

Financial literacy, attitudes, and financial satisfaction: an assessment of credit card debt-taking behavior of Australians

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Abstract

Unpaid credit card debt can be problematic; people should avoid it where possible. Unlike prior studies, this article examines the relative strength of the association of financial literacy, attitude toward balancing spending and savings, and financial satisfaction with credit card debt-taking behavior by analyzing the 2016 wave of the Household, Income and Labor Dynamics in Australia (HILDA) Survey. We find that higher financial literacy is associated with less credit card debt. However, incorporating the other factors reduces this relationship. Our results advise policy-makers to include components in the financial literacy curricula that encourage savings attitude to reduce problematic debt-taking. © 2020 Academy of Financial Services. All rights reserved.

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1. Introduction

Credit cards provide convenient shopping facility enabling consumers to utilize their future income. However, in case of future income volatility, the repayment might be delayed allowing financial institutions to charge high interest on the due amount. Recent research

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undertakings highlight factors associated with credit card debt. Gorbachev and Luengo-Prado (2019) show that those with savings in low-interest liquid assets and no credit card debt are more financially literate than those who simultaneously hold low-interest liquid assets and high-interest credit card debt. Lin, Revindo, Gan, and Cohen (2019) find that those who prefer to make payments using a card are more likely to have more credit card debt as compared with those who use other modes of payments. They find that a person's attitude towards money is more related to credit card debt than the person's demographic factors, including gender, education level, and employment type. In this article, we extend research on credit card debt. We explore the relative strength of the association of financial literacy, attitude towards balancing spending and savings, and financial satisfaction with credit card debt-taking behavior in Australia.

Credit card use is topical in Australia because the Australian Securities and Investments Commission (ASIC, 2018) explicates that credit card debt is continuously rising. According to the Australian Bureau of Statistics (ABS), 74% of Australian households held debt in 2015–2016 (ABS, 2017b) and credit card debt was the most common type of household debt with 55% of households holding it. According to the ASIC (2018), more than 14 million credit card accounts (with 21.4 million cards) exist in Australia at June 2017 with a total outstanding balance of almost \$45 billion. Out of the total outstanding balance of \$45 billion, the overdue amount is \$31.7 billion being eligible for interest charges. Accordingly, financial institutions charged almost \$1.5 billion in annual fees and late payment surcharges to the credit card users in 2016–2017 (ASIC, 2018). The ASIC (2018) shows that 18.5% of credit card holders are in a problematic condition due to either severe/serious delinquency or having persistent debt or low repayments. From 2003–2004 to 2015–2016, the ABS (2017a) found an increase of 41% in the credit card debt of middle and high wealth households and a 25% increase in the credit card debt of low wealth households.

Households, like businesses, can access many types of debt including mortgages, personal loans, credit card debt, student loans, vehicle loans, and so forth (Cassells, Duncan, Kelly, & Ong, 2015). Understandably, not all types of debt have a negative impact on households. In the academic literature, a method of distinguishing whether a debt is problematic is whether it has been collateralized (secured by an asset) or not (Berger, Collins, & Cuesta, 2016; Harari, 2018; Tippett, 2010). Dunn and Mirzaie (2016) contend that non-collateralized debt is more stressful for households than collateralized debt. When households do not have any collateral to surrender, lenders or collection agencies can adopt aggressive behavior in collecting debt, and this increases stress felt by households (Dunn & Mirzaie, 2016). Among non-collateralized debt types (that include credit card debt, student loans, pay day loans etc.), Dunn and Mirzaie (2012, 2016) argue that credit card debt is relatively more stressful and problematic due to the added penalties (high interest rates) in addition to the aggressive behavior of the collection agencies. Furthermore, debt taken beyond the means to repay it also becomes stressful and problematic (Cecchetti, Mohanty, & Zampolli, 2011). This implies that non-collateralized debt (especially credit card debt) and over indebtedness should be avoided as they can have negative consequences such as exorbitant repayments and interest costs that become burdensome for households to meet. Other

negative consequences of problematic debt and over indebtedness include health problems (Jacoby, 2002), mental-illness leading to the attempt of suicide (Turunen & Hiilamo, 2014), depression and psychological disorder (Richardson, 2013), heart malfunction, ulcers, and migraine headaches (Jarl, Cantor-Graae, Chak, Sunbaunat, & Larsson, 2015). Therefore, this article specifically researches credit card debt-taking because it is a problematic type of debt-taking.

Credit cards facilitate purchasing of household goods with the option of “buy now, pay later.” However, when income is volatile, households often utilize savings to meet their consumption needs (Kaplan & Violante, 2014). A risky income stream and fewer savings may result in an increased credit card repayment liability. An overdue credit card amount often leads to a high associated interest charge. Research shows that those who have fewer savings and are less financially satisfied, are more vulnerable to economic shocks and tend to access more credit (Reyers, 2019). Further, those who are less financially literate and are not aware of the credit market terms, are most likely to take on credit card debt. Research associates low financial literacy with a high probability of taking on debt (Brown, Grigsby, van der Klaauw, Wen, & Zafar, 2016; Disney & Gathergood, 2013; Norvilitis et al., 2006; Ottaviani & Vandone, 2018). However, to our knowledge, little research is published that empirically explores the relative weight of the association of financial literacy, attitude towards balancing spending and savings, and financial satisfaction with credit card debt-taking behavior. Unlike prior studies, this study researches the relative weight of the association and analyzes the 2016 wave of Household, Income, and Labor Dynamics in Australia (HILDA) Survey, which reflects Australian household financial behavior and many other household characteristics.¹

In our empirical analysis, we find a negative association between financial literacy and credit card debt-taking behavior. In the sensitivity analysis, where we include respondents’ attitude towards balancing spending and savings and respondents’ financial satisfaction, the association between financial literacy and credit card debt-taking behavior remains negative. A comparison of the various factors using the average marginal effects (AMEs) reveals that attitude toward spending and savings has the strongest relationship with credit card debt-taking behavior, followed by financial satisfaction and financial literacy, respectively. This implies that financial literacy has a relatively weaker magnitude of relationship with credit card debt-taking behavior, yet remains a significant factor to have an association with credit card debt-taking behavior. Furthermore, the analysis shows that the concept of simple interest (one of the five financial literacy concepts) has a highly negative association with credit card debt-taking behavior. The research has policy implications suggesting that financial education has some, but limited association. Financial literacy curricula that include financial behaviors, such as attitude towards balancing spending and savings will be more influential at reducing credit card debt-taking behavior.

The rest of the article reviews relevant prior studies, explains the data and method of data analysis, presents empirical results, discusses these results, and concludes with a direction for future research.

2. Literature review

2.1. Financial literacy and financial decisions

As debt-taking is a part of household financial decisions, our review includes studies that are related to explaining the relationship between financial literacy and financial decisions. Literature specifically related to credit card debt-taking behavior is considered, but few studies focus on this.

Remund (2010, p. 284) provides a synthesized definition of financial literacy in the following words:

“Financial literacy is a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through appropriate, short-term decision-making and sound, long-range financial planning, while mindful of life events and changing economic conditions.”

