

# **A comparative study of financial literacy, retirement planning and delinquency in payment: the Kazakhstan case**

Maya KATENOVA\*, Sang HOON LEE\*\*

## **Abstract**

*Financial knowledge is assumed to help people in making good choices in their financial attitude and behaviour. Financial literacy, retirement planning and delinquency in payment were studied in different regions of Kazakhstan in both 2015 and 2019. Questionnaires were distributed among different groups of the population. Excluding invalid and unsuitable answers for the analysis, the total number of survey responses resulted was 830 for 2015 and 983 for 2019. The authors analyzed the responses to questions regarding financial attitude/behaviour such as Retirement Planning, Delinquency in payments, and the frequency of making Money Decisions.*

**Keywords:** retirement planning, delinquency in payment, financial literacy, personal finance, Kazakhstan

## **Introduction**

Traditional economic theory postulates that forward-looking individuals maximize expected lifetime utility properly by using financial information to build retirement assets over their working lives. Personal financial planning plays an important role during the whole lifetime of an individual. Previous studies report the fact that financial literacy levels among respondents are low in many countries. The issue of personal finance is associated with poor financial planning and retirement planning. This aspect was discussed in the following studies: van Rooij, Lusardi, and Alessie (2011a, 2011b), Bucher-Koenen and Lusardi (2011), Lusardi and Mitchell (2011), Klapper and Panos (2011), Agnew *et al.*, (2013), Clark *et al.*, (2011), and Boisclair *et al.*, (2014). Those studies were primarily carried out in developed countries such as the USA, Canada, and Germany etc. Hadar, Sood, and Fox (2013) mentioned the fact that an increasing body of research suggests that many consumers lack the necessary financial literacy to evaluate financial products and choose among

---

\* Maya KATENOVA is Assistant Professor at the KIMEP University, Almaty, Kazakhstan; E-mail: m.katenova@rambler.ru.

\*\* Sang HOON LEE is Professor at the KIMEP University, Almaty, Kazakhstan.

them adequately (Benartzi and Thaler, 2001; Benartzi, 2007; Choi *et al.*, 2005, 2011; Lusardi and Mitchell, 2007b, 2008; Lusardi *et al.*, 2010).

The first study was conducted in Kazakhstan, in 2015, by Lee and Kuttyzholova. Authors found out that those who are male, non-single, with some business education and higher income tend to have better retirement planning status than those who are female, single, with no business education and a lower income. Another result of the study is that both financial literacy level and retirement planning do affect each other. The mutual causality of both variables was empirically proved by authors. The same study was performed in Kazakhstan in 2019 and the results are compared and demonstrated in this paper. We made an attempt to compare the results of both studies and to find differences and similarities.

The new pension reform in Kazakhstan may have affected people's concern about retirement planning. In June 2013, Kazakhstan introduced a new pension reform on the existing fully-funded mandatory defined contribution system which had been severely weakened after the global financial crisis. The reform became an excellent opportunity for the public to be informed of the importance of retirement planning early on. The next step that the government needs to target will be to provide the appropriate education for the citizen to make prudent financial decisions, including retirement planning. Financial literacy and education remain popular topics among the media, policymakers, and academics. The issue of retirement planning and delinquency in payment is popularized and discussed worldwide, especially in developed countries.

A properly managed retirement plan is key to the financial success of an individual. For example, Skimmyhorn (2016) mentioned the importance of financial education. The need to focus on financial education was discussed by the author. The federal government proposed different programs such as President George W. Bush's 2008 Financial Literacy Advisory Council, President Obama's 2009 financial literacy campaign, and no less than 16 federal programs. (GAO) 2012). Yet, there is no evidence that financial education improves individuals' economic decision making. Objective observers generally admit that research to date does not demonstrate a causal chain from financial education to higher financial literacy, to better financial behaviour, to improved financial outcomes (Cole and Shastry, 2008; Hathaway and Khatiwada, 2008; Willis, 2008; Gale and Levine, 2010), in part due to biases, heuristics, and other nonrational influences on financial decisions. The aforementioned retirement planning issue was actively studied in developed countries. However, the issue was not thoroughly studied in developing or emerging economies. Therefore, this study is focused on the aforementioned issue of retirement planning and delinquency in payments in Kazakhstan. As defined by Lusardi and Mitchel (2014), financial literacy is an ability to process economic information and to make informed decisions about financial planning, wealth accumulation, debt, and pensions. Such type of knowledge helps physical entities to invest intelligently, take loans at cheaper costs, and to accumulate wealth in shorter periods of time. Physical entities are similar to

companies and they also strive for wealth accumulation. They also do borrow and do invest and achieve their goals throughout their lives. The paper is devoted to the issue of retirement planning and delinquency in payment in Kazakhstan and it evaluates the ability to manage payments and deal with retirement planning among certain categories of Kazakhstani population.

At the same time, the paper strives to identify whether Kazakhstani people need any training in the area of financial literacy and personal finance.

## 1. Literature review

Hadar *et al.*, (2013) argue that, among the most important decisions that consumers make, those that involve financial products- from the choice of a retirement savings portfolio to the terms of a home mortgage, to the lease parameters on a car are essential. The author claims that there has been a proliferation of new and complex financial products available to consumers. People simply cannot choose wisely and make sound financial decisions due to the low level of financial literacy. As mentioned, this topic was discussed in developed countries. “Financial education programs aim to provide consumers with the necessary expertise or knowledge to better manage their financial affairs. In so doing, financial education programs typically focus on increasing consumers’ OK” (Fernandez *et al.*, 2014). The term OK has been used to refer to accurate product-related information stored in memory.

