Financial Literacy and Financial Behaviour in Thailand: A Pilot Test

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Abstract

This study aims to explore financial behaviour, level of financial literacy, and relationship between them. The study has carried out a pilot on-line questionnaire designed to adapt to the Thai culture and tested on a small sample of 78 Thai respondents. The findings are that financial behaviours of the respondents are relatively good, and the financial literacy level is relatively high: more than 60 percent of the respondents could answer three or more questions of financial literacy correctly. This is not a surprise, since almost all of the respondents are well-educated with a bachelor's or higher degree.

However, in terms of plan ahead behaviour, about 70 percent of the respondents reported that they do not have plan for their retirement, and about 50 percent reported that they will start plan for their retirement when they are over 40 years old. This can aggravate to having inadequate fund for retirement, which can be a serious problem to both households and the society at large. This may partially be explained by the prevailing attitude of living-for-today in the Thai culture.

Regarding financial literacy, the respondents seem to perform well on interest and mortgage questions, but did poorly on risk diversification, bond price, and inflation. This implies that they might not be familiar with bond investment, the concept of risk diversification, and inflation. Therefore, in order to promote investment in financial markets, a considerable room for improvement in these areas is needed.

Logistic regressions are carried out, where a positive association is found between financial literacy and financial behaviour of the Thai sample, nonetheless the relationship is not statistically significant. This may be explained by the small sample size and the cognitive bias that despite high level of education and financial literacy, individuals might still make an unsound financial decision.

I. Introduction

Households frequently face financial decisions on a day-to-day basis. For instance, a household would have to decide how much to spend, save, borrow, and invest. In fact every aspect regarding managing one's income is a financial decision. For example, a household decides to buy a house or a car is an investment decision. Consequently, household might resort to borrowing in order to finance its investment which is so-called financing decision, whereas such a decision demands some form of financial literacy such as how to perform interest rate repayment calculation and how to compare the best deal offered. Therefore, less financial literacy may lead households to bad financial practices (Hung, Parker, and Yoong, 2009).

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Furthermore, bad financial practices do not affect only households themselves, but also the economy as a whole (Lusardi, 2010; OECD, 2010). The growing concerns over financial illiteracy are well recorded, as recently shown by Gerardi, Goette, and Meier (2010) that lack of financial literacy played an important role in the recent 2008 US. subprime mortgage crisis.

Consequently, many countries have been increasingly aware of the consequence of financial illiteracy among their citizens and have taken steps to reduce financial illiteracy in their population. These countries are, viz., the US., the UK., New Zealand, Australia, Ireland, Canada, and the Netherlands. In order to implement efficient policy of lifting up financial literacy, these countries had carried out national financial literacy survey to set up their nation's financial literacy baseline (FSA, 2006a,b; FINRA, 2009a,b; Lusardi and Mitchell, 2011a).

Unfortunately, these steps of financial literacy elevation have not yet been taken in developing countries including Thailand. This research aims to establish financial literacy baseline among Thai population, namely, find relationships between financial literacy and financial behaviours; compare financial literacy level with other countries; and produce policy recommendation to promote the level of financial literacy.

2.1 What is Financial Literacy?

Definitions of financial literacy can be inconsistent among different researchers. Until 2008, the President's Advisory Council on Financial Literacy (PACFL, 2008) pointed out that this inconsistency of financial literacy definition has hindered research and policy development, as employing different definitions would result in different measure of financial literacy, and making comparison difficult. Thus, to ensure compatible and consistent measurement of the quality and effectiveness of financial educational programs, along with measurement for the level and trends in financial literacy, PACFL recommended a consensus definition of financial literacy as follows:

***"Financial literacy is the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being,"* (PACFL, 2008).**

Similar definitions are also proposed by OECD (Organisation for Economic Co-operation and Development) as follows:

"Financial literacy is the combination

***of consumers'/investors' understanding of financial products and concepts and their ability and confidence to appreciate financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being"*(OECD, 2009).**

From the definitions above, financial literacy is a form of ability to employ one's knowledge and skill regarding financial matters. This ability must also in turn enhance individuals' financial decision ability, which should result in life-time financial well-being. Despite effort to unify financial literacy definition, it is still unclear how to measure financial literacy. Consequently, there is yet no standardised measure of financial literacy (Cole and Fernando, 2008). It will be pointed out later in Section 3 below that financial literacy measures will largely be depended on underlying theoretical background and economic models of financial literacy.

2.2 Why Financial Literacy Matters?

As financial literacy is an ability of an individal to manage financial resources for life-time well-being, the question of why financial literacy matters might be tackled through 3 levels of the society, namely, household level, market level, and economy level. Each of these levels will be discussed in turn.

2.2.1 Household

Lack of financial literacy, households may expose to different vulnerabilities. For example, Hung et al., (2009) find that less financial literacy may lead to unintentional financial mistakes, less likely to engage in recommended financial practices, and less likely to be able to cope with sudden economic shocks. It has also been found that financial knowledge and financial planning (such as retirement planning) are correlated, and individuals who have higher financial literacy are more likely to plan and be successful planners (Lusardi and Mitchell, 2006).

Lack of planning also has important consequences on saving and portfolio choice, unplanned individuals tend to accumulate much less wealth than those who plan (Lusardi and Mitchell, 2007). Financial literacy is, in addition, found to be positively and significantly correlated with wealth, pension contributions, and retirement planning (Behrman, Mitchell, Soo, and Bravo, 2010).

