age

	Wages, Salaries, Self Employed	Superannuation	Private Income & Investment	Benefits	Total
15-24	73.63	0.00	4.18	22.19	100
25-44	82.58	0.10	1.74	15.58	100
45-59	78.58	2.16	3.32	15.94	100
60-74	20.14	11.46	10.03	58.37	100
75+	2.86	8.81	8.59	79.74	100
Total	65.61	3.08	4.11	27.21	100

Source: Household Expenditure Survey, 1998-99.
(Percentages are of row totals).

It is useful to look at the sample by country of origin and by age. Unfortunately the HES does not give a detailed breakdown but aggregates the country of origin into large regional groups such that we do not even know how many of the sample are from the UK, the largest group of migrants in Australia.

Table 4: Country of Origin by Age

	Australia	N W Europe	S E Europe	N Africa + Mid East	S E Asia	N E Asia	Other	Total
15-24	339	10	2	2	7	7	16	383
25-44	2282	261	78	38	109	59	216	3043
45-59	1256	274	132	24	60	28	121	1895
60-74	766	182	112	16	19	1	21	1117
75+	331	72	38	0	1	0	12	454
Total	4974	799	362	80	196	95	386	6892

In this paper we are interested in the tenure decisions of migrants. It is interesting to see that there are very big differences between migrants from different countries. Households from South East Europe are more likely to own (either outright or purchasing) their homes compared to Australian born people or other migrants. In 1998-99 most of these household would have migrated to Australia in the immediate post war period. It is interesting to note that North East Asian migrants look very similar to the Australian born households. Table 4 provides further details.

Table 5: Tenure Status by Country of Origin

	Owned	Being Bought	Rent Govt.	Rent furnished	Rent unfurnished	Other	Total
Australia	36.3	32.2	6.2	11.6	20.3	2.6	100
N W Europe	42.1	32.3	6.6	7.0	16.0	1.9	100
S E Europe	63.5	19.9	5.0	12.1	9.1	1.4	100
N Africa + Mid East	32.5	30.0	12.5	5.6	22.5	1.3	100
S E Asia	28.6	37.8	8.2	9.3	21.9	1.5	100
N E Asia	34.7	30.5	0.0	70.6	17.9	4.2	100
Other	19.2	33.7	6.0	14.2	34.7	1.6	100
Total	37.2	31.7	6.2	12.0	20.1	2.4	100

Source: Household Expenditure Survey, 1998-99.
(Percentages are of row totals).

Diagram 3: Tenure Status by Age (a)

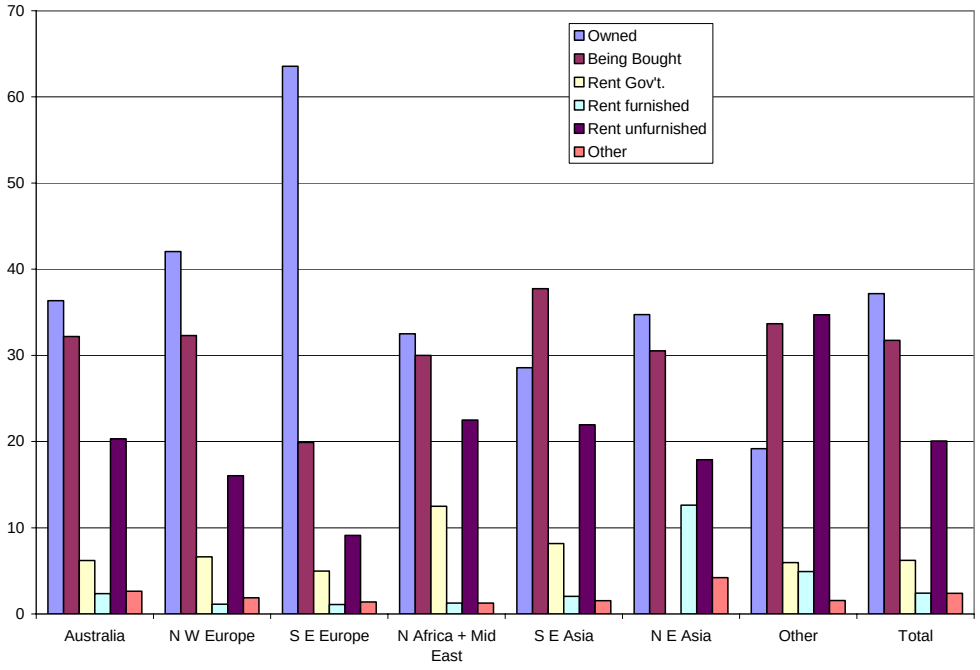
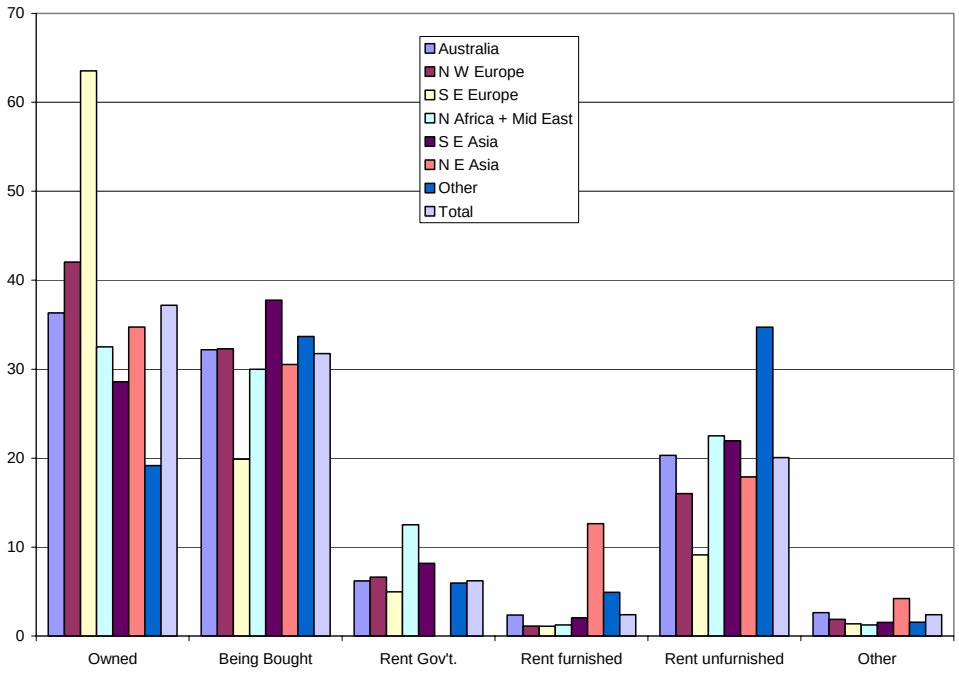