As mentioned by Lee and Kuttyzhlova (2015), a comprehensive literature review on financial literacy vs. retirement planning, wealth accumulation, and consumer behaviour as well as an assessment of financial literacy program is discussed by Lusardi and Mitchell (2014). The authors consider financial knowledge as a form of investment in human capital, which may have the optimum level achieved for each individual given the heterogeneity of costs and benefits perceived by that person. In their survey of existing studies, they find evidence that the low literacy levels are pervasive around the world, especially in old and young populations, although most participants in the surveys are confident of their financial knowledge without recognizing their own shortcomings. They also find evidence of heterogeneity in literacy levels due to differences in gender and races, income and work status, education levels and family background, hometown. In assessing the link between literacy levels and financial behaviours, they conclude that more financially literate people make more and better money decisions and retirement planning, and less financial mistakes and herd behaviours.

Overall, the majority of previous studies indicate that there is a positive relationship between financial knowledge and retirement planning. A person with a higher level of financial knowledge is most likely better prepared for his or her retirement. The existing literature on financial literacy has also reported that young adults have lower levels of financial literacy, relative to older cohorts. Lusardi and Mitchell (2014), Allgood and Walstad (2013). One potential reason for lower levels

of literacy among young adults may be due to a lack of experience in making financial decisions. Lusardi and Mitchell (2014), however, argue that while older adults score relatively better on measures of financial literacy, they still have low levels of financial literacy. It does not appear that experience, based on age alone, increases financial literacy. This study furthers that understanding by investigating the financial literacy of young adults, aged 18 to 34, and their financial behaviours. The data for the study comes from the National Financial Capability Study (NFCS). The National Financial Capability Study (NFCS) is located in the United States of America. It was funded by the FINRA Investor Education Foundation and conducted by ARC Research.

The questions for our study were initially developed by Lusardi and Mitchell (2008) in their survey study of the 2004 Health and Retirement Study (HRS). Those basic questions are further discussed in the next chapter. Previous research exploring financial literacy in developed countries found out that individuals have relatively low levels of literacy (Lusardi and Mitchell, 2014; Allgood and Walstad, 2013; Knoll and Houts, 2012). Researchers found out some interesting facts. For example, females have lower scores than males (Jappelli and Padula, 2013; Fonseca *et al.*, 2012, Lusardi and Mitchell, 2008); individuals with less education also have less financial literacy (Lusardi and Mitchell, 2011; Monticone, 2010); and unemployed workers are less financially literate than employed workers (Lusardi and Tuffano, 2012).

Ali *et al.*, (2015) mentioned the fact that achieving personal financial wellbeing is not only important to individuals but also, to an aggregate level, it contributes to the efficiency and prosperity of the whole country. Personal finance is becoming more complicated than ever before. As a result, individuals all over the world are becoming increasingly concerned about managing their own financial matters. Personal finance encompasses simple daily activities such as saving money and paying bills and challenging tasks such as conducting tax planning and assessing future risks. As such, there is a danger of poor self-financial management. As a result, there is a risk that one may spend more than his/her earnings, leading to personal bankruptcy.

Behrman *et al.*, (2010) argue that forward-looking individuals maximize expected lifetime utility by using economic information to build retirement assets over their working lives. Authors claim that estimated impacts are substantial enough to suggest that investments in financial literacy could have large positive payoffs. Traditional economic theory postulates that we should build our own net worth during our lifetime and get ready for retirement. At the same time, there are concerns that households are not saving enough for retirement, are accumulating excessive debt, and are not taking advantage of financial innovation (Lusardi and Mitchell, 2007a). Fewer than half of the Americans have not even attempted to estimate how much money they might need in retirement, and many older adults face significant retirement saving shortfalls. This is a matter of concern to those focused on retirement saving, inasmuch as data on older adults indicates that the financially illiterate appear to be unable to calculate how much they need to save for retirement,

and they also have less wealth (Lusardi and Mitchell, 2007b). Economic explanations for these shortfalls include dispersion in discount rates, risk aversion, and credit constraints. Individuals face difficulty in dealing with retirement planning.

Poor retirement planning and delinquency in payment are both results of poor personal financial planning at an individual level. The literature shows that a large fraction of the population is absolutely unprepared to make these decisions. Lusardi (Lusardi and Mitchell, 2007b; Lusardi and Tufano, 2015) find that there are low levels of financial literacy in the US population, an inability to understand basic financial concepts, such as the importance of retirement savings and poor judgment in borrowing decisions. Similarly, Cole *et al.*, (2011) document very low levels of financial literacy for households in India and Indonesia. In addition, these studies find a strong correlation between understanding financial concepts, better financial decisions, and household well-being. Lusardi and Mitchell (2014) mentioned that there is a rapid spread of such financially complex products as student loans, mortgage loans, credit cards, pension accounts, and annuities. Many of these financial products have proven to be difficult for financially unsophisticated investors to deal with. Such developments have their advantages, they also impose a much greater responsibility on households to borrow, save, and invest (Johnson and Sherraden, 2007). Authors such as Lusardi and Mitchell (2007a, 2007b, 2007c, 2017) and Lusardi and Tufano (2015) have found low levels of financial literacy in the US population, an inability to understand basic financial concepts, such as the importance of retirement savings and poor judgment in borrowing decisions. At the same time, Cole *et al.*, (2011) found out that there are very low levels of financial literacy for households in India and Indonesia.

## 2. Methodology

Both 2015 and 2019 surveys were performed by KIMEP University student groups as a class project in the spring semester of each year by using face-to-face and paper-and-pencil surveys in different cities and towns of Kazakhstan. Excluding invalid and unsuitable answers for the analysis, the total number of survey responses resulted was 830 for 2015 and 983 for 2019, respectively. For the purpose of analysing the impacts of personal profiles on the financial literacy level and financial attitude/behaviour, we will mainly focus on gender, education level, ethnicity, hometown, marital status, and income level in this study. Although illiteracy in financial issues is a widespread issue all over the world, particularly the female, old and young groups, and low-income people are more vulnerable in financial transactions and decision-making due to their lack of financial knowledge. In addition, the majority of previous studies show a positive relationship between the literacy level and proper financial behaviour (Lusardi and Mitchell, 2014). Different parameters of the Respondents are presented in Tables 1a and 1b.