Furthermore, poor financial practice such as borrowing at high cost debt has also been reported. Lusardi and Tufano (2009) find that low financial literate individuals are not only more likely to carry high-cost debt, but also to have debt problems. Financial illiterate may also be victim of lender who collects high rate of interest, by willing to take up such expensive loan (Bertrand and Morse, 2011). Klapper, Lusardi, and Panos (2012) also report that financial

literacy is negatively related to the use of informal borrowing sources. On the other hand, a strong correlation between financial literacy and investment in lower cost funds has been reported (Hastings, Mitchell, and Chyn, 2010). Individuals with higher rates of financial literacy are significantly more likely to report

having more unspent income at the end of the month and higher spending capacity (Klapper et al., 2012).

2.2.2 Financial Market Participation

Following from the previous section, ability to invest or diversify investments has become more important, since individuals are increasingly put in charge of their financial security after retirement (Van Rooij, Lusardi, and Alessie, 2007). Therefore, individuals need some basic financial knowledge such as financial markets, risk return, and financial investment, in order to be able to participate in financial markets.

Lusardi and Mitchell (2006) find that individuals who display higher financial literacy are more likely to save and invest in complex assets, such as stocks. Similar result is also reported by Klapper et al. (2012) that financial literacy is positively related to participation in financial markets. Bucher-Koenen and Ziegelmeyer (2011) assert that individuals with low levels of financial knowledge are less likely to have invested in the stock market. Accordingly, Van Rooij et al. (2007) confirm that those who are low financial literate are significantly less likely to participate in stock investment, while higher financially literate individuals incline to include stocks in their portfolios, due to their better understanding of risk diversification principle.

However, the determinant of financial market participation is still arguable. For example, Cole and Shastry (2009) find that financial market participation was led by cognitive ability (e.g. trust, peer effects, experience with stock market returns) not financial literacy. Christelis, Jappelli, and Padula (2010) also report that the tendency to invest in stocks is strongly associated with cognitive abilities, for both direct stock market participation and indirect participation through mutual funds and investment accounts. Another widely documented literature on possibility of financial market participation is the difference of risk preference among individuals, e.g. risk averse individuals are less probable to participate in stock market (Laakso, 2010).

2.2.4 Economy at Large

Recently, attention of the causes of the recent 2008 financial crisis in the US. has been drawn to financial illiteracy. In 2008, the US. President's Advisory Council on Financial Literacy, addressed that "While there are many causes to the economic problems facing the country, it is undeniable that a lack of financial literacy is a contributing factor," (PACFL, 2008). Consequently, Lusardi (2010) comments in a report prepared for the US. Financial Crisis Inquiry Commission that low financially literate individuals who are ill-equipped to make financial decisions, can not only generate adverse consequence on themselves, but also on the economy as a whole. Furthermore, lack of financial literacy has also been widely acknowledged as an aggravating factor of the crisis (OECD, 2010).

More evidence has been provided by Gerardi et al. (2010) who conducted a survey of subprime mortgage borrowers who took out mortgages in 2006 or 2007, measured financial literacy and cognitive ability, and matched these measures to data on mortgage characteristics and repayment performance. The result is

that there is large and statistically significant negative correlation between financial literacy and various measures of delinquency and default.Thus, they conclude that lack in certain aspects of financial literacy played an important role in the subprime mortgage crisis.

As for a consequence of crisis on individuals, less financial literate individuals tend to suffer more as they lack of financial plan and financial crisis. Bucher-Koenen and Ziegelmeyer (2011) report that individuals with lower levels of financial literacy were more likely to sell their assets which lost in value and thus realize their losses for certain. Furthermore, this reaction of individuals with low financial literacy to short-term losses can contribute to substantial long-term consequences on wealth distribution.

Lastly, Klapper et al. (2012) find that the relationship between financial literacy and the availability of unspent income is more prominent during the financial crisis, suggesting that better financial literate individuals may be better equipped to deal with macroeconomic shocks.

2.3 Financial Literacy and Financial Behaviours

Literature reporting relationship between financial literacy and various financial behaviours is well documented. In general, low financial literacy would predict unsound financial practice, low savings, and less wealth accumulation, each of which will be discussed below, also along with a topic of impact of financial literacy and financial education.

2.3.1 Financial Literacy, Saving, Wealth and Well-Being

Ameriks, Caplin, and Leahy (2003) find very strong relationship between the propensity to plan and how carefully households monitor their spending with saving and wealth accumulation. Accordingly, Lusardi and Mitchell (2007) further show that planning behaviour is strongly correlated with financial literacy, which positively affect savings and wealth.

Consequently, Jappelli and Padula (2011) employ ordinary least squares (OLS) and instrumental variables (IV) regressions, and also find that financial literacy is strongly associated with saving and wealth. In addition, Cole and Fernando, (2008) also assert that financial literacy has been found to have a tight association with household wellbeing.

Cole et al. (2009) find that financial knowledge and skill predicts demand for and use of financial services, and is correlated with household wealth, education and wellbeing. Low levels of financial knowledge households tend to borrow at higher interest rates, participate less in the formal financial system, and not to have long term financial planning.