Diagram 4: Tenure Status by Age (b)



5. Results

As discussed earlier we estimated simple probit models for the probability of owning or purchasing a home, and multinomial logit models for the following tenure possibilities: owning a home, purchasing a home, renting in the public sector, renting a furnished property in the private sector, renting unfurnished property in the private sector, and "other". The detailed results are presented in Appendix 1. In the text of the paper we present results based on our estimated models by comparing the predicted probabilities for a base case with alternative cases for migrants from different countries and who arrived in Australia after 1981 and those who arrived after 1986.

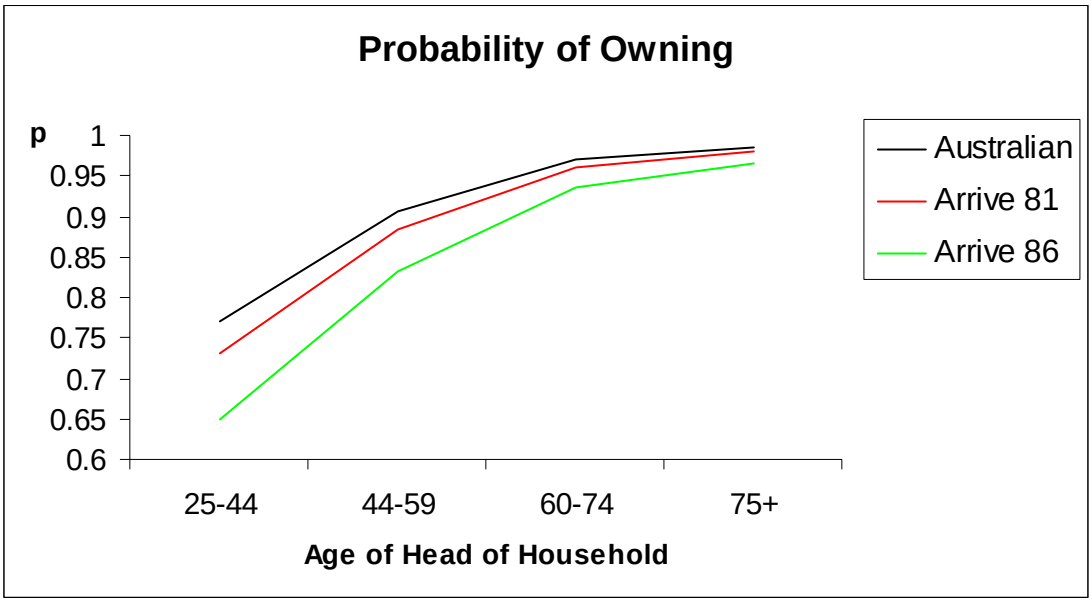
In the first set of results, the base case is of an Australian born household family with children, with male Head of household age 45-59, employed, unskilled with household income mainly coming from wages and on sample mean household income and not in bottom quintile of the index of relative socio-economic disadvantage. The household head lives in NSW in a house (detached, terraced or semi) and the household does not contain someone with a disability.

The explanatory variables include taxable household income, source of income (wages and salaries being the base case; superannuation, private income, social security benefits), employment status, demographic variables like age, gender, and family structure, country of origin, date of arrival for migrants, occupational dummies, low socio-economic region, a disability dummy if anyone in the household has disabilities, structure (house, semi-detached, terraced), and State dummies.