**Table 1a. Profiles of Respondents**

Question Answer	Gender		Business Education			Marital Status		
	Male	Female	None	< 1yr	< 2yr	> 2yr	Single	Non- single
<b>2015</b>	416, 50.1%	414, 49.9%	265, 31.9%	165, 19.9%	175, 21.1%	225, 27.1%	412, 49.6%	418, 50.4%
<b>2019</b>	514, 52.3%	469, 47.7%	182, 18.5%	177, 18.0%	243, 24.7%	381, 38.8%	642, 65.3%	341, 34.7%
<b>Diff</b>	2.2	-2.2	-13.4%	-1.9%	3.6%	11.7%	15.7%	-15.7%
<b>t-stat</b>		-0.92		-1.02	1.83 *	5.24 ***		-6.74 ***

*The significance levels are represented as: \* for 10%, \*\* for 5%, and \*\*\* for 1% levels*  
Source: Authors' calculations.

**Table 1b. Profiles of Respondents**

Question Answer	Hometown		Ethnicity			Income		
	Village	City	KAZ	RUS	Other	None	< \$25K	> \$25K
<b>2015</b>	510, 61.4%	320, 38.6%	502, 60.5%	150, 18.1%	178, 21.4%	246, 29.6%	410, 49.4%	174, 21.0%
<b>2019</b>	465, 47.3%	518, 52.7%	515, 52.4%	224, 22.8%	244, 24.8%	273, 27.8%	407, 41.4%	303, 30.8%
<b>Diff</b>	-14.1%	14.1%	-8.1%	4.7%	3.4%	-1.9%	-8.0%	9.9%
<b>t-stat</b>		6.02		2.47 **	1.69 *		-3.41 ***	4.75 ***

*The significance levels are represented as: \* for 10%, \*\* for 5%, and \*\*\* for 1% levels*  
Source: Authors' calculations.

Compared to the 2015 survey, the 2019 survey shows more weight on higher-educated, city-residing, single, and higher-income respondents. The proportion of high business education (more than 2 years) was more than 20% in both studies, indicating the possibilities of samples to include a large number of students in both studies. In addition, the high-income groups (annual income of more than \$25,000) represent 21% in the 2015 survey and 31% in the 2019 survey. Considering that the per capita income of Kazakhstan was \$10,857 at the end of 2018 and \$10,646 at the end of 2014, the high-income group is over-represented in the survey, potentially due to sampling of many affluent family members of the students. Other than these issues, the sample sizes are sufficiently large and responses are more or less balanced, representing the characteristics of the population.

We analyzed the correlation coefficients among the personal profiles of the respondents (Table 2, 3). We used an Excel spreadsheet to collect and analyze the data. Since the numbers are indicators and ranks, they are qualitative in nature. In

addition, the differences within multiple rankings are ambiguous considering the difficulties in measuring the true distances among different classes.

**Table 2. Correlation Coefficient Matrix for Personal Profiles (2015)**

	Gender	Business Education	Ethnicity	Hometown	Marital Status	Income
Gender	1.0000					
Business Education	-0.0809	1.0000				
Ethnicity	0.0107	0.0388	1.0000			
Hometown	-0.0823	0.0763	0.0967	1.0000		
Marital Status	-0.0747	-0.0285	0.0241	-0.1246	1.0000	
Income	-0.1505	0.0431	0.0085	0.0412	0.1920	1.0000

*Correlations with less than 10% significance level are in blue numbers*

Source: Authors' calculations.

**Table 3. Correlation Coefficient Matrix for Personal Profiles (2019)**

	Gender	Business Education	Ethnicity	Hometown	Marital Status	Income
Gender	1.0000					
Business Education	-0.0543	1.0000				
Ethnicity	0.0740	-0.0659	1.0000			
Hometown	-0.0618	0.0204	0.1509	1.0000		
Marital Status	0.0398	-0.0092	0.0026	-0.0501	1.0000	
Income	-0.1233	0.1883	0.0945	0.0351	0.3174	1.0000

*Correlations with less than 10% significance level are in blue numbers*

Source: Authors' calculations.

Therefore, we transform all the observations into two groups of each class and assign binary numbers (0, 1) in each group in the further correlation analysis. In the 2019 study, Female has significant negative correlations with Business Education, Hometown, and Income while it has a significant positive correlation with Ethnicity. The opposite is true for the male group. Compared to male respondents, females tend to have less business education, reside in villages and small towns, and earn less income. In addition, more non-Kazakh females are included in the sample compared to the ethnicity of the male sample. More or less, the same interpretation can be made for the 2015 study, except for the fact that the females in the 2015 sample are less likely to be married. Non-Kazakhs are less business educated, and the high-income earners are, most likely, highly business educated in the 2019 sample. In the 2015

study, city dwellers have more business education than village residents. In both 2019 and 2015 studies, non-Kazakhs tend to live in the cities, while they earn higher incomes than Kazakhs in the 2019 sample. Married/Non-single respondents tend to live in the village in the 2015 sample while they have higher earnings compared to single respondents in both 2019 and 2015 samples.

People behave based on what they know, and financial behaviour will be influenced by the financial literacy level, among others. Knowledge about basic financial and economic relationships and financial products can motivate people for preparing their financial wellbeing in the future and help them to make good choices in financial transactions. In Kazakhstan, most financial activities are bank-related, and people have options to choose better bank accounts by considering interest rates and terms of deposit and lending. Since financial products have recently become more complex, people tend to rely on relationships with their own favourite banks rather than to carefully analyze the risk and return trade-offs in choosing their financial transactions. The capital market is relatively underdeveloped in Kazakhstan and knowledge of capital market services and products is limited for the Kazakh people.

