Asian Journal of Education and Social Studies

13(4): 9-21, 2020; Article no.AJESS.63457
ISSN: 2581-6268

Education, Financial Knowledge and Consumer Confidence in Financial Goals: Evidence from the 2018 US National Financial Capability Study

Fuzhong Chen[1*], Ziteng Han[1] and Qingyang Ma[1]

[1]School of International Trade and Economics, University of International Business and Economics, Beijing 100029, China.

Authors' contributions

This work was carried out in collaboration among all authors. Author FC designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author ZH managed the analyses of the study. Authors ZH and QM managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJESS/2020/v13i430337
Editor(s):
(1) Dr. E. Seda Koc, Namık Kemal University, Turkey.
Reviewers:
(1) Jagadeesh Hubballi, KLE Academy of Higher Education & Research Institute of Nursing Sciences, India.
(2) Elaine da Silveira Leite, Federal University of Pelotas, Brazil.
Complete Peer review History: http://www.sdiarticle4.com/review-history/63457

Original Research Article

Received 28 September 2020
Accepted 05 December 2020
Published 17 December 2020

ABSTRACT

Consumer confidence in financial goals is the degree of trust expressed by consumers through the activities of setting financial goals and subsequent realization. Utilizing data from the 2018 US National Financial Capability Study, in terms of the data characteristics of the dependent variable, this study utilizes the method of ordered logistic regression to explore the roles of education and financial knowledge in consumer confidence in financial goals. Moreover, this study also performs a robustness check, which suggests unchanged results. The results indicate that both education and financial knowledge positively contribute to consumer confidence in financial goals and consumers both with higher education levels and financial knowledge will be more confident in financial goals. Thus, policymakers are recommended to provide financial support for education and focus on mechanisms of improving financial knowledge through financial education programs and financial related courses.

**Corresponding author: Email: uibesitechen@126.com;*

Keywords: Financial knowledge; education; consumer confidence in financial goals; ordered logistic regression.

1. INTRODUCTION

In recent years, there has been a surge of interest in consumer finance, in which financial satisfaction is considered as one of the important factors affecting life satisfaction [1]. Previous studies have explored substantial factors contributing to financial satisfaction, such as educational attainment, income [2], and financial confidence [3]. Consumer financial confidence is primarily designated from the following two aspects. First, consumer financial confidence is defined to be the ability and confidence to make financial decisions by using consumers' financial knowledge [4], which is also considered as subjective financial knowledge [5]. Second, consumers are expected to have confidence in achieving financial goals after completing specific financial affairs, namely consumer confidence in financial goals. Prior studies have focused on the relationships between financial confidence and specific domains of satisfaction. In detail, empirical evidence suggests that financial confidence has a significant impact on financial satisfaction [6], and it is of great importance to explore what factors contribute to financial confidence. Previous research has examined that receiving an allowance in childhood enables individuals to cultivate confidence in their capability to utilize financial knowledge [7]. Moreover, using the data from Malaysia, Mohamad et al. [8] showed that financial literacy, saving behavior and financial management all play a critical role in enhancing retirement confidence. Besides, Ralph et al. [9] claimed that compared with men, women have significantly lower confidence in investment decisions. However, little literature uses financial self-confidence as a dependent variable, and so does consumer confidence in financial goals. Unlike previous research, this study attempts to investigate the roles of education and financial knowledge in affecting consumer confidence in financial goals.

The level of education is often considered as an investment in human capital. In the field of consumer finance, educational attainment is regarded as an important factor contributing to financial satisfaction [10], financial advice [11], and financial literacy [12]. However, few studies have explored the relationships between education and consumer confidence in financial goals. Hence, unlike previous studies, this study focuses on the associations between educational attainment and financial confidence in financial goals.

Financial knowledge refers to the knowledge and comprehension of financial concepts specific to financial literacy. Specifically, financial literacy is defined as not only the financial knowledge but also the skills and confidence to utilize such knowledge to make appropriate financial decisions, which aims at enhancing the wellbeing of consumers and society [13]. Simultaneously, financial literacy is also defined as subjective financial knowledge, which is considered as an aspect of financial confidence. Three basic issues, namely the interest rate, inflation, and risk diversification are often applied to measure consumers' basic levels of financial literacy [14]. However, this measurement only focuses on how much knowledge an individual possesses and ignores consumers' confidence in applying their knowledge, which implies that financial knowledge and financial literacy may be utilized interchangeably to some degree. Furthermore, traditional microeconomic theories claim that consumers make optimal decisions of savings and consumptions to maximize the utility in their life time. Nevertheless, these theories are based on the assumption that consumers have the ability and knowledge to deal with substantial information from the financial market. Besides, in the U.S., the government begins to decrease the payment of retirement pensions, and hence, consumers need to improve their financial knowledge to effectively manage their finance during retirement. Previous research has explored the impact of financial knowledge on financial behaviors [15], and financial satisfaction [16]. Different from extant research, this study aims to investigate the potential effects of financial knowledge on consumer confidence in financial goals.

The purpose of this study is to investigate the roles of education and financial knowledge in consumer confidence in financial goals. The remainder of this paper is organized as follows. Section 2 deals with a brief literature review on educational attainment, financial knowledge, and financial confidence. Based on the knowledge gap in the literature, the hypotheses are put forward in detail. Section 3 presents the methodology, including the empirical model, data source, variable specifications, and descriptive statistics. Section 4 discusses the empirical results and further offers a robustness check. Section 5 concludes and puts forward the implications.