A simple probit model, see Appendix Table A1, shows that the model fits reasonably well and that people with higher incomes are more likely, younger (older) people are less (more) likely to owning/purchasing their own homes, single persons, lone parents are less likely, North East Asians are more likely than Australian born households to own or purchase their own homes. Migrants who arrived after 1986 (that is who have not lived in Australia for long) are less likely to own or purchase their home. People on superannuation are more likely to own their homes, compared to those on wage incomes, people on government benefits are (not surprisingly) less likely to own or purchase their homes. People with professional and trades, and clerical occupations are more likely to own or purchase their own homes. People who have a household with a person with a disability are less likely to be owner occupiers. Not surprisingly those people who are in the lowest two deciles of the index of socio-economic disadvantage are less likely to be owner occupiers.

We begin with predicting the outcomes for Australian born people with migrants who arrived after 1981 and those who arrived after 1986. Based on the estimates of the probit function in Appendix Table A1 where we estimated the probability of owning outright or purchasing versus all other tenures, we predict the outcomes for different age groups of migrants and Australian born households. This is shown in Diagram 5.

Diagram 5: Probability of Owning



It is clear from the diagram that migrants begin with a lower probability of ownership (either owning outright or purchasing) but eventually catch up as they grow older with the Australian born households. Obviously, migrants who have arrived later have a lower probability of ownership at all ages.

The multinomial results, see Appendix Table A2, are more interesting with younger households more likely and older households less likely to be purchasing (compared to the base case of outright ownership). Households on super and with private incomes are less likely to be purchasing (compared to owning outright). Households from low Socio Economic disadvantaged groups and those with a person with a disability in the household are more likely to be renting from the government.

Table 6: Summary of Multinomial Results for Migrants from different Source Countries

	1. Owned Outright	2. Being Bought	3. Renting Government	4. Private Renting Furnished	5. Private Renting Unfurnished	6. Other
North West Europe	Base	Positive	Positive **	Negative**	Positive	Positive
South and East Europe	Base	Negative	Negative	Negative	Negative	Positive
North Africa & Middle East	Base	Positive	Positive **	Negative	Negative	Negative
SE Asia	Base	Positive	Negative	Negative	Negative	Negative
NE Asia	Base	Negative**	Negative***	Negative	Negative ***	Negative
Other	Base	Positive*	Positive **	Negative	Positive ***	Positive

***** Significant at 5 %**
**** Significant at 10 %**

Using these estimates, we have graphed the predicted probabilities of owning outright, purchasing, or renting unfurnished property at different age groups in Diagrams 6, 7, and 8.

Diagram 6: Probability of Owning Outright

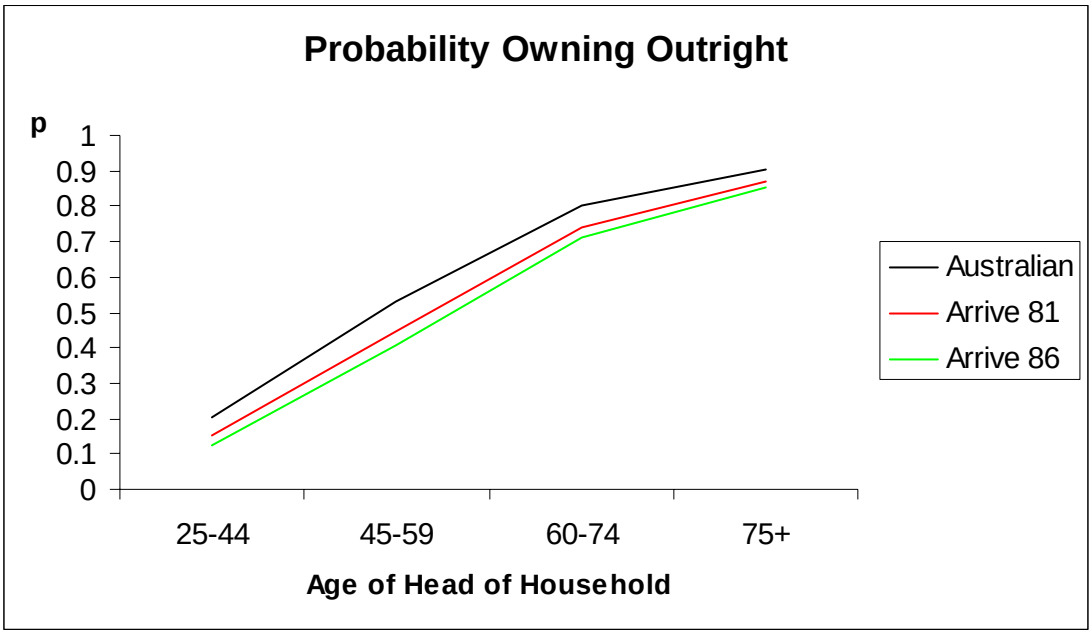
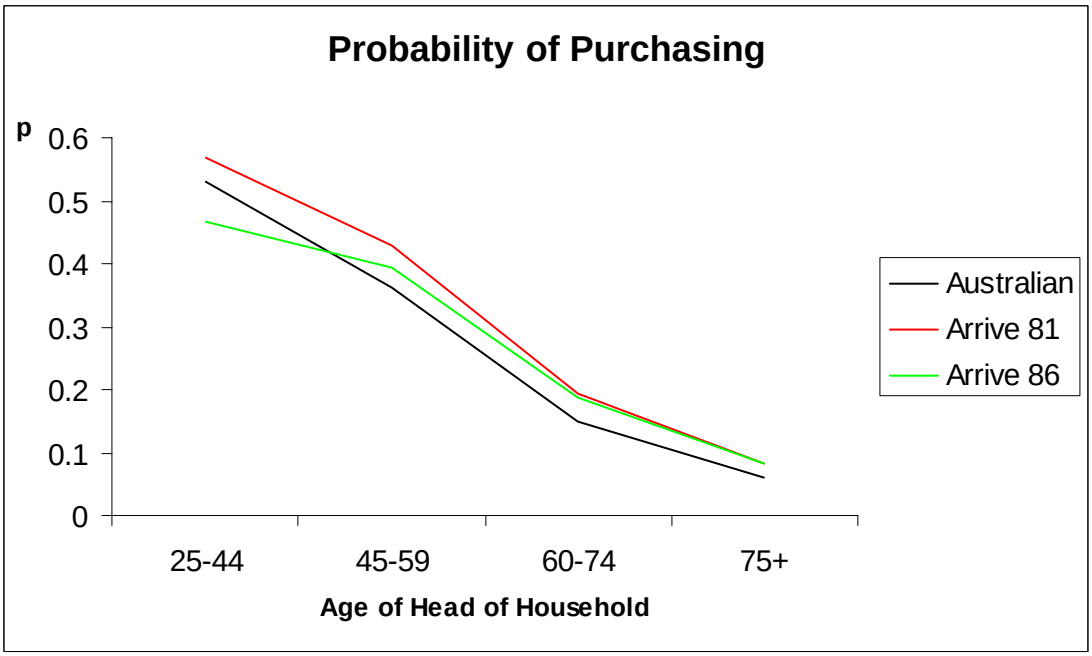