We asked five basic financial literacy questions related to: understanding of present value and future value at a given interest rate, the effect of inflation on purchasing power and required return, and risk diversification concept. The actual questions asked in Russian and Kazakh languages are the following:

1. You are promised to receive \$100 one year later, the Present Value of this \$100 will be \_\_\_\_\_ when the interest rate is \_\_\_\_\_.
  - a. higher, higher;
  - b. lower, lower;
  - c. higher, lower;
  - d. None of the above.
2. Suppose you had \$100 in your savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?
  - a. More than \$102;
  - b. Less than \$102;
  - c. Exactly \$102;
  - d. Don't know.
3. Imagine that the interest on your savings account was 2% per year and inflation was 4% per year. After one year, how much would you be able to buy with the money in this account?
  - a. More than today;
  - b. Less than today;
  - c. Exactly the same;
  - d. Don't know.

4. How do you assess the following statement? “Buying a single company’s stock usually provides a safer return than a stock mutual fund.”
  - a. True;
  - b. False;
  - c. Don’t know.
5. All else equal, an increase in inflation will cause investors to require a higher rate of return on an asset.
  - a. True;
  - b. False;
  - c. Don’t know.

The proportions of correct answers in both surveys are 36% - 37% on Present Value, 58% - 65% on Future Value, 46% - 55% on Inflation, 38% - 39% on Diversification, and 48% - 52% on Required Return. Compared to the 2015 survey, the 2019 answers show a significantly higher proportion of correct answers on Future Value (64.8% vs 58.6%) and a significantly lower proportion of correct answers on Inflation (46.6% vs 55.2%). The probabilities of correct answers on the Present Value (37.2% and 36.5%) and Diversification (39.3% and 38.7%) questions are substantially lower than those of other questions in both surveys. It seems that discounting is considered more difficult than compounding, and the risk diversification concept in capital market investment is not well-established among the respondents of both 2019 and 2015 surveys (Table 4a, 4b).

**Table 4a. Basic Financial Literacy Questions**

Question	Present Value		Future Value		Inflation	
	Not correct	Correct	Not correct	Correct	Not correct	Correct
<b>2015</b>	527, 63.5%	303, 36.5%	344, 41.4%	486, 58.6%	372, 44.8%	458, 55.2%
<b>2019</b>	617, 62.8%	366, 37.2%	346, 35.2%	637, 64.8%	525, 53.4%	458, 46.6%
<b>Diff</b>	-0.7%	0.7%	-6.2%	6.2%	8.6%	-8.6%
<b>t-stat</b>	0.32		2.77		-3.65	
			***		***	

*The significance levels are represented as: \* for 10%, \*\* for 5%, and \*\*\* for 1% levels*  
 Source: Authors’ calculations.

**Table 4b. Basic Financial Literacy Questions**

Question	Diversification		Required Return	
	Not correct	Correct	Not correct	Correct
<b>2015</b>	509, 61.3%	321, 38.7%	426, 51.3%	404, 408.7%
<b>2019</b>	597, 60.7%	386, 39.3%	472, 48.0%	511, 52.0%

<b>Diff</b>	-0.6%	0.6%	-3.3%	3.3%
<b>t-stat</b>		0.26		1.40

*The significance levels are represented as: \* for 10%, \*\* for 5%, and \*\*\* for 1% levels*  
*Source: Authors' calculations.*

Table 5 shows mean literacy scores for different groups and the differences between groups within a class. The mean scores for the literacy level were 2.399 and 2.376 out of the maximum score of 5 in the 2019 and 2015 surveys, respectively. More business education and residing in cities significantly help in improving the literacy score in both surveys. People residing in cities may interact more with others and are more frequently exposed to financial issues compared to village dwellers. People who have less than 1 year of business education scored substantially poorer compared to the overall mean score. Additionally, in the 2015 survey, females marked a significantly lower score than males and high-income earners scored significantly higher than none/low-income earners.

**Table 5. Mean Score for Each Group and Differences between Groups in Literacy Score (Maximum Basic Literacy Score =5)**

		2015 Survey		2019 Survey	
		Mean	p-value	Mean	p-value
<b>Gender</b>	Male	2.529		2.427	
	Female	2.222		2.369	
	Difference	-0.307	0.002 ***	-0.057	0.53
<b>Business Education</b>	Less than 1 year	1.972		2.056	
	More than 1 year	2.810		2.596	
	Difference	0.838	0.000 ***	0.540	0.000 ***
<b>Ethnicity</b>	Kazakh	2.339		2.460	
	Non-Kazakh	2.433		2.331	
	Difference	0.094	0.352	-0.129	0.164
<b>Hometown</b>	Village	2.268		2.170	
	City	2.561		2.604	
	Difference	0.294	0.004 ***	0.434	0.000 ***
<b>Marital Status</b>	Single	2.308		2.419	
	Non-single	2.443		2.361	
	Difference	0.134	0.175	-0.058	0.549
<b>Income</b>	None/Less than \$25K	2.232		2.441	

More than \$25K	2.920			2.383		
Difference	0.688	0.000	***	-0.058	0.170	
<b>All sample</b>	2.376	0.000	***	2.399	0.000	***

The significance levels are represented as: \* for 10%, \*\* for 5%, and \*\*\* for 1% levels

Source: Authors' calculations.

The questions on Future Value, Inflation, and Diversification are similar to the internationally-standardized financial literacy questions, and in Table 6, Kazakhstan's performances are compared to previously published international studies. In general, Kazakhstan's understandings of Inflation and Diversification are substantially lower than other countries'. Although the understanding of Future Value is comparable with the level in the US, Kazakhstan's performances on All Correct is lower than in all other countries except Russia and its performance on None Correct is poorer than in other countries except in Russia and Italy. The relatively lower performance in the diversification question is a universal phenomenon in the world.

This score is particularly low in Kazakhstan, and it may be due to:

- (1) the question is structured in asking the capital market investment, and
- (2) Kazakh people are less experienced in capital market investment activities.

It seems that financial knowledge can be improved and fully understood through experimentation and exposure.

