

Predicting financial literacy in Australia

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Abstract

Logit models are used to predict financial literacy using the 2003 ANZ Survey of Adult Financial Literacy in Australia. Financial literacy is defined in terms of mathematical ability and the understanding of financial terms. Factors examined include gender, age, ethnicity, occupation, education, income, savings, and debt. Financial literacy is found to be highest for persons aged between 50 and 60 years, professionals, business and farm owners, and university/college graduates. Literacy is lowest for the unemployed, females, and those from a non-English speaking background with a low level of education. © 2006 Academy of Financial Services. All rights reserved.

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1. Introduction

In the last few decades, numerous factors have come together in Australia to create financial services markets that require consumers to be more knowledgeable if they are to manage their finances effectively. Financial deregulation and the ensuing boost in competition and access to credit, the proliferation in financial products, innovation in marketing, and technological change have led to consumers being faced with a bewildering array of intricate financing and investment opportunities (Consumer & Financial Literacy Taskforce, 2004). Consumers' responsibilities for retirement investment have also grown, with the government encouraging citizens to move from public pensions into private pensions. Employers are also persuading employees to shift from defined-benefit plans into defined-contribution plans and responsibility for their own investment strategies, including choice of managed fund provider (Brown, Gallery & Gallery, 2004). And there is now allowance in

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Australia's system of compulsory privately funded retirement income (superannuation) for self-managed superannuation funds (Australian Securities & Investments Commission, 2005b).

Problematically, the profile of consumers requiring knowledge to deal with these markets has also changed. Changes in Australia's demography with aging and ethnically diverse populations has seen language, educational and cultural barriers arise that may hinder the access of some of these populations to new financial opportunities, and expose others less knowledgeable to questionable marketing practices and the possibility of devastating borrowing and investment exposures. In the last few years, mortgage debt and consumer credit as a share of disposable income in Australia has grown to record highs with allied concerns raised over the financial knowledge of demand-side market participants (Worthington, 2006). This is because when combined with low levels of emergency funds, high debts have exposed many households to adverse financial outcomes, including debt repayment problems, delinquencies, and bankruptcy (Worthington, 2004). In response, financial literacy has risen on the agenda for educators, community, business and consumer groups, and government agencies and policymakers.

Interest in financial literacy is, of course, not confined to Australia. In the United States, the Federal Reserve Board-founded *Jumpstart Coalition for Personal Financial Literacy* [see, e.g., Jumpstart Coalition for Personal Financial Literacy (2005)] biannually surveys the financial literacy of high school students and the response, at least in part, has been a proliferation of state legislation mandating personal finance in school curricula (CBA Reports, 2003). More recently, the U.S. Senate Committee on Banking, Housing and Urban Affairs (2002) has conducted hearings into the state of financial literacy and education and the U.S. Department of Treasury (2002) has created the Office of Financial Education with a specific focus on improving financial literacy. Recent applications concerning the key role of financial knowledge in personal financial decision-making include Montalto, Gutter and Fox (1999), Lin and Lee (2004), and Jacobs-Lawson and Hershey (2005).

Likewise, there has been a surging interest in financial literacy by U.S. financial institutions and their associations. For example, in 2003 some 98% of U.S. banks sponsored financial literacy programs, and seventy-two percentage offered their own programs (Community Banker, 2003), with the goals of 'reaching youth', 'stemming the rise in bankruptcies', 'thwarting predatory lending' and 'boosting communities' (Givonsky, 2003). The Consumer Bankers Association's (2005) *Survey of Bank-Sponsored Financial Literacy Programs* regularly assesses the impact of these industry sponsored or supported financial education programs. Concern about the state of U.S. financial literacy by yet other government departments, professional associations and the media include Lamb (2002), Grace and Hauptert (2003), Hilgert, Hogarth and Beverley (2003), Givonsky (2003), American Banker (2003), Jackson (2003), Kim (2003), and Tossaint-Comeau (2003).

Similarly, in the United Kingdom in 2003 the Financial Services Authority called for a summit of industry leaders and consumer activists "... to come together to develop a strategy to take forward consumer education, information and generic financial advice [in] response to its identification of a pressing need to foster financial literacy as the gap between people's long-term needs and their savings widens" (Burgess, 2003, p. 26). There are several financial literacy programs already in the U.K. For example, the Personal Finance Education Group

(2005) aims to raise the competence of personal finance educators, and the Citizens Advice Bureaux (2005) and the Stewart Ivory Foundation (2005) seek to raise the level of financial knowledge in the broader community.

Other financial literacy initiatives throughout the world include the Canadian Bankers Association's (2005) *Building a Better Understanding* program and the *New Zealand Financial Literacy Programme* developed by Enterprise New Zealand Trust (2005). The Canadian Banker's Association (2005) program is described as "... a major, long-term commitment to help improve Canadians' knowledge about the economy and personal finance [and] includes the publication of a series of information booklets, Web sites and educational seminars". Enterprise New Zealand Trust's (2005) efforts are defined as "... school-based programs and activities [that] raise awareness and provide practical opportunities for students to take part in financial decision-making, and develop money management capability."

In Australia too, a number of reports have highlighted the need to better understand and improve financial literacy. The Australian Law Reform Commission's (2005) *Seen and Heard* report found that young people were ill informed about a wide range of consumer services, while the ANZ Bank's *Survey of Adult Financial Literacy in Australia* [see Roy Morgan Research (2003a, 2003b, 2003c)] showed that while most Australians have basic financial literacy, young consumers and those from low socioeconomic backgrounds were at a disadvantage in making informed decisions about money management.

Similarly, the Australian Securities and Investments Commission's (2005a) *Financial Literacy in Schools* report championed financial literacy programs inside and outside of schools. And the Consumer and Financial Literacy Taskforce's (2004) *Australian Consumers and Money* stocktake of initiatives by public, private and community sector bodies found that while there was no shortage of consumer information, a good proportion of that material was not known, not properly targeted or not used by Australian consumers. Nonetheless, there is now a call in Australia for a national partnership of stakeholders to improve financial literacy levels, especially of the elderly, youth and socially disadvantaged (CA Charter, 2003).

Regrettably, these government and industry initiatives aimed at understanding financial literacy have not been mirrored by academic research, at least in Australia. This is unfortunate since such research can assist and advance the good intentions of financial literacy stakeholders (like regulators, banking associations and consumer advocacy groups) through the better design and targeting of education programs. The purpose of the present paper is to add to this small but evolving literature an analysis of financial literacy using *ANZ Survey of Adult Financial Literacy in Australia*. It does so by focusing on the demographic, socioeconomic and financial characteristics of Australians and linking these with their level of financial literacy. It, thereby, could provide an important input into current educational policy regarding financial literacy in Australia and a useful point of comparison for overseas work in this area.