2.3.2 Impact of Financial Literacy and Financial Education

O'Neill (1997) finds that financial literacy led to improving financial situation, such as debts reduced and savings increased. Boyce and Danes (1998) discover that high-school students, who have increased financial knowledge and skills, have higher confidence in money management. Bernheim et al. (2001) find that high school students who entered in financial literacy training programs in the United States

significantly increased their savings rates and net worth. Garman el al. (1999) find that workplace financial education helps improve financial decision making and increases confidence in investment decisions.

Lyons and Scherpf (2003) discover that increasing in financial knowledge leads to higher financial management ability. Lusardi (2004) finds that financial education (e.g. retirement seminar) associates with increasing in financial net worth and total net worth of the participants. Rand (2004) discovers that increasing financial management knowledge improves financial management behaviours.

Hilgert, Hogarth, and Beverly (2003) find that individuals with more financial knowledge are more likely to engage in a wide range of recommended financial practices, while Lusardi and Mitchell (2006, 2007) assert that among older adults, those who displayed better financial knowledge were more likely to plan, to succeed in planning, and to invest in complex assets

2.4 Current Financial Literacy Situation around the World

2.4.1 Financial Literacy in Developed World

Lusardi and Mitchell (2011b) report that financial illiteracy is widespread even when financial markets are well developed as in Germany, the Netherlands, Sweden, Japan, Italy, New Zealand, and the United States. The authors further mention that although higher educational attainment is strongly correlated with financial knowledge, but even at the highest level of schooling, financial literacy tends to be low. This implies that education is not a good proxy for financial literacy.

Recently, governments are more aware of importance of financial literacy as determinant of financial behaviours, which will contribute to the life-time well-being of the population. Thus more countries such as the US., the UK., New Zealand, Australia, Ireland, Canada, and the Netherlands have carried out national financial literacy survey or intend to include into their national consensus (see FSA, 2006a,b; FINRA, 2009; and Lusardi and Mitchell, 2011b).

The consequence of financial literacy survey has led some government, such as the UK. government has taken effort to improve financial literacy of its population via various tools such as including financial education into the UK. National Curriculum both in schools and colleges/universities, and provide financial education to employees at their workplace (FSA, 2006a,b).

2.4.2 Financial Literacy in Developing World

In the context of financial literacy for developing countries, Organisation for Economic Co-operation and Development (OECD, 2009) states that financial literacy is critical to promote desired financial behaviours, such as saving, budgeting, or borrowing prudently. OECD further confirms financial literacy can immensely affect financial future and well-being of the poor (accounted at around 3billion people around the world). As poor households normally lack of fund to cushion shock from sudden lost in income, having access to savings products or insurance can significantly affect their welling-being and financial future.

About 2.3 billion people around the world still do not possess a bank account, where nearly 90% of those unbanked population are in developing countries (AFI, 2010; and Center for Financial Inclusion, 2012). This staggering number signifies financial exclusion or inability to access formal financial sources, where ability to access financial services required financial literacy (Viswambharan, 2011). Increase financial literacy might open possibility particularly for low-income households to save money as a safeguard against an income shock.

Cole, Sampson, and Zia (2009) find that the financially more literate are more likely to have bank accounts in India and Indonesia. Therefore, in order, for household to be able to access to at least the most basic financial services and gain ability to manage sound financial practice such as plan for income shock and retirement which will contribute to households' well-being, households clearly need to have some degree of financial literacy.

Research on levels of financial literacy in developing countries remain slim (Cole and Fernando, 2009). There have been efforts through some organizations such as OECD, the U.K. Department for International Development (DFID), and the World Bank Group that are working to strengthen financial literacy in developing countries
(OECD, 2009). OECD also has planned to carry out assessment of financial literacy around the world (OECD, 2010).

In 2012, OECD carried out a pilot survey on differences in financial knowledge, behaviour and attitude across 14 countries on 4 continents. The findings suggest low level of financial knowledge of a large population of the countries surveyed and needs to considerably improve financial behaviour (Atkinson and Messy, 2012).

Recently in 2014, S&P's Ratings Services in collaboration with Gallup, Inc., the World Bank Development Research Group, and the Global Financial Literacy Excellence Center developed S&P Global FinLit Survey (S&P, 2014). The survey claimed to be the largest and the most comprehensive global measurement of financial literacy carried out in 148 countries with over 150,000 respondents (Ibid.).

2.4.3 Financial Literacy in Thailand

The Bank of Thailand (BOT) has conducted financial literacy measures for four times in 2002-2003, 2006, 2010 and 2013 (BOT, 2013)

The fourth survey in 2013 has adopted the OECD's suggestion of standardisation the survey to make it comparable with those of other countries. The survey comprises three parts, namely, 1) Financial Knowledge, 2) Financial Behavior, and 3) Financial Attitude. The survey finds that the financial literacy level of Thai people is averaged at 58.5 percent, which is slightly lower than the average score of 62.3 percent of the OECD's pilot survey of 14 countries. The findings suggest that socio-demographics attributes, particularly, income and education have the highest positive effect on financial literacy score. The positive association between financial knowledge and behaviour suggests promoting financial education could improve financial behaviour (Ibid.).

2.5 Objectives

The objectives of this study are:

1. To explore financial behaviours of the sample group,

2. To apply financial behaviour and financial literacy questionnaire designed to adapt to Thai culture,

3. To explore the level of financial literacy of the sample group, and

4. To explore the relationship between financial behaviour and financial literacy.

III. Theoretical Background

Theoretical Model

The theoretical model widely employed in economics literature on decision under uncertainty is life-cycle model of consumption dated back to Modigliani and Brumberg (1954), and Friedman (1957). The model has been adopted to contain the effect of financial literacy by Lusardi and Mitchell (2009), Lusardi (2011), and Jappelli and Padula (2011).