2. LITERATURE REVIEW AND HYPOTHESIS

2.1 Prior Research on Financial Confidence

In recent decades, substantial studies on financial confidence have focused on the capability to utilize financial knowledge to explore the associations among other financial related factors. For instance, Babiarz et al. [17] claimed that individuals with higher financial confidence tend to seek financial advice, except debt counseling, because financial confidence is inversely associated with the probability of searching for debt counseling. Furthermore, active financial behaviors can enhance financial satisfaction [18]. When it comes to financial knowledge, it is the subjective aspect, rather than the objective aspect, that affects financial satisfaction [19]. Besides, factors involving behaviors associated with recommended practice and subjective financial knowledge are more salient to care about than those associated with objective financial knowledge [20]. Thus, it implies that financial confidence is conducive to consumer financial satisfaction. Under this circumstance, it is desirable to identify the factors affecting financial confidence. However, little literature has addressed the financial confidence and its determinants. As to the confidence in financial capability, extant studies have emphasized some demographic factors. Specifically, consumers' confidence in the ability of making financial decisions does not decrease with age [21], and the older ones tend to overestimate it [22]. In terms of consumer confidence in financial goals, workers receiving financial education in the workplace have higher levels of retirement confidence than those who don't [23]. Rehl et al. [24] argued that widows can significantly improve their financial confidence in financial circumstances by working with a financial advisor.

Rather than focusing on the capability and confidence to utilize financial knowledge, this study concentrates on consumer confidence in financial goals to enrich the literature in the related fields of financial confidence. After reviewing the literature about the level of education and financial knowledge, hypotheses about the roles of education and financial knowledge in consumer confidence in financial goals are put forward.

2.2 Education and Consumer Confidence in Financial Goals

Educational attainment is considered to be the highest level of education that consumers have achieved and measures households' investment in human capital. Numerous studies have established a link between educational background and financial satisfaction. Yao et al. [25] developed a framework for analyzing how educational background plays a role in influencing financial satisfaction. To be more specific, the mediating mechanisms between education and life satisfaction are job, financial, and health satisfaction. Besides, the level of education has a positive effect on consumers' wellbeing, with a stronger impact on women and the older ones [26]. The linkage between educational levels and financial behaviors has been investigated as well. Students with a higher level of education are more likely to hold student loan [27]. Moreover, demographic characteristics in terms of financial literacy are more likely to include education. Boisclair et al. [28] used the data from Canada and suggested that those who possess a low level of education do worse in answering questions measuring knowledge of financial concepts, which results in poor financial literacy. Prior research also demonstrates that higher level of education contributes to financial literacy more when it comes to females [29]. Also, those whose parents have higher education are more likely to be financially literate [30].

Aside from financial satisfaction, practice, and knowledge, the level of education also affects consumer confidence in financial goals. Consumers with higher educational attainment tend to have a retirement savings program, which results in retirement confidence. This effect exists in both men and women [31]. Empirical research in the field of consumer finance has verified that education is more likely to have a promotional effect on consumer financial confidence. Furthermore, considering that consumers possessing a higher education level are in a position to reach financial goals, and educational attainment is positive to enhance consumer confidence in financial goals. Based on the discussion above, hypothesis 1 is put forward as follows:

> H1: Given other control variables, education is positively associated with consumer confidence in financial goals.

2.3 Financial Knowledge and Consumer Confidence in Financial Goals

Previous research has failed to distinguish financial knowledge from financial literacy clearly, and this study intends to fill this gap. Financial knowledge is measured in subjective and objective dimensions. The subjective financial knowledge is defined as consumers' self-assessment of the financial knowledge, and the belief in how to use their financial knowledge to deal with financial affairs. Meanwhile, the objective financial knowledge refers to compound interest, the relationship between nominal interest rates and inflation, and risk diversification, which is measured in terms of a series of questions. Hence, the above two dimensions of financial knowledge also refer to perceived financial literacy and actual financial literacy [32]. Furthermore, the difference between these two types of the financial knowledge is employed to measure consumers' overconfidence in financial literacy [33], and both objective and subjective financial knowledge are utilized to measure the indicators of financial capability [34]. Considering that financial confidence includes subjective financial knowledge, financial knowledge (or financial literacy below) refers to its objective aspect, namely objective financial knowledge. Lusardi et al. [35] revealed the current situation of financial knowledge and summarized related demographic characteristics, such as age, sex, and educational attainment. Specifically, the level of financial knowledge around the world is generally high for men even for old ages, and those with lower education are less likely to be informed about finance. Besides, financial trust increases with financial knowledge first and then decreases, namely the association between financial knowledge and financial trust is inversed-U shape [36].

Prior research that aims at exploring the linkage between financial knowledge and financial confidence is relatively scarce. Disney et al. [37] used the survey data from the British and claimed that consumers possessing poor financial knowledge have less confidence in explaining some financial concepts, and they are also less faithful in the decision of credit card use. It implies that consumers who are knowledgeable in finance are more likely to be confident in financial decisions, and they will have more confidence in achieving their financial goals as well.