The paper itself is divided into five main areas. The first section briefly reviews the literature regarding the definition and analysis of financial literacy. The second section explains the empirical methodology and data employed in the analysis. The third section discusses variable specification, and the fourth section presents the results. The paper ends with some concluding remarks.

2. Literature review

It goes without saying that financial literacy means different things to different people, and this is reflected most clearly in the many definitions used in the literature. For some it is quite a broad concept, encompassing an understanding of economics and how household decisions are affected by economic conditions and circumstances. For others, it focuses quite narrowly on basic money management: budgeting, saving, investing and insuring (Hogarth, 2002). Likewise, financial literacy can be absolute, comprising some standard of knowledge assumed common or desirable for all consumers, or relative, where the standard varies according to personal skills, needs and experiences. Therefore, the benchmark of financial literacy changes according to the degree of current and possible interaction with financial services markets. Of course, any definition of 'personal' financial literacy used in this literature plainly differs from the 'professional' financial literacy expected of directors and audit committee members, where financial literates are typically regarded as having an understanding of financial statements, cash flows and management compensation, internal control mechanisms and corporate governance [see, for instance, McDaniel, Martin & Maines (2002)].

Schagen and Lines (1996) in a report to the National Foundation for Educational Research in the United Kingdom defined financial literacy as "the ability to make informed judgments and to take effective decisions regarding the use and management of money." This definition has been later used in a number of studies with some minor changes. Roy Morgan Research (2003a, 2003b, 2003c), for example, agreed that financial literacy was about people being informed and confident decision makers in all aspects of their budgeting, spending and saving, but that measures of financial literacy should reflect individual circumstances and were, therefore, relative. As such, knowledge is "... only to be tested against an individual's needs and circumstances rather against the entire array of financial products and services, some of which they will neither use nor need" (Roy Morgan Research 2003c, p. 2). This definition is used in this study. Alternatively, Beal and Delpachtra (2003) argue that the financially-literate should not only have the ability to understand key concepts in money management, a working knowledge of financial institutions, systems and services and a range of analytical skills, but also possess a facilitating attitude to the effective and responsible management of financial affairs. In a recent survey article, Hogarth (2002) found that most definitions of financial literacy include knowledge and understanding of basic financial concepts and the ability to use these to plan and implement financial decisions.

The literature concerning financial literacy itself may be categorized into two areas: (1) attempts to explain the differing patterns of financial literacy in the population (Schagen and Lines, 1996; Mandell, 1998; Jumpstart Coalition for Personal Financial Literacy, 2005) and (2) efforts to evaluate the efficacy of individual financial literacy programs (Huddleston & Danes, 1999; Garman, Kim, Kratzer, Brunson & Joo, 1999; Chatzky, 2002). While these two streams of research can, and often are, regarded as distinct, they are closely related in that any evaluation of an individual program aimed at improving financial literacy must take into account the level of knowledge pre-existing outside these programs and derived from non-program sources.

To start with, a variety of large-scale surveys aimed at establishing the level and

distribution of financial literacy have been conducted. Most well known is the Jumpstart Coalition for Personal Financial Literacy's bi-annual tests of high school seniors in the United States [see Mandell (1998) for the baseline survey and Jumpstart Coalition for Personal Financial Literacy (2005) for the most recent results]. Questions are divided into four categories—income, money management, saving and investing, spending and credit—and cover a variety of multiple choice responses on insurance choices, saving and spending behaviors, and investment in stocks and bonds. Students are given an overall score based on the percentage of questions answered correctly. Overall, the results have been fairly consistent: “on average, students who participated in the 2004 survey answered 52.3% of the questions correctly. That score is up from 50.2% in 2002 and 51.9% in 2000.” (Mandell, 2004). While adults taking identical tests generally score better, the timing of the tests (at graduation) suggests that they overstate the true level of financial literacy, at least among students, if not the total population (Hogarth, 2002).

Interestingly, not only has the observed level of financial literacy declined since the earliest surveys, such literacy varies across socioeconomic and demographic groups each year. For example, in 1997/98 female students scored slightly higher on average than male students (but were under represented towards the uppermost end of the distribution), and Native, African, Hispanic and Asian Americans scored lower than others (Mandell, 1998). Differences in scores were found to be not very dependent upon family income. See Mandell (2001; 2002a; 2002b; 2003) for additional perspectives on these financial literacy surveys. The results of these and a number of other U.S. surveys are also discussed in Hogarth (2002), including studies conducted by and for the Consumer Federation of America and American Express, Americans for Consumer Education and Competition, and the American Savings Education Council, among others. Hogarth (2002, p. 18) concluded:

[T]he results of these various financial literacy surveys make it seem that there is a problem. However, it may be that actions speak louder than words (or, in this case, test scores) [since] none of these surveys tried to match knowledge with behavior, which is perhaps the truest test of how financially literate U.S. households are.

Notable financial literacy surveys outside of the United States include Schagen and Lines (1996) and Roy Morgan Research (2003a, 2003b, 2003c). Schagen and Lines (1996) conducted a survey of financial literacy in the U.K. for the NatWest Group Charitable Trust, with particular attention paid to younger people, students, single parents, and people living in subsidized housing. The respondents were asked a variety of question about their attitudes to buying and saving, money management and confidence with dealing with money matters. They were also asked questions testing their knowledge of financial markets and instruments, financial decision-making, problem-solving and planning. For the most part, the survey indicated that most people were confident with their financial affairs, though this was lower for some groups, especially single parents and to a lesser extent, students.

In Australia, Roy Morgan Research (2003a, 2003b, 2003c) conducted a similar survey of financial literacy on behalf of the ANZ Bank. Roy Morgan Research (2003a, 2003b, 2003c) concluded that persons with low levels of financial literacy were characterized by low levels of educational attainment, income, and employment, were frequently younger and mostly single, and possessed lower than average levels of debt and savings. However, language and

mathematical literacy (apart from multiplication) appeared to be adequate, and basic financial terms were easily understood, though the level of understanding of advanced financial terms was much less.

Apart from these surveys of adult populations, much of the remaining work concerning the level and distribution of financial literacy has focused on mainly U.S. high school or university students. Williams-Harold and Smith (1999) reported the results of a survey of 500 students which concluded only 31% were able to balance a bank account (just 12% were confident of their ability to choose between different bank accounts), 23% were familiar with credit cards (and only 9% with debit cards) and just 7% were aware of current interest rates. This was despite 56% of the sample having taken a money management class.

Chen and Volpe (1998) also examined financial literacy across 924 students at 14 colleges and related these scores to a set of demographic and socioeconomic characteristics. They concluded those with low levels of financial literacy were likely to be young females studying non-business majors with little work experience. Race and income were not significant factors. An earlier study by Volpe, Chen, and Pavlicko (1996) had similar conclusions, along with the observation that finance business majors out-performed non-finance business majors. Most recently, Beal and Delpachtra (2003) surveyed students at an Australian regional university and found that most respondents scored reasonably well for basic financial literacy concepts. However, financial literacy was found to vary with work experience and income, and business students generally outperformed those in other disciplines, irrespective of age.