Diagram 7: Probability of Purchasing

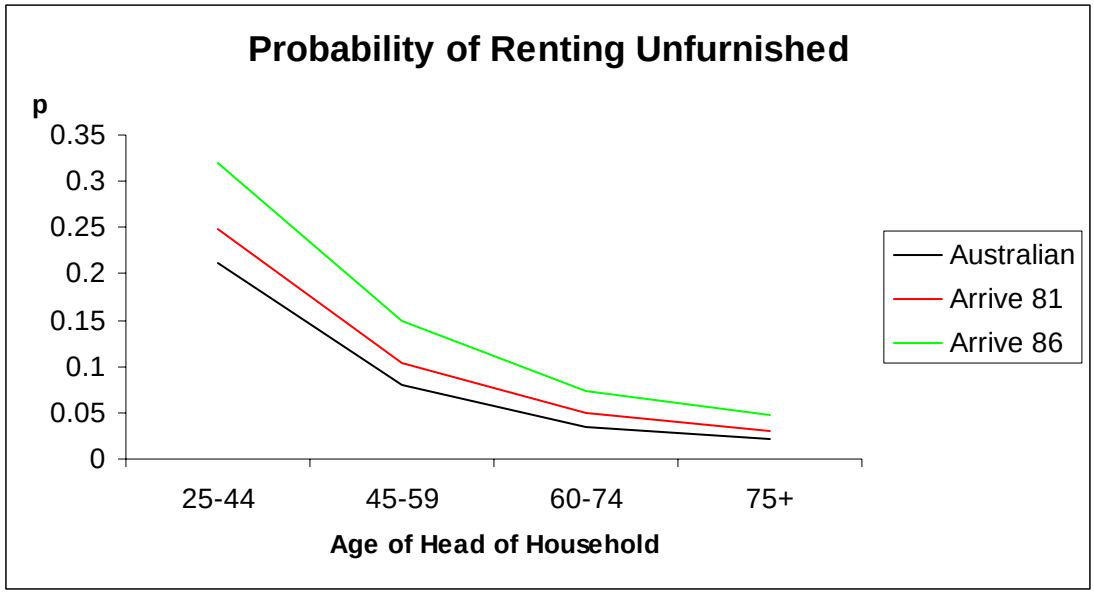


The probability of owning outright increases with age, but is always lower at all ages for migrants. The probability of purchasing is greater at all ages for migrants who arrived after 1981 than for the migrants who arrived after 1986 and for the Australian born households. Not surprisingly, the migrants who arrived after 1986 are less likely to be

purchasing at the younger age groups compared to the migrants who have lived in Australia longer.

The probability of renting unfurnished accommodation is greater for migrants at all ages (but the gap narrows with age), and again, recent migrants are more likely to be renting unfurnished property at all ages, Diagram 8.

Diagram 8: Probability of Renting Unfurnished Property



Diagrams 9 and 10 below show the probabilities of owning and purchasing for migrants from different countries who arrived after 1981 and after 1986. These diagrams clearly show differences for migrants from different countries.