Financial education is conducive to improving financial knowledge and then contributes to consumer financial confidence. Tim et al. [38] suggested that the way enhancing financial knowledge by financial education is proved to be effective. Xiao et al. [39] measures financial capability by five indicators (objective financial literacy, subjective financial literacy, desirable financial behavior, perceived financial capability, and the financial capability index) and indicated that all forms of financial education have a positive impact on the above five indicators. Thus, financial education enables consumers to enhance confidence in the ability to use financial knowledge. As for the confidence in financial goals, consumers who have received financial education in the workplace are more likely to have higher levels of retirement confidence [23]. Therefore, financial education is proved to positively contribute to consumer confidence in both financial knowledge and financial goals. Thus, hypothesis 2 is proposed as follows:

> H2: Given other control variables, financial knowledge positively contributes to consumer confidence in financial goals.

2.4 Financial Education and Consumer Confidence in Financial Goals

Prior research has discussed two places providing financial education, namely the school and workplace. For financial education in the school or university, extant studies suggest a positive association between financial education and financial knowledge. Utilizing the data from senior middle school students in Italy, Becchetti et al. [40] suggested that a 16-hour financial course significantly improves students' financial knowledge and their virtual investment attitudes. Borden et al. [41] claimed that seminar participation in college contributes to financial knowledge as well. In the workplace, financial education is suggested to be positive to help workers to plan a retirement savings program, which is positively associated with retirement confidence [42]. Simultaneously, Hira et al. [43] argued that financial education in the workplace improves workers' anticipation for living a better life, and the workers are more satisfied.

According to above discussions, consumers receiving financial education in the school may have a higher level of education than those who are educated about financial knowledge in the workplace. Since financial education is normally considered to be an important predictor of financial knowledge, consumers receiving financial education in the school may have both high educational attainment and advanced financial knowledge, which enhances consumer confidence in financial goals. Thus, this study puts forward hypothesis 3 as follows:

> H3: Given other control variables, consumers both with higher education levels and financial knowledge will be more confident in financial goals.

3. METHODOLOGY

3.1 Econometric Specification

The purpose of this study is to explore the roles of education and financial knowledge in consumer confidence in financial goals. This study firstly measures the correlations by performing bivariate analyses among education, financial knowledge, and consumer confidence in financial goals. In this study, the data of the variable of consumer confidence in financial goals is not continuous but discrete and ordered. According to Chen et al. [44], the approach of Ordinary Least Squares (OLS) regression is inappropriate, which will bring estimation bias. Hence, ordered logistic regression is conducted to investigate the roles of education and financial knowledge in consumer financial confidence. Financial knowledge, education-related variables, and other control variables are entered as independent variables. To verify the hypotheses, the following baseline empirical model is specified:

$$fin\_con_i = \alpha_0 + \sum_{k=1}^{N} \beta_k \times edu_{k,i} + \gamma \times fin\_kno_i + \sum_{l=1}^{M} \delta_l \times cv_{l,i} + \varepsilon_i \qquad (1)$$

In equation (1), fin_con denotes consumer confidence in financial goals, and edu stands for related variables of education levels, such as some college to bachelor's degree, and postgraduate degree or higher. fin_kno indicates consumers' objective financial knowledge, and cv stands for the control variables, financial circumstance-related variables, and the variables of demographic characteristics. Besides, i is the subscript and denotes the respondent, α_0 is the constant, β_k, γ, and δ_l are the coefficients of education-related variables, financial knowledge, and control variables, respectively. The random error term is represented by ε_i. Meanwhile, the numbers of education-related variables and other control variables are denoted by N and M, respectively.

3.2 Data Source

This study utilizes data from the 2018 National Financial Capability Study (NFCS), which is conducted by the US FINRA Investor Education Foundation. The foundation financially supports the state by state surveys, which is also the largest portion of the NFCS. After excluding missing values, the sample size in this study is 25862. The NFCS is aimed to investigate the determinants of financial capability and how they change with other factors, such as demographic characteristics, financial behaviors, attitudes, and financial knowledge.

3.3 Variables

Consumer confidence in financial goals, the dependent variable in this study, is measured by a question with a 4-point scale about the confidence in achieving financial goals, which is worded as "If you were to set a financial goal for yourself today, how confident are you in your ability to achieve it?" Responses are classified into four levels of confidence, in which 4-point refers to very confident in achieving financial goals while 1-point stands for not confident at all.

The main independent variables include education and financial knowledge. Educational attainment is measured by the question "What was the highest level of education that you completed?". In detail, the variable is encoded 1 when the highest level of education that consumers received is a high school or lower, and when the consumer's answer is some college with no degree, associate's degree, or bachelor's degree, it is encoded 2. Moreover, if the consumer possesses a post-graduate degree or higher, the variable is encoded 3. Consumers' financial knowledge is measured by a set of variables including 6 questions relating to interest rates, inflation, bond prices, mortgages, and risk diversification. The variable is encoded 1 if the consumer answers the question correctly and 0 otherwise. The number of consumer's correct answers to these 6 questions measures how much financial knowledge the consumer acknowledges. Thus, the value of the variable of financial knowledge ranges from 0 to 6.