The intertemporal economic choice model is briefly discussed as follows. The model assumes that rational and foresighted households maximize their life-time expected utility.

$$\mathbb{E}\left[\sum_{j=S}^{D} \boldsymbol{p_j \beta^{j-s} U(c_j)}\right]$$

Equation 1

Equation 1implies that life-time expected utility of a household is the sum of per-period utility of consumption $U(c_j)$ discounted to the present period (current age S) at the subjective discount factor[1] β, attached by survival probability p_j until the end of household life-time D.

For the period of current age until one period before retirement $j \in [S, \dots, R-1]$, the pattern of household's income is determined by Equation 2 below:

$$y_j = e_j + ra_j,$$

Equation 2

Equation 2 means that income of period j, y_j, comes from earning e_j pluses ra_j, return of asset $a_j$household invested, from current age until $R-1$, one period before household retired.

For the period of retirement until death $j \in [R, \dots, D]$, household's income is generated from

$$y_j = SS_j(R) + PP_j(R) + ra_j,$$

Equation 3

where $SS_j(R)$ and $PP_j(R)$ represent household's social security benefit and pension, respectively.

The boundary condition imposes that

$$c_j + a_{j+1} = y_j + a_j, \quad \text{for } j \in [S, \dots, D],$$

Equation 4

[1] β implies how household value future relative to current utility of consumption, and can also be written as $\beta = \frac{1}{1+\rho} < 1$, where ρ means rate of time preference of household.

which implies that asset in the last period is zero as the household does not leave any debt behind.

However, in order to implement this model, one need to assume household's time preference, risk aversion (shape of the utility function), discount rates, lifetime income expectations, capital market returns, borrowing possibilities, and income shocks, which are not easy to carry out on empirical data (Lusardi and Mitchell, 2011a). Therefore, rather than imposing specific preferences and constraint structures, Lusardi and Mitchell (2011a) propose testing on whether a behavioural outcome would consistent with life-cycle behaviour, namely **whether people plan for retirement.**

3.1 Measuring Financial Literacy

There is no standardized financial literacy measure (Cole and Fernando, 2008). However, following the implication of the above life-cycle model and in order for households to behave optimally, they should have at least the knowledge of the following concepts, namely, interest rate, inflation, and capital market returns (risk and return). This study employs two measures of financial literacy. The first following FINRA (2009a,b)., where the later proposed by S&P (2014), both are further discussed below.

3.1.1 Financial Literacy Measure 1 (FLM1)

Lusardi, (2011) suggests four principles of financial literacy measures as follows:

1) Simplicity : Measure rudimentary financial concepts

2) Relevance: Questions must relate to daily financial decision over the life cycle, and should not be too cultural biased to only some specific ethnic groups.

3) Brevity: Keep number of questions to be minimal, due to the time spent on answer the questionnaire of each respondent is short.

4) Capacity to differentiate: Questions must be able to differentiate between financial knowledge levels

Furthermore, in coherent with economic models of saving and portfolio selection, three economic concepts that individuals should have some comprehension are, namely, 1) interest compounding, 2) inflation, and 3) risk diversification. These concepts have been transformed into three questions also in accordance with the aforementioned four principles as follows:

1) Interest compounding

Suppose you had $100 in a 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?

2) Inflation

Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

3) Risk diversification

Please tell me whether this statement is true or false. "Buying a single company's stock usually provides a safer return than a stock mutual fund."

These three questions have become a popular of financial literacy measure (Cole and Fernando, 2008). In addition, two more questions have been tested and added to measure financial knowledge regarding mortgage and bond, as

FINRA (Financial Industry Regulatory Authority) has carried out US. National Survey of Financial Literacy in 2009 (FINRA, 2009a,b).

4) Bond Price Question

If interest rates rise, what will typically happen to bond prices? Rise, fall, stay the same, or is there no relationship?

5) Mortgage Question

True or false: A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage but the total interest over the life of the loan will be less.

In sum, a measure of financial literacy adopted is a collection of the five questions above.

3.1.2 Financial Literacy Measure 2 (FLM2)

This measure is based on the aforementioned S&P Global FinLit Survey (S&P, 2014).

The measures is based on four basic questions to gauge financial Table

S&P Global FinLit Survey	Financial Literacy Measure 2
Risk Diversification	
Suppose you have some money. Is it safer to put your money into one business or investment, or to put your money into multiple businesses or investments? [one business or investment; **multiple businesses or investments**; don't know; refused to answer]*	Does buying a single company's stock usually provides a safer return than a stock mutual fund? [**no**; yes; don't know; refused to answer]
Inflation	
Suppose over the next 10 years the prices of the things you buy double. If your income also doubles, will you be able to buy less than you can buy today, the same as you can buy today, or more than you can buy today? [less; **the same**; more; don't know; refused to answer]	Imagine that the interest rate on your savings account was 1 percent per year and inflation was 2 percent per year. After 1 year, how much would you be able to buy with the money in this account? [more than today; Exactly the same; **less than today**; don't know; refused to answer]
Numeracy (Interest)	
Suppose you need to borrow 100 US dollars. Which is the lower amount to pay back: 105 US dollars or 100 US dollars plus three percent? [105 US dollars; **100 US dollars plus three percent**; don't know; refused to answer]	Suppose you borrow money from a moneylender for 1,000 Baht at the interest rate of 2 percent per day. You agree to pay interest back to the lender on a daily basis. How many Baht per day that you have to pay the lender? [2 Baht/Day; **20 Baht/Day**; 200 Baht/Day; don't know; refused to answer]