This definition addresses that financial literacy helps to improve household financial decisions (Alhenawi & Elkhali, 2013). One research avenue has been to investigate if financial literacy is related to improved financial planning for retirement. Lusardi and Mitchell (2007) survey those who are above 50 years of age to know about their financial literacy skills and retirement preparedness. They find that most of the respondents who are unable to answer the basic financial literacy questions are unprepared for their retirement. As a result, they conclude that being financially illiterate may be a reason behind retirement unpreparedness. Martin and Finke (2014) find that the use of a financial planner has a large impact on retirement preparedness. Moreover, van Rooij, Lusardi, and Alessie (2011) analyze if financial knowledge and retirement planning are associated with each other. They utilize data from the Netherlands and find a strong positive association between financial knowledge and retirement planning.

Financial literacy is related to other apt financial behaviors. Worthington (2006) uses Australian data to explore the association of demographic, socioeconomic, and financial factors with the financial literacy of Australian households. Among other results, he finds a positive association between higher levels of mortgage debt and financial literacy. In addition, he also finds a positive association between higher levels of household savings and financial literacy. Similarly, Davutyan and Öztürkcal (2016) study Turkish households and find that an increase in literacy level increases the probability of saving more for unseen future needs and, therefore, reducing the use of debt in emergency situations. Moreover, Grinstein-Weiss, Spader, Yeo, Key, and Freeze (2012) contend that financial literacy plays a pivotal role in shaping the future financial behavior of individuals. They find that those who are taught financial literacy and financial skills because their childhood are more likely to avoid loan delinquency in the future. Alhenawi and Elkhali (2013) analyze data from the United States and find that those who acquire financial knowledge through formal academic experience secure developed financial planning skills. However, their results also suggest that those who accumulate financial knowledge over time do not have good financial planning skills.

Lusardi and Tufano (2015) develop a survey to test debt literacy skills. They survey individuals from the United States and report a low debt literacy level of the respondents. They

further contend that those who do not know the concept of compound interest are more likely to be overindebted. The results are consistent after controlling for demographic factors as well. Furthermore, Huston (2012) uses data of American consumers to analyze the relationship between financial literacy and the cost of borrowing via mortgage loans and credit cards. Their results suggest that financial literacy skills equip a consumer with the ability to minimize the cost of borrowing for both mortgage loans and credit cards.

Some studies specifically investigate an association between financial literacy and credit card debt. Norvilitis et al. (2006) study college students from the United States and find that lack of financial knowledge is related to the credit card debt. Brown et al. (2016) use American data of young consumers and find that financial education improves repayment behavior and decreases debt dependence. Robb (2011) studies credit card usage behavior of American students and concludes that those with high financial knowledge use their credit cards more responsibly. In summary, extant of the literature suggests that individuals are more likely to engage in high-cost credit and problematic debt (especially credit card debt) when they are less exposed to the credit market terms (e.g., simple interest, compound interest etc.).

Worthington (2013) states that the concept of financial literacy has been unknown to Australians until the end of the 20th century. However, with the start of the 21st century, efforts were started to make Australians financially literate. State-level interventions were also introduced, and the Australian government initiated the *national financial literacy strategy* (NFLS) in 2011. The motive of the government initiatives was to equip Australians with financial literacy skills enabling them to efficiently manage their finances and make informed financial decisions. However, the use of credit cards and credit card debt are still rising in Australia (ASIC, 2018). While research also reports a low level of financial literacy among Australians (Ali, Anderson, McRae, & Ramsay, 2014), we explore the association between financial literacy and credit card debt-taking behavior in Australia. We expect that high financial literacy will be related to less credit card debt-taking behavior in Australia. We test the following hypothesis:

Hypothesis 1: Financial literacy negatively relates to credit card debt-taking behavior.

2.2. *Financial literacy, attitude towards balancing spending and savings, financial satisfaction, and financial decisions*

Prior research describes some factors other than financial literacy that could be more relevant to financial decisions. García (2013) critically reviews prior studies and concludes that financial literacy is an important phenomenon to learn, but the prior beliefs, mental abilities, and cognitive factors dominate financial decision-making. Fernandes, Lynch, and Netemeyer (2014) conduct a meta-analysis of 168 papers covering 201 prior studies. They find that financial literacy and financial behavior are strongly positively associated with each other. However, when the behavioral factors are incorporated in an empirical analysis, the effect size of financial literacy on financial behavior diminishes dramatically. They include five types of financial behaviors in their study (1) saving for an emergency fund, (2) understanding how much is needed for retirement, (3) having a good credit score, (4)

assessing credit and checking fees, and (5) adopting a positive savings or investment behaviors. Fünfgeld and Wang (2009) survey 1,282 individuals from Switzerland. The first part of their analysis identifies savings attitude and spending attitude as financial behavioral factors. The second part of their analysis finds that the savers make financial decisions analytically by comparing and calculating the risk before making any financial decision. They define savings attitude as an attitude towards savings for future emergency needs. Shih and Ke (2014) use data from Taiwan and explore the relationship between attitude towards money and financial decision-making. Their empirical findings show that those who have an attitude of savings and financial planning make risky financial decisions. Like other studies, they also focus on one's attitude towards savings and planning to meet future financial needs.

Soman and Cheema (2002) state that people either utilize their current income in the future in the form of savings or utilize future income in the present. One way to utilize future income in the present is the use of credit cards as credit cards allow people to “buy now, pay later.” If a person uses a credit card and faces income shock, she or he will be unable to make timely repayment. Households may utilize their savings to smooth their current consumption pattern when experiencing income volatility (Reyers, 2019). However, Soman and Cheema (2002) argue that easy access to credit facilities allows people to think that they would have comparable earnings in the future and would make timely repayment. Here, a need to adjust current spending and saving patterns arise to avoid being in future debt. Those who spend more and do not keep a balance between spending and saving end up, usually, struggling with timely repayments. Hence, this argument suggests an association between spending and savings attitude and credit card debt-taking behavior. Most studies in the literature measure savings attitude as an attitude towards savings for unseen future circumstances. Unlike prior research, our focus is on one's attitude towards balancing spending and savings. Essentially, we test the following hypothesis:

Hypothesis 2: A person's attitude towards balancing their spending and savings negatively relates to their credit card debt-taking behavior.

Another important factor with a relationship to financial decisions is financial satisfaction. Xiao, Sorhaindo, and Garman (2006) use data from the United States to research consumer financial behavior. Their findings suggest that a lower credit card debt is associated with increased financial satisfaction. Contrary to Xiao et al. (2006), Zhang and Kemp (2009) use data from the University of Canterbury, New Zealand. Their empirical analysis suggests that there is no association between student debt and student life satisfaction. Students seem satisfied irrespective of whether they have debt or not. However, Solis and Ferguson (2017) analyze student data from the United States and conclude that students with loans and credit card debt are more likely to be financially dissatisfied. Brown and Gray (2016) conclude similar results for consumers by analyzing the HILDA survey. Their empirical analysis finds a negative association between all types of debt and financial satisfaction. Similarly, we expect in this article a negative association between financial satisfaction and credit card debt-taking behavior.

Hypothesis 3: Higher financial satisfaction negatively relates to credit card debt-taking behavior.

In the context of our study, we expect that both financial literacy and the other factors (attitude towards balancing spending and savings and financial satisfaction) are related to reduced credit card debt-taking behavior. However, we also expect that the relative weight of the association of the other factors with credit card debt-taking behavior is greater than financial literacy.

