



Understanding Life Satisfaction and the Education Puzzle in Australia: A profile from HILDA Wave 9

Honge (Cathy) Gong, Rebecca Cassells, Marcia Keegan

Working Paper Series No. 2011/
July 2011
(draft only, not for citation)

Working Paper Series

ABOUT NATSEM

The National Centre for Social and Economic Modelling was established on 1 January 1993, and supports its activities through research grants, commissioned research and longer term contracts for model maintenance and development.

NATSEM aims to be a key contributor to social and economic policy debate and analysis by developing models of the highest quality, undertaking independent and impartial research, and supplying valued consultancy services.

Policy changes often have to be made without sufficient information about either the current environment or the consequences of change. NATSEM specialises in analysing data and producing models so that decision makers have the best possible quantitative information on which to base their decisions.

NATSEM has an international reputation as a centre of excellence for analysing microdata and constructing microsimulation models. Such data and models commence with the records of real (but unidentifiable) Australians. Analysis typically begins by looking at either the characteristics or the impact of a policy change on an individual household, building up to the bigger picture by looking at many individual cases through the use of large datasets.

It must be emphasised that NATSEM does not have views on policy. All opinions are the authors' own and are not necessarily shared by NATSEM.

Director: Alan Duncan

© NATSEM, University of Canberra 2011

All rights reserved. Apart from fair dealing for the purposes of research or private study, or criticism or review, as permitted under *the Copyright Act 1968*, no part of this publication may be reproduced, stored or transmitted in any form or by any means without the prior permission in writing of the publisher.

National Centre for Social and Economic Modelling
University of Canberra ACT 2601 Australia
170 Haydon Drive Bruce ACT 2617

Phone + 61 2 6201 2780

Fax + 61 2 6201 2751

Email natsem@natsem.canberra.edu.au

Website www.natsem.canberra.edu.au

CONTENTS

About NATSEM	2
Author Note	4
Acknowledgements	4
General caveat	4
Summary	5
1. Introduction	5
2. Empirical model	7
3 Data and definitions	9
4. Preliminary data analysis	14
5.Estimated results	18
5.1 Education and life satisfaction	18
5.2 Other factors influencing life satisfaction	19
6. Conclusions and Discussion	21
References	23
Appendices	25

AUTHOR NOTE

Honge (Cathy) Gong is a Research Fellow in the Children and Family team (CAF) at the National Centre for Social and Economic Modelling (NATSEM) at the University of Canberra. Rebecca Cassells is an Acting Principle Research Fellow at NATSEM, and Marcia Keegan is a Research Fellow at NATSEM.

ACKNOWLEDGEMENTS

We acknowledge funding provided by AMP and NATSEM.

This paper uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this paper, however, are those of the authors and should not be attributed to either FaHCSIA or the Melbourne Institute.

GENERAL CAVEAT

NATSEM research findings are generally based on estimated characteristics of the population. Such estimates are usually derived from the application of microsimulation modelling techniques to microdata based on sample surveys.

These estimates may be different from the actual characteristics of the population because of sampling and nonsampling errors in the microdata and because of the assumptions underlying the modelling techniques.

The microdata do not contain any information that enables identification of the individuals or families to which they refer.

SUMMARY

Although better income, wealth and health outcomes have been predicted by human capital theory for better educated people, increasingly international and Australian empirical evidence has found a negative relationship between higher education and subjective wellbeing instead, particularly for developed nations.

This study uses Wave 9 of the HILDA survey data and an ordered logit model to estimate the partial effect of educational achievement on different life satisfactions in Australia and how this differs by age group. We find that the younger age group have relatively higher education but lower satisfaction level on average than the older age group. The relationship between education and life satisfaction level differs by age group. Either controlling other variables or not, we found that for the older age group, those with graduate diploma/graduate certificates, certificates or Year 11 or below are more satisfied with their lives on average when compared to those with university degrees, or Year 12 only. However, this is not the case anymore for the younger age group, where life satisfaction, especially with respect to finances, health and safety, increases with education.

1 INTRODUCTION

Australia's trajectory as a modern developed nation is thought to depend critically on a highly skilled and educated population and workforce. Successive governments have reiterated this as a key outcome for policies relating to education, training and skills. The current Australian government has established clear goals related to enhancing Australia's competitiveness and productivity in the global market. These goals include the target of a workforce of which 40 per cent of 25 to 34 year-olds will hold a tertiary degree by 2025, 20 per cent of low socioeconomic status (SES) students participating in University by 2020, and a socially inclusive society supported and achieved through education and workforce participation. Currently (in 2010), only 34 per cent of Australian population aged 25 to 34 having a Bachelor degree or above, and only 23 percent for those aged 15-64 years (ABS 2010). Are these goals of a highly educated society also at odds with the wellbeing of a nation's citizens? Surprisingly, empirical studies often predict a negative relationship between higher education and subjective wellbeing than a positive one – particularly for developed nations (see for example Veenhoven, 1996; Dockery, 2003; Headey & Wooden 2004; Hickson and Dockery 2008; Dockery, 2010). This brings a great interest to further understand the relationship between education and subjective wellbeing.

Subjective wellbeing is the feeling of wellbeing or self report on how well life is going. It includes two components: affective and cognitive. The affective part is the presence of positive or negative emotion. The cognitive part is how people judge their lives compared to their expectations (Diener, 1994; van Hoorn, 2007).

Measurement of subjective wellbeing has become increasingly more fashionable in social and economic studies, particularly those that centre on developed nations. There is now a large body of empirical studies that focus on the determinants of subjective wellbeing measures such as life and job satisfaction (see for example Clark, 1997; Winkelman and Winkelman, 1998; Dockery, 2005). The Happy Planet Index, established in 2007, compares average life satisfaction rankings of 143 nations around the world, where Australia ranks in top ten. This index, more readily digestible happiness reports, a growing presence and demand for happiness experts and 'secret to happiness' self-help collections in book stores have no doubt assisted the growth in this area of study.

A number of elements have been found to have associations with subjective well-being, including income, wealth, being in a relationship and education (Dolan, Peasgood and White, 2008). It is well established from both human capital theory and empirical evidence that higher educational attainment can enhance a person's future outcomes, including bringing about better career opportunities, income and wealth attainment, personal relationships and health outcomes (Sweetland 1996).

One would therefore expect people who achieve higher levels of education to be happier on average than those with lower levels of education. However, increasingly international and Australian evidence is more likely to predict a negative relationship between higher education and subjective wellbeing than a positive one – particularly for developed nations (see for example Veenhoven, 1996; Dockery, 2003; Headey & Wooden 2004; Hickson and Dockery 2008; Dockery, 2010).

Relative deprivation theory, developed by Merton (1938), attempts to explain the experience of feeling deprived of something to which one believes oneself to be entitled to have, but others surrounding the person do not experience the same level of deprivation, causing discontent. It essentially argues that feelings of deprivation in a subject are greater the more people around the subject who are not so deprived (for example, see Yitzhaki, 1979). In the context of education, it suggests that highly-educated people are more likely to have higher expectations and are therefore more likely to experience greater disappointment when these expectations are not met. Dockery (2010, p13) also notes that increased education may 'promote critical thought or heightened concern in some domains in life. Using data from both the Longitudinal Survey of Australian Youth (LSAY) and the Household Income and Labour Dynamics in Australia (HILDA) survey, Dockery (2003) also finds that self-reported life satisfaction declines with higher education, noting that this is likely due to differences between expectations and outcomes.

A recent comprehensive Australian study that examines the relationship between educational attainment and self reported life satisfaction for Australian youth, finds that those with a university degree are more likely to have lower levels of life-satisfaction in the years immediately following graduation, compared to those who have gone on to complete a vocational qualification (Dockery 2010). Dockery finds that those who went on to study at university had relatively higher life satisfaction levels in high school and while studying at university when compared with those who went on to achieve a vocational qualification. However, life satisfaction level for these undergraduates diminishes once they enter the

workforce. Dockery reasons that those who do go on to university are more likely to be from more advantaged backgrounds and be having a relatively 'good time' while at school and university, whereas those who go on to study for vocational qualifications who were relatively unhappy at school, are more likely to find higher levels of life satisfaction after studies (Dockery, 2010 p.8).

Preliminary descriptive data analysis on Wave 8 of HILDA also found that in Australia people with higher educational level are less likely to report feeling 'very satisfied' with their lives compared to those with no post-school qualification, or those with a certificate or diploma, indicative of higher levels of educational attainment not necessarily being associated with higher life satisfaction (Cassells et al 2009).

This paper uses the very detailed information about different aspects of job and life satisfaction, as well as educational attainment, labour market status, individual characteristics, family background and major life events, reported in Wave 9 of the HILDA survey data to further investigate and understand the complicated relationships between life satisfaction and educational achievement. An ordered logit model is used to estimate both the conditional and unconditional association of educational achievement on life satisfaction by controlling for other factors that are thought to influence life satisfaction, including age, gender, health, marital status, labour force status, social connection, income, wealth, personality, negative or positive life events that occurred recently.

2 EMPIRICAL MODEL

There is large and growing number of empirical studies explicitly investigating the determinants of various components of satisfaction and happiness, such as the role of work on life satisfaction (Dockery, 2005), whether part-time work makes the family happier (Booth and van Ours, 2007). A detailed literature review of determinants of subjective well-being, conducted by Dolan, Peasgood and White (2008) summarised that low income, poor health, separation, unemployment and lack of social contact were all strongly associated with low subjective well-being, while people who are married, healthy and active in participation are likely to be happier (see for example Veenhoven 1991; Ferrer_i_Carbonell and Frijters 2004; Dockery 2005; Guilbert and Paul 2009). In addition, psychological studies find that besides these economic considerations, genetics and expectations might also have large influence on subjective well being (Brickman et al, 1978 ; Lykken and Tellegen 1996).