Diagram 9: Probability of Owning or Purchasing for Migrants from different countries who arrived after 1981

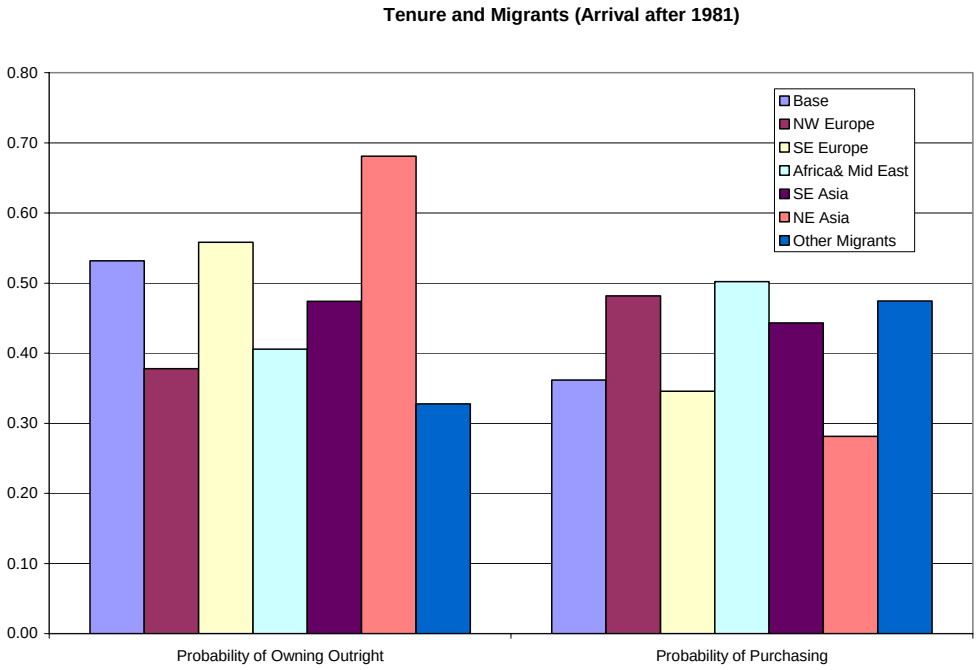
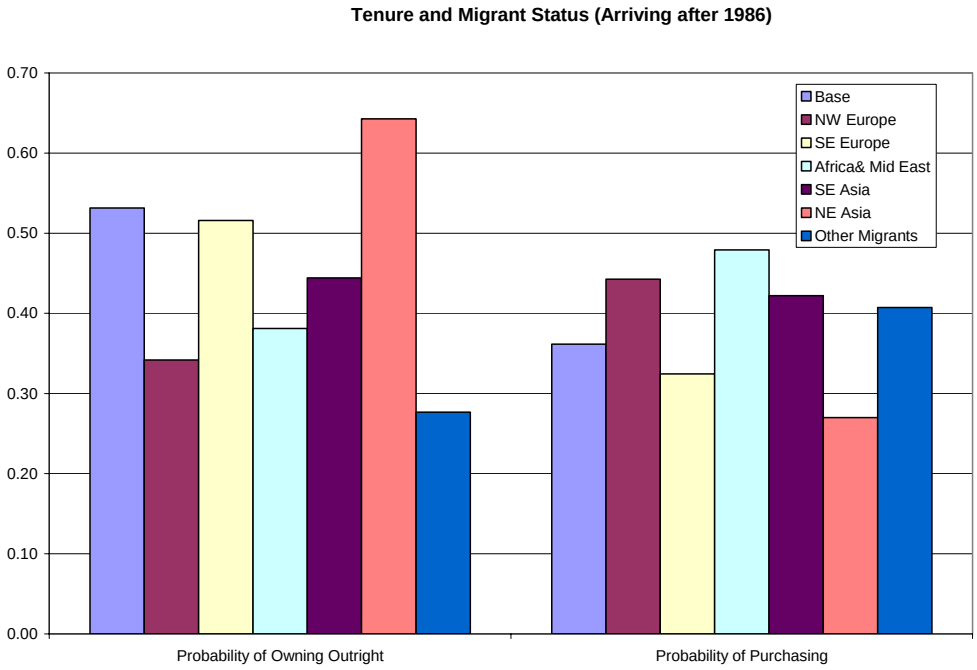


Diagram 10: Probability of Owning or Purchasing for Migrants from different countries who arrived after 1986



When we look at migrants from different source countries we see some striking differences in tenure choice, controlling for the obvious variables like income, household demographics, etc. Compared to the base case of an Australian born household, we see that people from North West Europe and from North Africa and the Middle East are more likely to be renting from the Government, while households from North East Asia are less likely. Households from North East Asia are less likely to be purchasing and less likely to be renting from the Government or renting unfurnished property from the private sector

6. Conclusions and suggestions for future work

This paper shows the differences in the household tenures of migrants from different countries. We have used probit and multinomial logit estimation methods to study the differences in the different kinds of housing for households from Australia compared to migrants. We used data from the Household Expenditure Surveys for our preliminary research. Our results show some striking differences for the probabilities of owning or purchasing homes for different country groups when we control for a range of other important variables like household income, source of income, demographic characteristics of the household, etc. The results show that age clearly plays an important role in the tenure status of households and that migrants are always less likely than Australian born households to be owning outright at all ages, although the gap diminishes as the household gets older. In future work we will use a more recent set of data from the Household Expenditure Surveys for 2003-2004. We also hope to extend our study by using panel data from the Household Income Labour Dynamics of Australia.

