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University Students' Financial Literacy Levels: Obstacles and Aids

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Abstract

In the last decade, the increased complexity of, and levels of access to, financial products and services, together with rising household debt and the funding of an ageing population, have prompted the State to place increased focus on financial education, with the dual objectives of regulating to enhance market efficiency and mitigating social welfare issues attributed to poor financial decisions. Financial literacy is crucial for young adults as they embark on life events involving major expenditure and debt, particularly for university students who have already accrued a debt based on Higher Education contribution scheme liability and who are making labour market decisions. This paper investigates the determining factors of personal financial literacy levels among a sample of university students at different stages of study and across diverse study areas including business, education, arts, humanities and the sciences; with some interesting findings for policy makers. It also provides indicative evidence of students' preferred method of learning more about personal finance to facilitate the effective design of personal financial literacy programs.

JEL Codes: A22, A23, I22, I28, D14

Keywords

Financial education; financial literacy; life-cycle income; university students.

Introduction

In the last decade, the need for financial education has become a policy issue, in the context of widening community access to increasingly complex financial products and services, rising levels of household debt and the need to fund retirement for an ageing population through superannuation schemes. This is particularly evident in countries such as Australia, New Zealand, the United Kingdom and the United States. The promotion of financial literacy can be seen as a means for the State to mitigate the social welfare issues which stem from poor financial decisions. Moreover, if placed in the context of financial services

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regulation, it can be viewed as a way for the State to fulfil its obligation to promote an 'efficient market' by increasing market participation and ensuring that participants are fully informed in terms of making financial decisions.

Adherents of the Efficient Market Hypothesis (EMH) (Fama 1970) hold that prices in financial markets efficiently average out the incorrect choices of individuals. Critics of the hypothesis point to the obvious anomaly of speculative bubbles, with irrational investor behaviour long outlasting individuals' ability to remain solvent (Keynes, cited in Lowenstein 2000: 123). Since the 1990s, behavioural economics and behavioural finance theories have explored the specific cognitive biases that are likely to lead to poor financial choices, such as the discounting of future value. Such biases, it is argued, may be mitigated by financial literacy education (Thaler and Sunstein 2009).

While there is no standard definition for financial literacy, a number of attempts to define the term have been made. A comprehensive list of various definitions can be found in Appendix 2 of Huston (2010: 311). It is a broad term and encompasses a basic level of knowledge and skills in areas such as superannuation, taxation, estate planning, home ownership, investments, debt and risk management, annuities and welfare benefits. The Ministerial Council for Education, Early Childhood Development, and Youth Affairs (MCEECDYA) in Australia defines financial literacy as 'the application of knowledge, understanding, skills and values in … financial contexts and the related decisions that impact on self, others, the community and the environment' (MCEECDYA 2009).

In addition to resulting in poor financial decision making, low levels of financial literacy have been linked to high levels of personal and household debt (Lusardi and Tufano 2009); poor health (Joo and Garman 1998); adverse health choices (Peters et al. 2007); inadequate retirement planning (Lusardi and Mitchelli 2007); and poorer general life outcomes. It has also been found (De Bruin et al. 2010) that individuals with lower financial literacy levels are more likely to have higher inflationary expectations which further exacerbate the negative social and economic consequences of poor financial literacy.

The financial literacy of young people is critical as they enter adulthood and are faced with a huge array of financial products and services to choose from at a time when they are also embarking on major financial and life cycle events such as commencing employment, moving out of home, purchasing their first car, entering marriage, starting a family or securing a mortgage. In addition, lifestyle aspirations spurred on by the influence of advertising and the media are also likely to increase young people's reliance on debt (Fear and O'Brien 2009). Ill informed financial decisions in the early part of their lives can potentially have disastrous consequences which may affect them later in life. Such consequences may include huge debt, poor credit ratings, or adverse outcomes for health, retirement and quality of life.

We might intuitively expect that those young people who have the highest levels of literacy and numeracy overall — university students — would also have higher than average levels of financial literacy. We might also expect that amongst university students, those in business courses would have the highest

financial literacy scores. This article reports the results of a recent test of both these assumptions.