Our investigation here focuses on identifying factors that influence satisfaction levels of various life aspects, with an emphasis on the role of educational achievement by age group. Subjective well-being measured as a scale of 0 to 10, can be treated as either cardinal or ordinal data, however, recent studies prefer to use it as ordinal data, with ordered logit or probit models most commonly used (Dockery, 2005; Booth and van Ours 2007). Here we report our estimated results from ordered logit models using cross sectional data.

The empirical model we estimated can be described as:

$$S_i = \alpha + \beta_1 Edu + \beta_2 Edu * Age + \delta X_i + \varepsilon_i$$

Where, S_i is self-reported life satisfaction level. Edu is the highest level of education achieved, Age here indicates older or younger age groups, X_i is the observed individual characteristics, ε_i is the i. i. d error term.

The HILDA dataset allows us to control for an extensive set of variables which are likely to impact upon individual satisfaction levels. This helps to decrease the potential endogeneity problem in the model due to unobserved individual effects. Informed by previous literature mentioned above we have controlled for a number of variables, namely age, gender, the presence of a long term health condition, the occurrence of a significant life event, labour force status, marital status, family structure, country of birth, personality, income and wealth.

In order to capture the relationship between satisfaction level and education in details, we use seven educational categories for both young and old age groups. Age and age squared are both included in the model to reflect the non-linear relationship between age and satisfaction level. As well as traditional labour force categories, we have also included variables that capture underemployment and involuntary non-labour force participation¹. Club membership is used as a proxy for social participation or connection.

Australia is a nation of migrants where more than one quarter of its population was born overseas. In general, migrants from non-English speaking backgrounds are found to assimilate more slowly than migrants from English speaking countries due to language barriers, cultural differences or lack of recognition of work experience and qualifications gained overseas (Borjas 1985; Beggs and Chapman 1988; Miranti, Nepal and McNamara, 2010). Our preliminary data also found that migrants from non-English speaking countries have relatively lower life and job satisfaction levels than their Australian born and English speaking migrant counterparts. Consequently, we have divided individuals into three groups: those born in Australia, those born overseas with English speaking background (ESB), and those born overseas with non-English speaking background (NESB).

Income and wealth can be used to increase consumption and potentially improve well-being. We have used household equivalised income, home ownership and housing to capture the impact of income and wealth in the life satisfaction model.

1 We identify people who are currently working part time but want to work more as "underemployed". For people not in labour force, if they want a job or they might want to have a job but not looking for a job due to constraints or difficulties, we defined them as "involuntary not in labour force". If they do not want a job or they might want to have a job but not looking for a job due to positive choices, we define then as "voluntary not in labour force". The constraints or difficulties include 'own illness, injury or disability/ welfare payment/pension may be affected/lack of transport/Difficulties in finding child care/Waiting until youngest child starts school/other childcare reason/health of someone else/too young/too old/lacks necessary training or qualifications/lacks necessary experience/difficulties with language/ethnic background/difficulties with reading/writing/no jobs available in line of work/no jobs available with suitable hours/no jobs available at all'. The positive choices include 'retired/voluntarily inactive/study/travel/holiday/leisure/doing voluntary job'. For more details, please see Gong and McNamara (2011).

Personalities are also controlled in the life models. The HILDA survey asked the respondents 36 questions about their personality traits, which were used to create five derived scales to summarise the five personality factors: extroversion, agreeableness, conscientiousness, emotional stability and openness to experience.² In addition, the presence of any positive or negative major life event that occurred in the last 12 months, (such as a job promotion or relationship dissolution) is used in the model as random shocks.

3 DATA AND DEFINITIONS

The data used in this analysis are from Wave 9 of the HILDA survey. The HILDA survey follows the same individuals every year and asks them questions on their demographics, family backgrounds, educational attainment, labour force participation, income, and housing etc. (Wooden and Watson, 2007; Watson, 2010). It also provides very detailed information about subjective well-being or self reported satisfaction levels on overall and different aspects of job, life and family relationships, as well as major life events that occurred in the last 12 months.³

There are around 13,300 responding persons in the Wave 9 HILDA dataset. We first restricted the sample to those aged 25 years and above as most individuals have finished their formal education by this age. This reduced the sample size to 10 675. For the life satisfaction model, we further restricted the sample to those who answered the questions on life satisfaction and personality. The final sample in the life satisfaction model is around 9 000 observations.⁴

The HILDA survey measures satisfaction across a number of aspects of people's lives – including satisfaction with their home, neighbourhood, financial situation, health, safety, community involvement, free time, paid job, as well as their personal relationship with their partners, children and parents. Life satisfaction in HILDA is a subjective measure, with respondents ranking their satisfaction level on a scale of 0 to 10 (from totally dissatisfied to totally satisfied).

As noted by Carson and Kerr (2001), there was a big change in the nature of work before and after 1970s. Given the domination of industry/manufacturing and labour intensive sectors before the 1970s, there was a high demand for low skilled labour workers. Since the 1970s, with the improvement in technology and rising focus on specialization, there was increasing demand for skilled workers while less demand for unskilled workers. In this case, the majority of people who entered into the labour market before the 1970s could

² For more details on how these personality factors are derived, see Losoncz (2009)

³ HILDA survey also asks how long ago the life events happened, such as 0-3 months, 4-6 months, 7-9 months or 10-12 months, but we did not use this detailed information.

⁴ There are only around 5 000 workers having reported their job satisfaction, and the determinants of life and job satisfaction are very different. In this study, we will not estimate the job satisfaction model.

have made relatively rapid and easy transitions from relatively low education to full time employment. Under the assumption that most people started to work at their age 15 to 16 when they finished their schooling of year 10 or 11, the majority of them should be born before year 1956. We do find that the early baby boomer (born 1946-1955) have relative lower educational attainment (with 12.87 schooling years on average) when compared to the late baby boomers (born 1956-1964, with 13.45 schooling years on average). After considering the change in the nature of work and educational difference, we divided individuals into two age groups: the younger age group (born after 1955) and the older age group (born 1955 or before). The older age group includes the early baby boomers and builders, and the younger age group includes late baby boomers and generations X and Y.

Table 1 presents the mean and standard deviation (SD) for the variables of satisfaction level. It shows that Australian adults are generally satisfied overall with their jobs and life in general, with mean life and job satisfaction levels of 7.83 and 7.65 out of 10, respectively. When looking at different aspects of life and job, Australians are most satisfied with their safety, home and job security, followed by their job and health, but are less satisfied with their financial situation, free time and community involvement. The largest variance occurs in satisfaction with free time, job flexibility, and finance, while lowest variance occurs in satisfaction with safety and one's neighbourhood. Australian adults are very satisfied with their relationships with their children and partners, with a mean response over than 8, but are less satisfied with their step children and step parents, with a mean response lower than 7, reflecting the difficulty in building up a mutually understanding relationship in blended families. Satisfaction levels with family relationships (except for relationships with children) show a larger variance compared with satisfaction in other aspects of life.

Table 1 Mean and SD of satisfaction levels

Variables	Mean	SD
Life satisfaction		
Life overall	7.83	1.47
Home	7.91	1.78
Finance	6.58	2.16
Safety	8.11	1.58
Community	6.73	2.10
Health	7.15	1.96
Neighbourhood	7.84	1.65
Free time	6.62	2.46
Job satisfaction		
Job overall	7.65	1.63
Job payment	7.03	2.06
Job security	7.90	2.12
Work itself	7.60	1.79
Working hours	7.23	2.04
Job flexibility	7.47	2.19
Relationship satisfaction		

Partner	8.11	2.06
Children	8.32	1.80
Step children	6.97	2.68
Step parents	6.88	2.74
Share of housework	7.52	2.31

Note: Sample has been restricted to those aged 25 and above. The satisfaction level is out of 10. The mean and SD are weighted.

Source: Authors' calculations from HILDA Wave 9

Table 2 presents the mean and standard deviation (SD) for the non-category variables controlled in the model, such as age, income, housing value and number of children at home. It shows that for those Australians aged 25 years and above, their average age is 49.53 years, with a mean of household equivalised income as \$46 130, individual gross income of \$49 690, and home value of \$418 310.⁵ On average, there are 0.54 children younger than age 15 in each household, 31 per cent of individuals have experienced negative life events in past year while 17 percent of them with positive life events.

Table 2 Mean and SD of non-category variables

Variables	Mean	SD
Age	49.53	15.66
HH equivalised income (\$000)	46.13	29.27
Home value(\$000)	418.31	424.90
Individual gross income(\$000)	49.69	53.03
No. of kids younger than 15 at home	0.54	0.97
Extroversion	4.37	1.07
Agreeableness	5.37	0.93
Conscientiousness	5.15	1.00
Emotional stability	5.29	1.05
Openness to experience	4.13	1.07

Note: Sample has been restricted to those aged 25 and above. The satisfaction level is out of 10. The mean and SD are weighted.

