

# Chapter 1

## Study 3: Risk Preference of Ageing Consumers: Evidence from Financial Decisions

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# Chapter 1

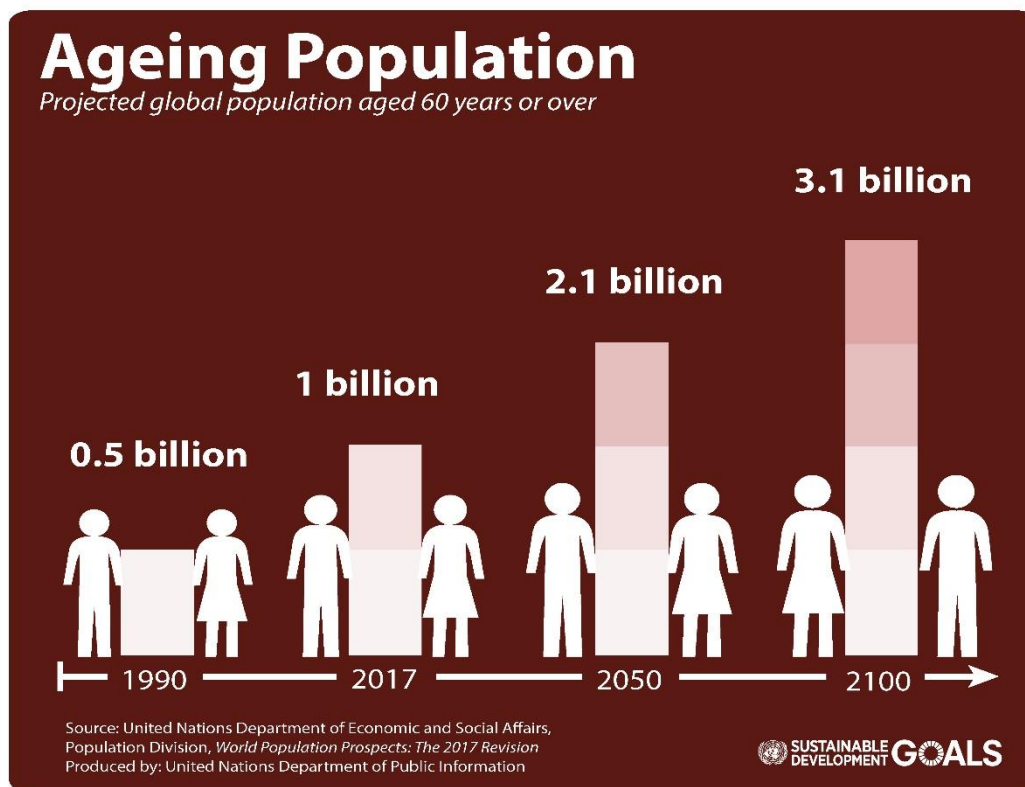
## Study 3: Risk Preference of Ageing Consumers: Evidence from Financial Decisions

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### 1. Introduction

The world has been ageing at an unprecedented rate. About 962 million people are 60 years or older, accounting for 13% of the global population (Figure 1) (United Nations, 2018). That figure was estimated to rise to 1 billion in 2017; it is estimated to rise to 2.1 billion in 2050 and to 3.1 billion in 2100. At least a quarter of the world population will be 60 years or older by 2050.

**Figure 1.1. Projected Ageing Population**



Source: United Nations Department of Economic and Social Affairs, Population Division (2018).

Thailand is one of the fastest ageing countries. In 2016, 11% of the population was 65 years or older. The World Bank (2016) estimated that the ageing population would rise to 25% by 2040. The total fertility rate declined from 6.1 in 1965 to 1.5 per woman in 2015 (World Bank, 2016). Thailand has the highest share of older people of any developing country in

East Asia and the Pacific and the fastest declining working-age population. The dependency ratio<sup>1</sup> is estimated to grow from 5.4:1 in 2020 to 2.4:1 in 2040, a demographic shift that presents several dire challenges. First, the shrinking labour force will pose significant threats to productivity. Service providers and infrastructure must be made available for the growing ageing population. Whilst it is vital for older people to have more money for their retirement, the saving rate reportedly decreased to 6.4% in 2019, the lowest since 2009 (Chk, 2019). Half of the population is in debt. Consequently, the government will inevitably shoulder hefty financial burdens in the form of pension and healthcare systems for older people. The government must encourage people to make smart financial choices to support themselves.