The fact that the majority of university students are young adults aged between eighteen to thirty years old (85 per cent of university students in this study fall into this age group), underlines the importance of financial literacy amongst this group. Moreover, for many of them, the first major financial decision they will make is how they will finance their university education. Survey figures produced by the Australian Financial Literacy Foundation (FLF) (2007: 79) indicated that school fees and Higher Education Contribution Scheme (HECS) debt were the main source of debt for 18–29 year olds, with 34.3 per cent of the age group having such debts — a higher percentage than for any other age group. Although students are not required to make repayments on their HECS debt until they are in the full-time work force, by this time an interest charge may have become attached to the debt. It is possible for students to have a HECS debt but own no assets nor have any substantial income with which to service the debt. Universities Australia (2007) found that 93.9 per cent of undergraduate students and 60.6 per cent of postgraduate students were HECS liable, with students reporting an average anticipated HECS/HELP debt on completion between $24,000 and $25,000. This is a large amount of debt for young people to repay as they commence full-time employment. A Universities Australia (2007) study reports the following comment as indicative: 'as I have entered full time employment, I am finding that re-payment of my HECS debt is a heavier financial burden than I had anticipated' (p. 34).

In addition to HECS debt, 24.4 per cent of all undergraduate students and 20.2 per cent of postgraduate students also reported borrowing from other sources to assist them pursue their studies with the average loan for undergraduate students $4,720, and $6,370 for postgraduate students. The main sources of loans were credit cards (12.9 per cent) and parents (4.3 per cent). The average credit card debt ranged upwards from $2,470 for full-time undergraduate students to $3,720 for postgraduate students, with those under 25 most likely to borrow. The financial pressure is summed up by one full-time student, 'I feel it is almost impossible to financially stay "above water" while studying and with the vast personal debts I'm gaining. I will be paying them off for years after I graduate' (ibid: 36). Such debt also places students at higher risk of performing poorly in their academic pursuits ('Now, I don't buy books at all, because I can't afford them', ibid: 24); or dropping out from studies (Lyons 2004), adding to longer term social welfare and economic implications.

The fact that university students are accruing both HECS debt and exposed to a wider variety of credit services makes financial literacy among this group even more pertinent. The 2003 comment by United States Federal Reserve Chair, is relevant to Australia in 2010:

> Certainly young adults have access to credit at a much earlier age than their parents did. Accordingly, they need a more comprehensive understanding of credit than was afforded to the previous generation — including the impact of compounding interest on debt balances …

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This article is based on a study of the level of financial literacy of a sample of Australian university students in one university. The main findings called into question the assumption that university students are financially literate, or that business students are any more financially literate than students in other discipline areas. In particular, the way in which debt multiplies through compound interest was poorly understood. Both our analysis of financial knowledge areas by demographic variables, and our findings as to students' preferred method of learning more about personal finance, are valuable in determining how low levels of financial literacy can be best addressed.

Background: Previous Studies Overseas and in Australia

Previous studies conducted both in the United States (Chen and Volpe 1998: 108) and in the United Kingdom (Marriott 2007: 506) have recognised gaps in the literature on financial literacy, particularly for university students. At the time of conducting our research, some studies (Chatzky 2002: 128) had investigated financial literacy amongst high school students, while others (Worthington, 2006; FLF 2007) reported financial literacy levels but did not sufficiently examine the various factors that influenced these. A more recent US study (Lusardi et al. 2010) that does identify key determinants of financial literacy amongst the young (23 to 28 years old) found that lack of financial literacy was widespread in the young adult population of the United States and that there was a strong association between financial literacy and cognitive ability. Findings also indicated that there were significant differences according to socio-demographic characteristics. However, there is still limited research as to what this means for university students (a group which may be assumed to have higher levels of cognitive ability when compared with the general population), particularly in Australia.

One of the few studies conducted in Australian universities was the research conducted by Beal and Delpachitra (2003) targeting first year students in their first semester of studies at the University of Southern Queensland (USQ) in 2002. The findings suggested that financial literacy was not high among first year university students in Australia but that it improved with work experience and income. Findings also suggested that students undertaking business studies performed better than other students.

A more recent study (Wagland and Taylor, 2009: 22) indicated that 60 per cent of business students at the University of Western Sydney (UWS) were able to make appropriate financial decisions and that gender was not a significant factor. Marcolin and Abraham (2006), however, identified certain gaps in financial literacy research targeting university students and in particular noted that no study to date had attempted to compare financial literacy levels of students from different disciplines or across years of study.