Tracing back to the empirical model of prior research in the area of consumer finance [44,45], some demographic and socioeconomic characteristics in determining the degree to which consumers' confidence in reaching a financial goal is regarded as control variables. These variables include marital status (1 stands for married and 0 otherwise), gender (1 represents male and 0 otherwise), race (1 represents non-white and 0 otherwise), age (6 types as 18-24, 25-34, 35-44, 45-54, 55-64, and 65 or older), the number of financially dependent children, work status (Being unemployed or retired, being self-employed, and working part-time or full-time). Furthermore, two control variables associated with financial circumstances are also included, namely the risk attitude, and financial market participation (1 stands for engaging in the financial markets and 0 otherwise).

3.4 Descriptive Statistics

Table 1 displays the results of the descriptive statistics. The mean value of consumer confidence in financial goals is 3.035 on the 4-point scale, suggesting that consumers' evaluation of their confidence in financial goals is relatively high. The variables related to educational attainment include high school or lower, some college to bachelor's degree, and postgraduate degree or higher. Also, the mean values of the three education-related variables are 0.271, 0.596, and 0.134, respectively, which indicates that a slight majority of consumers have a middle educational level, and those with a lower or higher level of education account for a minor proportion. The mean value of financial knowledge is 3.174 out of 6, suggesting that consumers' financial knowledge is at a moderate level.

More specifically, while the proportion of males in the sample is slightly less than half (44.3%), more than half of the consumers are married (53.7%). In terms of the race, non-white accounts for about a quarter (25.7%) while the remaining (74.3%) of the consumers are white. As far as the structure of age is concerned, while the older age (20.2%) constitute almost twice of the younger age group (10.4%), the remaining age groups constitute nearly equal percentage 17.4% aged 25-34, 16.7% aged 35-44, 17.2% aged 45-54, and 18.1% aged 55-64. The mean value of the number of financially dependent children is 0.671. Besides, the average scores of risk attitude and financial market participation that are linked to financial circumstances, are 4.847 and 0.339, respectively.

4. EMPIRICAL RESULTS AND DISCUSSIONS

4.1 Results of Correlations

Table 2 presents the correlations among education, financial knowledge, and consumer confidence in financial goals. As is expected, the results show that both educational attainment

Table 1. Descriptive statistics

Variables	Obs.	Mean	Std. Dev.	Min	Max
Confidence in financial goals	25862	3.035	0.875	1	4
Financial knowledge	25862	3.174	1.659	0	6
Education	25862	1.863	0.621	1	3
High school or lower	25862	0.271	0.444	0	1
Some college to Bachelor's degree	25862	0.596	0.491	0	1
Post graduate degree or higher	25862	0.134	0.340	0	1
Male	25862	0.443	0.497	0	1
Non-white	25862	0.257	0.437	0	1
Age 18 to 24	25862	0.104	0.305	0	1
Age 25 to 34	25862	0.174	0.379	0	1
Age 35 to 44	25862	0.167	0.373	0	1
Age 45 to 54	25862	0.172	0.377	0	1
Age 55 to 64	25862	0.181	0.385	0	1
Age 65 or older	25862	0.202	0.402	0	1
Being married	25862	0.537	0.499	0	1
Number of children	25862	0.671	1.062	0	4
Risk attitude	25862	4.847	2.737	0	10
Participating in the financial markets	25862	0.339	0.473	0	1
Being unemployed or retired	25862	0.432	0.495	0	1
Being self-employed	25862	0.074	0.261	0	1
Working part-time or full-time	25862	0.494	0.500	0	1

Source: The results of descriptive statistics are from the dataset of the 2018 NFCS

Table 2. Correlations between education, financial knowledge and consumer confidence in financial goals

Variables	Consumer confidence in financial goals	Education	Financial knowledge	Risk attitude
Education	0.160***			
Financial knowledge	0.184***	0.307***		
Risk attitude	0.309***	0.154***	0.167***	
Participating in the financial markets	0.310***	0.223***	0.305***	0.323***

*Notes: The sample size is 28562. Besides, ***, ** and * stand for statistical significance at 1%, 5% and 10%, respectively*

and objective financial knowledge have a positive correlation with consumer confidence in financial goals and the coefficients are 0.160 and 0.184 at a significance of 1%, respectively. Besides, both the two variables related to financial circumstances are positively and significantly associated with consumer confidence in financial goals with coefficients of 0.309 and 0.310, respectively. Meanwhile, education is as expected to be positively associated with financial knowledge, and the coefficient is 0.307 at a significance of 1%. The results also suggest that consumers who are of higher risk tolerance and financial knowledge are more likely to participate in financial markets.

4.2 Regression Results of Education and Financial Knowledge on Consumer Confidence in Financial Goals

Table 3 presents the results of the regressions of education and financial knowledge on consumer confidence in financial goals. Columns (1) to (3) report regression results from the OLS estimates. In Column (1), the control variables and the independent variable of education are entered. In Column (2), the variables of education levels, including some college to bachelor's degree and post-graduate degree or higher, are entered. In Column (3), financial knowledge is incorporated. In Columns (4) to (6), ordered logistic regression is used to identify the collective impact of educational attainment and financial knowledge on consumer confidence in financial goals. Besides, the robust standard errors are calculated in all of the estimations. Furthermore, all of the estimations control the state fixed effects, so the heterogeneity from the U.S. states can be eliminated.