This paper is the first in a series to analyse a rather neglected issue in housing, namely the housing of migrants. In later work we will look at the dynamics of change over the life cycle of households from Australia and from other countries.

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APPENDIX

Table A1: Probit Model - Probability Owner Occupation

Variable	Coefficient	Robust Std.Err.	z score	P>|z|
taxinch	6.80e-06	9.71e-07	7.01	0.000
alone	-0.4359	0.057	-7.63	0.000
couple	-0.0223	0.053	-0.42	0.674
lonepar	-0.2621	0.069	-3.81	0.000
sex	0.0491	0.041	1.2	0.229
age1524	-1.6277	0.094	-17.35	0.000
age2544	-0.5736	0.048	-11.96	0.000
age6074	0.5569	0.078	7.15	0.000
age75plus	0.8592	0.103	8.33	0.000
nweurope	-0.0455	0.128	-0.35	0.723
seeurope	0.2165	0.154	1.41	0.159
africame	0.0786	0.209	0.38	0.707
seasia	0.2920	0.147	1.98	0.048
neasia	0.6038	0.191	3.16	0.002
othermig	-0.3072	0.133	-2.3	0.021
arrive81	-0.1238	0.126	-0.98	0.327
arrive86	-0.3859	0.135	-2.85	0.004
super	0.8323	0.186	4.47	0.000
privinc	0.1874	0.138	1.36	0.174
benefits	-0.2800	0.090	-3.12	0.002
employ	0.0218	0.098	0.22	0.824
professional	0.1732	0.068	2.55	0.011
trade	0.2722	0.079	3.46	0.001
intermed	0.0727	0.072	1.01	0.313
structure	1.0478	0.066	15.81	0.000
soclow	-0.3464	0.049	-7.12	0.000
dndis	-0.1208	0.040	-3.05	0.002
nsw	0.4566	0.082	5.59	0.000
vic	0.5480	0.085	6.44	0.000
qld	0.3355	0.087	3.87	0.000
sa	0.5075	0.099	5.11	0.000
wa	0.3772	0.094	4.03	0.000
tas	0.5265	0.100	5.28	0.000
act	0.1257	0.114	1.11	0.269
constant	-0.5738	0.206	-2.78	0.005

Table A2.1: Multinomial Logit Model Results
Panel A: Probability of Purchasing

Variable	Coefficient	Robust Std.Err.	z score	P>|z|
taxinch	-9.67E-07	1.00E-06	-0.97	0.334
alone	-0.1038	0.117	-0.89	0.374
couple	-0.1961	0.090	-2.18	0.029
lonepar	-0.1640	0.160	-1.02	0.307
sex	0.1127	0.081	1.38	0.167
age1524	1.2837	0.279	4.6	0.000
age2544	1.3384	0.081	16.51	0.000
age6074	-1.2906	0.149	-8.67	0.000
age75plus	-2.3064	0.381	-6.05	0.000
nweurope	0.3897	0.263	1.48	0.138
seeurope	-0.3325	0.297	-1.12	0.264
africame	0.3597	0.420	0.86	0.392
seasia	0.0799	0.302	0.26	0.791
neasia	-0.7371	0.383	-1.92	0.054
othermig	0.5175	0.279	1.86	0.064
arrive81	0.2388	0.257	0.93	0.352
arrive86	0.2544	0.298	0.85	0.393
super	-1.1222	0.346	-3.24	0.001
privinc	-0.9037	0.244	-3.71	0.000
benefits	-0.2080	0.175	-1.19	0.234
employ	0.7613	0.194	3.92	0.000
professional	0.1274	0.131	0.98	0.329
trade	0.0759	0.148	0.51	0.609
intermed	0.1423	0.141	1.01	0.313
structure	0.3175	0.185	1.72	0.086
soclow	0.1674	0.104	1.6	0.109
dndis	-0.1260	0.075	-1.69	0.092
nsw	-0.9881	0.200	-4.94	0.000
vic	-0.9208	0.204	-4.52	0.000
qld	-1.0265	0.209	-4.92	0.000
sa	-0.7882	0.226	-3.49	0.000
wa	-1.0309	0.221	-4.66	0.000
tas	-0.9848	0.231	-4.27	0.000
act	-0.4652	0.268	-1.73	0.083
constant	-0.5441	0.430	-1.27	0.205

Table A2.2: Multinomial Logit Model Results
Panel B: Probability of renting Govt. Housing Authority