These previous research findings, in addition to gaps in the literature, prompted our further investigation of financial literacy levels of university students. We were particularly interested in the factors influencing these financial literacy levels, because it is hoped that an understanding of these factors can assist with the design of financial literacy programs at universities. In addition, the proposed research will assist in developing policies and programs to protect

university students from exploitation, improve stability for students and improve university results/retention of students. Such potential outcomes are supported by Joo and Garman (1998) who have suggested that that a lack of personal finance education may pose so much financial stress on a person that it may negatively impact on other areas of their lives. Similarly, the findings of Lyons (2004), Universities Australia (2007) and Kezar and Yang (2010) suggest that a student's academic ability is negatively affected by financial distress.

Methodology

A student survey on financial literacy was administered to University of Western Sydney (UWS) student cohorts across three colleges: Business; Arts; and, Health/Science, over five campuses in Greater Western Sydney (GWS). The survey sample included students from various disciplines including accounting, economics, finance, law, management, marketing, education, humanities, social sciences, general science, engineering and nursing. Both undergraduate and postgraduate students responded. Of 502 surveys distributed, a total of 472 were returned with response rate of 94 per cent.

The survey was designed specifically for the Australian context with terms relevant to Australian university students. Some of the questions were based on the Chen and Volpe (1998) survey instrument. The survey contained 21 questions, many with tick boxes to encourage participation and completion. The data was collected anonymously, and included questions relating to personal finance knowledge, attitude to personal finance and personal finance education. Demographic data collected included age, field of study, ethnic background, employment and income. Personal finance knowledge and application questions solicited specific information pertaining to superannuation, compound interest, tax benefits, bank fees and HECS debt.

Results and Discussion

Demographic Statistics

Of the respondents, 84 per cent were undergraduates. 89 per cent were local students, and 56 per cent were female. This respondent profile compares well with the profile for the total UWS population which consists of 90 per cent local students, 43 per cent male students and 87 per cent undergraduates (UWS 2007: 25).

As indicated in Table 1, two-thirds of the survey respondents were business students. They came from the fields of accounting, economics, finance, law, management and marketing. The second largest group consisted of education students, training as early childhood, primary and secondary teachers. The financial literacy levels of many in these two groups could be expected to have flow-on effects to business clients, pupils and the community. The high concentration of business students in the study can be explained from the fact that large class sizes allowed for easy data collection from this cohort. It was higher than

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the 53 per cent concentration in the study by Chen and Volpe (1998), who did not identify the field of study of the remaining 47 per cent.

Table 1: Students Responding to Financial Literacy Survey, University of Western Sydney, 2009 — Demographic Characteristics (n=472)

Item	Characteristic	Number	Valid Frequency (% of total)
Study area	Business	313	66.8
	Education	72	15.4
	Humanities	45	9.6
	Sciences	24	5.1
	Nursing/Health	14	3.0
Age (yrs)	18/19	88	18.6
	20–25	254	33.8
	26–35	89	18.9
	36–45	25	5.3
	46 plus	16	3.4
Student type	International	51	11.0
	Domestic	395	89.0
Gender	Male	206	43.8
	Female	264	56.2
Education	Undergraduate	395	84.0
	Postgraduate	75	16.0
Household status	Single (no dependants)	322	68.4
	Single (with dependants)	24	5.1
	Partnered (no dependants)	81	17.2
	Partnered (with dependants)	44	9.3
Living arrangements	With Parents	308	65.5
	Own home	62	13.2
	Renting home on own / with partner	52	11.1
	Sharing rental accommodation	48	10.2
Income (incl. welfare)	Under $6000	144	31.3
	$6001–$10000	63	13.7
	$10001–$15000	49	10.7
	$15001–$20000	49	10.7
	$20001–$25000	35	7.6
	$25001–$45000	54	11.7
	$45001–$75000	47	10.2
	Over $75000	19	4.1

Table 1 also sets out data on both the students' current relationship status and living arrangements. Seventy-three per cent of students were single and just over 14 per cent had dependent children. The data also highlighted the high rate of student dependence on their parents, with 66 per cent of respondents still living with their parents.