Source: Authors' calculations from HILDA Wave 9

Table 3 reports the sample size and its proportion for the category variables controlled in the model, such as education, labour force statue, gender, long term health condition, marital status, country of birth and whether living in capital city. For the older age group, 42.68per cent have year 11 or below only, but this is only 19.55per cent for the younger age group. About 64.82per cent of adults are working, where 38.66per cent working full time and 35.11per cent working more than 40 hours per week, 10.66per cent voluntarily working part time, 11.71per cent self employed, 3.79per cent underemployed (working part time but want to work more), 2.09per cent unemployed. About 33.08per cent are not in labour force, where 27.44per cent are voluntarily while 5.14per cent involuntarily not in the labour force. The proportion of females is 53.41per cent, higher than males. Around 31.51per cent of

⁵ Household equivalised income was calculated using household disposable income divided by the modified OECD equivalising scale computed by assigning a value of 1 to the first adult, 0.5 to each additional adult member and 0.3 to each child in the household.

adults have reported having long term health condition. More than two-thirds are living with partners, and about one fifth were born overseas, and 61 per cent of them living in capital cities.

Table 3, Sample size by categories (for variables used in life satisfaction model)

Variables	Categories	Sample	Per cent
Total		9,023	100
Age group	Young age group (Born after 1955)	5,539	61.39
	Old age group (Born 1955 or before)	3,484	38.61
Education (younger age group, born after 1955)	Year 11 or below	1082	19.55
	Year 12	730	13.19
	Certificates	1,408	25.45
	Adv. diploma/diploma	582	10.52
	Bachelor/honours	1,033	18.67
	Grad. diploma/certificates	407	7.36
	Master/Dr.	291	5.26
Education (older age group, born 1955 or before)	Year 11 or below	1484	42.68
	Year 12	252	7.25
	Certificates	750	21.57
	Adv. diploma/diploma	346	9.95
	Bachelor/honours	317	9.12
	Grad. diploma/certificates	196	5.64
	Master/Dr.	132	3.8
LFST	Full time	3488	38.66
	Part time (want to work more)	342	3.79
	Part time (do not want to work more)	962	10.66
	Self employed	1057	11.71
	Unemployed	189	2.09
	Voluntarily not in labour force	2476	27.44
	Involuntarily not in labour force	464	5.14
	Other not in labour force	45	0.5
Currently working	No	3174	35.18
	Yes	5849	64.82
Work more than 40 hours	No	5856	64.9
	Yes	3167	35.1
Gender	Male	4204	46.59
	Female	4819	53.41
Long-term health condition	Yes	2843	31.51
	No	6180	68.49
Marital status	Legally married	5353	59.33
	De facto	1204	13.34
	Separated	261	2.89
	Divorced	646	7.16
	Widowed	518	5.74
	Always single	1041	11.54

Country of birth	Born in Australia	6969	77.24
	Born overseas (English speaking)	1029	11.4
	Born overseas (non-English speaking)	1025	11.36
Capital city	No	3520	39.01
	Yes	5503	60.99
Home ownership	Owner	3391	37.58
	Buyer	3293	36.5
	Public renter	317	3.51
	Private renter	1786	19.79
	Other tenure type	236	2.62
Life event	Negative life events	2812	0.31
	Positive life events	1568	0.17

Note: Sample has been restricted to those aged 25 and plus
Source: HILDA 2009.

Table 4 reports the correlation between the satisfaction level of life overall with each of its aspects, ranked from high to low. This table suggests that satisfaction with health, safety and finance have contributed the most to the overall life satisfaction followed by satisfaction with home, job overall and neighbourhood, while satisfaction with step parents and different job aspects (including job flexibility, security, payment, working hours) contributed the least to the overall life satisfaction.

Table 4 Correlation between satisfaction on life overall and its aspects

Correlation with overall life satisfaction		Ranking	Correlation with overall life satisfaction		Ranking
Life satisfaction: health	0.58	1	Relationship: step children	0.32	10
Life satisfaction: safety	0.46	2	Job satisfaction: work itself	0.31	11
Life satisfaction: finance	0.44	3	Relationship: housework	0.29	12
Life satisfaction: home	0.41	4	Relationship: children	0.29	13
Job satisfaction: overall	0.41	5	Job satisfaction: work hours	0.29	14
Life satisfaction: neighbourhood	0.40	6	Job satisfaction: payment	0.28	15
Life satisfaction: free time	0.39	7	Job satisfaction: security	0.25	16
Life satisfaction: community	0.39	8	Job satisfaction: flexibility	0.25	17
Relationship: partner	0.35	9	Relationship: step parents	0.24	18

Note: Sample has been restricted to those aged 25 and above. The satisfaction level is out of 10. The mean and SD are weighted.

Source: Authors' calculations from HILDA Wave 9

4 PRELIMINARY DATA ANALYSIS

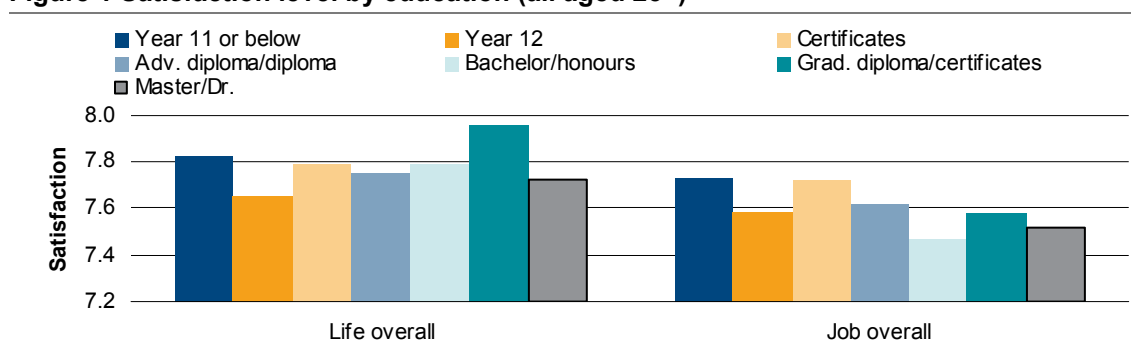
In this section, we report some preliminary data analysis to look at the correlation between individual characteristics and satisfaction, especially the correlation between education and satisfaction by age group without controlling other variables.. It shows that people with good health, living with a partner (either married or in de facto), owning a house, voluntarily working part time or voluntarily not in the labour force, being a member of a

club and people who are more extroverted, agreeable, conscientious and emotionally stable have higher levels of satisfaction. The gender difference in satisfaction level is small.

As mentioned in the introduction, Australian studies often find a negative relationship between subjective well-being and educational attainment. Our preliminary data analysis reveals a non-linear relationship between educational attainment and life satisfaction, but an overall negative relationship between education and job satisfaction (Figure 1).

Figure 1 shows that as a whole, Australians whose highest educational level is Year 11 or below are on average, more satisfied with their life and job overall, when compared to most other individuals except for those with graduate diploma/graduate certificates having the highest satisfaction with life overall and those with certificates (vocational certificates) having the highest satisfaction with their job overall. On average, individuals with Master/Doctorate degrees, Bachelor/Honours degrees and Year 12 only are less satisfied with their job and life overall on average.

Figure 1 Satisfaction level by education (all aged 25+)



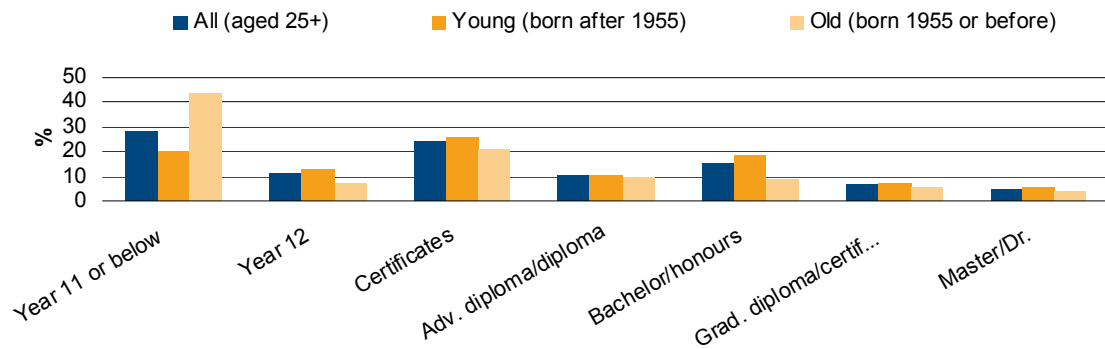
Source: Authors' calculations from HILDA Wave 9

The finding that those with an education level of year 11 or below are likely to have, on average, higher satisfaction levels in terms of both their job and life overall, than most other individuals, may be linked to different satisfaction either by age group or by educational achievement.

Figure 2 shows that older age groups (those born in and before 1955, which includes the early baby boomers and builders) are less well-educated than younger age groups (those born after 1955, including late baby boomers and age group X and Y). This is consistent with the finding by Carson and Kerr (2001)⁶. We found that the older age group have a relatively higher proportion of individuals with year 11 or below while the younger age group having a higher proportion of individuals attaining year 12, a certificate or university degree.

⁶ The early baby boomers, born between 1946 and 1955, were leaving school and making relatively rapid and easy transitions into employment so that their education is lower in general than the baby boomers and younger age groups (Carson and Kerr, 2001).