In Column (1), the coefficient of education is statistically positive at a significance of 1%. The coefficients of most control variables are statistically positive, which are as expected. For educational attainment, consumers with a higher level of education tend to have more confidence in reaching financial goals. Compared with women, men have slightly higher confidence in financial goals, because men are more likely to earn more than women, which is positive to achieve a financial goal. As far as the marital status is concerned, married consumers are more likely to be confident in achieving financial goals. More specifically, having a job positively contributes to consumer confidence in financial goals. One possible explanation is that consumers with jobs or married consumers have less uncertainty in income, which may enhance their financial confidence in the future. Concerning the race of the respondents, non-white consumers are proved to be more financially confident than the white. Financial market participation is conducive to establishing consumer confidence in financial goals, since participating in financial markets may help consumers to accumulate experiences in dealing with financial affairs. Furthermore, risk-averse consumers tend to be less confident in achieving goals regarding finance. However, the result indicates that the number of children that need financial help from their parents has a significant negative association with consumer confidence in financial goals, since these parents have greater financial pressure, which diminishes their financial confidence. Regarding the variables of age, the result suggests a U shape relationship, which implies that the consumer confidence in financial goals will decrease and then increase with age. The result implies that older consumers have accumulated wealth, which is positive to achieve financial goals.

In Column (2), a high school or lower is regarded as a reference category and the regression result shows that consumers with some college to bachelor's degree or higher are more confident in financial goals than those who are only educated with a high school degree or lower. Furthermore, the impact of a postgraduate degree or higher on consumer confidence in financial goals is higher than that of some college to a bachelor's degree. Thus, with the increase in the level of education, consumers tend to improve their confidence in achieving financial goals, which is as hypothesized in H1. In Column (3), the coefficient of financial knowledge on consumer confidence in financial goals is statistically positive. The result implies that higher financial knowledge has the potential in enhancing consumers' faith in achieving financial goals, which is consistent with H2.

Table 3. Results of regressions of education and financial knowledge on consumer confidence in financial goals

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Education	0.089***			0.169***		
	(0.008)			(0.021)		
Some college to Bachelor's degree		0.077***			0.119***	
		(0.012)			(0.029)	
Postgraduate degree or higher		0.184***			0.368***	
		(0.017)			(0.043)	
Financial knowledge			0.034***	0.055***	0.056***	
			(0.003)	(0.008)	(0.008)	
Financial knowledge ×Some college to Bachelor's degree						0.044***
						(0.007)
Financial knowledge ×Post graduate degree or higher						0.098***
						(0.009)
Constant	2.374***	2.466***	2.426***			
	(0.044)	(0.042)	(0.042)			
Male	0.037***	0.037***	0.023**	0.087***	0.087***	0.092***
	(0.010)	(0.010)	(0.011)	(0.026)	(0.026)	(0.025)
Non-white	0.064***	0.065***	0.077***	0.178***	0.180***	0.175***
	(0.012)	(0.012)	(0.012)	(0.030)	(0.030)	(0.030)
Age 25 to 34	-0.117***	-0.118***	-0.103***	-0.244***	-0.244***	-0.236***
	(0.020)	(0.020)	(0.020)	(0.048)	(0.048)	(0.048)
Age 35 to 44	-0.229***	-0.230***	-0.223***	-0.544***	-0.546***	-0.535***
	(0.020)	(0.020)	(0.020)	(0.049)	(0.049)	(0.049)
Age 45 to 54	-0.276***	-0.276***	-0.285***	-0.662***	-0.665***	-0.650***
	(0.020)	(0.020)	(0.020)	(0.048)	(0.048)	(0.048)
Age 55 to 64	-0.131***	-0.131***	-0.147***	-0.334***	-0.337***	-0.317***
	(0.020)	(0.020)	(0.020)	(0.049)	(0.049)	(0.048)
Age 65 or older	0.029	0.028	0.016	0.046	0.041	0.066
	(0.021)	(0.021)	(0.021)	(0.051)	(0.051)	(0.050)
Being married	0.209***	0.208***	0.205***	0.469***	0.468***	0.476***
	(0.011)	(0.011)	(0.011)	(0.026)	(0.026)	(0.026)
Number of children	-0.033***	-0.033***	-0.033***	-0.072***	-0.072***	-0.074***
	(0.005)	(0.005)	(0.005)	(0.013)	(0.013)	(0.013)
Risk attitude	0.070***	0.070***	0.070***	0.170***	0.170***	0.171***
	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)	(0.005)
Participating in the financial markets	0.352***	0.351***	0.348***	0.848***	0.846***	0.858***
	(0.012)	(0.012)	(0.012)	(0.029)	(0.029)	(0.029)
Being self-employed	0.094***	0.094***	0.102***	0.221***	0.222***	0.228***
	(0.020)	(0.020)	(0.020)	(0.049)	(0.050)	(0.049)
Working part-time or full-time	0.116***	0.116***	0.125***	0.215***	0.216***	0.227***
	(0.012)	(0.012)	(0.012)	(0.028)	(0.028)	(0.028)
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25862	25862	25862	25862	25862	25862
Adjusted R^2	0.178	0.178	0.178			
Pseudo R^2				0.083	0.083	0.083

*Notes: Reference categories are a high school or lower, and age 18 to 24. ***, ** and * represent 1%, 5%, and 10% significance levels, respectively, and the data in parentheses is the robust standard error*