The second, much smaller, area of research into financial literacy has been concerned with the changes in knowledge associated with a particular program aimed at improving financial literacy. Huddleston and Danes (1999), for example, examined the impact of a high school financial planning program in the United States. They concluded that personal finance could indeed be taught and, moreover, had a positive impact on financial behavior in both student and adult life. Conversely, Chatzky (2002) found that while the number of high school students exposed to financial literacy programs was small, those in such programs did not appear to retain much content. Garman, Kim, Kratzer, Brunson, and Joo (1999) provide an analysis of a workplace financial education program and positive impacts on financial health. Apart from these, Braunstein and Welch (2002) present a generally positive appraisal of homebuyer counseling programs, savings initiatives and workplace programs in the United States, while the Consumer Bankers Association (2003) documents the growth in financial literacy programs provided by U.S. banks, especially those covering mortgages and homeownership.

When examining existing research on financial literacy, a number of salient points emerge. First, almost all of this work has been undertaken in the United States and, to a lesser extent, the United Kingdom. Relatively little attention has been paid to populations outside of these financial milieus, not least in Australia. Second, there has been an overwhelming emphasis in most studies on financial literacy in high school and college/university students and rather less attention paid to adult populations. This is especially important given the aging populations in all developed economies. Finally, much of the existing literature, especially from industry and government studies, has focused on simple descriptive statistics concerning the relationships between demographic, socioeconomic and financial character-

istics and financial literacy. Because these relationships are likely to be complex, advanced statistical modeling is likely required. It is with these considerations in mind that the present study is undertaken.

3. Research method and data

A convenient consumer behavior model put forward by the Consumer and Financial Literacy Taskforce (2004) hypothesizes that the external environment, socioeconomic background and personal characteristics, financial experiences, and financial skills shape financial decisions. Economic, regulatory, cultural, and political factors shape the external environment facing consumers. The consumer's own socioeconomic background and personal characteristics also affect the decision-making process. What's more, a role is played by financial experiences with particular products and services. And there are financial skills consumers can learn to assist decision-making. Clearly, financial literacy may result from any or all of these sources and so, attempts to predict financial literacy, should take into account the different demographic, socioeconomic, and financial backgrounds of consumers.

The data used in this study is from Roy Morgan Research's (2003b) *ANZ Survey of Adult Financial Literacy in Australia*: a national telephone survey of 3,548 respondents. The data are composed of three sets of information. The first set consists of each respondent's answers to a set of eighty questions aimed at measuring adult financial literacy. These include: (1) mathematic literacy and standard literacy questions to test mathematical, reading, and comprehension skills; (2) financial understanding questions to evaluate understanding of what money is, how it is exchanged, and where it comes from and goes; (3) questions on financial competence to check understanding of basic financial services, financial records, awareness of risk and return and attitudes to spending and saving; and (4) questions on financial responsibility to confirm knowledge of life choices, rights, and responsibilities and confidence when resolving problems. An abridged list appears in the Appendix.

A measure of financial literacy was calculated by Roy Morgan Research using the responses to these questions. Where responses were drawn from a scale of options (i.e., very well, fairly well, not very well or not at all), points ranging from 2 to -2 were allocated depending on the level of financial knowledge discerned by the interviewer. Where responses were on a non-rating scale (i.e., true or false), 2 points were awarded for correct answers and -2 for incorrect answers. After summing the scores, all respondents were assigned to financial literacy quintiles, ranging from 1 (lowest quintile of financial literacy scores) to 5 (highest quintile of financial literacy scores).

The analytical technique employed in this study is to specify each respondent's financial literacy quintile as the dependent variable in a regression with demographic, socioeconomic and financial characteristics as predictors. Because the dependent variable (financial literacy quintiles) is discrete (i.e., it can only take a value of 1, 2, 3, 4, or 5) discrete dependent variable techniques are appropriate. This is because linear regression would treat the difference between a 4 and a 3 the same as that between a 3 and a 2, whereas, in fact, they are only a ranking. An alternative is a multinomial logit model. But this would fail to account for the ordinal nature of the dependent variable. That is, financial literacy increases as we move from

1 to 5 through 2, 3, and 4 (Greene, 1997). Accordingly, an ordered logit model is specified. This model best takes account of the nature of the dependent variable.

4. Specification of explanatory variables

The next two sets of information are specified as explanatory variables in the ordered logit regression model. The first of these relates to demographic and socioeconomic characteristics, and the second to financial characteristics. The first set of information is generally comparable to that employed in earlier studies of financial literacy. The second set of information is used to identify financial characteristics as a means of establishing a connection between financial literacy and respondent characteristics beyond these factors.

The set of demographic and socioeconomic variables upon which financial literacy is regressed are first examined. The definition and coding of these dummy variables is detailed in Table 1. While there is no unequivocal rationale for predicting the direction and statistical significance of many of these independent variables, their inclusion is consistent with both past studies of the determinants of financial literacy (as variously defined) and the presumed interests of educators, policy-makers and other parties. For example, Beal and Delpachtra (2003) included gender, household status, age, educational and employment status and time spent in the workforce, whereas Chen and Volpe (1998) added race and nationality, academic discipline and class rank.

The first nine variables relate to the sex, geographical location, ethnic background and age of the respondent. These are used as proxies for characteristics exposing respondents to financial literacy including stage of life cycle, access to labor and credit markets, exposure to marketing and information campaigns, language skills, and the level of financial responsibility. Chen and Volpe (1998, p. 114), for example, found that “. . . the percentages of correct answers from the female participants (50.77%) are lower than those from male participants (57.40%),” as did Goldsmith and Goldsmith (1997). Similarly, Chen and Volpe (1998) concluded that the less (financially) knowledgeable group was also more likely to be younger and female, whereas the Jumpstart Coalition for Personal Financial Literacy (2005) established that Native, African, Hispanic, and Asian Americans scored lower than other (white) students. Negative coefficients are hypothesized for gender, region and language, with age coefficients being negative for younger and older respondents and positive for middle-aged respondents.