3. Data

We use a nationally representative dataset of Australia namely HILDA. HILDA survey is a household panel survey that observes a change in the characteristics and behaviors of the same sample over time (Watson & Wooden, 2010). Commenced in 2001, 18 waves of HILDA have been released to the date. Initial details of HILDA are documented by Wooden, Freidin, and Watson (2002). We use wave 16 for this article. The data for wave 16 were collected in 2016 and access was granted in 2018. Wave 16 contains a special module of financial literacy measures along with other regular modules, making it apt for this study. The financial literacy skills were not tested in HILDA before wave 16 or after. Hence, it makes this study cross-sectional.

Table 1 lists five items used to measure the financial literacy skills of the respondents. These are objective questions with one correct answer. Similar worldwide research studies have also used these measures (Cude, Chatterjee, & Tavosi, 2019; Kadoya, Khan, Hamada, & Dominguez, 2018; Lusardi & Mitchell, 2007, 2011, 2013; van Rooij et al., 2011). Table 2 shows the percentage of valid correct responses. Most of the respondents (85.5%) correctly answer the question related to simple interest, while the concept of inflation got the lowest percentage of correct responses (70.4%). Furthermore, it is important to note that those who got assistance to answer these questions are excluded. Additionally, we treat “don’t know” as an incorrect answer because these questions imply a correct response.

Next, we create the “financial literacy” variable by adding the correct responses of these five questions for each participant as applied in prior studies (Ali, Rahman, & Bakar, 2015; Xiao & O’Neill, 2016). This transformed variable depicts the levels of financial literacy, where “0” represents that the respondent has answered incorrectly to all the five questions, while “5” depicts that respondent has answered all the questions correctly. Table 3 below shows the distribution of financial literacy skills among the respondents. This table excludes the missing values, and it shows that around 44% of respondents have answered all the financial literacy questions correctly. This is low in comparison to the average percentage of high financial literacy for OECD countries that was 62% (OECD, 2016).

To measure the attitudes of respondents towards balancing their spending and savings, wave 16 of HILDA contains the item with the description “I do a good job of balancing my spending and savings.” This item is measured on a 7-point Likert scale with option 1 = *strongly disagree* while 7 = *strongly agree*. This item has 1,725 missing respondents (refused/not stated/multiple responses/not asked) out of 17,694 total respondents, which is only about 9.75% of the total.

Table 1 Items of financial literacy in wave 16 of HILDA

Financial literacy concept	Items	Possible responses (correct answer in bold)
Simple interest	“Suppose you put \$100 into a no-fee savings account with a guaranteed interest rate of 2% per year. How much would be in the account at the end of the first year?”	Don't know/refused/ \$102 /other value
Inflation	“If the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, would you be able to buy more/the same/less than today?”	Don't know/refused/more/same/ less than today
Risk and return	“An investment with a high return is likely to be high risk.”	Don't know/refused/ true/false
Portfolio choice	“Buying shares in a single company usually provides a safer return than buying shares in a number of different companies.”	Don't know/refused/ true/false
Time value of money	“If by the year 2020 your income has doubled, but the prices of all of purchases have also doubled. In 2020, will you be able to buy more/the same/less than today?”	Don't know/refused/more/ same/less than today

Note: Some of these items are based on Lusardi and Mitchell (2007). Each financial literacy question has a correct and incorrect answer(s). A financial literacy measure is developed by taking the sum of correct answers provided by each individual.

Table 2 Respondents of financial literacy items in wave 16 of HILDA

Measuring concept	Correct responses	Wrong responses	Got assistance	Missing values	Correct percentage ^a
Simple interest ^b	14,773	2,506	198	217	85.5
Inflation ^c	12,228	5,152	76	238	70.4
Risk and return ^d	14,569	2,817	137	171	83.8
Portfolio choice ^e	13,325	4,102	91	176	76.5
Time value of money ^f	13,727	3,650	90	227	79.0

^a Correct percentage is calculated after omitting all those who got someone's assistance regardless of a correct or wrong answer. Moreover, those who replied as "don't know" are treated as wrong answers due to being numerical and general conceptual questions.

^b Those who correctly answered after getting assistance are 176, while those who wrongly answered after getting assistance are 22.

^c Those who correctly answered after getting assistance are 51, while those who wrongly answered after getting assistance are 25.

^d Those who correctly answered after getting assistance are 115, while those who wrongly answered after getting assistance are 22.

^e Those who correctly answered after getting assistance are 46, while those who wrongly answered after getting assistance are 45.

^f Those who correctly answered after getting assistance are 66, while those who wrongly answered after getting assistance are 24.

Moreover, respondents are asked to depict their satisfaction level with their financial situation through the item "I am now going to ask you some questions about how satisfied or dissatisfied you are with some of the things happening in your life. I am going to read out a list of different aspects of life and, using the scale on SHOWCARD K13, I want you to pick a number between 0 and 10 that indicates your level of satisfaction with each. The more satisfied you are, the higher the number you should pick. The less satisfied you are, the lower the number. . . c) Your financial situation?". This item has 31 missing respondents (refused/not stated/don't know) out of 17,694 total respondents. This item is measured on an 11-points scale with 0 = *totally dissatisfied* while 10 = *totally satisfied*.

To measure credit card debt-taking behavior, two relevant items in wave 16 of HILDA are; "do you have any credit cards, charge cards or store accounts? do not include debit cards." and "how often is the entire balance on all your credit cards paid off each month?" The first item only asks whether the respondents have a credit card or not. This does not seem relevant since having a credit card does not mean having credit card debt. Instead, the second item explicitly taps the debt-taking behavior of the respondents. Because the focus of this article is on credit card debt-taking behavior, we opt for the second item.

The options available in response to the second item are "(1) pays off entire balance hardly ever/never (2) pays off entire balance not very often (3) pays off entire balance about half the time (4) pays off entire balance most months (5) pays off entire balance always/almost always." We combine the first three options of this item into one category (as "1") and the last two options into the other category (as "0"); thus, making it a binary response variable. The reason for doing this is the variable now tracks the behavior of credit card debt-taking that we specifically research. If a respondent falls into any of the first three options, it implies his or her behavior as incurring credit card debt. Whereas the last two

Table 3 Percentage of respondents in each level of financial literacy (wave 16 of HILDA)

Financial literacy levels	Frequency ^a	Percent
No correct answer	324	1.91
One correct answer	577	3.40
Two correct answers	1,283	7.55
Three correct answers	2,631	15.48
Four correct answers	4,692	27.61
Five correct answers (High financial literacy)	7,487	44.06
Total	16,994	100.0

^a Missing values are excluded.

options depict that the respondent avoids having credit card debt. As stated earlier in the introduction section of this article, the researchers report credit card debt as a most stressful and problematic type of household debt (Dunn & Mirzaie, 2012, 2016; Richards, Ahmed, & Tahir, 2019). The debt becomes more problematic and burdensome when monthly balances linger on and are not paid off. The initial valid percentage of respondents in the raw dataset (before cleaning and filtering of the whole dataset) falling into the “0” category (not taking on credit card debt) is 74.4%, while those who fall into the other category named as “1” (taking on credit card debt) is 25.6%. It shows that one out of every four individuals is entering into a credit card debt arrangement in Australia.