Figure 2 Proportion of people by education achievement and age group

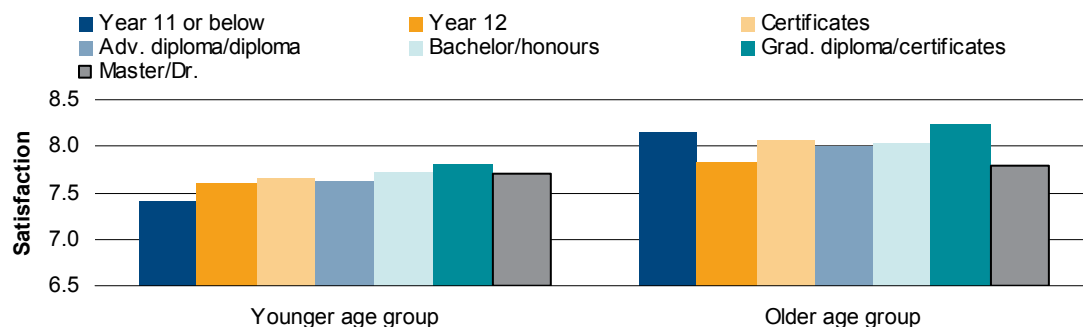


Source: Authors' calculations from HILDA Wave 9

When we look at the satisfaction by age group, we do find that overall, the younger age group has much lower life and job satisfaction levels when compared to older age group. The mean life and job satisfaction levels are 7.62 and 7.54 for the younger age group, and 8.07 and 7.95 for the older age group. This difference might reflect both age and cohort effects.

Figures 3 and 4 further investigate the correlation between education and overall satisfaction level on life and job for younger and older age groups, respectively. Figure 3 shows that for the younger age group, life satisfaction level increases with education, but it is much lower than the older age group on average. While there is a non linear relationship between education and satisfaction level for the older age group, where life satisfaction is the highest for those with graduate diplomas/graduate certificates and those with Year 11 or below, but lowest for those with Year 12 only or Masters/Doctor degrees.

Figure 3 Life satisfaction level by age group

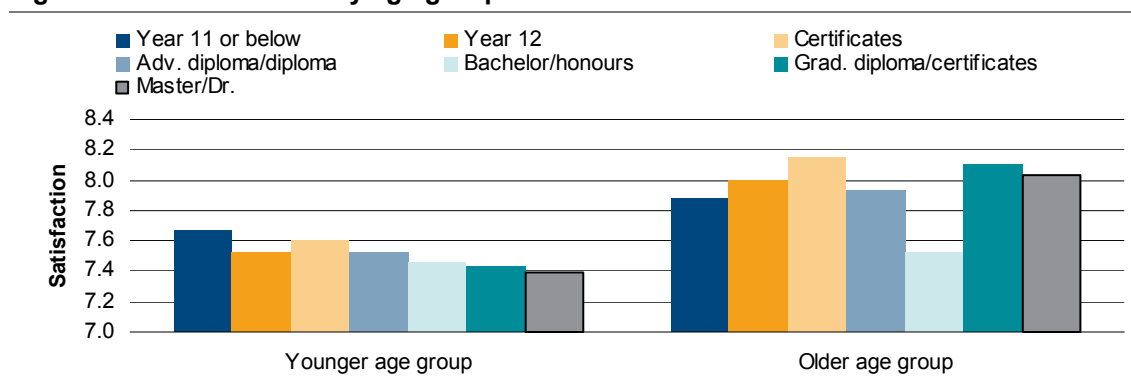


.Source: Authors' calculations from HILDA Wave 9

Figure 4 shows that for the younger age group, job overall satisfaction decreases with education and it is much lower than the older age group on average. There is a non linear relationship between education and job satisfaction level for the old age group, .where

overall job satisfaction levels are highest for those with graduate diplomas/graduate certificates, while the least for those with bachelor/honours degrees .

Figure 4 Job satisfaction by age group



Source: Authors' calculations from HILDA Wave 9

Table 5 presents the association between educational achievement and life satisfaction by aspect and age group before controlling other variables. It shows that, except for health, the younger age group has relatively lower life satisfaction when compared to the older age group, especially for satisfaction with free time. This might reflect both age and cohort effects.

For the younger age group, those with a university degree (especially those with graduate diploma/graduate certificates), are more satisfied with their lives and its aspects, especially on their finances and health, but they are less satisfied with their free time, especially those with masters/doctorate degrees.

While for the older age group, surprisingly, individuals with year 11 or below are most satisfied with their financial situation, home, and life overall. Those with graduate diploma/graduate certificates are most satisfied with their free time, neighbourhood, health and safety. Those with certificates are most satisfied with their community involvement, while those with masters/doctorate degrees, bachelor/honours degree, or Year 12 only are less satisfied with their lives.

Table 5 Unconditional association between education and life satisfaction (before controlling other variables)

	Life satisfaction							
	Overall	Home	Finance	Safety	Comm.	Health	Neigh.	Free time
Highest education								
Year 11 or below								
Year 12	0.047	-0.062	0.247	-0.137	-0.028	0.421	0.045	-0.159
	[0.128]	[0.127]	[0.116]**	[0.121]	[0.112]	[0.111]***	[0.125]	[0.111]
Certificates	0.162	0.083	0.193	0.037	0.018	0.369	0.024	-0.134
	[0.106]	[0.105]	[0.099]*	[0.102]	[0.095]	[0.099]***	[0.101]	[0.090]
Adv. diploma/diploma	0.112	0.167	0.390	0.041	0.265	0.490	0.182	-0.205

	[0.119]	[0.124]	[0.113]***	[0.115]	[0.112]**	[0.108]***	[0.120]	[0.110]*
Bachelor/honours	0.226	0.070	0.779	0.251	0.113	0.683	0.188	-0.239
	[0.107]**	[0.108]	[0.096]***	[0.102]**	[0.100]	[0.099]***	[0.106]*	[0.093]**
Grad. diploma/certificates	0.346	0.174	0.975	0.242	0.402	0.571	0.312	-0.246
	[0.132]***	[0.127]	[0.138]***	[0.135]*	[0.136]***	[0.128]***	[0.139]**	[0.112]**
Master/Dr.	0.204	-0.162	0.932	0.233	0.165	0.662	0.352	-0.365
	[0.145]	[0.145]	[0.146]***	[0.152]	[0.144]	[0.131]***	[0.148]**	[0.135]***
Education * older age group								
				Older age group				
Year 11 or below	0.981	1.139	0.761	0.312	0.544	0.151	0.622	1.304
	[0.110]***	[0.106]***	[0.098]***	[0.106]***	[0.103]***	[0.102]	[0.109]***	[0.099]***
Year 12*elder	0.573	0.812	0.299	0.189	0.418	-0.305	0.420	1.189
	[0.188]***	[0.155]***	[0.163]*	[0.170]	[0.166]**	[0.166]*	[0.169]**	[0.171]***
Certificates * elder	0.581	0.897	0.550	0.198	0.578	-0.160	0.624	1.223
	[0.099]***	[0.092]***	[0.109]***	[0.110]*	[0.104]***	[0.108]	[0.098]***	[0.107]***
Adv. diploma/diploma	0.566	0.501	0.615	0.321	0.351	-0.062	0.398	1.236
	[0.138]***	[0.139]***	[0.131]***	[0.128]**	[0.130]***	[0.133]	[0.133]***	[0.156]***
Bachelor/honours	0.540	0.771	0.371	0.211	0.398	-0.072	0.337	1.028
	[0.118]***	[0.125]***	[0.124]***	[0.127]*	[0.128]***	[0.123]	[0.126]***	[0.126]***
Grad. diploma/certificates	0.614	0.807	0.357	0.762	0.453	0.306	0.768	1.521
	[0.185]***	[0.183]***	[0.183]*	[0.172]***	[0.178]**	[0.181]*	[0.181]***	[0.163]***
Master/Dr.	0.240	0.573	0.233	0.328	0.350	-0.068	0.013	1.068
	[0.239]	[0.209]***	[0.248]	[0.223]	[0.187]*	[0.205]	[0.259]	[0.217]***
Other variables included	No	No	No	No	No	No	No	No
Observations	9181	9172	9185	9165	9163	9186	9169	9173

Note: Robust standard errors in brackets; * significant at 10per cent ; ** significant at 5per cent ; *** significant at 1per cent.

"Comm." Indicates "Community involvement", and "Neigh." Indicates "Neighbourhood where they live".

Source: HILDA 2009.

5 ESTIMATED RESULTS

5.1 EDUCATION AND LIFE SATISFACTION

Table 6 presents the estimated correlation between educational achievement and life satisfaction by aspects and age groups after controlling for other variables. The older age group still have relative higher life satisfaction levels than the younger age group except for satisfaction with finances.

For the younger age group, after controlling other variables, the association between education and satisfaction with life overall, safety and free time becomes insignificant, but the more educated of the younger age group are still more satisfied with their finance and health than the less educated of their age group. Those with Master/Doctorate degrees are more satisfied with their finances, health and neighbourhoods, but less satisfied with their

home. Those with graduate diploma/graduate certificates are more satisfied with their finances and community involvement. .

For the older age group, after controlling for other variables, the association between education and finance becomes insignificant, but the non-linear relationship between overall life satisfaction and education still exists. Those with graduate diploma/graduate certificates are most satisfied with their safety, health, neighbourhood and free time. Those with certificates are most satisfied with their community involvement, and those with Year 11 or below are most satisfied with their home and life overall, while those with Masters/Doctor degrees, bachelor/honours degrees, or Year 12 are less likely to be very satisfied in any life aspect.