The next five variables indicate whether the respondent is non-working and looking for work (unemployed), non-working and a student, non-working and engaged in home duties, non-working and retired, and non-working for any other reason. Beal and Delpachtra (2003) also included variables indicating employed and unemployed respondents. Possible reasons for differences in financial literacy for non-working respondents include lack of exposure to financial transactions such as pay slips and superannuation statements, simpler sources of income, less exposure to work-related literacy campaigns, and fewer synergies between work-related and personal literacy. It is reasoned that all categories of non-working respondents will have lower levels of financial literacy: negative coefficients are hypothesized. Following this 11 categories of occupation are specified. It is generally argued that white

Table 1 Variable definitions and statistics

Variable	Definition	Mean	Standard deviation
Lowest financial literacy	1 if financial literacy score in lowest quintile	19.98	—
Next-to-lowest financial literacy	2 if financial literacy score in next-to-lowest quintile	19.79	—
Middle financial literacy	3 if financial literacy score in middle quintile	20.21	—
Next-to-highest financial literacy	4 if financial literacy score in next-to-highest quintile	19.95	—
Highest financial literacy	5 if financial literacy score in highest quintile	20.07	—
Gender	1 if female; 0 male	50.56	50.00
Region	1 if rural, regional or non-capital city household; 0 metropolitan	37.80	48.49
Language	1 if language spoken most often at home is non-English; 0 English	10.01	30.01
Age 18–24	1 if aged 18–24 years; 0 otherwise	12.80	33.41
Age 25–29	1 if aged 25–29 years; 0 otherwise	9.13	28.81
Age 30–39	1 if aged 30–39 years; 0 otherwise	20.24	40.18
Age 40–49	1 if aged 40–49 years; 0 otherwise	19.59	39.69
Age 50–59	1 if aged 50–59 years; 0 otherwise	15.39	36.09
Age 60–69	1 if aged 60–69 years; 0 otherwise	11.92	32.41
Unemployed	1 if non-working and looking for work (unemployed); 0 otherwise	4.26	20.19
Student	1 if non-working and principally engaged as student; 0 otherwise	3.38	18.08
Home duties	1 if non-working and principally engaged in home duties; 0 otherwise	7.22	25.88
Retired	1 if non-working and principally retired; 0 otherwise	21.03	40.76
Non-worker	1 if non-working and not student, home duties or retired; 0 otherwise	2.37	15.21
Professional	1 if principal occupation is professional; 0 otherwise	11.02	31.32
Owners or executives	1 if principal occupation is business owner or executive; 0 otherwise	1.63	12.68
Small business owner	1 if principal occupation is small business owner; 0 otherwise	4.59	20.94
Sales	1 if principal occupation is sales; 0 otherwise	6.54	24.72
Semi-professional	1 if principal occupation is semi-professional; 0 otherwise	11.95	32.44
Other white collar	1 if principal occupation is other white collar; 0 otherwise	22.13	41.51
Skilled trades	1 if principal occupation is skilled tradesman; 0 otherwise	17.19	37.74
Semi-skilled trades	1 if principal occupation is semi-skilled tradesman; 0 otherwise	11.22	31.56
Unskilled trades	1 if principal occupation is unskilled tradesman; 0 otherwise	7.69	26.65
Farm owner	1 if principal occupation is farm owner; 0 otherwise	1.10	10.43
Farm worker	1 if principal occupation is farm worker; 0 otherwise	0.87	9.31

Continued

Table 1 Continued

Variable	Definition	Mean	Standard deviation
Year 10	1 if highest level of education is 4 th Form/Year 10 or lower; 0 otherwise	28.27	45.04
Year 12	1 if highest level of education is HSC/VCE/6 th Form/Year 12; 0 otherwise	15.76	36.44
Technical	1 if highest level of education completed is technical/commercial/TAFE; 0 otherwise	9.67	29.56
University	1 if highest level of education completed university/CAE; 0 otherwise	25.48	43.58
Single parents	1 if household structure is single parent with children at home; 0 otherwise	6.85	25.26
Couples	1 if household structure is couple with children at home; 0 otherwise	36.27	48.09
Owned outright	1 if residency is owned outright; 0 otherwise	42.56	49.45
Paying off	1 if residency is being paid off; 0 otherwise	33.20	47.10
Rented	1 if residency is being rented; 0 otherwise	22.80	41.96
Income	Total household income (\$000s)	61.84	23.23
Savings	Total household savings incl. superannuation but excluding home value (\$000s)	40.88	24.30
Mortgage debt	Total household mortgage debt (\$000s)	52.75	116.26
Non-mortgage debt	Total household non-mortgage debt (\$000s)	15.38	54.77

collar occupations are associated with higher levels of financial literacy, with some occupations having more reliance on skills included within financial literacy, such as mathematical skills. Positive coefficients are hypothesized for white-collar occupations, especially those involving business management or ownership; negative coefficients are hypothesized for blue-collar occupations, primarily those in semiskilled and unskilled trades.

The next four variables categorize respondents according to the highest level of education attained: namely, 4th Form/Year 10 or lower (corresponding in most Australian states to 11 years of primary and secondary education and the first secondary education qualification), HSC/VCE/6th Form/Year 12 (an additional two years of secondary education necessary for university matriculation), technical/commercial/TAFE certificate or diploma (vocational specific education following either of the above), and university/CAE degree (three-year programs equivalent to university, polytechnic or liberal arts college elsewhere). All other things being equal, mathematical and language literacy skills attained in secondary and tertiary education should be useful for the purposes of financial literacy, with higher levels of educational attainment associated with higher financial literacy. Positive coefficients are hypothesized.

The following two variables indicate whether the household structure is a single parent or a couple with children at home. The argument is single parent households are at most risk from a lack of financial literacy skills. Finally, the next three variables indicate whether the principal residence is owned outright, being bought or rented. It is generally the case that a residential mortgage is the largest financial transaction entered into by most Australian households so that experience with dealing with such products may serve to improve financial literacy, especially in the context of budgeting, saving and spending and consumer

rights and responsibilities. A positive coefficient is hypothesized for respondents who own outright or are buying their own home.

The final four variables in Table 1 are quantitative variables for household income, investments and debt. The basic hypothesis is that financial literacy should increase with exposure to financial service markets. By comparison, Chen and Volpe (1998) and Beal and Delpachtra (2003) specified personal income alone. The financial variables are household income, household savings (including superannuation but excluding home value), household mortgage debt and household non-mortgage debt in thousands of Australian dollars. A positive coefficient is hypothesized when financial literacy is regressed against all four variables.

5. Empirical findings

The estimated coefficients and standard errors of the parameters for the ordered logit regression are provided in Table 2. The standard errors and *p*-values employ corrections for heteroskedasticity. Care must still be taken when interpreting estimated coefficients in this model. While a positive (negative) coefficient indicates a shift in likelihood to a rightward (leftward) cell, the impact on the intervening cells are ambiguous and depend on the particular density functions. Nevertheless, some comment can be made on the levels of significance of the probability density shifts, and the interpretative limitations overcome by the calculation of marginal effects. Also included in Table 2 is the Nagelkerke R^2 as an analogue for that used in the linear regression model (this measure is often used for logit regression), the Hannan-Quinn criteria as a guide to model selection, the log-likelihood ratio statistic as a test of the null hypothesis that all slope coefficients are zero, and the Pearson goodness-of-fit test for model misspecification.