**Table 6. International Comparisons on the Basic Financial Literacy Levels**

	Future Value	Inflation	Diversification	All 3 Correct	None Correct
<b>USA</b>					
All sample	65%	64%	52%	35%	10%
Older than 50 years	67%	75%	52%	34%	10%
Employees in Financial Co.	76%	92%	88%		
<b>Germany</b>					
All sample	82%	78%	62%	53%	10%
West Germany*	85%	82%	66%	58%	
East Germany*	78%	70%	54%	45%	
<b>Netherlands</b>	75%	80%	48%	46%	11%
<b>Australia</b>	83%	69%	55%	43%	9%
<b>Canada</b>	78%	66%	59%	42%	10%
<b>Russia</b>	36%	51%	13%	3%	28%
<b>Italy</b>				28%	20%
<b>Sweden</b>				27%	11%
<b>Japan</b>				27%	17%

<b>New Zealand</b>				27%	4%
<b>Kazakhstan (2015)</b>	59%	55%	39%	20%	18%
<b>Kazakhstan (2019)</b>	65%	47%	39%	19%	19%

\* Simple average of four different groups in Table 3 of Bucher-Koenen and Lusardi (2011)

\*\* Excluding Kazakhstan, the data were adopted from Lusardi and Mitchell (2014)

Source: Authors' calculations.

**Table 7. Correlation Coefficient Matrix for Literacy Questions (2015)**

	<b>Present Value</b>	<b>Future Value</b>	<b>Inflation</b>	<b>Diversification</b>	<b>Required Return</b>
<b>Present Value</b>	1.0000				
<b>Future Value</b>	0.1960	1.0000			
<b>Inflation</b>	0.2456	0.2450	1.0000		
<b>Diversification</b>	0.2046	0.2162	0.1337	1.0000	
<b>Required Return</b>	0.0777	0.2028	0.0391	0.1423	1.0000

Correlations with less than 10% significance level are in blue numbers

Source: Authors' calculations.

**Table 8. Correlation Coefficient Matrix for Literacy Questions (2019)**

	<b>Present Value</b>	<b>Future Value</b>	<b>Inflation</b>	<b>Diversification</b>	<b>Required Return</b>
<b>Present Value</b>	1.0000				
<b>Future Value</b>	0.2592	1.0000			
<b>Inflation</b>	0.1412	0.2913	1.0000		
<b>Diversification</b>	0.0960	0.0910	0.2345	1.0000	
<b>Required Return</b>	0.1548	0.2382	0.1915	0.1932	1.0000

Correlations with less than 10% significance level are in blue numbers

Source: Authors' calculations.

As expected, the correct answers on all five questions, except on the Inflation and Required Return in the 2015 survey, are significantly positively correlated in Tables 7 and 8. Although the concept of the Required Return question is essentially the same as that on the Inflation question, the correlation coefficient between the two is not significant in the 2015 sample. Besides this, the levels of understanding in terms of interest rate discounting and compounding, inflation, and diversification are closely related.

### 3. Results

We analyzed the responses on questions for financial attitude/behaviour such as Retirement Planning, Delinquency in payments, and the frequency of making Money Decisions. Financial knowledge is assumed to help people in making good choices in their financial attitudes and behaviour. About 35 percent to 40 percent of respondents answered that they had already planned their retirement, and about 30 percent of respondents answered that they considered planning their retirement. The responses in 2019 are poorer than those seen in the 2015 survey, partly because more students were sampled in the 2019 survey. In Kazakhstan, the social safety net is relatively limited compared to other advanced countries, and the expected benefit after retirement from the Unified Pension Fund is far lower than the expected expenses of the general public. This situation should force people to take the responsibility of their own or their families' retirement. The proportion that answered already planned retirement substantially dropped in the 2019 survey. This can be explained due to the fact that, in addition to financial knowledge, general economic conditions, the level of discretionary income, and government policy may also affect people's attitudes toward retirement planning. The economic conditions in Kazakhstan have been substantially deteriorated due to the significant drop in oil price in 2014 and to the near currency crisis experienced after the free-floating exchange rate policy in 2015. In addition, the 2015 survey was performed after the heated national debate on the pension reform policy announced in 2013. The national exposure of the issue and the risk of not being prepared for retirement could help people appreciate the value of savings and the importance of planning a retirement (Table 9).

**Table 9. Financial Attitude/Behaviour Questions**

Question	Retirement Plan			Delinquency		Money Decision	
	No	Planning	Yes	Many	Never	Minor	Major
<b>2015</b>	256, 30.8328, 33.4%	241, 29.0%	333, 40.1%	114, 13.7%	716, 86.3%	299, 36.0%	531, 64.0%
<b>2019</b>	2.5%	309, 31.4%	346, 35.2%	152, 15.5%	831, 84.5%	478, 48.6%	505, 51.4%
<b>Diff</b>		2.4%	-4.9%	1.7%	-1.7%	12.6%	-12.6%
<b>t-stat</b>		1.11	-2.16 **		-1.01		-5.35 ***

Source: Authors' calculations.

Delinquency in payment is not a well-accepted behaviour anywhere in the world due to its negative impact on the individual's trustworthiness and credit rating. It is also true in Kazakhstan. Due to the financial crisis during 2008–2009, a large number of non-performing loans and defaults led to several banks' and lending

institutions' failures. More than ten years later, the commercial banking sector is not yet fully recovered from this massive loan defaults. Financial knowledge may help people not to delinquent in payment, but economic and personal financial conditions would have a stronger impact on delinquency in payment. In addition, due to bias and irrational behaviour, people may make mistakes and wrong choices even though they know that delinquency in payment would hurt banking relationships and employment opportunities. In Kazakhstan, the proportion of answers related to whether they perform many delinquencies in payments is less than 16 percent; more than 84 percent responded that they never or rarely delinquent in payments.