Table 6 Conditional association between education and life satisfaction (after controlling other variables)

	Life satisfaction							
	Overall	Home	Finance	Safety	Comm.	Health	Neigh..	Free time
Highest education								
Year 11 or below								
Year 12	-0.100	-0.183	-0.014	-0.195	0.006	0.147	0.034	-0.116
	[0.129]	[0.133]	[0.115]	[0.123]	[0.116]	[0.122]	[0.126]	[0.117]
Certificates	0.032	-0.016	-0.077	-0.057	0.001	0.115	-0.002	-0.049
	[0.108]	[0.106]	[0.100]	[0.104]	[0.097]	[0.102]	[0.101]	[0.095]
Adv. diploma/diploma	-0.117	-0.035	-0.066	-0.108	0.126	0.141	0.046	-0.100
	[0.122]	[0.126]	[0.114]	[0.119]	[0.115]	[0.114]	[0.121]	[0.115]
Bachelor/honours	-0.148	-0.180	0.178	0.066	0.046	0.174	0.050	-0.108
	[0.112]	[0.114]	[0.103]*	[0.113]	[0.106]	[0.109]	[0.111]	[0.102]
Grad. diploma/certificates	-0.067	-0.159	0.316	0.012	0.241	0.119	0.104	-0.102
	[0.140]	[0.128]	[0.144]**	[0.131]	[0.140]*	[0.130]	[0.148]	[0.118]
Master/Dr.	0.018	-0.395	0.362	0.144	0.130	0.352	0.291	-0.088
	[0.150]	[0.152]***	[0.146]**	[0.158]	[0.162]	[0.153]**	[0.147]**	[0.147]
(Education *older age group)								
Year 11 or below	0.531	0.387	0.034	0.247	0.149	0.306	0.261	0.204
	[0.146]***	[0.131]***	[0.127]	[0.134]*	[0.130]	[0.128]**	[0.134]*	[0.124]
Year 12	0.370	0.165	-0.112	0.252	0.070	0.113	0.197	0.182
	[0.206]*	[0.182]	[0.183]	[0.194]	[0.183]	[0.192]	[0.197]	[0.197]
Certificates	0.339	0.284	0.193	0.198	0.282	0.209	0.421	0.191
	[0.134]**	[0.118]**	[0.130]	[0.143]	[0.125]**	[0.129]	[0.124]***	[0.127]
Adv. diploma/diploma	0.105	-0.201	0.013	0.232	-0.028	0.127	0.051	0.095
	[0.164]	[0.154]	[0.156]	[0.158]	[0.156]	[0.153]	[0.165]	[0.169]
Bachelor/honours	0.292	0.200	0.032	0.168	0.021	0.139	-0.007	0.063
	[0.148]**	[0.149]	[0.157]	[0.165]	[0.159]	[0.167]	[0.156]	[0.141]
Grad. diploma/certificates	0.486	0.342	0.053	0.729	0.159	0.484	0.586	0.659
	[0.210]**	[0.185]*	[0.190]	[0.189]***	[0.199]	[0.195]**	[0.208]***	[0.175]***
Master/Dr.	-0.133	0.022	-0.106	0.224	0.158	0.154	-0.256	-0.078
	[0.241]	[0.217]	[0.230]	[0.233]	[0.213]	[0.227]	[0.257]	[0.222]

Other variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8971	8964	8975	8957	8953	8976	8959	8963

Note: Robust standard errors in brackets; * significant at 10per cent ; ** significant at 5per cent ; *** significant at 1per cent. "Comm." Indicates "Community involvement", and "Neigh." Indicates "Neighbourhood where they live".

Source: HILDA 2009.

5.2 OTHER FACTORS INFLUENCING LIFE SATISFACTION

The full estimated results of life satisfaction model are reported in Appendix A1. It is found that life satisfaction with life overall, home, financial situation, safety first decreases then increases with age, but there is no significant association between age and satisfaction with community involvement and neighbourhood. Gender difference is insignificant for satisfaction level with financial situation, health, community involvement and neighbourhood, but females are less satisfied with their life overall, home, safety and free time when compared to their male peers.

Healthy (with no long term health conditions) and socially active people (club members) are more likely to be satisfied with their lives in all aspects except for insignificant correlation between long term health condition and home satisfaction. People living with their partners (legally married or de facto) are more satisfied with their lives in most aspects, except for free time. Single people are most likely to be satisfied with the amount of free time they have while individuals with dependent children living at home have the lowest levels of satisfaction with their free time.

People living in capital cities are less satisfied in all life aspects than those living in the country, possibly due to higher living costs or greater housing or transport stress in the capital cities. Immigrants from non English speaking countries are less satisfied with their finances and safety while migrants from English speaking backgrounds are less satisfied with their community involvement.

There are strong associations between labour force status and satisfaction with finances, health and free time, but no significant association between labour force participation and satisfaction with safety and neighbourhood one lives in. People who are currently not working (either unemployed or not in the labour force) are most satisfied with their free time, followed by people working part time or self-employed, while those working full time, especially those working long hours (more than 40 hours per week) are least satisfied with their free time. Those who want to work or work more hours (unemployed, involuntarily not in labour force or underemployed) are least satisfied with their financial situation, followed by those voluntarily not in labour force or self-employed.

People either voluntarily or involuntarily not in the labour force and those voluntarily working part time (do not want to work more), and those working long hours are less satisfied with their health, reflecting that on the one hand, health is a major barrier for labour force participation, while on the other hand, working long hours might have a negative influence on health. People unemployed or involuntarily not in the labour force

are less satisfied with their community involvement although they have much more “free time”.

As expected, both income and housing value (as a proxy for wealth) are positively correlated with life overall satisfaction and most of its aspects, except for community involvement. In general, home owners are more satisfied with their life overall, finances, safety, and health. Owners and buyers are both more satisfied with their home, involvement and neighbourhood. Renters are more satisfied with their free time. Unsurprisingly, public renters are less satisfied with the neighbourhood they live in. ⁷

Strong correlation was found between personality traits and life satisfaction level in all aspects. In general, people who are more extroverted, agreeable and emotionally stable are more satisfied with their lives and all of its aspects. Conscientious people are more satisfied with their home, finances, health and hence life overall, but not significantly more satisfied with their safety, community involvement, neighbourhood and free time. People who are more open to experience (philosophical) are less likely to feel satisfied with their home, but more satisfied with their safety and community involvement, while no difference in satisfaction with their finances, health, neighbourhood and free time.

Though individual life satisfaction levels are found to be relatively persistent over time, the major life events do have very significant impacts on people’s feeling about their lives. People who have gone through negative life events (e.g separated from a partner, serious injury/illness, death of family, physical violence, property crime, job loss, financial worsening) in last 12 months are less likely to feel satisfied with their finances, safety, community involvement, health and neighbourhood, hence less satisfied with life overall. Negative life events have no influence on satisfaction with home and free time. People who have gone through positive life events in the last 12 months (e.g. getting married, pregnancy, giving birth, retired, promoted, financial improvement) are more likely to feel satisfied with their finances, safety and health, hence more satisfied with life overall, but positive life events have no influence on satisfaction with one’s home, community involvement, neighbourhood and free time.

6 CONCLUSIONS AND DISCUSSION

Our analysis shows that the determinants of life satisfaction are complicated. As expected, we find many elements to be significantly associated with life satisfaction, including age, gender, education, age group, health, marital status, labour force status, social connection, income, wealth, personality, and recent significant life events.

Age group differences between the impact of higher education and life satisfaction are of note. The younger age group are found to have relatively higher education but lower satisfaction levels on average than the older age group. Both unconditionally and

⁷ The mean of log of housing value is about 6. After adding the impact of housing value, the owner’s coefficient becomes (0.936, 3.420, 1.428, 0.972, 0.396, 0.852, 2.448 and 0.354) and buyer’s becomes (0.771, 3.438, 0.766, 0.827, 0.311, 0.611, 2.357 and 0.319) for the models in Appendix 2, respectively.

conditionally, we find that for the older age group, those with graduate diploma/graduate certificates, certificates or Year 11 or below are more satisfied with their lives on average when compared to those with a masters/doctorate, bachelor/honour degrees, or Year 12 only. However, this is not the case for the younger age group, where life satisfaction, especially with respect to finances, health and safety, increases with education.

The reasons for the differences in life satisfaction between the younger age group and the older age group are not clear. The explanations for these differences are likely: the faster pace and more demanding lifestyle experienced by the younger age group. First, stress can lead to lower life and job satisfaction (Tetrick, Larocco and James 1987). For the older age group, they could choose to leave school early, learn some specific skills, and make relatively rapid and easy transitions into employment (Carson and Kerr, 2001). While for the younger age group, they have to study longer, and update their skill sets regularly to protect their job security. The challenge in balancing their work, lives and studies can also lead to greater stress and lower life satisfaction for the younger age group (Tetrick, LaRocco and James, 1987). In addition, it may also be the case that the older age group inherently possess a 'sunnier' outlook on life. This age group is likely to have experienced quite different and difficult times, including wars, depressions and recessions. As a consequence they may be more inclined to have a more grateful and 'sunny' disposition towards life. However, it has often been expressed that the younger age group is possibly more likely to exhibit a 'me' mentality, more expectant of instant gratification and a more affluent lifestyle.

This study used HILDA survey data from 2009 Wave 9 only to examine the association between education and life satisfaction and how this differs by age group. Further development of this research using HILDA panel data will allow us to distinguish the age and cohort effects. Please note that this research is a work-in-progress.