A model employing the entire set of explanatory variables was initially estimated (columns 2, 3, and 4), followed by a refined specification (columns 5, 6, and 7) obtained by redundant variable testing. The refined model is preferred in terms of the trade-off between comprehensiveness and complexity (given the lower value of the Hannan-Quinn criteria) so only the refined model is discussed in detail. This allows a focus on the most significant factors affecting financial literacy. Regardless, both the full and refined models appear appropriate to the data examined. The values of the Nagelkerke R^2 appear adequate for cross-sectional data (ranging between 0 and 1). The log-likelihood ratio tests reject the null hypotheses that all slope coefficients are zero and the Pearson goodness-of-fit tests fail to reject the null hypotheses of no functional misspecification (that is, there is not a significant difference between the observed and predicted cell counts) so we may conclude that both models are appropriate for predicting financial literacy in Australian adults.

In the refined model, the estimated coefficients for 22 variables are significant at the 10% level of significance or lower and conform to a priori expectations. The estimated coefficients indicate that female, non-English speaking, unemployed and non-working respondents, farm workers, and persons whose highest level of educational attainment is Year 10, Year 12 or technical education have a greater likelihood of a low level of financial literacy. Being female increases the log odds of a low level of financial literacy by 0.57, while speaking a language

Table 2 Parameter estimates and statistics

Variable/statistic	Full model			Refined model		
	Estimated coefficient	Standard error	p-value	Estimated coefficient	Standard error	p-value
Gender	-0.536	0.069	0.000	-0.570	0.066	0.000
Region	0.006	0.066	0.929	—	—	—
Language	-0.397	0.105	0.000	-0.371	0.103	0.000
Age 18–24	-0.125	0.197	0.526	-0.114	0.143	0.426
Age 25–29	0.047	0.195	0.808	-0.020	0.140	0.884
Age 30–39	0.419	0.184	0.023	0.359	0.125	0.004
Age 40–49	0.565	0.184	0.002	0.547	0.127	0.000
Age 50–59	0.719	0.171	0.000	0.783	0.132	0.000
Age 60–69	0.780	0.146	0.000	0.811	0.143	0.000
Unemployed	-0.330	0.173	0.056	-0.344	0.170	0.043
Student	0.244	0.201	0.225	—	—	—
Home duties	-0.127	0.124	0.307	—	—	—
Retired	-0.208	0.146	0.155	—	—	—
Non-worker	-0.827	0.236	0.001	-0.833	0.236	0.007
Professional	1.179	0.202	0.000	1.159	0.199	0.000
Owners or executives	0.824	0.307	0.007	0.808	0.301	0.000
Small business owner	0.815	0.228	0.000	0.812	0.225	0.005
Sales	0.750	0.203	0.000	0.731	0.202	0.000
Semi-professional	0.545	0.195	0.005	0.538	0.190	0.072
Other white collar	0.885	0.178	0.000	0.867	0.174	0.648
Skilled trades	0.330	0.181	0.069	0.322	0.179	0.719
Semi-skilled trades	0.097	0.186	0.603	0.084	0.184	0.044
Unskilled trades	-0.023	0.196	0.907	-0.070	0.195	0.854
Farm owner	0.594	0.318	0.062	0.643	0.320	0.000
Farm worker	-0.078	0.416	0.851	-0.080	0.435	0.103
Year 10	-0.748	0.097	0.000	-0.781	0.095	0.078
Year 12	-0.147	0.101	0.146	-0.164	0.100	0.037
Technical	-0.187	0.118	0.113	-0.207	0.117	0.000
University	0.213	0.098	0.030	0.203	0.097	0.000
Single parents	-0.179	0.132	0.175	—	—	—
Couples	-0.170	0.078	0.029	—	—	—
Owned outright	0.129	0.253	0.611	—	—	—
Paying off	0.012	0.256	0.961	—	—	—
Rented	-0.328	0.259	0.205	—	—	—
Income	0.006	0.002	0.000	0.006	0.001	0.000
Savings	0.006	0.001	0.000	0.007	0.001	0.000
Mortgage debt	0.002	0.000	0.000	0.002	0.000	0.000
Non-mortgage debt	0.000	0.001	0.463	—	—	—
Lowest financial literacy	-0.659	0.347	0.057	-0.503	0.218	0.021
Next-to-lowest financial literacy	0.479	0.346	0.167	0.625	0.217	0.004
Middle financial literacy	1.456	0.347	0.000	1.595	0.218	0.000
Next-to-highest financial literacy	2.613	0.349	0.000	2.746	0.221	0.000
Log-likelihood ratio	918.935	—	0.000	885.521	—	0.000
Pearson goodness-of-fit	13843.612	—	0.822	12829.179	—	0.850
Hannan-Quinn criteria	3.009	—	—	3.007	—	—
Nagelkerke R^2	0.238	—	—	0.230	—	—

Note: Huber/White heteroskedasticity robust standard errors and p -values reported; literacy category parameters are limit points; the null hypothesis for the log-likelihood ratio test statistic is no difference between an intercept only and estimated model; the null hypothesis for the Pearson goodness-of-fit test is that the observed data are consistent with the fitted model; the Hannan-Quinn criteria reflects the trade-off between model complexity and comprehensiveness with lower values indicating a better model; the Nagelkerke R^2 is analogous to that used in the linear regression model.

other than English at home or a Year 10 education or lower increases the log odds of a low level of financial literacy by 0.37 and 0.78, respectively. Put differently, the odds (e^x) of a low level of financial literacy if female is 1.77 times the estimated odds for males, 1.45 times the estimated odds for English-speaking respondents if non-English speaking, and 2.18 times the estimated odds for other education levels if the highest level attained is Year 10 or lower.

On the other hand, being aged 40 to 49, 50 to 59, and 60 to 69 increases the likelihood of higher financial literacy (log odds of 0.81 and odds of 2.25 times for the 60–69 years age group over other age groups), as does being a professional, owner or executive, small business owner, semiprofessional or sales (log odds of 1.16 and odds of 3.19 times for professionals over other occupations) and having a university education (log odds of 0.20 and odds of 1.23 times for university graduates over other levels of educational attainment). The estimated coefficients on income, savings, and mortgage debt are positive and significant indicating financial literacy increases non-linearly, but monotonically, with dollar value. Moreover, they also indicate that an increase in the dollar value of savings increases the log odds of higher financial literacy more than income and mortgage debt and, in turn, that the log odds of income are greater than mortgage debt.