Importantly, thirty-one per cent of responding students were in the non-taxable income range and 43 per cent earned between six thousand and twenty-five thousand dollars per annum, which meant that 74 per cent earned twenty-five thousand dollars or less.

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Financial Literacy Indicators

To assist in understanding the level of students' personal finance knowledge, students were asked to indicate if they had sought advice from a financial planner. Ten per cent of students had seen a planner, primarily to gain financial advice to buy an investment property or secure a mortgage. However, it is interesting to note that some students sought financial advice because of their study fees or because they were in debt. This coincides with the findings of Joo and Garman (1998) concerning workers in general: unsurprisingly those of higher socio-economic status more likely to seek advice on retirement and investment and those of lower socio economic status more likely to request information on budgeting and getting out of debt. Students were also asked if they had participated in a personal financial literacy program and only 1.5 per cent reported they had. Of these students, tertiary study was the most frequently cited type of program.

Overall, the results indicated low levels of personal finance knowledge among students. This finding is consistent with previous studies in both Australia (Beal and Delpachitra 2003) and the United States (Chen and Volpe 1998: 112). The following section analyses the various components of personal financial knowledge and application of this knowledge by university students.

HECS Debt

While HECS debt knowledge is not applicable for international students, it was found that amongst local students; only 54 per cent knew the amount of their HECS debt. Surprisingly, a Chi-square test showed a statistically significant negative correlation at the 0.03 level (χ^2=12.7, 5 DF) between knowledge of HECS debt and number of years at university (see Table 2). Students in their first year of study were more likely to know the amount of their HECS debt than those in subsequent years.

The Chi-square test found no significant relationship with other demographic factors although there seemed to be a sudden increase in the knowledge of HECS debt in the income range $25,000 to $45,000 (58.5 per cent). This reflects the income range in which students would be required to begin repaying their HECS debt. As findings from Universities Australia (2007) suggest, this is the time that students begin to experience the financial pressure of having to repay the debt.

Table 2: Local Students' knowledge HECS debt by number of years at university, University of Western Sydney, 2009 (n=393, valid n=385)

Number of years at University	Number knowing amount	Number not knowing amount	No response	Total local students responding	Valid percent knowing amount of debt
1 Year	90	51	3	141	63.8
2 Years	49	38	2	87	56.3
3 Years	35	31	2	66	53.0
4 Years	24	33	1	57	42.1
5 Years	7	17	0	24	29.2
Over 6 Years	3	7	0	10	42.9
Total	**208**	**177**	**8**	**385**	**54.0**

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Bank Fees

Only 53 per cent of students were found to have adequate knowledge of their bank fees, including only 54 per cent of business students. Both age and gender showed no significant relationship with the level of knowledge of bank fees among students. However, a Chi-square test indicated significance at the 0.05 level (χ^2=14.3, 7 DF) for bank fee knowledge and income. The highest bank fee knowledge was for those with an income between $6,001 and $10,000 (64 per cent), and lowest for those with an income less than $6,001 (41 per cent), suggesting that bank fee knowledge is at its highest when students begin to earn enough to warrant opening a bank account. Further details are provided in Table 3.

Table 3: Students' knowledge of bank fees by level of income (including government benefits), University of Western Sydney, 2009 (n=460, valid n=452)

Income level	Number knowing bank fees	Number not knowing bank fees	No response	Valid percent knowing bank fees
Under $6000	59	82	3	41.8%
$6001–$10000	39	22	2	63.9%
$10001–$15000	24	24	1	50.0%
$15001–$20000	29	20	0	59.2%
$20001–$25000	22	13	0	62.9%
$25001–$45000	33	20	1	62.3%
$45001–$75000	24	22	1	52.2%
Over $75000	11	8	0	57.9%
Total	**241**	**211**	**8**	**53.3%**

There was no significant relationship between bank fee knowledge and the number of years of study at university, area of study or whether students were undergraduate, postgraduate, domestic or international students.

Compound Interest

Students were asked to determine what the balance of a one thousand dollar investment would be after a year invested at ten per cent per annum; compounded daily versus compounded monthly. No calculation was required and students were given a choice of four responses. Only around 58 per cent were able to provide a correct response (Table 4). These results are a little better than the results of the Beal and Delpachitra (2003) study which reported correct answers of 52.9 per cent, but targeted only first year students. Coincidentally, the results for first year students in this study match those of Beal and Delpachitra at 53 per cent. Conclusions reached in other studies (Chen and Volpe 1998; Schagen and Lines 1996) suggest that personal finance knowledge is higher among those with more years of education.