REFERENCES

- ABS (2010) Education and Work, Australia, May 2010. Cat. no. 6227.0, Canberra.
- Becker, G. 1975. Human Capital, 2nd ed. University of Chicago Press, Chicago, IL.
- Becker, G. 1976. The Economic Approach to Human Behaviour, University of Chicago Press, Chicago IL.
- Beggs, J.J. and Chapman B.J., 1988. "Immigrant wage adjustment in Australia: cross section and time series estimates", *Economic Record*, 64(186), pp.161-7.
- Booth, A.L. and Ours, J. C. V. 2009. Hours of Work and Gender Identity: Does Part-time Work Make the Family Happier? , *Economica* 76, vol.301, pp. 176-196.
- Borjas, G.J., 1999. "Economic analysis of immigration" in Orley Ashenfelter and David card (eds.) *Handbook of Labour Economics*, Vol 3A, pp. 1697-1760, Amsterdam, New York and oxford: Elsevier Science, North-Holland.
- Brickman, P., Coates, D., Janoff-Bulman, R, 1978 . 'Lottery winners and accident victims: Is happiness relative?' *Journal of Personality and Social Psychology*, vol. 6, no. 8, pp 917-927
- Carson, E & Kerr, L 2001. 'Bust for the 'baby-boomers': the real mid-life crisis', *Journal of Economic and Social Policy*, vol.6, no. 1.
- Clark, A.E., 1997. 'Job Satisfaction and Gender: Why Are Women So Happy at Work?' *Labour Economics*, vol. 4, issue 4, pp 341-372
- Diener, E.D., 1994. "Assessing subjective well-being: progress and opportunities". *Social Indicators Research*, Vol 31(2), pp.103-157.
- Dockery A. M. 2003 'Happiness, life satisfaction and the role of work: Evidence from two Australian surveys', HILDA Working Paper No.3/10
- Dockery, A.M. 2005, The happiness of Young Australians: Empirical Evidence on the Role of Labour Market Experience, *Economic Record*, vol.81, no. 2005, pp. 322-335.
- Dockery A. M. 2010 'Education and happiness in the school-to-work transition', National Centre for Vocational Education Research (NCVER), Adelaide.
- Ferrer_i_Carbonell, A. and Frijters, P. 2004. How Important is methodology for the Estimates of the Determinants of Happiness, the *Economic Journal*, vol.114, no. July, pp. 641-659.
- Gong, H. and McNamara J. 2011. Workforce participation and retirement among baby boomers in Australia. The BSL.NATSEM report series on mature age labor force participation, May 2011.
- Guilbert, D. and Paul, S. 2009. Income and Happiness: An Analysis of Adaptation and Comparison Income Effects, HILDA Survey Research Conference, Melbourne, 16-17 July.

- Losoncz, L. 2009. "Personality traits in HILDA", Australia Social Policy, pp. 169-198.
- Lykken, D., Tellegen, A. 1996. "Happiness is a Stochastic Phenomenon", Psychological Science, vol. 7, no. 3, p186-189
- Miranti, R., Nepal, B., and McNamara, J. (2010), "Calling Australia Home-The Characteristics and Contributions of Australian Migrants", AMP.NATSEM Income and Wealth Report, Issue 27, November, Sydney, AMP.
- Robert K. Merton, 1938. "Social Structure and Anomie". American Sociological Review 3: 672-82, 1938.
- Sweetland, S.R. 1996. "Human capital theory: foundations of a field of inquiry". Review of Educational Research, Vol 66 (3) pp. 341-359.
- Tetrick, Lois E.; LaRocco, James M. 1987. "Understanding, prediction, and control as moderators of the relationships between perceived stress, satisfaction, and psychological well-being". Journal of Applied Psychology, Vol 72(4), pp.538-543. doi: 10.1037/0021-9010.72.4.538.
- Van Hoorn, 2007, " A short introduction to subjective well-being: its measurement, correlation and policy uses", presented at conference "Is happiness measurable and what do those measures mean for policy?", 2-3 April 2007, University of Rome.
- Veenhoven, R. 1991, 'Questions on happiness: classical topic, modern answer, blind spots' in F. Strack, M. Argyle and N. Schwarz, (eds), Subjective Well-Being: an interdisciplinary approach. Great Britain: Pergamon Press, pp. 7-26.
- Walker, Lian, Smith, heather J. 2001. Relative Deprivation: Specification, Development, and Integration, Cambridge University Press, 2001, ISBN 0-521-80132-X.
- Watson N. (ed) 2010, HILDA User Manual – Release 8, Melbourne Institute of Applied Economic and Social Research, The University of Melbourne.
- Winkelmann, L. and Winkelman, R., 1998, 'Why Are the Unemployed So Unhappy? Evidence from Panel Data', *Economica*, vol 65, no. 257, pp 1-15
- Wooden, M. and Drago, R. 2007, "The Changing Distribution of Working Hours in Australia", Melbourne Institute Working paper No. 19/07.
- Wooden, M. and Watson, N. 2007, 'The HILDA Survey and its Contribution to Economic and Social Research (So Far)'. *The Economic Record*, vol. 83, no. 261, pp. 208–231.
- Yitzhaki, S. (1979) "Relative Deprivation and the Gini Coefficient" *Quarterly Journal of Economics*, vol. 93, no. 2, pp 321-324.

APPENDICES

Appendix A1 Factors influencing life satisfaction level

	Life satisfaction							
	Overall	Home	Finance	Safety	Community	Health	Neighbourhood	Free time
Highest education								
Lower 11 or below								
Year 12	-0.100 [0.129]	-0.183 [0.133]	-0.014 [0.115]	-0.195 [0.123]	0.006 [0.116]	0.147 [0.122]	0.034 [0.126]	-0.116 [0.117]
Certificates	0.032 [0.108]	-0.016 [0.106]	-0.077 [0.100]	-0.057 [0.104]	0.001 [0.097]	0.115 [0.102]	-0.002 [0.101]	-0.049 [0.095]
Adv. diploma/diploma	-0.117 [0.122]	-0.035 [0.126]	-0.066 [0.114]	-0.108 [0.119]	0.126 [0.115]	0.141 [0.114]	0.046 [0.121]	-0.100 [0.115]
Bachelor/honours	-0.148 [0.112]	-0.180 [0.114]	0.178 [0.103]*	0.066 [0.113]	0.046 [0.106]	0.174 [0.109]	0.050 [0.111]	-0.108 [0.102]
Grad. diploma/certificates	-0.067 [0.140]	-0.159 [0.128]	0.316 [0.144]**	0.012 [0.131]	0.241 [0.140]*	0.119 [0.130]	0.104 [0.148]	-0.102 [0.118]
Master/Dr.	0.018 [0.150]	-0.395 [0.152]***	0.362 [0.146]**	0.144 [0.158]	0.130 [0.162]	0.352 [0.153]**	0.291 [0.147]**	-0.088 [0.147]
Year 11 or below*elder	0.531 [0.146]***	0.387 [0.131]***	0.034 [0.127]	0.247 [0.134]*	0.149 [0.130]	0.306 [0.128]**	0.261 [0.134]*	0.204 [0.124]
Year 12*elder	0.370 [0.206]*	0.165 [0.182]	-0.112 [0.183]	0.252 [0.194]	0.070 [0.183]	0.113 [0.192]	0.197 [0.197]	0.182 [0.197]
Certificates * elder	0.339 [0.134]**	0.284 [0.118]**	0.193 [0.130]	0.198 [0.143]	0.282 [0.125]**	0.209 [0.129]	0.421 [0.124]***	0.191 [0.127]
Adv. diploma/diploma	0.105 [0.164]	-0.201 [0.154]	0.013 [0.156]	0.232 [0.158]	-0.028 [0.156]	0.127 [0.153]	0.051 [0.165]	0.095 [0.169]
Bachelor/honours	0.292 [0.148]**	0.200 [0.149]	0.032 [0.157]	0.168 [0.165]	0.021 [0.159]	0.139 [0.167]	-0.007 [0.156]	0.063 [0.141]
Grad. diploma/certificates	0.486 [0.210]**	0.342 [0.185]*	0.053 [0.190]	0.729 [0.189]***	0.159 [0.199]	0.484 [0.195]**	0.586 [0.208]***	0.659 [0.175]***
Master/Dr.	-0.133 [0.148]**	0.022 [0.149]	-0.106 [0.157]	0.224 [0.165]	0.158 [0.159]	0.154 [0.167]	-0.256 [0.156]	-0.078 [0.141]