Variable	Coefficient	Robust Std.Err.	z score	P>|z|
taxinch	-2.9E-05	4.80E-06	-6.06	0.000
alone	0.390	0.201	1.94	0.052
couple	-0.614	0.224	-2.74	0.006
lonepar	0.575	0.210	2.74	0.006
sex	-0.273	0.141	-1.94	0.052
age1524	2.285	0.367	6.23	0.000
age2544	1.279	0.180	7.1	0.000
age6074	-0.926	0.205	-4.51	0.000
age75plus	-1.643	0.277	-5.94	0.000
nweurope	0.746	0.458	1.63	0.103
seeurope	-0.211	0.549	-0.38	0.702
africame	0.869	0.601	1.45	0.148
seasia	-0.390	0.472	-0.83	0.409
neasia	-30.518	0.512	-59.56	0.000
othermig	0.889	0.472	1.88	0.060
arrive81	0.619	0.447	1.38	0.166
arrive86	0.294	0.484	0.61	0.544
super	-1.365	0.646	-2.11	0.035
privinc	-0.741	0.430	-1.72	0.085
benefits	0.605	0.272	2.23	0.026
employ	-0.015	0.279	-0.05	0.958
professional	-0.702	0.286	-2.45	0.014
trade	-0.778	0.359	-2.17	0.030
intermed	0.095	0.264	0.36	0.719
structure	-1.268	0.214	-5.92	0.000
soclow	1.858	0.147	12.64	0.000
dndis	0.785	0.145	5.4	0.000
nsw	-3.201	0.282	-11.35	0.000
vic	-3.417	0.300	-11.4	0.000
qld	-3.227	0.305	-10.59	0.000
sa	-2.482	0.305	-8.14	0.000
wa	-3.090	0.332	-9.32	0.000
tas	-2.616	0.306	-8.55	0.000
act	-1.268	0.372	-3.41	0.001
Constant	1.147	0.693	1.66	0.098

Table A2.3: Multinomial Logit Model Results
Panel C: Probability of Renting Other Furnished

Variable	Coefficient	Robust Std.Err.	z score	P>|z|
taxinch	-1.7E-05	4.99E-06	-3.34	0.001
alone	0.7722	0.267	2.9	0.004
couple	0.0465	0.268	0.17	0.862
lonepar	-0.6745	0.443	-1.52	0.128
sex	0.8523	0.229	3.72	0.000
age1524	4.5683	0.390	11.7	0.000
age2544	1.9970	0.275	7.26	0.000
age6074	-1.3550	0.447	-3.03	0.002
age75plus	-3.1886	1.091	-2.92	0.003
nweurope	-1.7915	1.155	-1.55	0.121
seeurope	-1.6963	1.285	-1.32	0.187
africame	-2.2275	1.719	-1.3	0.195
seasia	-2.1241	1.264	-1.68	0.093
neasia	-1.3278	1.250	-1.06	0.288
othermig	-0.4966	1.249	-0.4	0.691
arrive81	-1.3989	1.181	-1.18	0.236
arrive86	2.4640	1.210	2.04	0.042
super	-0.6521	1.117	-0.58	0.559
privinc	-0.3359	0.513	-0.65	0.513
benefits	0.8660	0.461	1.88	0.061
employ	0.3913	0.470	0.83	0.405
professional	-0.0188	0.321	-0.06	0.953
trade	-0.6228	0.390	-1.6	0.111
intermed	-0.1364	0.347	-0.39	0.694
structure	-2.6301	0.252	-10.45	0.000
soclow	0.5548	0.248	2.24	0.025
dndis	0.1343	0.193	0.7	0.486
nsw	-3.2912	0.366	-9	0.000
vic	-3.5829	0.451	-7.94	0.000
qld	-1.8558	0.348	-5.33	0.000
sa	-2.7568	0.479	-5.76	0.000
wa	-1.8165	0.396	-4.59	0.000
tas	-3.2902	0.553	-5.95	0.000
act	-1.7733	0.473	-3.75	0.000
constant	1.6212	1.340	1.21	0.226

Table A2.4: Multinomial Logit Model Results
Panel D: Probability of Renting Other Unfurnished

Variable	Coefficient	Robust Std.Err.	z score	P>|z|
taxinch	-1.2E-05	2.04E-06	-5.99	0.000
alone	0.6232	0.131	4.75	0.000
couple	-0.0659	0.117	-0.56	0.574
lonepar	0.2857	0.171	1.67	0.095
sex	-0.0334	0.095	-0.35	0.724
age1524	3.6805	0.267	13.8	0.000
age2544	1.9395	0.109	17.83	0.000
age6074	-1.2685	0.189	-6.73	0.000
age75plus	-1.9338	0.281	-6.87	0.000
nweurope	0.3590	0.303	1.19	0.236
seeurope	-0.4779	0.361	-1.32	0.186
africame	-0.2486	0.494	-0.5	0.615
seasia	-0.4369	0.345	-1.27	0.205
neasia	-2.0507	0.465	-4.41	0.000
othermig	0.9021	0.310	2.91	0.004
arrive81	0.3331	0.295	1.13	0.259
arrive86	0.9084	0.327	2.78	0.005
super	-2.0480	0.541	-3.78	0.000
privinc	-1.0800	0.318	-3.39	0.001
benefits	0.0033	0.205	0.02	0.987
employ	0.2933	0.225	1.3	0.193
professional	-0.1968	0.155	-1.27	0.203
trade	-0.3213	0.180	-1.79	0.074
intermed	-0.0540	0.164	-0.33	0.743
structure	-1.7224	0.158	-10.89	0.000
soclow	0.2665	0.116	2.3	0.022
dndis	0.0217	0.090	0.24	0.810
nsw	-0.8620	0.230	-3.75	0.000
vic	-1.0151	0.236	-4.3	0.000
qld	-0.7077	0.238	-2.97	0.003
sa	-1.2530	0.271	-4.62	0.000
wa	-0.8726	0.253	-3.45	0.001
tas	-1.3125	0.271	-4.84	0.000
act	-0.1310	0.301	-0.43	0.664
constant	1.0064	0.493	2.04	0.041