In our analysis, we control for demographic factors to analyze if the association between the main variables of interest remains the same. Specifically, we include age, gender, marital status, employment status, and educational status. Gender, marital status, employment status, and educational status are included as dummy variables having two categories each as males and females, those who are currently in a registered marriage and those who are not in a registered marriage, those who are full time or part time employed and those who are not working, and those who have earned bachelor/graduate diploma/postgraduate degree and those who have earned year 11 or below/year 12/certificate III or IV/advanced diploma degree, respectively. In our analyses, we include age as a continuous variable. In addition, we include the age-squared variable to examine the quadratic relationship of age to credit card debt-taking behavior.

Finally, as each variable consists of some missing respondents, we removed all the missing respondents from the data and created a cleaned and filtered dataset where we included only those respondents who responded to each of our interested variables. The variable with the most missing responses is credit card debt-taking behavior. In wave 16, this variable had 8,136 missing respondents (refused/not stated/don't know/not asked) out of 17,694 total respondents. After omitting missing responses from other variables, 6,661 respondents remained out of a total of 17,694.

The sample of 6,661 individuals consists of 51.6% females, 60.3% married, and 89.9% are employed full time or part time. Moreover, 40% are identified as having earned bachelor/graduate diploma/postgraduate degree, while 60% are identified as having earned year 11 or below/year 12/certificate III or IV/advanced diploma degree. Furthermore, the minimum age of respondents is 15 and the maximum age is 92 with a mean value of 45. The average income of sample individuals is \$66,092.

4. Methodology

The binary nature of the dependent variable allows using a binary logit model to test the relationship between the variables (Kennedy, 2003; Long & Freese, 2006). Appendix 1 shows the relevant econometrics equations of a binary logit model. The results of the binary logit model can only indicate a positive or negative relationship between the variables as we cannot interpret the estimated coefficients. To interpret the magnitude of the relationship, we often calculate the odds ratio. An odds ratio can be interpreted as an expected change in the odds of the dependent variable due to a 1-unit change in the independent variable. However, we can also calculate the standardized odds ratio of logistic regression that is relatively easier to interpret as compared with the odds ratio. A standardized odds ratio states the odds ratio from a one standard deviation change in the independent variable.

In addition to calculating the odds ratio and standardized odds ratio, we also calculate AMEs. An advantage of calculating the AMEs is that the values of the AMEs can be interpreted to compare the relative strength of each variable (Mussida & Sciulli, 2019; Stewart, 2007; West & Worthington, 2014). Therefore, the computation of the AMEs aligns with the motive of this article, that is, to test the relationship of financial literacy, attitude towards balancing spending and savings, and financial satisfaction with credit card debt-taking behavior, and to explain the relative strength of the association of each variable.

We use the statistical analysis program “Stata” to use a binary logit model. We ran the analyses in three phases. First, we only include financial literacy in the model. Second, we add attitude towards balancing spending and savings in the model. Finally, we include financial satisfaction in the model. We also control for demographic factors in all the models. In each of the phases, we run two models. The first model of each phase includes financial literacy accumulated score variable, whereas the second model of each phase includes five financial literacy concepts as separate dummy variables. This activity would help us to identify the relative association of five financial literacy concepts with credit card debt-taking behavior. The five financial literacy concepts are simple interest, inflation, risk and return, portfolio choice, and the time value of money.

There is a twofold purpose of running analyses in three phases. First, we analyze if the association between financial literacy and credit card debt-taking behavior changes over the phases. Second, we analyze the relative strength of each variable in each phase.

5. Results

5.1. Descriptive statistics

The following figures show different types of descriptive comparisons between variables for the filtered sample of 6,661 individuals. Fig. 1 below shows the distribution of credit card debt-taking among males and females. Our data contain 28% of males and around 33% of females with credit card debt-taking. Next, Fig. 2 shows the percentage of males and females who correctly answered each of the five financial literacy questions. Fig. 2 identifies

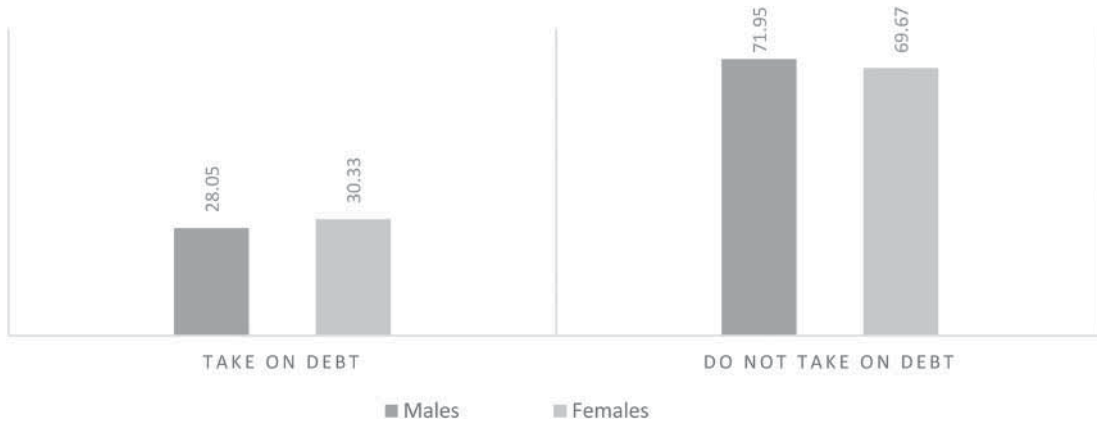


Fig. 1. Percent comparison of credit card debt-taking behavior by males and females.

that most of the males (97.89%) and females (90.21%) could correctly answer the concept of simple interest, while the least percentage of the correct answer of males relates to the concept of the time value of money (85.52), whereas the least percentage of the correct answer of females relates to the concept of inflation (73.77).

Fig. 3 shows the percentage of respondents who take on debt and could correctly answer each of the five financial literacy questions. According to Fig. 3, most percentage of those who take on debt (91.58) could correctly answer the concept of simple interest, while the lowest percentage (76.32) could correctly answer the concept of inflation. Next, Fig. 4 shows that most of the respondents could correctly answer the concept of simple interest regardless of the degree they have earned.

Fig. 5 and Fig. 6 take into account the correct response rate of all (five) financial literacy questions. Fig. 5 below shows that 44% of respondents with zero financial literacy score have credit card debt. In contrast, 26% of respondents who correctly answered all five questions are identified as those who take on debt. These descriptive statistics indicate that financially illiterate people are relatively more inclined to credit card debt as compared with financially literate people. Next, for a comparison purpose, we make seven blocks of age as below 25 years, 25–34, 35–44, 45–54, 55–64, 65–74, and above 74. Fig. 6 shows that those who are below 25 years of age contain least percentage of respondents who could correctly answer all the five financial literacy questions, whereas the age (in years) block 55–64



Fig. 2. Percent comparison of correct answers to the financial literacy concepts by males and females.



Fig. 3. Percent of those take on debt and could correctly answer the questions relating to the financial literacy concepts.

contains most of the respondents who are highly financially literate. The young generation in Australia is not highly financially literate and may require financial literacy education.

Finally, Fig. 7 shows the age comparison of those who have credit card debt. Our data indicate that those who are between 25 and 34 years of age are relatively more inclined to credit card debt as compared with other age groups. The overall trend in Fig. 7 explicates that debt increases up to a certain age, then it decreases.