Age	[0.241]	[0.217]	[0.230]	[0.233]	[0.213]	[0.227]	[0.257]	[0.222]
	-0.059	-0.027	-0.056	-0.029	0.017	-0.049	-0.001	-0.016
	[0.011]***	[0.012]**	[0.012]***	[0.014]**	[0.012]	[0.013]***	[0.013]	[0.012]
Age square	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000
	[0.000]***	[0.000]***	[0.000]***	[0.000]*	[0.000]	[0.000]***	[0.000]	[0.000]***
Female	-0.132	-0.191	0.062	-0.195	0.029	-0.045	0.019	-0.470
	[0.060]**	[0.057]***	[0.058]	[0.056]***	[0.054]	[0.058]	[0.057]	[0.057]***
LFSST								
Full time								
Part time (want to work more)	-0.081	-0.173	-0.719	-0.094	-0.204	-0.036	-0.161	0.449
	[0.151]	[0.144]	[0.136]***	[0.136]	[0.151]	[0.149]	[0.140]	[0.140]***
Part time (do not want to work more)	0.115	-0.038	-0.067	0.107	0.014	-0.221	-0.125	0.293
	[0.097]	[0.091]	[0.094]	[0.098]	[0.088]	[0.093]**	[0.096]	[0.093]***
Self employed	-0.125	-0.149	-0.204	0.023	0.045	-0.067	-0.097	0.208
	[0.072]*	[0.073]**	[0.076]***	[0.076]	[0.074]	[0.074]	[0.075]	[0.075]***
Unemployed	-0.542	-0.540	-1.353	0.002	-0.397	-0.245	-0.193	0.740
	[0.273]**	[0.252]**	[0.232]***	[0.235]	[0.212]*	[0.231]	[0.224]	[0.252]***
Voluntarily not in labour force	0.074	0.063	-0.256	0.027	-0.007	-0.426	-0.040	0.782
	[0.108]	[0.101]	[0.109]**	[0.102]	[0.094]	[0.105]***	[0.101]	[0.100]***
Involuntarily not in labour force	-0.376	-0.070	-0.984	-0.169	-0.245	-0.384	-0.188	0.674
	[0.155]**	[0.161]	[0.132]***	[0.156]	[0.131]*	[0.144]***	[0.150]	[0.153]***
Other not in labour force	-0.399	-0.838	-0.857	0.035	0.236	-0.540	-0.606	0.697
	[0.800]	[0.723]	[0.283]***	[0.505]	[0.303]	[0.586]	[0.766]	[0.653]
Work 40 hours or more	-0.070	-0.029	0.012	0.064	-0.046	-0.130	0.024	-0.486
	[0.072]	[0.067]	[0.072]	[0.066]	[0.067]	[0.070]*	[0.071]	[0.065]***
No health condition	0.486	-0.024	0.426	0.149	0.233	1.750	0.286	0.094
	[0.062]***	[0.059]	[0.060]***	[0.059]**	[0.058]***	[0.063]***	[0.059]***	[0.059]
Marital status								
Legally married								
De facto	0.147	-0.009	-0.153	0.214	-0.080	0.130	0.041	0.109
	[0.074]**	[0.075]	[0.076]**	[0.078]***	[0.079]	[0.077]*	[0.077]	[0.076]

Separated	-1.056	-0.401	-0.733	-0.278	-0.333	-0.224	0.005	-0.188
	[0.205]***	[0.190]**	[0.145]***	[0.224]	[0.221]	[0.153]	[0.206]	[0.151]
Divorced	-0.807	-0.079	-0.802	-0.429	-0.690	-0.518	-0.450	-0.276
	[0.135]***	[0.125]	[0.125]***	[0.137]***	[0.114]***	[0.124]***	[0.127]***	[0.120]**
Widowed	-0.353	0.140	-0.124	0.033	-0.227	-0.069	0.000	0.371
	[0.144]**	[0.134]	[0.144]	[0.148]	[0.148]	[0.139]	[0.145]	[0.136]***
Always single	-0.570	0.009	-0.201	-0.174	-0.408	-0.088	-0.058	0.220
	[0.096]***	[0.097]	[0.092]**	[0.096]*	[0.091]***	[0.095]	[0.094]	[0.091]**
Kids younger than 15	0.043	-0.077	0.063	-0.023	0.067	0.047	0.050	-0.298
	[0.033]	[0.033]**	[0.032]**	[0.029]	[0.032]**	[0.034]	[0.029]*	[0.031]***
ln(HH equivalized income)	0.201	0.082	0.641	0.152	-0.100	0.139	0.032	0.189
	[0.052]***	[0.065]	[0.060]***	[0.053]***	[0.042]**	[0.059]**	[0.052]	[0.053]***
Home ownership								
Owner (adjusted by housing value)	0.936	3.420	1.428	0.972	0.396	0.852	2.448	0.354
Buyer (adjusted by housing value)	0.771	3.438	0.766	0.827	0.311	0.611	2.357	0.319
Owner								
Buyer	-0.165	0.018	-0.662	-0.145	-0.085	-0.241	-0.091	-0.035
	[0.068]**	[0.063]	[0.067]***	[0.068]**	[0.066]	[0.067]***	[0.067]	[0.063]
Public renter	0.756	2.552	0.755	0.852	0.158	0.475	1.878	0.426
	[0.381]**	[0.395]***	[0.366]**	[0.407]**	[0.370]	[0.392]	[0.427]***	[0.377]
Private renter	0.775	2.840	0.507	0.905	0.143	0.713	2.261	0.392
	[0.338]**	[0.360]***	[0.338]	[0.332]***	[0.332]	[0.343]**	[0.350]***	[0.347]
Other tenure type	0.837	3.111	1.151	1.153	0.468	0.787	2.612	0.370
	[0.360]**	[0.392]***	[0.365]***	[0.354]***	[0.353]	[0.370]**	[0.372]***	[0.368]
ln(housing value)	0.156	0.570	0.238	0.162	0.066	0.142	0.408	0.059
	[0.053]***	[0.057]***	[0.055]***	[0.052]***	[0.053]	[0.055]***	[0.056]***	[0.057]
Country of birth								
Born in Australia								
Born overseas (English speaking)	0.080	0.048	-0.039	0.092	-0.143	0.074	0.040	-0.046
	[0.072]	[0.074]	[0.073]	[0.071]	[0.073]*	[0.072]	[0.072]	[0.073]
Born overseas (non-English speaking)	-0.036	0.127	-0.147	-0.221	-0.070	0.028	-0.125	-0.032

Not club member	[0.093]	[0.081]	[0.085]*	[0.091]**	[0.082]	[0.084]	[0.083]	[0.079]
	-0.244	-0.103	-0.144	-0.145	-0.624	-0.325	-0.197	-0.103
Capital city	[0.051]***	[0.049]**	[0.049]***	[0.050]***	[0.049]***	[0.050]***	[0.050]**	[0.049]**
	-0.271	-0.377	-0.162	-0.415	-0.325	-0.156	-0.446	-0.231
Life events in 12 months	[0.051]***	[0.049]***	[0.049]***	[0.050]***	[0.049]***	[0.050]***	[0.050]***	[0.050]***
Any negative event	-0.374	-0.016	-0.403	-0.231	-0.260	-0.443	-0.252	-0.031
Any positive event	[0.057]***	[0.054]	[0.056]***	[0.059]***	[0.055]***	[0.055]***	[0.056]***	[0.053]
	0.289	-0.017	0.312	0.186	-0.009	0.127	0.040	0.036
Personality	[0.068]***	[0.068]	[0.068]***	[0.065]***	[0.066]	[0.070]*	[0.069]	[0.067]
Extroversion	0.150	0.067	0.045	0.139	0.211	0.151	0.164	0.086
	[0.025]***	[0.023]***	[0.024]*	[0.029]***	[0.026]***	[0.027]***	[0.026]***	[0.025]***
Agreeableness	0.312	0.265	0.105	0.214	0.229	0.211	0.286	0.094
	[0.036]***	[0.034]***	[0.033]***	[0.042]***	[0.036]***	[0.035]***	[0.037]***	[0.033]***
Conscientiousness	0.118	0.171	0.141	0.035	0.011	0.112	0.012	0.029
	[0.028]***	[0.027]***	[0.028]***	[0.029]	[0.027]	[0.027]***	[0.029]	[0.027]
Emotional stability	0.341	0.131	0.155	0.280	0.127	0.284	0.174	0.139
	[0.028]***	[0.027]***	[0.027]***	[0.029]***	[0.027]***	[0.027]***	[0.028]***	[0.027]***
Openness to experience	-0.012	-0.090	0.003	0.069	0.091	0.013	-0.011	-0.046
	[0.028]	[0.027]***	[0.027]	[0.031]**	[0.029]***	[0.028]	[0.029]	[0.027]*
Observations	8971	8964	8975	8957	8953	8976	8959	8963

Note: Robust standard errors in brackets; * significant at 10per cent ; ** significant at 5per cent ; *** significant at 1per cent .

Source: Source: HILDA 2009.

Appendix A2 Sensitivity test for different sample restriction and independent variables