More than half of respondents answered that they make major money-related decisions themselves. This means that those who do not make any earnings (27% - 30% of total) still make major money-related decisions. In the 2019 survey, the proportion of responses for major money-related decisions is substantially lower than that in the 2015 survey. Again, we suspect that more students, who may not make frequent money-related decisions, are sampled in the 2019 survey.

**Table 10. Correlation Coefficient Matrix for Financial Attitude/Behaviour (2015)**

	<b>Retirement Plan</b>	<b>Delinquency Payment</b>	<b>Money Decision</b>
<b>Retirement Plan</b>	1.0000		
<b>Delinquency Payment</b>	-0.0010	1.0000	
<b>Money Decision</b>	0.2833	-0.0041	1.0000

*Correlations with less than 10% significance level are in blue numbers*

Source: Authors' calculations.

It is expected that these financial attitudes and behaviour be positively correlated with the financial literacy level as well. The higher the financial knowledge a person has, the earlier he/she plans retirement, the less delinquent in payments, and the more money-related decisions he/she will make. In Table 11, the correlations between both Retirement Plan and Money Decision with Delinquency in Payment are strongly negative, meaning that the person who has already planned retirement and/or frequently makes money-related decisions is most likely to never or rarely be delinquent in payment. In the 2015 survey (Table 10), however, we do not see such strong results observed in 2019 although the signs are still negative. On the other hand, significant positive correlations between Retirement Plan and Money Decisions are observed in both 2019 and 2015 surveys.

Although proper financial attitudes/behaviour could be the result of an individual's appropriate motivation, understanding basic financial knowledge would help the individual make a rational decision and reduce mistakes in risk-related behaviour. However, it is an empirical question to confirm the effect of basic financial knowledge on making proper financial decisions since serious doubts about the

rationality of people's judgments and decisions have been raised in many previous studies. Therefore, we focus on the possible association between the level of basic financial literacy and financial attitudes/behaviour by analysing the correlations between these variables (Table 12, 13).

**Table 11. Correlation Coefficient Matrix for Financial Attitude/Behaviour (2019)**

	<b>Retirement Plan</b>	<b>Delinquency Payment</b>	<b>Money Decision</b>
<b>Retirement Plan</b>	1.0000		
<b>Delinquency Payment</b>	-0.1561	1.0000	
<b>Money Decision</b>	0.3590	-0.2022	1.0000

*Correlations with less than 10% significance level are in blue numbers*

Source: Authors' calculations.

**Table 12. Correlation Coefficient Matrix for Behaviour-Literacy (2015)**

	<b>Retirement Plan</b>	<b>Delinquency Payment</b>	<b>Money Decision</b>
<b>Present Value</b>	-0.0389	0.1257	-0.1306
<b>Future Value</b>	0.0213	0.1561	-0.1747
<b>Inflation</b>	0.0119	0.1738	-0.0093
<b>Diversification</b>	0.0355	0.1422	0.0821
<b>Required Return</b>	0.0262	-0.0393	0.0001

*Correlations with less than 10% significance level are in blue numbers*

Source: Authors' calculations.

**Table 13. Correlation Coefficient Matrix for Behaviour-Literacy (2019)**

	<b>Retirement Plan</b>	<b>Delinquency Payment</b>	<b>Money Decision</b>
<b>Present Value</b>	-0.0437	-0.0943	0.0131
<b>Future Value</b>	0.0799	-0.1180	0.0543
<b>Inflation</b>	0.0457	-0.0669	0.0582
<b>Diversification</b>	0.0061	-0.1112	0.0413
<b>Required Return</b>	0.0733	0.0696	0.0653

*Correlations with less than 10% significance level are in blue numbers*

Source: Authors' calculations.

Unlike our expectation, the Retirement Plan has no significant relationships with correct answers on all five literacy questions in the 2019 survey. In the 2015 survey, however, it has significant positive correlations with Future Value and Required Return questions. In Table 9 above, the proportion of "Already Planned Retirement" was substantially lower in 2019 compared to 2015 (35.2% vs. 40.1%,

respectively), and “No Plan” was substantially higher in 2019 than that of 2015 (33.4% vs. 30.8%, respectively).

Since the 2013 pension reform, followed by heated national debates in 2014, retirement issues have been buried under economic hardships due to the collapse of oil price and substantial depreciation of currency value. The Kazakh people might have been dealing more with immediate issues of overcoming the challenging economic conditions rather than to future wellbeing and planned retirement. Basic financial knowledge would not be useful when people have bias preferring present consumption to future wellbeing. In addition, it could be a rational attitude for people to focus more on immediate challenges than on future outcomes under extraordinary economic circumstances. The significant negative relationships between Delinquency Payment and basic financial knowledge is another contradicting result we find in the 2015 survey. It shows, however, a positive relationship with Required Return. This means that a person with less (more) financial knowledge tends to delinquent less (more) in scheduled payments in the 2015 survey. Since more than 86% of respondents answered never or rarely delinquent in payment, financial literacy may not be the strong force leading choices in the delinquency issue. There may be some other reasons that might have interacted with both literacy level and delinquency in payment. In addition, due to cultural bias, the high proportion of never or rarely delinquent represents the wishful thinking of respondents who had experienced challenging economic conditions during the 2008-2009 crisis, followed by the massive non-performing loan problems. The 2019 survey, however, shows expected relationships (all except Required Return show significant positive relationships). The results for Money Decision are mixed. It has significant negative relationships with Present Value and Future Value questions and a significant positive relationship with the Diversification question in the 2019 survey. In the 2015 survey, however, it has significant positive relationships with the Inflation and Required Return questions. In general, respondents in the 2019 survey scored higher in most literacy questions, except Inflation, compared to the ones in the 2015 survey. Better financial knowledge may not necessarily lead to making more money-related decisions. Again, the 2019 survey results show evidence that more students, who tend to have higher financial knowledge but less frequently making money-related decisions, were involved in answering the questions. People tend to make more money-related decisions when they know more about Inflation and Required Return in the 2015 survey and Diversification in the 2019 survey.