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Table 4: Students' compound interest response by field of study, University of Western Sydney, 2009 (valid n=457)

Field of Study	Number responding	Higher if compounded daily (correct response)	Incorrect response
Business	304	59.4%	40.6%
Education	72	58.3%	41.7%
Humanities	44	42.2%	57.8%
Sciences	19	84.2%	15.8%
Engineering	5	60.0%	40.0%
Nursing/Health	13	28.6%	71.4%
Total	**457**	**57.7%**	**42.3%**

Chi-square results showed a significant relationship at the 0.01 level between field of study and compound interest knowledge (χ^2=15.2, 5 DF). The stronger results (around 84 per cent correct) were mainly from students in the sciences while business students performed less well, with only 59 per cent correct (refer Table 4). It was both surprising and alarming to see that the business students (who included accounting, economics and finance students) did not obtain strong results for this question. One might have expected better performance in this predictor of financial literacy amongst students who are most likely to have covered compound interest calculations in their university studies and most likely to use compound interest calculations in their future employment. This raises a number of questions around the Efficient Market Hypothesis (EMH) as it suggests that if business students are not well informed, the 'market' also may not be fully informed.

Students with income in the range $20,000 to $25,000 had the highest rate of correct answers (66 per cent) while those with income under $6,000 had the least correct answers (49 per cent). While those with an income less than $6,000 are less likely to have had the same opportunities to invest money as those with higher incomes, nevertheless, they are just as likely to be accruing interest on credit cards, making it all the more important for such students to be literate in this area.

Chi-square tests found statistically significant differences at the 0.01 level (χ^2=7.4, 2 DF) between domestic and international students with only 39 per cent of international students answering this question correctly. It should be noted that the research instrument was designed from a Western finance perspective so therefore results may be skewed in favour of those students who are more familiar with a Western-based financial system.

Years of work experience had a significant impact on compound interest knowledge at the 0.05 level (χ^2=9.8, 4 DF). As Table 5 shows, only 40 per cent of students with no work experience answered this question correctly, compared with 60 per cent of students with less than two years experience. Although, still a poor result, 64 per cent of students with greater than 6 years experience correctly answered this question. The results seem to indicate that work experience assists in improving knowledge in this area, however further research as to the type of work experience (for example full-time or part-time) and the field of employment would provide greater insight into these results.

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Table 5: Students' correct calculation of compound interest response by years of work experience, University of Western Sydney, 2009 (valid n=464)

Years of work experience	Higher if compounded daily (correct)	Incorrect response	Total
None	12	18	30
	40.0%	60.0%	100.0%
Less than 2 years	83	52	135
	61.5%	38.5%	100%
2–4 years	44	46	90
	48.9%	51.1%	100%
4–6 years	33	22	55
	60.0%	40.0%	100%
6 years plus	98	56	154
	63.6%	36.4%	100%
Total	**270**	**194**	**464**
	58.2%	**41.8%**	**100%**

Variables such as age, gender, years at university and income had no statistical significance in relation to students' knowledge of compound interest. Although not statistically significant, students in their first year at university reported a slightly lower proportion of incorrect responses when compared with almost all other years. An exception is that of students in their third year of study who surprisingly reported an even lower result.

Tax Offset vs. Tax Deduction

Table 6 gives the percentage of correct responses for students by field of study. The Chi-square test indicates that field of study was a significant factor at the 0.01 level (χ^2=13.4, 5 DF). Business students once again performed poorly in this area with only 34.5 per cent correct responses. One would expect this to be much higher for business students as business students would have been more likely to be exposed to these terms. Business students did, however perform better than the mean (29.5 per cent).