One potential criticism to this point is that with such a large number of tests, the probability of a Type I error (incorrectly identifying a significant coefficient in this instance) has risen because of chance producing the observed state of events. Bonferroni correction [see Uitenbroek (1997) for discussion and tools] concerns the question if, in the case of doing more than one test in a study, the alpha level should be adjusted downward to consider such chance capitalization. Bonferroni correction for the refined model in Table 2 results in lowering the critical p -value (at the 0.10 level overall) to 0.0033 (Uitenbroek, 1997). Coefficients that were significant (at the 0.10 level or lower) before the correction, and which are now no longer significant, are aged 30–39, unemployed, non-workers, small business owners, semiprofessional, semiskilled trades, and Year 10 and Year 12 education. The remaining 12 coefficients are still significant. Clearly, while there is a propensity for chance capitalization, notwithstanding the validity of Bonferroni correction, the greater number of estimated coefficients is still significant. Indeed, while the probability of a Type I error improves with this correction, that of a Type II error (failing to identify a significant coefficient) has increased dramatically.

To facilitate further comparability, marginal effects are calculated. These indicate the marginal effect of each variable on the probability of each category of financial literacy (ranked from 1 to 5 in quintiles, with 5 being the highest level of financial literacy and 1 the lowest). These are presented in Table 3. To calculate the marginal effects for the continuous variables, the standard normal density function is used. Note that the marginal effects sum to zero; this follows from the requirement that the probabilities add to one. However, this approach is not appropriate for evaluating the marginal effects of dummy variables. To calculate the marginal effect of a dummy variable, the probabilities that result when the variable takes its two different values (i.e., 0 and 1) are compared with those that occur with all other variables held at their sample means.

Consider gender. Being female decreases the probability of being in the highest category of financial literacy by 7.8% and the next-to-highest category by 5.5%. There is then only a small probability of being in the middle level of financial literacy (less than one percentage)

Table 3 Marginal effects

Variable	Change	Lowest financial literacy	Next-to-lowest financial literacy	Middle financial literacy	Next-to-highest financial literacy	Highest financial literacy
Gender	0 to 1	0.079	0.055	0.001	-0.055	-0.078
Language	0 to 1	0.056	0.033	-0.006	-0.038	-0.046
Age 18–24	0 to 1	0.016	0.011	0.000	-0.011	-0.015
Age 25–29	0 to 1	0.003	0.002	0.000	-0.002	-0.003
Age 30–39	0 to 1	-0.046	-0.036	-0.005	0.034	0.053
Age 40–49	0 to 1	-0.067	-0.055	-0.010	0.049	0.084
Age 50–59	0 to 1	-0.090	-0.079	-0.023	0.064	0.128
Age 60–69	0 to 1	-0.091	-0.081	-0.027	0.064	0.135
Unemployed	0 to 1	0.052	0.031	-0.006	-0.035	-0.042
Non-worker	0 to 1	0.146	0.059	-0.033	-0.085	-0.087
Professional	0 to 1	-0.118	-0.113	-0.051	0.074	0.208
Owners or executives	0 to 1	-0.085	-0.081	-0.033	0.058	0.141
Small business owner	0 to 1	-0.087	-0.082	-0.031	0.060	0.140
Sales	0 to 1	-0.081	-0.074	-0.025	0.057	0.122
Semi-professional	0 to 1	-0.065	-0.054	-0.012	0.047	0.084
Other white collar	0 to 1	-0.102	-0.086	-0.023	0.072	0.139
Skilled trades	0 to 1	-0.041	-0.032	-0.004	0.030	0.047
Semi-skilled trades	0 to 1	-0.011	-0.008	0.000	0.008	0.012
Unskilled trades	0 to 1	0.010	0.007	0.000	-0.007	-0.009
Farm owner	0 to 1	-0.071	-0.065	-0.022	0.051	0.107
Farm worker	0 to 1	0.011	0.008	0.000	-0.008	-0.011
Year 10	0 to 1	0.120	0.068	-0.013	-0.079	-0.096
Year 12	0 to 1	0.023	0.016	-0.001	-0.017	-0.022
Technical	0 to 1	0.030	0.019	-0.002	-0.021	-0.027
University	0 to 1	-0.027	-0.020	-0.001	0.020	0.029
Income	Marginal	-0.001	-0.001	0.000	0.001	0.001
Savings	Marginal	-0.001	-0.001	0.000	0.001	0.001
Mortgage debt	Marginal	0.000	0.000	0.000	0.000	0.000

Note: Marginal effects from the refined model in Table 2 indicate the effect of each outcome on the probability of being in a given literacy category; the standard normal density function is used for the continuous variables; the marginal effects for the dummy variables are analyzed by comparing the probabilities that result when the variable takes its two different values with those that occur with the other variables held at their sample means; probabilities for all categories sum to zero.

with a much higher probability of being in the lowest (7.9%) and next-to-lowest (5.5%) categories. By comparison, consider where a language other than English is mostly spoken at home. This reduces the probability of being in any but the lowest and next-to-lowest financial literacy quintiles (where it increases by 5.6 and 3.3%, respectively). Lastly, a university education decreases the probability of the lowest financial literacy by 2.7%, the next-to-lowest by 2.0% and the middle by 0.1%, and shifts these to a greater probability of the next-to-highest and highest financial literacy by 2.0 and 2.9%, respectively. Using the marginal effects in Table 3, it appears that being professional or a small business owner or executive has the greatest positive impact on having the highest literacy. Conversely, having only a Year 10 education or being female has the greatest impact on having the lowest financial literacy.

Table 4 presents the predicted and cumulative probabilities for three specific variables

Table 4 Selected predicted and cumulative probabilities

Type	Variable	Value	Lowest financial literacy	Next-to-lowest financial literacy	Middle financial literacy	Next-to-highest financial literacy	Highest financial literacy
Predicted probability for given category	Gender	0	0.129	0.185	0.233	0.245	0.207
		1	0.208	0.240	0.234	0.190	0.129
	Language	0	0.160	0.211	0.238	0.223	0.169
		1	0.216	0.244	0.232	0.184	0.123
	Non-worker	0	0.162	0.212	0.238	0.221	0.167
		1	0.309	0.271	0.205	0.136	0.080
Cumulative probability for categories < or = given category	Gender	0	0.129	0.314	0.547	0.793	1.000
		1	0.208	0.447	0.681	0.871	1.000
	Language	0	0.160	0.371	0.608	0.831	1.000
		1	0.216	0.460	0.692	0.877	1.000
	Non-worker	0	0.162	0.375	0.612	0.833	1.000
		1	0.309	0.580	0.784	0.920	1.000

Note: Predicted probabilities from the refined model in Table 2 calculate the predicted probabilities at the specified values with other variables held at their base values, cumulative probabilities are the sum of predicted probabilities for categories less than or equal to given category.

assuming that all others are held at their base values. These variables—gender, non-English speaking background, and non-worker—are selected because they represent groups that are very often argued to have low levels of financial literacy [see, e.g., Williams-Harold & Smith (1999), Chen & Volpe (2002), Tossaint-Comeau (2003) and Jackson (2003)]. Once again, consider gender. The probability of being in the lowest financial literacy category is 20.8% for females as compared to 12.9% for males. Conversely, the probability for the highest level of financial literacy is just 12.9% for females and 20.7 for males. Similarly, speaking a language other than English at home increases the probability of being in the lowest financial literacy from 16.0 to 21.6%, and decreases the probability of being in the highest category of literacy from 16.9 to 12.3%. Finally, being a non-worker for any reason other than being unemployed nearly doubles the probability of having the lowest financial literacy (from 16.2–30.9%) and more than halves the probability of being in the highest financial literacy category (from 16.7–8.0%).