## **Conclusions**

Compared to the 2015 study, the 2019 answers show a significantly higher proportion of correct answers on Future Value and a significantly lower proportion of correct answers on Inflation. The probabilities of correct answers on the Present Value and Diversification questions are substantially lower than those of other

questions in both surveys. It seems that discounting is considered more difficult than compounding, and the risk diversification concept in capital market investment is not well-established among the respondents of both 2019 and 2015 surveys. More business education and residing in cities significantly help in improving the literacy score in both surveys. People who have less than 1 year of business education scored substantially poorer compared to the overall mean score. Additionally, in the 2015 survey, females marked significantly lower scores than males and high-income earners scored significantly higher than none/low-income earners. Kazakh people are less experienced in capital market investment activities. The results from this study also show that financial knowledge is assumed to help people in making good choices in their financial attitudes and behaviour. About 35 percent to 40 percent of respondents answered that they had already planned their retirement, and 30 percent of respondents answered that they considered planning their retirement. The responses in 2019 are poorer than those seen in the 2015 survey, partly because more students were sampled in the 2019 survey. The proportion of the answers related to delinquencies in payments is less than 16 percent, and more than 84 percent responded that they never or rarely delinquent in payments.

More than half of respondents answered that they themselves make major money-related decisions. This means that those who do not make any earnings (27% -30% of total) still make major money-related decisions. In the 2019 survey, the proportion of responses for major money-related decisions is substantially lower than that of the 2015 survey. We suspect that more students, who may not make frequent money-related decisions, are sampled in the 2019 survey. The results demonstrate that the correlations between both Retirement Plan and Money Decision with Delinquency in Payment are strongly negative, meaning that the person who has already planned retirement and/or frequently makes money-related decisions is most likely to never or rarely delinquent in payment. In the 2015 survey, however, we do not see such strong results observed in 2019. On the other hand, significant positive correlations between Retirement Plan and Money Decisions are observed in both 2019 and 2015 surveys. At the same time, the Retirement Plan has no significant relationships with correct answers on all five literacy questions in the 2019 survey. In the 2015 survey, however, it has significant positive correlations with the Future Value and Required Return questions. The proportion of “Already Planned Retirement” was substantially lower in 2019 than in 2015 (35.2% vs. 40.1%, respectively), and “No Plan” was substantially higher in 2019 than in 2015 (33.4% vs. 30.8%, respectively).

Another result we have found is the significant negative relationship between Delinquency Payment and basic financial knowledge in the 2015 survey. It shows, however, a positive relationship with Required Return. It means that a person with less (more) financial knowledge tends to delinquent less (more) in scheduled payments in the 2015 survey. Since more than 86% of respondents answered never or rarely delinquent in payment, financial literacy may not be the strong force to lead

the choices in the delinquency issue. There may be some other reasons that might have interacted both with the literacy level and delinquency in payment. The 2019 survey, however, shows expected relationships (all except Required Return show significant positive relationships). The results for Money Decision are mixed. It has significant negative relationships with Present Value and Future Value questions and a significant positive relationship with the Diversification question in the 2019 survey. In the 2015 survey, however, it has significant positive relationships with Inflation and Required Return questions. In general, the respondents in the 2019 survey scored higher in most literacy questions except Inflation compared to the 2015 survey. Again, the 2019 survey results show evidence that more students, who tend to have higher financial knowledge but making money-related decisions less frequently, were involved in answering the questions. People tend to make more money-related decisions when they know more about Inflation and Required Return in the 2015 survey and Diversification in the 2019 survey.

The study serves as a promising avenue for further research in the area of financial literacy, retirement planning, and delinquency in payment. New techniques such as the case study may possibly be employed. The unique feature of this study is that there is a comparative analysis between the results of 2015 and 2019. There were two studies conducted in 2015 and 2019. The study is relevant due to the fact that it took place in an emerging economy, which is Kazakhstan. The study may possibly be broadened and some new techniques, such as the interview or case study, may possibly be further implemented. The study may take place in other emerging countries as well as in developed countries. The sample size may be increased. The practical implication of the study is that people should learn all aspects of personal finance in order to make sound financial decisions during their lifetime. Special free training for the population should be organized by the Government. It will help people learn more about retirement planning, financial literacy, and delinquency in payments. The task of increasing the level of financial literacy of the population is stated among the top priorities in the Concept of Long-Term Social and Economic Development of Kazakhstan for the period until 2030.

## References

- Agnew, J., Bateman, H. and Thorp, S. (2013), Financial literacy and retirement planning in Australia, *Numeracy, Advancing Education in Quantitative Literacy*, 6(2), pp. 1-25.
- Ali, A., Rahman, M. and Bakar, A. (2015), Financial Satisfaction and the Influence of Financial Literacy in Malaysia, *Social Indicators Research: An International and Interdisciplinary Journal for Quality-of-Life Measurement*, 120(1), pp. 137-156.
- Allgood, S. and Walstad, W.B. (2013), Financial Literacy and Credit Card Behaviours: A Cross-Sectional Analysis by Age, *Numeracy: Advancing Education in Quantitative Literacy*, 6(2), pp. 1-26.