5.2. Correlation analysis

Table 4 below shows the pairwise correlation analysis. Credit card debt-taking behavior is negatively correlated with financial literacy, attitude towards balancing spending and



Fig. 4. Percent comparison of correct answers to the financial literacy concepts by education status.

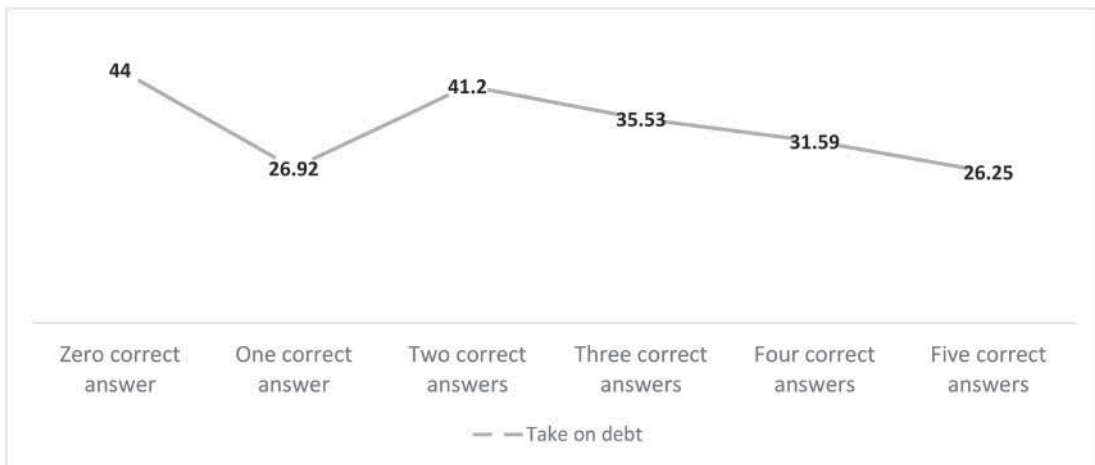


Fig. 5. Levels of financial literacy and percentage comparison of those who take on debt.

savings, and financial satisfaction as expected from the literature review. Among demographic factors, employment status is uncorrelated with attitude towards balancing spending and savings, problematic debt-taking, and age. Furthermore, gender is uncorrelated with attitude towards balancing spending and savings and age, while less correlated with credit card debt-taking behavior. All other variables are statistically significantly correlated with each other.

5.3. Empirical association of financial literacy, attitude towards balancing spending and savings, and financial satisfaction with credit card debt-taking behavior

Table 5, Table 6, and Table 7 show the results of empirical analyses after controlling for demographic factors. Table 5 below contains the analysis of the financial literacy variable, Table 6 adds attitude towards balancing spending and savings variable, and Table 7 adds the financial satisfaction variable. The first model of each table contains financial literacy

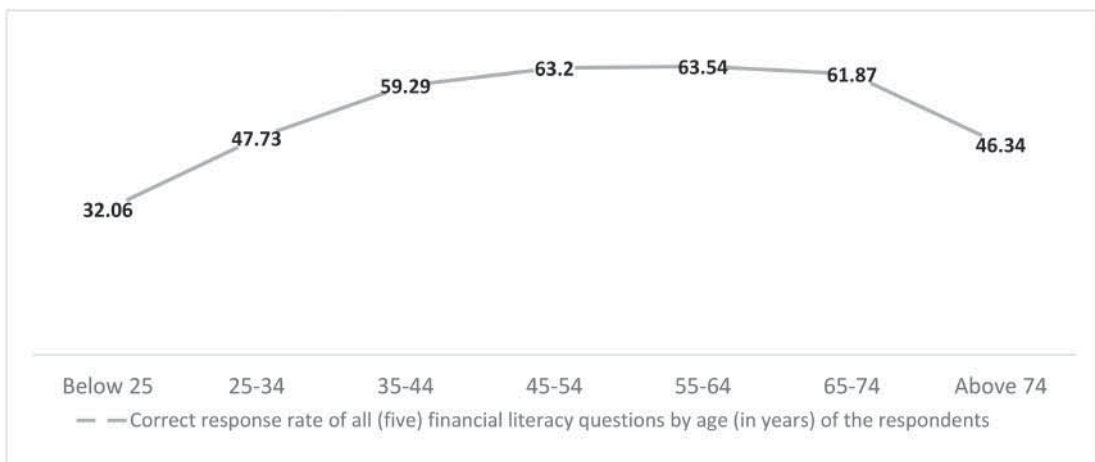


Fig. 6. Percent comparison of correct answers to the financial literacy concepts by age (in years).

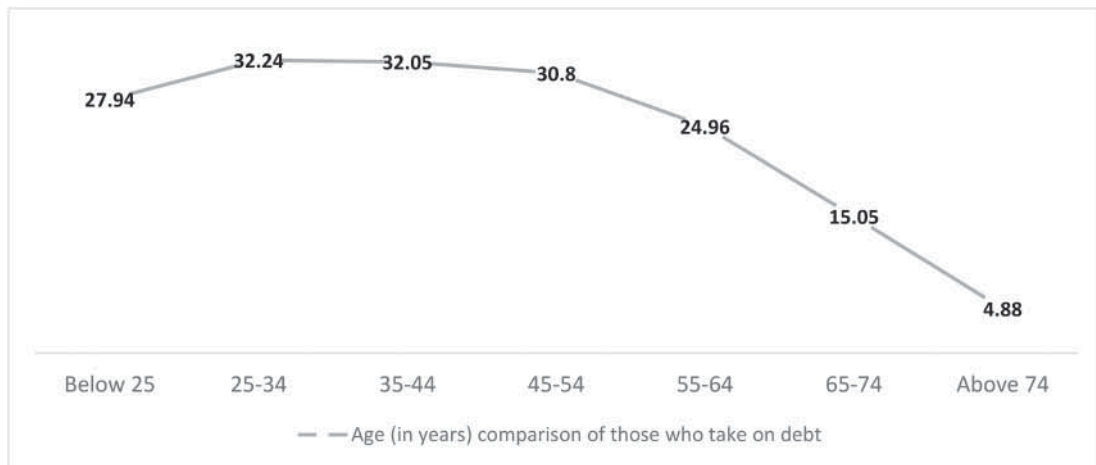


Fig. 7. Percent comparison of those who take on debt by age (in years).

accumulated score variable, whereas the second model of each table contains five financial literacy concepts as separate dummy variables.

Table 5 below shows the results of the two models. The first model contains only financial literacy variable, and it negatively relates to credit card debt-taking behavior at the statistical significance level. This analysis supports Hypothesis 1. It implies that those who are financially literate are less likely to have credit card debt. The odds ratio of financial literacy indicates that for a 1-unit change in financial literacy, the log odds of credit card debt-taking behavior are expected to change by a factor of 0.914, holding all other variables unchanged. The standardized odds ratio indicates that for a one standard deviation increase in financial literacy score, one could expect 0.920 factors change in the log odds of credit card debt-taking. Unlike the odds ratio and standardized odds ratio, the AMEs provide ease in the interpretation as the values of the AMEs of each variable are comparable to know the relative strength of the association. The AME of financial literacy in the first model of Table 5 can be interpreted as a higher financial literacy score decreases the probability of having credit card debt by 1.8%.