Table 4. Results of robustness check

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Education	0.073*** (0.009)	0.101*** (0.012)	0.137*** (0.023)	0.259*** (0.060)	0.152*** (0.023)
Financial knowledge	0.027*** (0.003)	0.033*** (0.005)	0.035*** (0.009)	-0.005 (0.022)	0.074*** (0.009)
Constant	2.341*** (0.044)				
Male	0.024** (0.011)	0.050*** (0.015)	0.122*** (0.028)	0.269*** (0.068)	0.040 (0.028)
Non-white	0.073*** (0.012)	0.103*** (0.017)	0.187*** (0.033)	0.216*** (0.073)	0.162*** (0.034)
Age 25 to 34	-0.115*** (0.020)	-0.135*** (0.028)	-0.164*** (0.055)	-0.047 (0.102)	-0.304*** (0.057)
Age 35 to 44	-0.234*** (0.020)	-0.307*** (0.029)	-0.477*** (0.057)	-0.524*** (0.109)	-0.543*** (0.058)
Age 45 to 54	-0.291*** (0.020)	-0.376*** (0.028)	-0.595*** (0.056)	-0.581*** (0.113)	-0.666*** (0.057)
Age 55 to 64	-0.152*** (0.020)	-0.188*** (0.028)	-0.309*** (0.057)	-0.176 (0.121)	-0.338*** (0.057)
Age 65 or older	0.003 (0.021)	0.027 (0.029)	0.045 (0.059)	0.035 (0.137)	0.048 (0.059)
Being married	0.203*** (0.011)	0.275*** (0.015)	0.372*** (0.029)	0.327*** (0.069)	0.496*** (0.029)
Number of children	-0.032*** (0.005)	-0.044*** (0.007)	-0.103*** (0.014)	-0.053* (0.031)	-0.081*** (0.014)
Risk attitude	0.069*** (0.002)	0.096*** (0.003)	0.166*** (0.006)	0.210*** (0.013)	0.160*** (0.006)
Participating in the financial markets	0.337*** (0.012)	0.506*** (0.017)	0.798*** (0.031)	0.958*** (0.073)	0.804*** (0.032)
Being self-employed	0.093*** (0.020)	0.123*** (0.029)	0.065 (0.056)	0.092 (0.123)	0.225*** (0.055)
Working part-time or full-time	0.113*** (0.012)	0.130*** (0.017)	0.090*** (0.032)	0.101 (0.075)	0.238*** (0.032)
State fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	25862	25862	21287	4075	21010
Adjusted R^2	0.180				
Pseudo R^2		0.084	0.070	0.119	0.078

4.3 Further Discussion

In Table 3, Columns (4) to (6) present the effects of both educational attainment and financial knowledge on consumer confidence in financial goals. In Column (4), both the variables of education and financial knowledge are included, and the coefficients are statistically positive. In Column (5), compared with the consumers who have only been educated a high school or lower, consumers who have a Bachelor's degree, postgraduate or higher degree will be more confident in financial goals. More specifically, the coefficients are 0.119 and 0.368, respectively, and both are at the 1% significant level. Simultaneously, the coefficient of financial knowledge is statistically positive as well. When focusing on enhancing consumers' confidence in financial goals, it is more efficient to increase consumers' financial knowledge with a higher education level, especially for those with a post-graduate degree or higher. Therefore, the results are as hypothesized in H3.

In Column (6), the variables that financial knowledge interacted with education are incorporated. The estimated result indicates that consumers who are educated higher will be more confident in financial goals, since the coefficient that financial knowledge interacted with a postgraduate degree or higher is greater than that with some college to Bachelor's degree.

Therefore, consumers both with higher education levels and financial knowledge are proved to be more confident in financial goals. Thus, the results are still consistent with H3.

4.4 Robustness Check

To produce more robust and accurate estimations, this study also performs a comprehensive robustness check. First, ordered logistic regression is replaced by OLS and ordered probit regression, respectively. Second, the sample whose income is more than $150,000 or less than $15,000 is dropped so that the disturbance from outliers by income can be eliminated. Besides, the estimation robustness between consumers having received financial education and those who not, are also taken into account. Moreover, this study controls state heterogeneity, and all of the estimations calculate robust standard errors.

Table 4 displays the results of the robustness check. In Columns (1) and (2), ordered logistic regression is replaced by the methods of OLS and order probit regression, respectively. The results suggest that the coefficients of both education and financial knowledge are still statistically positive at a significance of 1%. In Columns (3), the result remains unchanged after dropping the outliers by income. In Columns (4), subsamples that only consumers have received financial education are included. Most variables are robust at a significance of 1% except for financial knowledge, which are as expected. Previous research claimed that financial education is conducive to improving financial knowledge [38], which implies that consumers having received financial education may be more knowledgeable in finance. Therefore, financial education has the potential to offset the impact of financial knowledge on consumer confidence in financial goals, which makes statistical results insignificant. The result can also be deduced from Column (5). As for consumers who have not had a financial education before, the coefficients of both education and financial knowledge remain positively significant. Based on the results of the robustness check, both educational attainment and financial knowledge are positively associated with consumer confidence in financial goals. Hence, consumers with higher education levels or more financially knowledgeable tend to be more confident in achieving financial goals. Thus, the results are still unchanged, which remains to be consistent with H1, H2, and H3.