As a final requirement, the ability of the model to accurately predict financial literacy is examined. Table 5 provides the results for the refined model with the predicted number in each of the five categories of financial literacy. To start with, consider the predictions for the lowest category of financial literacy. Of the 709 respondents in this financial literacy quintile, the estimated model predicted correctly predicts 389 as being in this financial literacy category and incorrectly predicts 138 as being in the next-to-lowest, 80 in the middle, 66 in the next-to-highest and 36 in the highest categories of financial literacy. This represents the correct prediction of 54.87% of cases and the incorrect prediction of 45.3% of cases. By comparison, predicting the lowest category of financial literacy based on the sample proportion (a constant probability model) would yield just 141 correct predictions (19.9%) and 568 incorrect predictions (80.1%). Accordingly, the estimated model has an absolute improvement of 174.60% over the constant probability model (in terms of the number of correct

Table 5 Observed and predicted values

Observed and predicted	Number and percentage	Lowest financial literacy	Next-to-lowest financial literacy	Middle financial literacy	Next-to-highest financial literacy	Highest financial literacy	Total
Observed	Number	709	702	717	708	712	3548
	Percentage	19.98	19.79	20.21	19.95	20.07	100.00
Lowest financial literacy	Number	389	222	194	105	59	969
	Percentage	54.87	31.62	27.06	14.83	8.29	27.31
Next-to-lowest financial literacy	Number	138	123	113	86	62	522
	Percentage	19.46	17.52	15.76	12.15	8.71	14.71
Middle financial literacy	Number	80	123	134	140	85	562
	Percentage	11.28	17.52	18.69	19.77	11.94	15.84
Next-to-highest financial literacy	Number	66	114	130	140	140	590
	Percentage	9.31	16.24	18.13	19.77	19.66	16.63
Highest financial literacy	Number	36	120	146	237	366	905
	Percentage	5.0	17.09	20.36	33.47	51.40	25.51
Total correct	Number	389	123	134	140	366	1152
	Percentage	54.87	17.52	18.69	19.77	51.40	32.47
Total incorrect	Number	320	579	583	568	346	2396
	Percentage	45.13	82.48	81.31	80.23	48.60	67.53
Improvement	Absolute	174.60	-11.46	-7.53	-0.88	156.13	62.34
	Relative	43.66	-2.83	-1.91	-0.22	39.20	15.59

Note: Number is the predicted literacy by category; percentage is predicted literacy by category as a percentage of the observed category. All predictions correspond to the refined model in Table 2. Percentage correct is the number of correct predictions as a percentage of the total observed. The absolute improvement is the number and percentage improvement in correct predictions over the probability of correctly identifying responses on the basis of their proportion in the sample. For example (with rounding to the nearest person and no decimal places), 709 persons (20%) are in the lowest category of financial literacy and the sample probability would thus correctly predict 142 persons (0.20×709). Because the estimated model correctly predicts a further 247 persons in this category ($389 - 142$) this is a 174% absolute improvement. The relative improvement is the number and percentage improvement in incorrect predictions over the probability of incorrectly identifying values on the basis of their proportion in the sample. Again with the lowest category of financial literacy, the estimated model incorrectly predicts 320 persons while the sample probability incorrectly predicts 567 ($709 - 142$). Because the estimated model incorrectly predicts 247 fewer persons, this represents a 44% relative improvement.

predictions) and a relative improvement of 43.60% (in terms of the number of incorrect predictions).

Predictions for the highest level of financial literacy deliver a comparable level of correct and incorrect outcomes. The model correctly predicts 366 respondents (from 712) as being in the highest financial literacy, and incorrectly predicts 140 as the next-to-highest literacy, 85 as middle literacy, 62 next-to-lowest literacy and 59 as the lowest literacy. This means the model correctly predicts 51.40% of respondents: an absolute improvement of 156.13% and a relative improvement of 39.20% over the constant probability model. However, the estimated model is not particularly accurate at predicting outcomes in the next-to-lowest, middle and next-to-highest financial literacy categories, underperforming the constant probability model in absolute terms by between 0.88 and 11.46% and in relative terms by 0.22 and 2.83%. Nonetheless, the estimated model correctly predicts 32.47% of all respondent's

financial literacy; an absolute improvement of 62.34% and a relative improvement of 15.59% over the constant probability model.

6. Concluding remarks and policy recommendations

This study uses ordered logit models to investigate the role of demographic, socioeconomic and financial characteristics in determining financial literacy in Australian adults. It has been shown that financial literacy in Australia varies strongly according to some demographic and socioeconomic characteristics. All other things being equal, males, older persons, people whose occupations are professional, business owners and executives, small business and farm owners, and semiskilled trades, those with a university education and those with higher levels of income, savings and mortgage debt have a greater likelihood of a high level of financial literacy.

Conversely, females, the unemployed and other non-working persons, people with the occupation of farm worker, and those whose highest educational level is Year 10 or lower, Year 12 or technical college have a greater likelihood of a low level of financial literacy. These results give clear guidance as to how and where financial literacy programs can best be designed and targeted. It has also been shown that financial literacy may increase, albeit non-linearly, with the dollar value of income, savings and mortgage debt in each household. This at least allays fears that currently high levels of mortgage debt are concentrated in the hands of persons who may not be knowledgeable of the position in which they have placed themselves.

Generally, the models specified satisfactorily predict financial literacy outcomes. However, they are most accurate at predicting the very lowest and the very highest levels of financial literacy. While a natural focus is identifying persons with low levels of financial literacy, the inability to predict very accurately the financial literacy of the middle sixty percentage of the population remains a challenge. Certainly, predictive power could be improved with refinement of the set of demographic, socioeconomic and financial factors, and covariates. The highest level of educational attainment (university) is included in this study, but no details are known about the subjects studied or the level of performance (other than completion). Likewise, while several financial covariates, including income, savings, and debt, are included, few details are known about their composition and whether this contributes differently to financial literacy over time. For example, financial literacy may be higher for those who have had a series of mortgages rather than a single mortgage in their lifetime, or savings portfolios that include equity, debt and property may be associated with greater knowledge than cash deposited into a bank account. Unfortunately, it is not possible to add such refinements using the current data set.