- Behrman, J. R., Mitchell, O.S., Soo, C. and Bravo, D. (2010), *Financial Literacy, Schooling, and Wealth Accumulation*, PARC Working Paper Series, WPS No. 10-06.
- Benartzi, S. (2007), Heuristics and Biases in Retirement Savings Behaviour, *Journal of Economic Perspectives*, 21(3), pp. 81-104.
- Benartzi, S. and Thaler, R.H. (2001), Naive Diversification Strategies in Defined Contribution Savings Plans, *American Economic Review*, 91(1), pp. 79-99.
- Boisclair, D., Lusardi, A. and Michaud, P.-C. (2014), *Financial Literacy and Retirement Planning in Canada*, NBER Working Paper, No. 20297.
- Bucher-Koenen, T. and Lusardi, A. (2011), *Financial Literacy and Retirement Planning in Germany*, NBER Working Paper, No. 17110.
- Choi, J.J., Laibson, D. and Madrian, B.C. (2005), Are Empowerment and Education Enough? Under diversification in 401(k) Plans, *Brookings Papers on Economic Activity*, 36(2), pp. 151-198.
- Choi, J.J., Laibson, D., Madrian, B. and Metrick, A. (2011), A Defined Contribution Pensions: Plan Rules, Participation Decisions, and The Path of Least Resistance, *NBER/Tax Policy and the Economy*, 16(1), pp. 67-113.
- Clark, R., Morrill, M., and Allen, S. (2011), The Role of Financial Literacy in Determining Retirement Plans, *Economic Inquiry*, 50(4), pp. 851-866.
- Cole, S. and Shastry, G.K. (2008), *If You Are So Smart, Why Aren't You Rich? The Effects of Cognitive Ability, Education, and Financial Literacy on Financial Market Participation*, 2009 Federal Reserve System Community Affairs Research Conference, Working Paper, No. 09-071.
- Cole, S., Sampson, T. and Zia, B. (2011), Prices or knowledge? What drives demand for financial emerging markets?, *The Journal of Finance*, 56(6), pp. 1933-1967.
- Fernandez, D., Lynch, J.G. and Netemeyer, R.G. (2014), Financial Literacy, Financial Education, and Downstream Financial Behaviors, *Management Science*, 60(6), pp. 1861-2109.
- Fonseca, R., Mullen, K.J., Zamarro, G. and Zissimopoulos, J. (2012), What explains the gender gap in financial literacy? The role of household decision making, *Journal of Consumer Affairs*, 46(1), pp. 90-106.
- Gale, W.G. and Levine, R. (2010), Financial Literacy: What Works? How Could It Be More Effective?, *SSRN Electronic Journal*, pp. 1-31.
- Hadar, L., Sood, S. and Fox, C.R. (2013), Subjective Knowledge in Consumer Financial Decisions, *Journal of Marketing Research*, 50(3), pp. 303-316.
- Hathaway, I. and Khatiwada, S. (2008), *Do financial education programs work?*, Federal Reserve Bank of Cleveland Working Papers (Old Series), No. 0803.
- Jappelli, T. and Padula, M. (2013), Investment in financial literacy and saving decisions, *Journal of Banking and Finance*, 37(8), pp. 2779-2792.
- Johnson, E. and Sherraden, M.S. (2007), From financial literacy to financial capability among youth, *Journal of Sociology & Social Welfare*, 34(3), pp. 119-145.

- Klapper, L.F. and Panos, G.A. (2011), *Financial Literacy and Retirement Planning: The Russian Case*, University of Essex CER Working Paper, No. 3.
- Knoll, M.A.Z. and Houts, C.R. (2012), The financial knowledge scale: An application of item response theory to the assessment of financial literacy, *Journal of Consumer Affairs*, 46(3), pp. 381-410.
- Lee, S.H. and Kuttyzholova, A. (2015), Financial literacy and retirement planning in Kazakhstan, *Journal of Insurance and Financial Management*, 1(2), pp. 87-106.
- Lusardi, A. and Mitchell, O.S. (2007a), Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth, *Journal of Monetary Economics*, 54(1), pp. 205-224.
- Lusardi, A. and Mitchell, O.S. (2007b), Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education, *Business Economics*, 42(1), pp. 35-44.
- Lusardi, A. and Mitchell, O.S. (2007c), *Financial Literacy and Retirement Planning: New Evidence from the Rand American Life Panel*, Pension Research Council Working Paper, No. WP2007-33 (retrieved from <https://pensionresearchcouncil.wharton.upenn.edu/publications/papers-2018/financial-literacy-and-retirement-planning-new-evidence-from-the-rand-american-life-panel/>).
- Lusardi, A. and Mitchell, O.S. (2008), Planning and financial literacy: How do women fare?, *American Economic Review: Papers & Proceedings*, 98(2), pp. 413-417.
- Lusardi, A. and Mitchell, O.S. (2011), *Financial literacy and planning: Implications for retirement wellbeing*, NBER Working Paper Series, Working Paper, No. 17078.
- Lusardi, A. and Mitchell, O.S. (2014), The Economic Importance of Financial Literacy: Theory and Evidence, *Journal of Economic Literature*, 52(1), pp. 5-44.
- Lusardi, A. and Mitchell, O. S. (2017), How Ordinary Consumers Make Complex Economic Decisions: Financial Literacy and Retirement Readiness, *Quarterly Journal of Finance (QJF)*, 7(03), pp. 1-31.
- Lusardi, A. and Tuffano, P. (2015), Debt Literacy, Financial Experiences and Overindebtedness, *Journal of Pension Economics & Finance*, 14(4), pp. 332-368.
- Lusardi, A., Mitchell, O.S. and Curto, V. (2010), Financial Literacy among the Young, *Journal of Consumer Affairs*, 44(2), pp. 358-380.
- Monticone, C. (2010), How Much Does Wealth Matter in the Acquisition of Financial Literacy?, *Journal of Consumer Affairs*, 44(2), pp. 403-422.
- Skimmyhorn, W. (2016), Assessing Financial Education: Evidence from Boot Camp, *American Economic Journal: Economic Policy*, 8(2), pp. 322-343.
- van Rooij, M., Lusardi, A. and Alessie, R. (2011a), Financial Literacy and retirement planning in the Netherlands, *Journal of Economic Psychology*, 32(4), pp. 593-608.
- van Rooij, M., Lusardi, A. and Alessie, R. (2011b), Financial literacy and stock market participation, *Journal of Financial Economics*, 101(2), pp. 449-472.
- Willis, L.E. (2008), Evidence and Ideology in Assessing the Effectiveness of Financial Literacy Education, *San Diego Law Review*, 46, pp. 415-458.