5. CONCLUSIONS AND IMPLICATIONS

Prior studies on financial confidence have focused on financial capability and confidence to apply financial knowledge as usual, which is also called subjective financial knowledge or subjective financial literacy. Unlike previous research, this study is designed to investigate the roles of education and financial knowledge in consumer confidence in financial goals. Using the data from the 2018 US NFCS, the methods of OLS regression and ordered logistic regression are utilized to verify the roles of education and financial knowledge in consumer confidence in financial goals. To produce more robust estimates, a comprehensive robustness check is conducted as follows: First, the methods of OLS and ordered probit regression are utilized to perform re-estimates. Second, the income outliers are dropped. Third, the subsmaples of having receiving financial education are employed to conduct re-estimation.

The present findings are in favor of the notion that educational attainment is positively associated with consumer confidence in financial goals, which is identical to H1. Besides, financially knowledgeable consumers are more likely to be confident in achieving financial goals, which is consistent with H2. The empirical results also show that educational attainment and financial knowledge have a mutual promotion on financial confidence. Also, the interactive item of education and financial knowledge is positive to consumer confidence in financial goals. Thus, the results are as expected in H3.

The empirical results have important policy implications. This study examines two factors affecting consumer financial confidence, namely education, and financial knowledge. The results show that education and financial knowledge positively contribute to consumer confidence in financial goals. Hence, policymakers are suggested to increase the supply of education services, especially financial education, which is positive to improve consumer financial confidence. Besides, financial education is supposed to be vital to enhance consumers' financial knowledge. Hence, some courses about financial knowledge can be incorporated into the school curricula. Meanwhile, financial education programs are also encouraged to be provided in the workplace, which is pivotal to improve consumer financial confidence. Moreover, the results show that consumers having higher financial knowledge and education levels are more likely to be confident in achieving financial goals. Hence, financial related courses are recommended to be conducted in high-level education, such as for the postgraduates or doctoral students.

Limitations of this study should be acknowledged and the directions for future research are highlighted. The first is to establish the linkage between consumer confidence in utilizing financial knowledge and consumer confidence in achieving financial goals. Prior research indicates that both of these two kinds of confidences are positively correlated with financial education. The possible reason may be that consumers with higher objective financial knowledge are more likely to achieve their financial goals, so those who are confident in using their financial knowledge may also have confidence in achieving financial goals. The second is to use panel data to explore the roles of education and financial knowledge in consumer confidence in financial goals since this study uses cross-sectional data due to the data limitation, which makes it difficult to find out the dynamic changes of the impact of education and financial knowledge on consumer financial confidence. Besides, eliminating estimation bias is also difficult on the premise of using cross-section data. Therefore, panel data and more sophisticated estimations are considered to conduct more accurate studies in the future.

CONSENT

As per international standard or university standard, participant's written consent has been collected and preserved by the author(s).

ACKNOWLEDGEMENTS

The authors acknowledge the Social Science Foundation of the Ministry of Education of China (16YJC790006), Huiyuan Excellent Young Scholars of the University of International Business and Economics (18YQ07), and the Key Research Project Foundation of Beijing Finance Society.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Bowling A, Windsor J. Towards the good life: A population survey of dimensions of quality of life. Journal of Happiness Studies. 2001; 2(1):55-82.
2. Aboagye J, Jung JY. Debt holding, financial behavior, and financial satisfaction. Journal of Financial Counseling and Planning. 2018;29(2):208-218.
3. Xiao JJ, Chen C, Chen F. Consumer financial capability and financial satisfaction. Social Indicators Research. 2014;118(1): 415-432.
4. Huston SJ. Measuring financial literacy. Journal of Consumer Affairs. 2010;44(2): 296–316.
5. Robb CA, Woodyard AS. Financial knowledge and best practice behavior. Journal of Financial Counseling and Planning. 2011; 22(1): 60-70.
6. Chen F, Wang Y, Yu D. Financial literacy overconfidence and consumer financial satisfaction: Evidence from the 2018 US national financial capability study. Asian Journal of Economics, Business and Accounting. 2020;16(2):13-26.
7. Dario S, Mariacristina R, Elsa F. Four bright coins shining at me financial education in childhood, financial confidence in adulthood. Journal of Consumer Affairs. 2019;53(2): 630-651.
8. Mohamad FS, Teo TJ. The influence of financial literacy, saving behaviour, and financial management on retirement confidence among women working in the malaysian public sector. Asian Social Science. 2014;10(14): 40-51.
9. Estes R, Hosseini J. The gender gap on wall street: An empirical analysis of confidence in investment decision making. Journal of Psychology. 1988;122(6):577-590.
10. Joo SH, Grable JE. An exploratory framework of the determinants of financial satisfaction. Journal of Family and Economic Issues. 2004;25(1): 25-50.
11. Collins JM. Financial advice: A substitute for financial literacy? Social Science Electronic Publishing. 2012;21(4):307-322.
12. Ozdemir KK, Kokkizil M, Uysal G. Financial literacy in developing countries. Social Indicators Research. 2018;143: 325-353.
13. Lusardi A. Financial literacy and the need for financial education: Evidence and