Compound Interest	
Suppose you put money in the bank for two years and the bank agrees to add 15 percent per year to your account. Will the bank add more money to your account the second year than it did the first year, or will it add the same amount of money both years? [**more**; the same; don't know; refused to answer] Suppose you had 100 US dollars in a savings account and the bank adds 10 percent per year to the account. How much money would you have in the account after five years if you did not remove any money from the account? [**more than 150 dollars**; exactly 150 dollars; less than 150 dollars; don't know; refused to answer]	Suppose you had 100 Baht in a savings account and the interest rate was 2 percent per year. After 5 years, how much do you think you would have in the account (if you do not make any more deposit, withdraw, or the bank does not close your account)? [**More than 102 Baht**, Exactly 102 Baht, Less than 102 Baht; don't know; refused to answer]

Note: *correct answers in bold

Based on the above four questions, S&P (2014) defines a financially literate person as an individual who correctly answers at least three out of the four financial concepts described above.

IV. Data Analysis and Results

4.1 Data Attribute

Data were collected through on-line questionnaire during 15th – 27th March 2012, where there were 78 Thai respondents in total. In this section, attributes of the data are discussed.

Sex

The majority of the sample are female (64.1%) and the rest (35.9%) are male.

Age Group

The age attributes are divided into 2 groups, due to small sample size, i.e. 18 – 39 accounted for 88.5% and 40 – 59 for 11.5 percent.

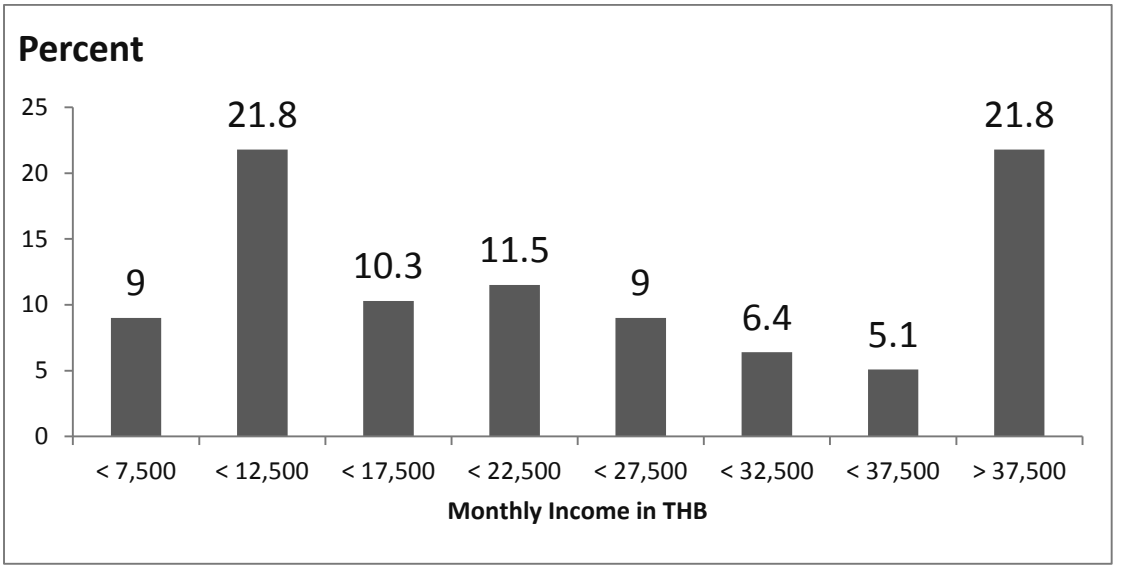
Education

59 percent of the respondents are college graduate, 33.3 percent were higher than bachelor's degree graduates, and 7.7 percent were diploma graduates. Therefore, the majority of the respondents are well-educated.

Monthly Income

Income distribution of the respondents are illustrated as Figure 1: Income Distribution below:

Figure 1: Income Distribution



64.1 percent of all the respondents have income higher than THB 12,500 monthly.

Employment Status

89.7 percent of all the respondents are either self-employed or full-time workers, 2.6 percent are part-time worker, 5.1 percent are students, and 2 percent are unemployed.

4.2 Financial Behaviour

This section reports financial behaviour of the sample group on the five questions of financial behaviours (FSA, 2006b; and Lusardi, 2011):

1. Make Ends Meet

When asked to rate their satisfaction of their current financial situation on the scale of 1 to 5, 59 percent of the respondents report medium satisfaction, 17.9 percent and 6.4 percent reported low and not satisfied at all respectively. Only 1.3 percent and 12.8 percent claimed very high and high satisfaction, respectively.

In response to the question regarding the respondent's current financial situation, 61.5 percent reported that *"I am able to pay all their monthly expenses, and there is still money left to spend on what I want,"* 26.9 percent reported *"I am just able to pay all my monthly expenses, but there are no money left for me to spend or save."* While only 9 percent reported either *they are not at all able to their monthly expenses or able to pay for some months.*

This seems that the majority of the respondents are able to make ends meet and can manage their expenses well.