Table A2.5: Multinomial Logit Model Results
Panel E: Probability of Other Tenures Including Occupied Rent Free

Variable	Coefficient	Robust Std.Err.	z score	P>|z|
taxinch	-1.6E-05	5.90E-06	-2.65	0.008
alone	1.0058	0.263	3.82	0.000
couple	0.2610	0.245	1.07	0.287
lonepar	-1.0023	0.515	-1.95	0.051
sex	0.2670	0.189	1.41	0.158
age1524	2.6726	0.392	6.82	0.000
age2544	1.1821	0.220	5.37	0.000
age6074	-0.9429	0.312	-3.02	0.003
age75plus	-0.7189	0.354	-2.03	0.042
nweurope	0.0501	0.715	0.07	0.944
seeurope	-0.2666	0.745	-0.36	0.721
africame	-0.2028	1.237	-0.16	0.870
seasia	-0.2858	0.672	-0.43	0.670
neasia	-0.3538	0.821	-0.43	0.667
othermig	0.2228	0.781	0.29	0.775
arrive81	0.6211	0.684	0.91	0.364
arrive86	0.3094	0.706	0.44	0.661
super	-1.6862	1.014	-1.66	0.096
privinc	0.4253	0.433	0.98	0.326
benefits	0.5205	0.350	1.49	0.137
employ	0.8806	0.344	2.56	0.011
professional	-0.3500	0.319	-1.1	0.273
trade	-0.8730	0.393	-2.22	0.026
intermed	-0.0872	0.316	-0.28	0.783
structure	-0.7588	0.296	-2.57	0.010
soclow	0.1964	0.229	0.86	0.391
dndis	0.0695	0.182	0.38	0.703
nsw	-1.4878	0.418	-3.56	0.000
vic	-1.1399	0.413	-2.76	0.006
qld	-1.1343	0.426	-2.66	0.008
sa	-1.0685	0.466	-2.29	0.022
wa	-0.8381	0.443	-1.89	0.059
tas	-1.1823	0.466	-2.54	0.011
act	-0.8805	0.590	-1.49	0.136
constant	-2.0553	0.915	-2.25	0.025

Table A3: Brief Description of Variables in the Model

tenu	1=own or buying, 0=else
dtenu	nature of housing: 1 owned outright; 2 being bought; 3 renting gov't. housing authority; 4 renting- other- furnished; 5 renting- other- unfurnished; and 6 other tenures including occupied rent free
taxinch	total household taxable income
alone	1=Person living alone, 0=else
couple	1= Couple, no other ususla residents, 0=else
lonepar	1=lone parent, 0=else
sex	1= household reference person male, 0=else
age1524	1=age household ref person 15 to 14 years, 0=else
age2544	1=age household ref person 25 to 44 years, 0=else
age6074	1=age household ref person 60 to74 years, 0=else
age75plus	1=age household ref person 75 years plus, 0=else
nweurope	1=if Head of household borne in North West Europe, 0=else
seeurope	1=Head of household born in South or East Europe, 0=else
africame	1=if Head of household borne in North Africa or Mid East, 0=else
seasia	1=if Head of household borne in S. E. Asia, 0=else
neasia	1=if Head of household borne in N. E. Asia, 0=else
othermig	1=if Head of household not borne in Aus or regions defined by other dummies, 0=e
arrive81	1=Head of Household arrived in or after 1981, 0=else
arrive86	1=Head of Household arrived in or after 1986, 0=else
super	1= principal source of income H H'hold is superannuation, 0=else
privinc	1=Principal source of income HH'hold is investment or private income, 0=else
benefits	1=prin. source inc. from gov't. support schemes or zero/neg inc, 0=else
employ	1=employed (full or part time) or self employed, 0=else
professional	1=h'old ref occ is manage and admin, prof or assoc prof, 0=else
trade	1= h'old ref. occ is tradesperson or advanced clerical, 0=else
intermed	1=h'old ref occ is intermediate clerical or prod. and t'port., 0=else
structure	1= house (detached, semi, terrace), 0=else
soclow	1=in lowest two deciles of Index of Relative Socio Economic Disadvantage,
nsw	1=New South Wales, 0=else
vic	1=Victoria, 0=else
qld	1=Queensland, 0=else
sa	1=South Australia, 0=else
wa	1=Western Australia, 0=else
tas	1=Tasmania, 0=else
act	1=Australian Capital Territory, 0=else