implications. Swiss Journal of Economics and Statistics. 2019,;155(1).
14. Lusardi A, Mitchell OS. Planning and financial literacy: How do women fare? American Economic Review. 2008;98: 413-417.
15. Xiao JJ, Tang C, Shim S. Antecedents and consequences of risky credit behavior among college students: Application and extension of the theory of planned behavior. Social Indicators Research, 2011;92: 53-68.
16. Loibl C, Hira TK. Self-directed financial learning and financial satisfaction. Journal of Financial Counseling & Planning. 2005; 16(1): 11-21.
17. Babiarz P, Robb CA, Woodyard A. The demand for financial professionals' advice: The role of financial knowledge, satisfaction and confidence. Financial Services Review. 2012;21(4): 291-305.
18. Xiao JJ, Tang, C, Shim, S. Acting for happiness: Financial behavior and life satisfaction of college students. Social Indicators Research. 2009;92: 53-68.
19. Totenhagen CJ, Wilmarth MJ, Serido J, Curran MA, Shim S. Pathways from financial knowledge to relationship satisfaction: The roles of financial behaviors, perceived shared financial values with the romantic partner and debt. Journal of Family and Economic Issues. 2019;40: 423-437.
20. Woodyard AS, Robb CA. Consideration of financial satisfaction: What consumers know, feel and do from a financial perspective. Journal of Financial Therapy, 2016; 7(2): 4.
21. Finke MS, Howe JS, Huston SJ. Old age and the decline in financial literacy. Management Science. 2017;63(1):213-230.
22. Lusardi A, Mitchell OS. Financial literacy around the world: An overview. Journal of Pension Economics and Finance. 2011, 10(4): 497-508.
23. Kim J, Kwon J, Anderson EA. Factors related to retirement confidence: Retirement preparation and workplace financial education. Journal of Financial Counseling and Planning. 2005;12(2):77–89.
24. Rehl KM, Moor CC, Leitz LY, Grable JE. Widows' voices: The Value of financial planning. Journal of Financial Service Professionals. 2016;70(1): 53-60.
25. Yao J, Curseu PL, Liang AX. Educated and happy: A four-year study explaining the links between education, job fit and life satisfaction. Applied Psychology. 2019;68(1): 150-176.
26. Witter RA, Okun MA, Stock WA, Haring MJ. Education and subjective well-being: A meta-analysis. Educational Evaluation and Policy Analysis. 1984, 6(2):165-173.
27. Robb CA, Chatterjee S, Porto N, Cude BJ. The influence of student loan debt on financial satisfaction. Journal of Family and Economic Issues. 2019;40: 51-73.
28. Boisclair D, Lusardi A, Michaud PC. Financial literacy and retirement planning in Canada. Journal of Pension Economics and Finance. 2017;16(3): 277-296.
29. Bannier CE, Schwarz M. Gender- and education-related effects of financial literacy and confidence on financial wealth. Journal of Economic Psychology. 2018; 67(8): 66-86.
30. Lusardi A, Mitchell OS, Curto V. Financial literacy among the young. Journal of Consumer Affairs. 2010;44(2): 358–380.
31. Joo SH, Pauwels VW. Factors affecting workers' retirement confidence: A gender perspective. Journal of Financial Counseling and Planning. 2002;13(2):1-10.
32. Allgood S, Walstad WB. The effects of perceived and actual financial literacy on financial behaviors. Economic Inquiry. 2016;54(1): 675-697.
33. Xia T, Wang Z, Li K. Financial literacy overconfidence and stock market participation. Social Indicators Research. 2014;119(3):1233-1245.
34. Xiao JJ, Chen C, Sun L. Age differences in consumer financial capability. International Journal of Consumer Studies. 2015;39(4): 387-406.
35. Lusardi A, Mitchell OS. The economic importance of financial literacy: Theory and evidence. Journal of Economic Literature. 2014;52(1): 5-44.
36. Lachance ME, Tang N. Financial advice and trust. Financial Services Review. 2012;21(3): 209-226.
37. Disney R, Gathergood J. Financial literacy and consumer credit portfolios. Journal of Banking and Finance. 2013;37(7):2246-2254.
38. Kaiser T, Menkhoff L. Financial education in schools: A meta-analysis of experimental studies. Economics of Education Review. 2019;101930.

39. Xiao JJ, O'Neill B. Consumer Financial education and financial capability. International Journal of Consumer Studies. 2016;40(6): 712-721.
40. Becchetti L, Caiazza S, Coviell D. Financial education and investment attitudes in high schools: Evidence from a randomized experiment. Applied Financial Economics. 2011;23(10): 817-836.
41. Borden LM, Lee SA, Serido J, Collins D. Changing college students' financial knowledge, attitudes and behavior through seminar participation. Journal of Family and Economic Issues. 2008;29(1): 23-40.
42. Joo SH, Grable JE. Employee education and the likelihood of having a retirement savings program. Journal of Financial Counseling and Planning. 2005;16(1):37-49.
43. Hira TK, Loibl C. Understanding the impact of employer-provided financial education on workplace satisfaction. Journal of Consumer Affairs. 2010;39(1):173-194.
44. Chen F, Lu J, Li J, Wang W, Bissielou H. Sustainable financial education and consumer life satisfaction. Sustainability. 2020;12(3):1150.
45. Grable JE, Cupples S, Fernatt F, Anderson NR. Evaluating the link between perceived income adequacy and financial satisfaction: A resource deficit hypothesis approach. Social Indicators Research, 2013;114(3): 1109-1124.

Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle4.com/review-history/63457