2. Manage Debt

71.8 percent reported that they have debt burden of some types. For those who have debts, their debts can be characterised Table 2: Debt Type and Percentage of Respondents below.

Table 2: Debt Type and Percentage of Respondents

Debt Type	% of Respondents
Physical Asset Debt (e.g. house, land, condominium)	29.49
Vehicle Debt	26.92
Education Debt	23.08
Investment Debt (e.g. debt of investing in business)	11.54
Electronic Gadget Debt (e.g. mobile phone, computer, tablet)	8.97

Respondents were also asked to report their sources of loan. Their loan sources are reported in Table 3: Loan Sources and Percentage of Respondents.

Table 3: Loan Sources and Percentage of Respondents

Loan Source	% of Respondents
Financial Institutions (e.g. bank, co-op)	78.95
Credit Card (e.g. AEON, Easy Buy)	38.6
Informal Financial Institution (e.g. friends, relative, moneylender)	17.54

Monthly Debt Payment: Respondents were also asked regarding their monthly debt payment, where 87.5 percent of those with debt reported to able to pay all monthly debt payments on time and never falling behind. Only 12.5 percent reported that they are able to repay the debt only for some months.

3. Plan Ahead

In this section, respondents' behaviour of financial planning is reported into three categories, namely, planning for rainy day, retirement, and children education.

For Rainy Day

59 percent of the respondents reported that they have prepared funds enough for at least 3 months to cover expenses when they are unable to work (in unexpected circumstances of sickness, job loss, economic downturn, or other emergencies), and 17.9 percent reported that they will survive for one month should such a situation occurs. While 21.8 percent reported that they have not prepared for such a situation.

Insurance Coverage: Personal insurance coverage: 58 percent of the respondents reported that they are covered by some type(s) of personal insurance.

Property Insurance coverage: 48.7 percent

reported that their property is covered by some kind of property insurance (e.g. fire insurance, house/building insurance, and car insurance that cover more than that mandated by the law). For those who reported that they are covered by property insurance, only 26.9% have fire insurance and/or house/building insurance, while 38.4 percent reported that they have acquired car insurances that cover more than legal requirement.

For Children's Education

For respondents who have children, 78.9 percent reported that they have planned for their children's education, in the form of saving (57.9%), saving and education insurance (10.53%), and saving and let them help themselves (5.3%).

For Retirement

When asked at what age does the respondent expect to retire, 48.7 percent replied at the age of 60, while 35.9 percent expect to retire at ages less than 60 year old. The rest 14.1 percent reported that they expect to retire after their 60. This is asserted by 2007 AIA Life Matters Annual Index that most Thais are expected to retire at 60.

However, when asked whether they have planned for their retirement only 33.3 percent stated yes. The rest 66.6 percent are either have thought about it or have not thought about preparing for retirement at all.

As shown in Table 4, when asked the question "When do you think you will start setting up your retirement plan? Or if you have already planned for your retirement, when did you do that (at what age)?," 50 percent of the respondents reported that they will start plan for their retirement when they are over 40 years old. 24.4 percent replied that they do not know when they will not plan for retirement.

Table 4: Age range of setting up a retirement plan

When will (did) you plan for your retirement?	% of Respondents
20-29	6.4
30-39	19.2
40-49	16.7
50-59	20.5
60-69	12.8
Do not know when I will plan for retirement.	24.4

Regarding the question of how much does the respondent expect to spend each month after retirement, 60.25 percent reported that they will spend around THB10,001 - 15,000 or less per month. Given Thailand's 2012 annual inflation rate of roughly 3 percent, in the next 20 years, the value of THB 15,000 will equal approximately THB 8,300, which can be hard to live on. This is consistent with the financial literacy question on inflation rate (in Section 4.3) that only 42 percent of the respondents could not answer the inflation question correctly, implying they did not take inflation into account of their estimation.

Then, the question of which source of fund the respondent expects for to use after the retirement is asked, 34.6 percent reported from their own saving alone, while 29.5 percent expected to use a combination of funds from work pension accompanied with fund from their children, from their own saving, and/or from retirement insurance.

4. Choose Financial Products

Bank Account

99.2 percent of all respondents have some types of bank saving account, where 40 percent of those with bank account reported to save regularly (as soon as they receive their monthly salary), and about 60 percent reported to save once in a while (after there is a left over from other expenses).

Other Financial Assets

56.4 percent of all respondents reported that they also have other types of financial products rather than just a bank account. Respondents who have invested in other types of financial product invested are reported in Table 5: Financial Investment below.

Table 5: Financial Investment

Financial Investments	% of All Respondents
Bank Account	99.2
Insurance Policy	34.6
GSB's or BAAC's Lottery*	24.4
Mutual Fund	14.1

Note: *GSB is Government Savings Bank and BAAC is Bank for Agriculture and Agricultural Co-Operatives.

Knowledge of Financial Products

When asked to check on listed of financial products that the respondent has knowledge of, namely, 1) bank account of any type, 2) Government Savings Bank's or Bank for Agriculture and Agricultural Co-Operatives' lottery, 3) Debt Security, 4) Equity Security, 5) Derivative Contract, 6) Insurance Policy, 7) LTF/RMF, and 8) Other Mutual Fund, more than 90 percent of the respondents stated that they know bank account of any type; more than 80 percent indicated that they know more than just one financial product, and only 15 percent claimed that they know financial derivative contract.