The senior population's allocation of funds plays a pivotal role in the ageing society. Based on empirical results derived from a conjoint choice experiment, this study investigates whether age influences risk preference when consumers make investment decisions, what the key determinants of risk aversion are, and whether the determinants amongst younger people differ from those amongst older people.

## **2. Literature Review**

### **2nd National Plan for the Elderly**

The government created the 2nd National Plan for the Elderly (2002–2021) to resolve issues resulting from population ageing. The main strategies tackle the demographic shift, support and socially protect older people, and aim to help them be financially independent. The government is boosting programmes that promote savings for older people, such as the Social Security Fund. Employers must register employees aged 15 years or older, withhold contributions from their wages, and transfer the contributions to the Social Security Fund on their behalf. Employers and the government contribute, as well. The insured receive benefits in case of unemployment, illness, disability, death, childbirth, and retirement. Upon turning 55, the insured receive a pension if they have contributed for at least 180 months. Otherwise, the insured will receive a lump-sum pension.

Integrating the pension system (Thai Health Information, 2017) is another project the government promotes under the Thai 2nd National Plan for the Elderly. The project aims to create income security for everyone, including informal workers and workers who are not members of the provident fund. The project is led by the National Pension Policy Committee, chaired by the Prime Minister.

The government has another system – the National Pension Fund – for formal workers 15–60 years old in the private and public sectors, including state enterprises. Employees

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<sup>1</sup> The dependency ratio is a measure of the number of dependents aged up to 14 years and over 65, compared with the total population 15–64 years old.

earning THB10,000 and more and their employers must contribute 3% of the wage, but not more than THB1,800 per month during the first 3 years of employment. The contribution rate gradually increases to 10% in the 10th year. Employees' benefits include either a 20-year pension or a lump-sum pension at the age of 60. Contributions, earnings from contributions, and the pension are exempt from personal income tax.

The government also established the National Savings Fund or the National Health Insurance Fund (Thai Health Information, 2016) under the National Savings Fund Act 2011 to ensure income security for older people in the informal sector, including self-employed farmers and part-time employees. After the abolition of Article 40,<sup>2</sup> relating to pension under the Social Security Act, the National Savings Fund was initiated in 2015, receiving contributions from members and the government. Members must save a minimum of THB50 per month but can accumulate no more than THB13,200 per year. The government pays 50%, 80%, and 100% of members' monthly accumulation depending on the age of the workers until they turn 60 years old. The government guarantees a return of not less than the 12-month fixed deposit rate specified by the Bank of Thailand.

### **Risk Preference and Goals of Older People**

The perception of time plays a fundamental role in the selection of social goals, which can change in any age group if it faces a time constraint. Time perception is linked to the time left in life and chronological age, but it is also malleable, depending on knowledge and emotion (Carstensen et al., 2003; Fung, Lai, and Ng, 2001; Lang and Carstensen, 2002; Yoon, Cole, and Lee, 2009).

Socio-emotional selectivity theory posits that time perspective heavily influences goal-directed behaviour (Carstensen, 1993; Carstensen, Isaacowitz, and Charles, 1999). Consequently, goals are often formulated within temporal contexts. That is, time plays an important role in determining preferred goals. According to the socio-emotional selectivity theory, psychological goals can be categorised into knowledge related and emotionally meaningful. Whilst knowledge-related goals are pursued for novel information or new skills, emotionally meaningful goals are pursued for their accompanying feelings (Carstensen et al., 2003). Early in life, individuals are more likely to focus their attention on acquiring novel knowledge and skills to prepare themselves for a long and unknown future. As individuals age, mortality is perceived as a pressuring constraint on time. Subsequently, they neglect to see the potential long-term benefits of knowledge-related goals and prioritise emotionally meaningful goals because achieving them brings a feeling of immediate satisfaction. Furthermore, impairment of cognitive function cripples older consumers' insight and results in reliance on emotion (Hasher and Zacks, 1988; Peters, 2010; Salthouse, 2006). Interestingly, the ability to understand and integrate emotional information has been shown to significantly improve with age (Labouvie-Vief, 1998). Fung