The second model adds dummy variables of each financial literacy concept. The analysis shows that two of the five dummy variables (simple interest and risk and return) negatively relate to credit card debt. The other three financial literacy dummy variables are statistically insignificant. The AMEs imply that those who have knowledge about simple interest and risk and return concepts are less likely to have credit card debt by 6.4% and 3.8%, respectively.

Table 6 below adds the attitude towards balancing spending and savings variable in the analysis. The results are comparable to Table 5 above. In the first model of Table 6, we note the same statistical significance level of financial literacy variable as noted in the first model of Table 5 above. The AME of financial literacy in the first model of Table 6 can be interpreted as a higher financial literacy score decreases the probability of having credit card debt by 1.5%, which is 0.3 percentage points lower than the one in Table 5. Further, the second model of Table 6 shows that the dummy variables of simple interest and risk and return concepts are statistically significant. The AMEs imply that those who have knowledge about

Table 4 Pairwise correlation analysis of variables

	1	2	3	4	5	6	7	8	9
1. Financial literacy	0.045***								
2. Attitude towards balancing spending and savings	0.060***	0.357***							
3. Financial satisfaction	-0.078***	-0.316***	-0.352***						
4. Credit card debt-taking behavior	-0.155***	-0.018	-0.033***	0.025*					
5. Gender	0.147***	0.139***	0.059***	-0.076***	-0.018				
6. Age	0.148***	0.060***	0.162***	-0.097***	-0.181***	0.093***			
7. Income	0.828***	0.016	0.115***	-0.006	-0.181***	-0.011	0.146***		
8. Employment status	0.084***	0.064***	0.159***	-0.096***	-0.028*	0.199***	0.049***	-0.028*	
9. Marital status	0.181***	0.040**	0.123***	-0.150***	0.085***	-0.063***	0.181***	0.054***	0.087***
10. Education status									

*** $p < .001$, ** $p < .01$, * $p < .05$. $N = 6,661$.

Table 5 Binary logistic regression analysis of credit card debt-taking behavior: phase 1

	Model 1		Model 2	
	AME	OR	AME	OR
Financial literacy				
Inflation	-0.018**	0.914** (0.028)	-0.004	0.981 (0.072)
Portfolio choice			-0.029	0.860 (0.068)
Simple interest			-0.064**	0.720** (0.083)
Time value of money			0.026	1.141 (0.093)
Risk and return			-0.038*	0.825* (0.076)
Female	0.005	1.028 (0.061)	0.002	1.009 (0.061)
Age	0.027***	1.147*** (0.019)	0.028***	1.149*** (0.019)
Age-squared	-0.0003***	0.998*** (0.000)	-0.0003***	0.998*** (0.000)
Income	-0.000001*	1.000* (0.000)	-0.000001*	1.000* (0.000)
Age * Income	0.00000001	1.000 (0.000)	0.00000001	1.000 (0.000)
Employed	0.223	1.121 (0.107)	0.022	1.117 (0.107)
Married	-0.081***	0.663*** (0.039)	-0.080***	0.665*** (0.039)
Minimum bachelor degree	-0.124***	0.530*** (0.033)	-0.124***	0.530*** (0.033)
Constant		0.096*** (0.034)		0.102*** (0.037)
N	6,661		6,661	
Pseudo R ²	0.047		0.048	
χ ² value	375.04***		388.26***	
Pearson χ ²	6956.26**		6966.99**	
				SOR
				0.920**
				1.014
				5.757***
				0.140***
				0.606*
				1.223
				1.035
				0.818***
				0.733***
				0.102*** (0.037)

*** $p < .001$, ** $p < .01$, * $p < .05$.

AME = average marginal effects; OR = odds ratio; SOR = fully standardized odds ratio. Standard errors in parentheses.

Table 6 Binary logistic regression analysis of credit card debt-taking behavior: phase 2

	Model 1		Model 2	
	AME	OR	AME	OR
Financial literacy	-0.015**	0.917** (0.030)	0.924**	
Inflation				0.971 (0.075)
Portfolio choice				0.869 (0.072)
Simple interest				0.732* (0.089)
Time value of money			0.029	1.181 (0.101)
Risk and return			-0.040*	0.800* (0.078)
Attitude towards balancing spending and savings	-0.080***	0.637*** (0.013)	-0.080***	0.637*** (0.013)
Female	0.006	1.035 (0.065)	0.002	1.012 (0.064)
Age	0.023***	1.141*** (0.019)	0.024***	1.144*** (0.020)
Age-squared	-0.0003***	0.998*** (0.000)	-0.0003***	0.998*** (0.000)
Income	-0.000001	1.000 (0.000)	-0.000001	1.000 (0.000)
Age * Income	0.000000003	1.000 (0.000)	0.000000001	1.000 (0.000)
Employed	0.026	1.154 (0.116)	0.024	1.147 (0.115)
Married	-0.067***	0.0686*** (0.042)	-0.066***	0.689*** (0.042)
Minimum bachelor degree	-0.112***	0.533*** (0.035)	-0.112***	0.532*** (0.035)
Constant		0.663 (0.255)		0.692 (0.271)
N	6,661		6,661	
Pseudo R ²	0.118		0.120	
χ ² value	947.90***		961.87***	
Pearson χ ²	6684.97		6712.74	

*** $p < .001$, ** $p < .01$, * $p < .05$.

AME = average marginal effects; OR = odds ratio; SOR = fully standardized odds ratio. Standard errors in parentheses.

Table 7 Binary logistic regression analysis of credit card debt-taking behavior: phase 3

	Model 1		Model 2	
	AME	OR	AME	OR
Financial literacy	-0.015**	0.915** (0.030)	0.922**	
Inflation				0.937 (0.074)
Portfolio choice				0.824* (0.070)
Simple interest				0.769* (0.097)
Time value of money			0.037*	1.249* (0.111)
Risk and return			-0.037*	0.803* (0.081)
Attitude towards balancing spending and savings	-0.058***	0.707*** (0.015)	0.591***	0.706*** (0.015)
Financial satisfaction	-0.054***	0.722*** (0.013)	0.544***	0.721*** (0.013)
Female	0.011	1.067 (0.068)	1.033	1.043 (0.068)
Age	0.018***	1.116*** (0.020)	4.077***	1.121*** (0.020)
Age-squared	-0.0002***	0.999*** (0.000)	0.019***	0.999*** (0.000)
Income	-0.0000004	1.000 (0.000)	-0.0000003	1.000 (0.000)
Age * Income	-0.0000000003	1.000 (0.000)	-0.00000001	1.000 (0.000)
Employed	0.060***	1.430*** (0.151)	1.114***	1.421*** (0.150)
Married	-0.033**	0.819** (0.052)	0.907**	0.825** (0.053)
Minimum bachelor degree	-0.098***	0.557*** (0.037)	0.750***	0.558*** (0.037)
Constant		3.632** (1.479)		3.580** (1.486)
N	6,661		6,661	
Pseudo R ²	0.163		0.165	
χ ² value	1312.29***		1328.87***	
Pearson χ ²	6644.34		6677.47	

*** $p < .001$, ** $p < .01$, * $p < .05$.

AME = average marginal effects; OR = odds ratio; SOR = fully standardized odds ratio. Standard errors in parentheses.

simple interest and risk and return concepts are more likely to avoid credit card debt by 5.5% and 4.0%, respectively, when attitude towards balancing spending and savings is controlled in the model. Moreover, the attitude towards balancing spending and savings variable is highly statistically significant in both the models of Table 6 supporting Hypothesis 2. The AME shows that if a person shows a one-point positive attitude towards balancing their spending and savings, it would decrease their likelihood of having credit card debt by 8%. Moreover, the comparison of the AMEs reveals that the relative strength of the attitude towards balancing spending and savings variable (AME = -0.080) is higher than that of the financial literacy score variable (AME = -0.015).