Table 6: Students' understanding of results of choosing between a tax offset and tax deduction by field of study — University of Western Sydney, 2009 (valid n=468)

Field of Study	Number responding	The $500 tax offset is more valuable (Correct)	Incorrect
Business	313	34.5%	65.5%
Education	72	15.3%	84.7%
Humanities	45	20.0%	80.0%
Sciences	19	31.6%	68.4%
Engineering	5	20.0%	80.0%
Nursing/Health	14	21.4%	78.6%
Total	**468**	**29.5%**	**70.5%**

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Age was a statistically significant factor here at the 0.01 level (χ^2=19.6, 8 DF) with more correct as age increased. The number of correct responses peaked at age range 46–55 with 55.6 per cent correct but reducing to 14.3 per cent for those aged above this range. Income was also statistically significant at 0.01 with more correct as income increased. This tends to reflect experience with the taxation system as those earning below $10,000 (including government benefits) may not be paying income tax. Unfortunately it also means that those with low incomes are less aware of how the low income tax offset (LITO) might affect them while those in the age group above 56 years old may have little awareness of how the senior Australian tax offset (SATO) works.

Superannuation

The students were also asked if they knew details about their superannuation fund such as the name of the fund or balance of the fund. The results are shown in Table 7. The results showed that approximately 70 per cent of students had a super fund. Only 40 per cent of those students who had a super fund claimed to know both the name of their fund and the balance.

Table 7: Students' knowledge of name and balance of superannuation fund, University of Western Sydney, 2009 (n=472)

	Frequency	Percent
Name of fund only	166	35.2
Balance of fund only	12	2.5
Both name of fund and balance	131	27.8
Does not know name of fund or balance of fund	18	3.8
Does not have superannuation fund	144	30.5
No response	1	0.2
Total	**472**	**100.0**

The younger students were less likely to have a super fund, while those who did had little knowledge of their super fund details. Older students were more likely to have more knowledge of their super fund details yet those aged 56 and over had a very poor knowledge of their superannuation details and surprisingly 29 per cent of students in this age group had no superannuation fund. Almost all of this group were female students. This is supported by research conducted by Jefferson and Preston (2005: 85) which indicates 10.4 per cent of women working in Australia in 2000 had no superannuation. In addition, this research suggests that a 35 per cent gender gap in superannuation contributions exists for this age group (ibid: 95). It is possible that these mature age students commenced work in the paid workforce prior to the introduction of compulsory superannuation in 1992 and left the workforce a short time after, spending most of their adult life out of the paid workforce to look after the family home, raise a family and/or care for elderly relatives. A likely explanation would be that they are now studying as a means to return to the paid workforce.

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Preferred Form of Personal Finance Education

With the large number of students progressing through universities at a time that for many students also involves making their first substantial financial decisions, universities are well positioned to provide personal finance to students. Furthermore, as universities play a citizenship role in developing students to become effective participators in society and the economy, it is fitting that they also contribute towards a student's financial education. The idea that tertiary students learn about finances as part of their post secondary education was recommended by the President's Advisory Council on Financial Literacy (2009: 3) and is supported by Kezar and Yang (2010: 15) claiming that 'financial literacy is both an important life skill and a critical intellectual competency' and 'an essential component of a college degree'.

Moreover, universities have a moral obligation to assist students in learning to manage their higher education debt. In light of this, the President's Advisory Council on Financial Literacy (2009: 3, 18) recommended that college students in the United States be required to undertake a comprehensive course in financial literacy (or pass a competency test) as a condition of receiving a Federally funded student loan. Whether legislated by the State, provided as student service programs, integrated into the curriculum, or incorporated into other university services, financial education can come in many forms. So what is the most effective way to deliver financial education to university students?

The UWS study collected information from students as to their preferred method of learning more about personal finance. The findings indicate that despite technological advances, students' preferred method of personal finance education is through face-to-face training sessions or workshops (57 per cent). This was followed by internet tutorials (17 per cent), DVD (15 per cent), MP3/iPod audio recording (6 per cent) and the less popular paper-based booklet or pamphlet (3 per cent). This suggests that financial education programs targeting university students should ideally be conducted as face-to-face workshops rather than as on-line or internet based programs. Such information is useful for academics, professionals (such as accountants and financial advisors), counsellors, student support personnel, social welfare groups and government agencies in designing financial education programs that target university students. Educators may choose to offer elective units in personal finance while there also exist opportunities for finance professionals to provide community service in this area. Furthermore, student support services, social welfare groups and various government agencies could better assist students by promoting more face to face financial education workshops.