	Life satisfaction					
	No	No	Yes	Yes	Yes	Yes
Sample: Personality reported	No	No	Yes	Yes	Yes	Yes
Sample: currently working	No	No	No	No	Yes	Yes
Controlling personality	No	No	No	Yes	Yes	Yes
Controlling occupation/industry	No	No	No	No	No	Yes
Highest education						
Lower 11 or below						
Year 12	-0.175 [0.099]*	-0.040 [0.127]	-0.047 [0.129]	-0.100 [0.129]	-0.054 [0.138]	-0.040 [0.156]
Certificates	-0.040 [0.076]	0.055 [0.107]	0.048 [0.108]	0.032 [0.108]	-0.082 [0.121]	-0.081 [0.136]
Adv. diploma/diploma	-0.226 [0.089]**	-0.028 [0.120]	-0.043 [0.121]	-0.117 [0.122]	-0.149 [0.139]	-0.062 [0.162]
Bachelor/honours	-0.169 [0.085]**	-0.038 [0.114]	-0.054 [0.114]	-0.148 [0.112]	-0.277 [0.126]**	-0.208 [0.149]
Grad. diploma/certificates	-0.022 [0.103]	0.096 [0.132]	0.082 [0.133]	-0.067 [0.140]	-0.087 [0.163]	0.028 [0.186]
Master/Dr.	-0.207 [0.120]*	0.011 [0.146]	-0.005 [0.146]	0.018 [0.150]	-0.050 [0.174]	-0.106 [0.204]
Year 11 or below*elder						
		0.538 [0.141]***	0.554 [0.142]***	0.531 [0.146]***	-0.091 [0.211]	-0.154 [0.258]
Year 12*elder						
		0.255 [0.206]	0.270 [0.208]	0.370 [0.206]*	-0.143 [0.280]	-0.035 [0.334]
Certificates * elder						
		0.390 [0.130]***	0.394 [0.132]***	0.339 [0.134]**	0.001 [0.176]	-0.144 [0.206]
Adv. diploma/diploma						
		0.125 [0.163]	0.149 [0.164]	0.105 [0.164]	-0.341 [0.271]	-0.685 [0.324]**
Bachelor/honours						
		0.254 [0.145]*	0.288 [0.146]**	0.292 [0.148]**	0.114 [0.196]	0.164 [0.234]
Grad. diploma/certificates						
		0.336 [0.202]*	0.364 [0.202]*	0.486 [0.210]**	0.066 [0.275]	-0.060 [0.294]
Master/Dr.						
		-0.014 [0.237]	-0.008 [0.238]	-0.133 [0.241]	-0.367 [0.276]	-0.549 [0.293]*
Age						
	-0.052 [0.011]***	-0.056 [0.012]***	-0.057 [0.012]***	-0.059 [0.011]***	-0.118 [0.021]***	-0.147 [0.028]***
Age square						
	0.001 [0.000]***	0.001 [0.000]***	0.001 [0.000]***	0.001 [0.000]***	0.001 [0.000]***	0.002 [0.000]***
Female						
	0.124 [0.055]**	0.119 [0.055]**	0.118 [0.055]**	-0.132 [0.060]**	-0.287 [0.075]***	-0.399 [0.097]***
LFST						
Full time						
Part time (want to work more)	-0.065 [0.145]	-0.057 [0.146]	-0.069 [0.148]	-0.081 [0.151]	-0.078 [0.171]	-0.091 [0.189]
Part time (do not want to work more)	0.150 [0.097]	0.133 [0.096]	0.144 [0.097]	0.115 [0.097]	0.187 [0.106]*	0.199 [0.118]*
Self employed	-0.092 [0.070]	-0.100 [0.071]	-0.100 [0.071]	-0.125 [0.072]*	-0.129 [0.082]	

Unemployed	-0.461	-0.459	-0.469	-0.542		
	[0.279]*	[0.278]*	[0.279]*	[0.273]**		
Voluntarily not in labour force	0.078	0.036	0.053	0.074		
	[0.103]	[0.104]	[0.105]	[0.108]		
Involuntarily not in labour force	-0.350	-0.363	-0.373	-0.376		
	[0.155]**	[0.155]**	[0.156]**	[0.155]**		
Other not in labour force	-0.142	-0.168	-0.161	-0.399		
	[0.796]	[0.801]	[0.803]	[0.800]		
Work 40 hours or more	-0.037	-0.041	-0.035	-0.070	-0.080	-0.026
	[0.068]	[0.069]	[0.069]	[0.072]	[0.082]	[0.099]
No health condition	0.602	0.598	0.596	0.486	0.452	0.418
	[0.060]***	[0.060]***	[0.061]***	[0.062]***	[0.083]***	[0.093]***
Marital status						
Legally married						
De facto	0.053	0.059	0.059	0.147	0.107	0.122
	[0.078]	[0.078]	[0.078]	[0.074]**	[0.087]	[0.101]
Separated	-1.026	-1.011	-1.022	-1.056	-1.239	-1.239
	[0.203]***	[0.200]***	[0.202]***	[0.205]***	[0.266]***	[0.325]***
Divorced	-0.666	-0.674	-0.697	-0.807	-0.580	-0.519
	[0.125]***	[0.125]***	[0.127]***	[0.135]***	[0.152]***	[0.160]***
Widowed	-0.267	-0.246	-0.258	-0.353	-0.026	0.165
	[0.140]*	[0.140]*	[0.144]*	[0.144]**	[0.342]	[0.444]
Always single	-0.656	-0.649	-0.658	-0.570	-0.704	-0.711
	[0.094]***	[0.094]***	[0.095]***	[0.096]***	[0.116]***	[0.127]***
Kids younger than 15	0.011	0.031	0.034	0.043	0.012	0.020
	[0.032]	[0.033]	[0.034]	[0.033]	[0.037]	[0.044]
ln(HH equivalized income)	0.218	0.218	0.220	0.201	0.197	0.252
	[0.052]***	[0.052]***	[0.053]***	[0.052]***	[0.067]***	[0.096]***
Home ownership						
Owner						
Buyer	-0.153	-0.129	-0.125	-0.165	-0.128	-0.144
	[0.066]**	[0.066]*	[0.067]*	[0.068]**	[0.079]	[0.092]
Public renter	0.603	0.626	0.593	0.756	0.639	0.365
	[0.371]	[0.370]*	[0.377]	[0.381]**	[0.525]	[0.602]
Private renter	0.740	0.762	0.754	0.775	0.678	0.378
	[0.330]**	[0.331]**	[0.335]**	[0.338]**	[0.438]	[0.538]
Other tenure type	0.772	0.787	0.753	0.837	0.964	0.762
	[0.356]**	[0.357]**	[0.362]**	[0.360]**	[0.472]**	[0.580]
ln(housing value)	0.147	0.147	0.143	0.156	0.137	0.097
	[0.052]***	[0.052]***	[0.053]***	[0.053]***	[0.069]**	[0.086]
Country of birth						
Born in Australia						
Born overseas (English speaking)	0.068	0.073	0.085	0.080	0.069	-0.054
	[0.071]	[0.072]	[0.072]	[0.072]	[0.092]	[0.106]
Born overseas (non-English speaking)	-0.146	-0.144	-0.103	-0.036	-0.035	-0.045
	[0.092]	[0.092]	[0.092]	[0.093]	[0.126]	[0.152]
Not club member	-0.293	-0.291	-0.299	-0.244	-0.283	-0.301
	[0.050]***	[0.050]***	[0.051]***	[0.051]***	[0.063]***	[0.073]***
Capital city	-0.258	-0.259	-0.258	-0.271	-0.208	-0.136

	[0.051]***	[0.051]***	[0.051]***	[0.051]***	[0.062]***	[0.073]*
Life events in 12 months						
Any negative event	-0.354	-0.354	-0.348	-0.374	-0.421	-0.433
	[0.055]***	[0.055]***	[0.056]***	[0.057]***	[0.071]***	[0.081]***
Any positive event	0.297	0.281	0.274	0.289	0.329	0.356
	[0.068]***	[0.068]***	[0.068]***	[0.068]***	[0.077]***	[0.085]***
Personality		[0.237]	[0.238]	[0.241]	[0.276]	[0.293]*
Extroversion				0.150	0.184	0.217
				[0.025]***	[0.031]***	[0.034]***
Agreeableness				0.312	0.363	0.371
				[0.036]***	[0.044]***	[0.051]***
Conscientiousness				0.118	0.111	0.088
				[0.028]***	[0.037]***	[0.040]**
Emotional stability				0.341	0.372	0.364
				[0.028]***	[0.034]***	[0.037]***
Openness to experience				-0.012	-0.010	-0.011
Public sector						0.158
						[0.104]
Work schedule						
Regular day						
Regular evening						-0.157
						[0.272]
Regular night						-0.199
						[0.322]
Rotating shift (day/evening/night)						-0.208
						[0.138]
Split shift						-0.304
						[0.329]
On call						-0.360
						[0.640]
Irregular schedule						-0.046
						[0.174]
Other schedule						-0.223
						[0.436]
Contract type						
Fixed term						
On a casual basis						-0.043
						[0.158]
Permanent/ongoing						-0.033
						[0.114]
Other contract type						-0.648
						[0.469]
Occupation						
Managers						
Professionals						-0.162
						[0.117]
Technicians and trade workers						-0.223
						[0.156]
Community and personal service workers						-0.047

						[0.167]
Clerical and administrative workers						-0.024
						[0.140]
Sales workers						-0.382
						[0.187]**
Machinery operator and drivers						-0.058
						[0.192]
Labourers						0.430
						[0.207]**
Industry						
Mining						
Agriculture Forestry and Fishing						-0.052
						[0.363]
Manufacturing						-0.146
						[0.257]
Electricity Gas Water and Waste service						0.063
						[0.396]
Construction						-0.035
						[0.254]
Whole sale trade						-0.001
						[0.280]
Retail trade						0.009
						[0.271]
Accommodation and food service						0.066
						[0.330]
Transport postal and warehouse						-0.166
						[0.274]
Information Media and Telecommunications						-0.339
						[0.317]
Financial and Insurance Service						-0.372
						[0.271]
Rental Hiring and Real Estate Service						-0.062
						[0.385]
Professional Scientific and Technical Services						-0.332
						[0.250]
Administrative and Support Service						-0.066
						[0.345]
Public Administration and Safety						-0.297
						[0.275]
Education and Training						-0.062
						[0.265]
Health care and Social Assistance						-0.107
						[0.270]
Arts and Recreation Services						-0.266
						[0.315]
Other services						0.225
						[0.040]
Observations	9092	9092	8971	8971	5820	4680

Note: Robust standard errors in brackets; * significant at 10per cent; ** significant at 5per cent ; *** significant at 1per cent
Source: Source: HILDA 2009.