5. Stay Informed about Financial Matters

In this regards, all respondents were asked a question, namely, "On a scale from 1 to 5, where 1 means not at all and 5 means very high, how strongly do you agree or disagree with the following statements? - I regularly keep up with economic and financial news."

The majority of respondents claimed they were moderately keeping up with economic and financial news (score 3). More details are reported in Table 6: Stay Financially Informed below

Table 6: Stay Financially Informed

Scale	Percent
1 (Not At All)	5.1
2 (Low)	21.8
3 (Medium)	44.9
4 (High)	21.8
5 (Regularly)	6.4
Total	**100.0**

4.3 Financial Literacy

This section discusses the results of financial literacy scores obtained from the sample.

Financial Literacy Measure 1

Table 7 reports percentages of respondents who answered each financial literacy question of the Financial Literacy Measure 1 correctly.

Table 7: Percentage of Respondents Who Answered Each Financial Literacy Measure 1 Question Correctly

Financial Literacy Measure 1	Percent
Interest Rate	84.6
Inflation	15.4
Bond Price	20.5
Mortgage	71.8
Risk	25.6

The question on interest rate seems to show that the respondents did really well. The worst answers that the respondents did are bond price, risk, and inflation questions. This might imply that they are neither familiar with investing in bond, nor the concept of risk diversification. In order to promote investment in financial markets, a considerable room for improvement in these areas is needed. There are only 15.4 percent who could answer the inflation question correctly.This reflected earlier on financial planning, that the repondents does not take into account inflation and time-value of money, because they have littlle knowledge on these issues.

In terms of total question answered corretly, 64.1 percent of the respondents answered correctly three questions or more, but only 7.7 percent could answer all five questions correctly. The results are shown in Table 8 below.

Table 8: Percentage of Respondents Who Answered Financial Literacy Measure 1 Question Correctly

Financial Literacy Measure 1	Percent
0 Correct	2.6
1 Correct	12.8
2 Correct	20.5
3 Correct	35.9
4 Correct	20.5
5 Correct	7.7
Total	**100**

Financial Literacy Measure 2

This measure is based on the aforementioned four questions proposed by S&P (2014). A financial literate person is defined as an individual who correctly answers three questions or more. 66.7 percent of the respondents answered three or more questions correctly, which is very high comparing to the S&P's finding that only 33 percent of adults worldwide are financial literate. This result is not a surprise, as aforementioned that almost all of the respondents are college graduates or above. The results are shown in Table 9 and Table 10 below.

Table 9: Percentage of Respondents Who Answered Each Financial Literacy Measure 2 Question Correctly

Financial Literacy Measure 2	Percent
Risk Diversification	25.6
Inflation	15.4
Numeracy (interest)	82.1
Compound Interest	84.6

The respondents seem to be able to perform interest calculation well, but are unaware of risk diversification and inflation. The suggestion is the same as FLM 1 above that the worst areas are knowledge of inflation and risk. Financial literacy improvement should prioritize on these areas.

Table 10: Percentage of Respondents Who Answered Financial Literacy Measure 2 Question Correctly

Financial Literacy Measure 2	Percent
0 Correct	2.6
1 Correct	11.5
2 Correct	19.2
3 Correct	44.9
4 Correct	21.8
Total	**100**

4.3.1 Financial Behaviour and Financial Literacy: An Empirical Result

The empirical model suggested by the theory of intertemporal economic choice model in the above Section III can be econometrically written below.

$$financial\ behaviour_i = \alpha + \beta(financial\ literacy_i) + \varepsilon_i,$$

Equation 5

where the dependent variable $financial\ behaviour_i$ is proxied by whether an individual i has a retirement plan taken the values 0 if there is no retirement plan and 1 otherwise; $financial\ literacy_i$ is either one of the two measures of financial literacy; and ε_i is the error term. By the nature of the binary dependent variable, a logistic regression is called upon. Logistic regressions were carried out where the results are presented in Table 11 below.

Table 11: Logistic Regression Results

Logistic regression results of Model (1) and Model (2) with *Financial Literacy Measure 1* and *Financial Literacy Measure 2* as the independent variables, respectively. The data were drawn from questionnaire of financial behaviour and financial literacy replied by 78 Thai respondents. $Retirement\ Plan_i$ takes value 1 if an individual i does have plan for retirement, and 0 otherwise. *Financial Literacy Measure 1* is financial literacy measure based on five financial literacy questions suggested by FINRA (2009a,b). *Financial Literacy Measure 2* is financial literacy measure based on five financial literacy questions based on S&P (2014). *p*-values are presented in parentheses.

Dependent Variable	**Model (1)**	**Model (2)**
	Retirement Plan	*Retirement Plan*
Constant	-1.121 (0.079)	-1.226 (0.091)
Financial Literacy Measure 1	0.150 (0.463)	-
Financial Literacy Measure 2	-	0.194 (0.431)
Cox & Snell R^2	0.007	0.008
Nagelkerke R^2	0.010	0.011

Note: Statistically significant at 1%(***), 5%(**), and 10%(*) levels.

The coefficients of the both financial literacy measures are positive implying that the higher the level of financial literacy, an individual will be more likely to have a retirement plan. However, there are no statistically significant relationship between retirement plan and financial literacy, contradicting results found by some authors such as Lusardi and Mitchell (2006) and Behrman *et al*. (2010). The R^2s of both models are very small. This might come from the fact that they both contain only one independent variable each.