Table 7 below adds the financial satisfaction variable in the analysis. The results are comparable to Table 5 and Table 6 above. The financial literacy variable in the first model of Table 7 shows no change in the statistical significance level, nor in the AME value. It implies that the financial satisfaction variable does not have any effect on the relative strength of the financial literacy variable towards credit card debt-taking. However, the second model of Table 7 shows that, unlike the results of Table 5 and Table 6, the dummy variables of portfolio choice and time value of money are statistically significant. The results further show a positive association of the time value of money dummy variable. It implies that those who know the concept of time value of money, are more likely to have credit card debt when the financial satisfaction variable is incorporated in the model.

Moreover, in both the models of Table 7, the financial satisfaction variable is highly statistically significant. This analysis supporting Hypothesis 3. The AME shows that if a person indicates a one-point increase in their financial satisfaction level, it would decrease their likelihood of having debt by 5.4%. Furthermore, the attitude towards balancing spending and savings variable is still highly statistically significant in both the models of Table 7 as similar to the models of Table 6. The AME shows that if a person shows a one-point positive attitude towards balancing their spending and savings, it would decrease their likelihood of having credit card debt by 5.8%, which is 1.2 percentage points lower than the one in Table 6. However, the relative strength of the attitude towards balancing spending and savings variable is still higher than the other main variables of interest in both the models of Table 7.

Among the demographic factors, those who are married and earned minimum bachelor degree are less likely to have debt, while the results for gender, employment status, and income variables are mostly insignificant across the models. The results for the interaction term of age and income are not statistically significant across all models. Furthermore, age is positively associated with problematic debt-taking. However, the quadratic relationship for age in relation to credit card debt-taking behavior is negative. According to Grable, Lyons, and Heo (2019), this statistical position of age and age-squared variables suggests an inverted U-shaped downward relationship with the credit card debt-taking behavior supporting the descriptive statistics shown in Fig. 7 of this article.

In the case of binary logistic regression, adjusted R^2 is replaced by pseudo R^2 , which is not as same as the former (Long & Freese, 2006). Nonetheless, a comparison of pseudo R^2 across the models can indicate the explanatory value of each model relative to another. The second model of Table 7, where all the variables are included in the model, has the highest pseudo R^2 value of 0.165 among the six models presented in Table 5,

Table 6, and Table 7. The least pseudo R^2 value of 0.047 is noted in the first model of Table 5 where only financial literacy is included in the model. Furthermore, the χ^2 value is highly significant across the models of all the tables implying that the regression models are significant as a whole. In addition, we test for the issue of multicollinearity using the variance inflation factor (VIF) and find that all VIFs are below the threshold of 10 that guarantees no multicollinearity issue (Kennedy, 2003). We append the VIF results in Appendix 2 below.

Across the analyses presented above, we had a sample size of 6,661 individuals that is about one-third of the original sample of 17,694 individuals surveyed in the 2016 wave of the HILDA survey. This reduction in the sample size was the result of filtering the dataset and omitting the retired respondents from the analyses. However, we run additional two models (as similar to those presented in Table 7) without filtering the dataset for a purpose to check the robustness of the existing results. This analysis incorporates 8,542 individuals. The sample consists of 52% females, 62% married, and 70% are employed full time or part time. Moreover, 36% are identified as having earned bachelor/graduate diploma/postgraduate degree, while 64% as having earned year 11 or below/year 12/certificate III or IV/advanced diploma degree. Furthermore, the minimum age of respondents is 15 and the maximum age is 98. The average income is \$60,150. Overall, the age and income average of this sample is different from the sample included in the main results because we include retired respondents in this robustness check. We append the results in Appendix 3 below. The statistical significance of the variables in Appendix 3 is similar to those in Table 7. It implies that the main results of this article are robust implying that the filtering of the dataset and omitting the retired respondents in the main results do not influence our conclusion.

In addition to these analyses, we analyze if financial literacy is associated with attitude towards balancing spending and savings and financial satisfaction. Though the correlation analysis (see Table 4 above) shows that there is a positive association between financial literacy, attitude towards balancing spending and savings, and financial satisfaction. However, we empirically analyze this relationship and control for demographic factors. Our analysis reveals that financial literacy is neither associated with attitude towards balancing spending and savings ($p > .05$) nor with financial satisfaction ($p > .05$) when we control for demographic factors. These results indicate that the concept of financial literacy is independent of the other two concepts. The results are omitted for brevity.

6. Conclusion

Existing research reports a low financial literacy level in Australia (Ali et al., 2014). In response to the financial literacy survey of Bourova, Anderson, Ramsay, and Ali (2018), only 30.9% of respondents could answer all the financial literacy questions correctly. The Australian government has been making efforts to equip Australians with financial literacy skills to give households superior financial knowledge to make better judgments and enable them to make informed financial decisions. However, the financial services regulator in

Australia, the ASIC (2018), states that the credit card debt is still rising in Australia and it is also the most common type of household debt in Australia (ABS, 2017b). The relevant existing literature revealed that credit card debt is relatively, as compared with other non-collateralized types of debt, a more stressful and problematic type of household debt. This issue motivated this research, and we expected that an increase in financial literacy level may be relevant to a reduced credit card debt-taking behavior in Australia. In addition, in contrast to the literature that includes savings for emergency needs as a measure of savings attitude, we analyzed the attitude of individuals towards balancing spending and savings. We hypothesized that those who keep a balance between their spending and savings are more likely to avoid credit card debt. We also expected a relationship between the financial satisfaction level of a person and their credit card debt-taking behavior.

Our contributions to the literature are many fold. Unlike prior studies, we analyzed the relative weight of the association of financial literacy, attitude towards balancing spending and savings, and financial satisfaction with credit card debt-taking behavior. We used the 2016 wave of a nationally representative dataset namely the HILDA survey. In our analysis, we, first, included a variable of accumulated financial literacy scores and then five dummy variables for each financial literacy concept to separately analyze their relationship with the credit card debt-taking behavior. We undertook analyses in different phases. We, first, included only financial literacy variable, then we added attitude towards balancing spending and savings and financial satisfaction, respectively. The purpose was to analyze whether the significance level of financial literacy and the magnitude of its relationship with the credit card debt-taking behavior remains the same or does change. This also helped us to examine the consistency and robustness of the relationship among the key variables.

Our analyses support all hypotheses of this article. In all the phases of analyses, financial literacy remained negatively significant to show a relationship with credit card debt-taking behavior. However, the magnitude of the relationship decreased when other factors were included in the model. Moreover, the comparison of the AMEs revealed that attitude towards balancing spending and savings has more relevance to the reduced credit card debt-taking behavior, followed by the financial satisfaction variable and then financial literacy. This implies that financial literacy has a relatively weaker magnitude of relationship with credit card debt-taking behavior, yet a significant factor to have an association with credit card debt-taking behavior. Among the five financial literacy concepts, the concept of simple interest showed a highly negative association with credit card debt-taking behavior.