Limitations and Future Research

As the data collected was limited to only one institution and limited to the geographical location of Greater Western Sydney, caution must be taken in interpreting the findings and in making generalisations. In addition the data sample included a higher percentage of business students. Ideally the data collection could be expanded to include a larger sample from other colleges. Moreover,

additional research in the area of financial literacy that encompasses differing financial systems is needed as previous notions of financial literacy have tended to assume all respondents make financial decisions based on a purely Western financial perspective. Such assumptions may implicate the financial literacy results reported for international students.

Conclusion

While this research supports previous studies conducted in Australia and overseas of the low levels of university students' personal finance knowledge, this study has further investigated the various factors impacting on these knowledge levels. The results have shown that there is a significant relationship between field of study and students' knowledge of the difference between simple interest and compound interest. In comparison, knowledge of bank fees, tax offsets and HECS debt were clearly impacted by income while superannuation knowledge was affected by age at both ends of the spectrum. These findings illustrate that personal financial knowledge is dependent on a combination of variables.

Unlike previous studies, this study has found that business students do not necessarily score better than all students, with students studying the sciences (other than nursing) performing much better than both business students and students in other study areas for compound interest knowledge. The findings did show however that business students were more knowledgeable about tax offsets than their student counterparts, possibly due to their exposure to the taxation system in their studies although the result was still low at only 34.5 per cent correct. Age seemed to have a more significant impact on this knowledge area as well as on superannuation knowledge with knowledge increasing along with age until dropping to extremely low levels once student age reaches fifty-six years.

With the exception of HECS debt, this study has not found any correlation between years of study at university and personal finance knowledge and in fact showed that knowledge of HECS debt is higher in the first year (26.8 per cent) than any other year. In line with the findings of Wagland and Taylor (2009), gender was not a significant determining factor of university students' personal financial knowledge, except for superannuation knowledge where gender was a significant factor for students aged 56 and over.

It is recommended that the research findings in this study be carefully considered by policy makers, universities and other interest groups. Furthermore, the findings suggest more face to face workshops be promoted to university students to assist them in managing their finances and perhaps be a compulsory requirement for those students prepared to take on a higher education debt. This is particularly pertinent as the number of places in Australian universities is planned to significantly increase over the next few years with trends from 2009 and 2010 suggesting there will be more students from less affluent backgrounds (Harrison 2011: 9). In addition, the research has highlighted the need for further financial education through the secondary school curriculum, especially with regards to basic compound interest calculations.

These recommendations are of major significance if we are to sufficiently equip future financial decision makers with the tools to navigate the diverse financial landscape and make wise choices as labour market participants that will affect the future of all Australians, young and old. The wider implications of poor financial literacy levels on debt, health, educational outcomes, labour market decisions and general well being and quality of life are too severe and long reaching to be ignored. This study has proven that it cannot be assumed that university students, even business students are immune from financial illiteracy. The challenge now is for policy makers, universities and other interest groups to take action for the benefit of society.

References

ANZ (2005) *ANZ Survey of Adult Financial Literacy in Australia 2005*, ANZ Banking Group and AC Nielsen.

Beal, D. and Delpachitra, S. (2003) 'Financial literacy among Australian University students', *Economic Papers*, 22(1), pp. 65–78.

Chatzky, J. (2002) 'Teach our children well', *Money*, 31(7), p. 128.

Chen, H. and Volpe, R. (1998) 'An analysis of personal financial literacy among college students', *Financial Services Review*, 7(2), pp. 107–128.

De Bruin, W., Vanderklaauw, W., Downs, J., Fischhoff, B., Topa, G. and Armantier, O. (2010)'Expectations of inflation: The role of demographic variables, expectation formation, and financial literacy', *Journal of Consumer Affairs*, 44(2), pp. 381–482.

Fama, E. (1970) 'Efficient capital markets: A review of theory and empirical work', *Journal of Finance*, 25(2), pp. 383–417.

Fear, J. and O'Brien, J. (2009) 'Where does the buck stop? Community attitudes to over-lending and over-spending', *Australasian Accounting Business and Finance Journal*, 3(1), pp 3–12.

Financial Literacy Foundation (FLF) (2007) *Financial Literacy — Australians Understanding Money,* Commonwealth of Australia, Canberra; available: http://www.financialliteracy.gov.au/media/209293/australians-understanding-money.pdf [accessed 4 May 2011].