V. Conclusion and Discussion

Financial Behaviour of the Sample

The behaviour is measured based on five characteristics are summarised as follows:

1) Make Ends Meet: the majority of the sample group reported that they are content of their financial situation, and can manage their expenditure well.

2) Manage Debt: About 72 percent of the respondents have debt of some types and claimed to manage their debt well.

3) Plan Ahead: almost 80 percent of the respondents reported that they have planned ahead in terms of for rainy days (unexpected events such as sickness, job loss, economic downturn, other emergencies, etc.) and for their children education. However, 66.6 percent reported that they do not have plan for their retirement, and about 50 percent reported that they will start retirement plan when they are 40 years old or older.

4) Choose Financial Products: Almost all of the respondents own bank saving accounts, and more than half have invested in some other types of financial products, such as insurance policy, GSB's or BAAC's Lottery, mutual fund.

5) Stay Informed about Financial Matters: The majority of respondents claimed that they are moderately keeping up with economic and financial news.

In sum, the respondents seem to have a good financial behaviour. The majority can make their end meets, pay off debts, are financially included (e.g. own at least a saving account and are in the reach of financial services). In terms of financial planning, 59 percent claimed to have plans for unexpected events and 78.9 percent for their children education. However, regarding retirement plan, despite the majority are well educated and financially literate, they are lack of:

a) Long-term planning for retirement: almost 70 percent do not prepare for or have plan for retirement,

b) Early planning: half of them stated that they will plan for retirement when they are 40 or older;

c) Knowledge of financial investment: around one third of the respondents stated that they will rely on bank savings. Bank saving is a convenient and safe investment, but yielding low return, which can be lower than the rate of inflation; and

d) Knowledge of inflation and time-value of money: 60.25 percent reported that they will spend around THB10,001 - 15,000 or less per month after retirement, which is either too optimistic or they are ignoring the effect of inflation. That in 20 or 30 years the purchasing power of this amount of money will considerably be reduced.

These factors can aggravate to having inadequate fund for retirement, which can be a serious problem to both households and the society at large. Should retirees retire without adequate fund, they might be forced to reduce their consumption, reply on families, charities and the government to make ends meet (Miller, Madland, and Weller, 2015).

In our case, given relatively high level of financial literacy of the respondents (about two third answered three or more financial literacy

questions correctly and deemed financially literate), they are still lack of retirement plan. An explanation may be as Bernhard (2008) suggests that, in the Thai culture, the living-for-to-day attitude is prevailing, which could be the cause of not planning for the far distant future such as retirement planning. Thus, not only having a sound financial knowledge, but also a good financial attitude are vital to a healthy financial behaviour.

Thus, in planning a financial literacy policy, not only financial knowledge that should be included in the prospectus, but also the right financial attitude such as an awareness of the importance of long term planning.

Financial Literacy of the Sample

The respondents seem to be able to perform interest calculation well, but did poorly on risk diversification, bond price, and inflation.This implies that they might not be familiar with bond investment, the concept of risk diversification, and inflation. Therefore, in order to promote investment in financial markets, a considerable room for improvement in these areas is needed. Knowledge of inflation is particularly important in formulating a good long-term financial plan.

In terms of the total questions answered correctly, both financial literacy measures yield the same answer, i.e. the financial literacy level of the sample is relatively high. For Financial Literacy Measure 2, 66.7 percent of the respondents answered three or more questions correctly, which is exceptionally high comparing to the S&P's finding that only 33 percent of adults worldwide are financial literate. However, this is not a surprise, since more than 90 percent of the respondents hold a bachelor's or higher degree. Furthermore, the sample is small and obviously biased, and may not be used as a representative of the Thai population. Regarding the questions employed in FLM2 and S&P, they are similar but not exactly the same, therefore they may not be able to directly compare to each other. Nonetheless, a general idea can be drawn from our results.

Logistic regressions were also carried out to investigate relationship between financial behaviour and financial literacy. A positive association is found, although it is not statistically significant. Plausible explanations are, viz., (a) The size of the sample is small; (b) Cognitive bias ability differs among groups of individuals as suggested by Cole and Shastry (2009) who find that high school financial literacy programs did not affect saving decision; (c) The regression model contains only one independent variable which could result in a low explanatory power (this is confirmed by very low R^2's values of our regression models); and (d) Using only retirement plan as a proxy for financial behaviour might not be adequate or appropriate, as financial behaviours can be characterised by more than just a retirement plan.As mentioned in Section 4.2, that there are five attributes of financial behaviours, namely, 1) Make Ends Meet; 2) Manage Debt; 3) Plan Ahead; 4) Choose Financial Products; and 5) Stay Informed about Financial Matters. Employing these attributes might yield an improvement on the explanatory power of the financial behaviour.

Regarding the adoption of financial behaviour and financial literacy questions into

a questionnaire, the researcher finds that the length of financial literacy questions is appropriate since it contains only four or five questions. However, the questions regarding financial behaviour are be quite lengthy and time consuming. Furthermore, answering lengthy questionnaire online might not be a good channel to acquire information, a telephone call might be a better choice, as the respondent does not have to fill in the answer by himself/herself, and, hence, less time consumed.

Acknowledgement

This research was originally carried out in 2012 and then revised in 2016 with the invaluable comments by the three anonymous referees of whom the author wish to express his thanks and gratitude.

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