There are, of course, a number of additional limitations in this study, all of which suggest further areas of research. To the author's knowledge, there has been no attempt to link financial literacy with financial behavior and actual financial outcomes. It is quite possible that some aspects of financial literacy are more or less significant in an economic sense in determining good or bad financial behavior, and consequently, good or bad financial outcomes. One area of research could then focus on the components of financial literacy to find

Appendix

Questions contributing to the financial literacy scoring

- 1) A person keeps their PIN number on a piece of paper in their wallet, along with their ATM or bankcard. If the wallet is stolen and the card and PIN number are used to take money from an account, who is liable for the lost money?
- 2) An investment with a high return is likely to have higher than average risk. True, false.
- 3) As far as you are aware is superannuation taxed at a lower, higher or the same rate than other investments?
- 4) Consumers have duty of honest disclosure when taking out a financial service or product and may face penalties for not doing so. Would you strongly agree, agree, disagree or strongly disagree with this statement?
- 5) Do you receive a pay advice? If so, do you read your pay advice at all and how well do you understand it? Very well, fairly well, not very well, not at all, can't say.
- 6) Do you receive _____? If so, how well do you understand these _____? Read and understand very well, read and understand fairly well, read but don't understand very much, read but don't understand at all, don't read, can't say.
- ATM receipts
bank statements
credit card or store card statements
insurance policy or renewal notices
investment statements
loan statements
superannuation statements
- 7) Employees cannot make Superannuation payments additional to any payments by their employer. True, false.
- 8) Employers are required by law to make superannuation payments on behalf of employees. True, false.
- 9) How confident are you that you would know how to make an effective complaint against a bank or financial institution? Are you very confident, confident, not very confident or not at all confident?
- 10) How well do you know about the fees and charges that apply to _____? Very well, fairly well, not very well, not at all, can't say.
- bank accounts
credit cards
EFTPOS
Loans
Mortgages
store cards
telephone banking
your own bank's ATMs
redraw facility
- 11) I am clear about my rights if I have a problem with a financial institution. Would you strongly agree, agree, disagree or strongly disagree with this statement?
- 12) I don't think it really matters about superannuation or planning and saving for retirement because the government will make up the gap. Strongly disagree, disagree, uncertain, agree, strongly agree.
- 13) I'm going to read out a list of financial terms. For each one, please tell me whether you understand the term very well, fairly well, not very well or not at all.
- charge-back on a credit card
co-borrower
bank check
broker
capital guarantee
master trust
- 14) If a lottery win of \$18,000 is shared equally between six people, how much will each person receive?
- 15) If a person pays for goods valued at \$165 with four \$50 notes, how much change would they receive?
- 16) If a person spent \$13 on lunch one day but only \$8 the next day, how much did they spend on lunch over the two days?
- 17) If a person takes home \$1,400 a month and 50% of this goes on rent, what is their monthly rent?
- 18) If a refrigerator priced at \$1,000 is discounted by 10% at a sale, how much would it cost?
- 19) If each of 20 share-holders was paid a dividend of \$350, what is the total amount paid out in dividends?
- 20) If providers of professional advice about financial products may receive a commission as a result of their advice, they are required by law to tell this to their clients. True, false.
- 21) If two people jointly take out a loan, which one of the following most accurately describes the responsibility for repayment of the loan? Both persons are responsible for repayment of the entire loan, each person is responsible for repayment of half the loan, only one person must be responsible for repayment of the entire loan, the older of the two persons is responsible for the repayment of the entire loan, can't say.
- 22) If you experienced difficulty with a banking-type product, such as a credit card or loan, which you were unable to resolve with the provider of that service, who would you contact? Who else? Anyone else?
- 23) If you experienced difficulty with a _____ that you were unable to resolve directly, who would you contact? Who else? Anyone else?
- a) financial planner or adviser
b) managed fund or superannuation fund
c) insurance company
- 24) If you, as a primary holder of a credit card, arrange for a second person to be provided with a card in your name, which one of the following most accurately describes your responsibility for debt incurred by that person on the card? You are entirely responsible for any debt the other person incurs of the card, you and the other person are each responsible for half the total debt on the card, you are only responsible for the debt incurred on the card by the other person if they are less than 18 years old, you are not responsible for any debt the other person incurs on the card – they are, can't say
- 25) Nearly all aspects of the financial services industry are covered by government legislation that protects consumers. Would you strongly agree, agree, disagree or strongly disagree with this statement?
- 26) Only licensed financial businesses are allowed to sell financial products. True, false.
- 27) Providers of financial products and services have a legal duty to provide clear information to consumers. Would you strongly agree, agree, disagree or strongly disagree with this statement?
- 28) The Australian Securities and Investments Commission checks the accuracy of all prospectuses lodged with it. True, false.
- 29) Thinking about debts and borrowing money, which one of the following is most likely to give someone a bad credit rating? Being more than 60 days late with the minimum payment on a credit card, taking out a second mortgage to buy your own home, borrowing from an organization other than a bank, asking the bank for an increased overdraft, can't say
- 30) Thinking about investing over five years or more, how important do you consider diversification of your funds across different types of investments? Very important, quite important, of some importance, not at all important, can't say.
- 31) Thinking about superannuation or investments, how important do you consider tax implications when making decision? Very important, quite important, of some importance, not at all important, can't say.
- 32) What percentage of an employee's salary is an employer required by law to make on behalf of an employee?
- 33) Which of the following is most important when arranging superannuation or an investment. The amount of return left after the fees are taken out, the return, the fees, the per-unit cost, can't say.
- 34) Which one of the following is the most accurate statement about fluctuations in market value? Short-term fluctuations in market value can be expected, even with good investments, good investments are always increasing in value, investments that fluctuate in value are not good in the long-term, can't say.
- 35) Which one of the following would you recommend for an investment advertised as having a return well above market rates and no risk? Consider it 'too good to be true' and not invest, invest lightly to see how it goes before investing more heavily, invest heavily to maximize your return, can't say.
- 36) Would you find checking or reconciling a(n) _____ very easy, easy, difficult or very difficult to do?
- a) bank statement
b) annual statement for a superannuation fund

which are most and least critical to financial success. These could be used to weight different measures of financial literacy. The internal reliability of typical financial literacy questions could also be examined within the scope of this research.

Another extension could focus more broadly on the possible sources of financial knowledge. For example, most studies in this area employ standard measures of educational attainment, such as completion of secondary school or university. It is likely that financial literacy is gained from very many other sources, including the Internet, magazines (especially consumer associations), television, and newspapers, along with information packages provided by financial institutions and regulators. Further work should find some way of gathering details on these direct and indirect sources of information. Finally, rather than focusing on financial literacy and financial services markets as a whole, attempts could be made to examine particular financial services products in more detail. For instance, valuable insights could be had from studies that choose to concentrate on financial literacy as it relates specifically to superannuation, consumer banking and mortgages.

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