Our results suggest that prior financial knowledge has a relatively weaker magnitude of association with financial decisions. Instead, attitude towards money matters more than the prior financial knowledge. The results are comparable with the prior studies. Fernandes et al. (2014) find that the incorporation of factors other than financial literacy in analyzing the relationship between financial literacy and financial behavior diminishes the effect size of financial literacy. Moreover, García (2013) shows that prior beliefs, mental abilities, and cognitive factors dominate the decision-making process. Our results partially support this conclusion because the magnitude of the association of financial literacy diminishes when other factors are included. However, the relevance of financial literacy does not disappear

suggesting some importance for the role of financial literacy in credit card debt-taking behavior.

In our results, the relevance of attitude towards balancing spending and savings and credit card debt-taking behavior is twofold. First, we show that those who keep a balance between spending and savings have relatively less probability of having credit card debt. Second, we argue that people with a higher credit limit tend to spend more because they think that their future income will cover their credit card debt (Soman & Cheema, 2002).

Our results have an important implication for policies on improving the financial literacy of households in Australia. The research suggests that education of this nature will have some, but limited relevance. Curricula that focus on financial behaviors and attitude towards personal finance will be more relevant to reduced problematic debt-taking. In this regard, although the Australian government has already designed a new website of financial capability that includes contents related to improving attitude towards personal finance, but there is still room for improvement as there is a global emergence of the concept of financial wellbeing.² Kempson, Finney, and Poppe (2017) explain the shift of focus from financial literacy to financial capability, and from financial capability to financial wellbeing. Further, in light of the importance of attitude towards balancing spending and savings, people need to be educated through focused media campaigns that promote an environment of not to overspend and keep a balance between spending and savings. Moreover, although the ASIC is continuously reviewing and regulating the credit card market, but there is a need to regulate the media advertisements of financial institutions where they promote their financial products and attract consumers to open a credit card account. The financial services regulating institutions should continuously monitor the media advertising strategies of financial institutions and make people aware of any possible “debt-trap.” Finally, as credit cards are a source of utilizing future income, financial institutions should set a credit limit after keeping in view the future income of consumers. Some interventions must be introduced in case of any possible economic shock that could disturb the spending and savings attitude of consumers.

Our research has some limitations that future researchers may wish to address. We could not conclude a causal relationship between the variables because we used a cross-sectional dataset. Future researchers may conduct a longitudinal analysis to see if the suggested relevance turns into a causal relationship. Further, future analyses may include more relevant behavioral and personality factors such as self-control, future-oriented behavior, and non-impulsive behavior to conclude a relationship with credit card debt-taking behavior. As we used a secondary dataset for this article, we were unable to capture the influence of external factors that remained unobserved and might have a larger influence on the attitude and behavior of individuals/households. For instance, education from parents or society norms might have more relevance with the behavior of households that may affect their financial decisions. Moreover, although we used popular measures of financial literacy, but different measures could produce different results. A guide for future researchers may be to subjectively measure financial literacy and analyze if the same results pop-up. Finally, financial capability and financial wellbeing are emerging concepts in the field of personal finance that may have relevance with reduced credit card debt-taking behavior.

Notes

- 1 “This article uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this article; however, are those of the author and should not be attributed to either FaHCSIA or the Melbourne Institute.” (Summerfield et al., 2017).
- 2 <https://financialcapability.gov.au/>

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Appendix 1: Equations of binary logit regression

The main dependent variable of this study—problematic debt-taking—is a binary variable. This variable was coded to “0” for those who pay off their monthly credit card balance each month (that means not take debt) and coded to “1” for those who are unable to pay off their monthly credit card balance each month (demonstrating debt-taking behavior). The binary nature of the dependent variable allows using a binary logit model to test the relationship between the variables (Kennedy, 2003; Long & Freese, 2006). The results of the binary logit model can only indicate a positive or negative relationship between the variables as we cannot interpret the estimated coefficients. To interpret the magnitude of the relationship, we often calculate the odds ratio, which can be defined as:

$$\sigma(t) = \frac{e^t}{e^t + 1} = \frac{1}{1 + e^{-t}} \quad (1)$$

where, t is the linear combination of all the explanatory variables of the study and e represents their exponential value. In this article, we have financial literacy, attitudes towards spending and savings, financial satisfaction, and demographic factors as explanatory variables. The inclusion of explanatory variables is:

$$g(p(x)) = \ln\left(\frac{p(x)}{1 - p(x)}\right) = \beta_0 + \beta_1 x \quad (2)$$

This equation interprets the probability of the dependent variable equaling or approaching to a specific “case,” where x represents the list of explanatory variables as described above.

Moreover, the above equation states that the logit (log odds – natural log of the odds) is as same as the linear regression equation. This model can also be transformed into the following equation after taking the exponential values of both sides.

$$\left(\frac{p(x)}{1 - p(x)} \right) = e^{\beta_0 + \beta_1 x} \quad (3)$$

In the case of the logistic function, the odds of the dependent variable being equal to a case are interpreted and the exponential value truly represents the odds as shown by the following equation:

$$Odds = e^{\beta_0 + \beta_1 x} \quad (4)$$

Appendix 2 Variance inflation factor (VIF) of the variables of interest

Variable	VIF
Credit card debt-taking behavior	1.22
Financial literacy	1.10
Attitude towards balancing spending and savings	1.22
Financial satisfaction	1.30
Female	1.10
Age	1.10
Income	1.12
Employment status	1.07
Marital status	1.08
Education achieved	1.13

Appendix 3 Robustness check

	Model 1		Model 2	
	AME	OR	AME	OR
Financial literacy				
Inflation	-0.014**	0.909** (0.028)	-0.008	0.944 (0.071)
Portfolio choice			-0.030*	0.817* (0.065)
Simple interest			-0.038*	0.770* (0.088)
Time value of money			0.025*	1.187* (0.096)
Risk and return			-0.030*	0.813* (0.078)
Attitude towards balancing spending and savings	-0.049**	0.718*** (0.014)	-0.049***	0.718*** (0.014)
Financial satisfaction	-0.050***	0.712*** (0.012)	-0.050***	0.711*** (0.012)
Female	0.014	1.097 (0.066)	0.011	1.078 (0.065)
Age	0.013***	1.089*** (0.015)	0.013***	1.092*** (0.015)
Age-squared	-0.0001***	0.999*** (0.000)	-0.0001***	0.999*** (0.000)
Income	0.0000001	1.000 (0.000)	0.0000002	1.000 (0.000)
Age * Income	-0.00000001	1.000 (0.000)	-0.00000001	1.000 (0.000)
Employed	0.079***	1.709*** (0.148)	0.078***	1.701*** (0.148)
Married	-0.033***	0.800** (0.048)	-0.032***	0.805*** (0.048)
Minimum bachelor degree	-0.084***	0.565*** (0.036)	-0.084***	0.565*** (0.036)
Constant		4.869*** (1.685)		4.883*** (1.725)
N	8,542		8,542	
Pseudo R ²	0.191		0.193	
χ ² value	1836.35***		1852.07***	
Pearson χ ²	8377.92		8416.29	

*** $p < .001$, ** $p < .01$, * $p < .05$.
 AME = average marginal effects; OR = odds ratio; SOR = fully standardized odds ratio. Standard errors in parentheses.

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