Greenspan, A. (2003) Remarks by Chairman Alan Greenspan at the JumpStart Coalition's Annual Meeting, Washington, DC, 3 April 2003, The Federal Reserve Board, 2003 Speeches, available: http://www.federalreserve.gov/boarddocs/speeches/2003/20030403/default.htm [accessed 26 April 2011].

Harrison, D. (2011) 'Growth in uni places good for economy, says Labor', *The Sydney Morning Herald*, 22–24 April, p. 9.

Huston, S. (2010) 'Measuring financial literacy', *The Journal of Consumer Affairs* 44(2), pp. 296–316.

Jefferson, T. and Preston, A. (2005) 'Australia's "other" gender wage gap: Baby boomers and compulsory superannuation accounts', *Feminist Economics*, 11(2), pp. 79–101.

Joo, S. and Garman, E. (1998) 'Workers want more than retirement education at their workplace: A report of research findings', *Personal Finances and Worker Productivity*, 2(2), pp. 156–161.

Kezar, A. and Yang, H. (2010) 'The importance of financial literacy', *About Campus* 14(6), pp. 14–21, available: www.onlinelibrary.wiley.com/doi/10.1002/abc.20004/pdf [accessed 19 April 2011].

Lowenstein, R. (2000) *When Genius Failed*: *The Rise and Fall of Long-Term Capital Management*, Random House, New York.

Lusardi, A. and Mitchell, O. (2007) 'Financial literacy and retirement preparedness: Evidence and implications for financial education', *Business Economics*, 42(1), pp. 35–44.

Lusardi, A., Mitchell, O. and Curto, V. (2010) 'Financial literacy among the young', *Journal of Consumer Affairs*, 44 (2), pp. 358–380.

Lusardi, A. and Tufano, P. (2009) 'Debt literacy, financial experiences, and overindebtedness', *NBER Working Paper 14808*, National Bureau of Economic Research, United States, available: http://www.nber.org/tmp/19952-w14808.pdf [accessed 25 April 2011].

Lyons, A. (2004) 'A profile of financially at-risk college students', *Journal of Consumer Affairs*, 38(1), pp. 56–80.

Marcolin, S. and Abraham, A. (2006) Financial literacy research: Current literature and future opportunities, *University of Wollongong Faculty of Commerce Working Papers*, available: http://ro.uow.edu.au/commpapers/223 [accessed 1 May 2011].

Marriott, P. (2007) 'An analysis of first experience students' financial awareness and attitude to debt in a post-1992 UK university', *Higher Education Quarterly*, 61(4), pp. 498–519.

Ministerial Council for Education, Employment, Childhood Development and Youth Affairs (2009) *National Consumer and Financial Literacy Framework (Introduction)*, available: http://www.mceetya.edu.au/mceecdya/default.asp?id=14430 [accessed 2 May 2011].

Peters, E., Dieckmann, N., Dixon, A., Hibbard, J., and Mertz, C. (2007) 'Less is more in presenting quality information to consumers', *Medical Care Research and Review*, 64(2), pp. 169–190.

President's Advisory Council on Financial Literacy (2009) *2008 Annual Report to the President*, The Department of the Treasury, United States, January , available: http://www.jumpstart.org/assets/files/PACFL_ANNUAL_REPORT_1-16-09.pdf [accessed 25 April 2011].

Schagen, S and Lines A (1996) *Financial Literacy in Adult Life: A Report to the Natwest Group Charitable Trust*, National Foundation for Educational Research, Berkshire.

Thaler, R. and Sunstein, C. (2009) *Nudge: Improving Decisions about Health, Wealth, and Happiness.* Penguin, New York.

Universities Australia (2007) Australian University Student Finances 2006: Final report of a national survey of students in public universities, August 2007, avail-

able:http://www.universitiesaustralia.edu.au/resources/135/Final%20AUSF%20report.pdf [accessed 26 April 2011].

University of Western Sydney (2007) Student Satisfaction Survey (SSS) Report (Quantitative), UWS Office of Planning and Quality, p. 25.

Wagland, S. P. and Taylor, S. (2009) 'When it comes to financial literacy, is gender really an issue?', *AABFJ Financial Planning Special Issue*, May 3(1), pp. 13–25.

Worthington, A. (2006) Financial literacy in Australia, Paper presented at Conference of the Accounting and Finance Association of Australia and New Zealand, Wellington.

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