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<sup>2</sup> Article 40 of the Social Security Act states that a portion of monthly wages will be deducted from an employee's wages to contribute to the Social Security Fund. See ThaiLaws (1999).

and Carstensen (2003) showed that older consumers prefer advertisements with emotionally meaningful appeal to those with knowledge-related appeal. The finding was supported by Williams and Drolet (2005).

Not only does the type of goal change over consumers' lifespan but goal orientation also shifts as consumers age (Cole et al., 2008; Ebner, Freund, and Baltes, 2000). According to the selective optimisation with compensation theory, consumers must carefully allocate their limited internal and external resources to maximise gains and minimise losses at every point in time throughout their lives (Baltes and Baltes, 1990; Freund and Baltes, 2000). With increasing salience of resource limitations in old age, consumers will invest more in maintaining and preventing the loss of resources rather than in growing them (Baltes, 1987; Freund and Baltes, 2000; Heckhausen, Dixon, and Baltes, 1989; Staudinger et al., 1995). This claim is reinforced by the lifespan development theory, lifespan theory of control, and strategies of accommodation and assimilation (Cole et al., 2008).

### **Information Processing and Ageing Consumers**

Several studies (see Carpenter and Yoon (2011)) have shown that information-processing ability declines with age, starting as early as 20 years old. Salthouse (1996) illustrates how older participants take longer to complete pattern-matching tasks, suggesting that the decline of processing speed is the result of age-related differences in cognitive processing. Age has been found to be associated with decline in working memory as the sense of cognitive psychology (Moscovitch and Winocur, 1995). Because great working memory capacity is required to select what to buy out of wide range of options, deciding what to buy will be challenging for the elderly (Roedder and Cole, 1986; Cole and Houston, 1987). It is not as easy for older as for younger consumers to shift from one task goal to another, update the contents of working memory, or reject irrelevant information (Hedden and Yoon, 2006; West, 1996). Older consumers, therefore, should be provided with fewer consumption options to reduce the cognitive effort required for decision-making. In this experimental study, we offered alternatives that included making a financial planner available to support consumers in choosing a product in the choice set so we could investigate the effect of financial planners on older consumers' investment decisions.

## **3. Methodology**

### **Data**

We carried out a conjoint choice experiment and collected data from 500 participants aged 19-86 years. They mainly resided in Bangkok, but residents of other provinces participated. Participants were randomly intercepted at malls and wet markets. Each participant was asked to choose the financial product that he or she most preferred. The participants were presented with nine occasions that required them to choose, and each choice occasion had four financial product alternatives with the following attributes and levels:

Attribute 1: Risk and return level, consisting of three levels:

1. Low (e.g. savings)
2. Medium (e.g. bonds)
3. High (e.g. stocks)

Attribute 2: Financial advising service, consisting of two levels:

1. Yes (available)
2. No (not provided)

For instance, participants were asked to select their most preferred option from four alternatives:

- A. Risk and return level: high; financial advising service: no
- B. Risk and return level: low; financial advising service: no
- C. Risk and return level: medium; financial advising service: yes
- D. Risk and return level: high; financial advising service: yes

Choice sets were designed using SAS to be orthogonal with equal probability for each alternative to appear in the choice sets.

Respondents were asked for demographic information, which was incorporated into the analysis. The variables include gender, age, education, personal income, household income, and investment experience in years.

### **Model**

As the main dependent variable in this study is choice, the most appropriate model is the logit discrete choice model. In particular, the utility that an individual  $i$  received from choosing the financial product  $j$  in the choice occasion  $k$  is denoted by

$$U_{ijk} = \beta R_{jk} + \gamma C_{jk} + \delta R_{jk} Z_i + \eta C_{jk} Z_i + \lambda C_{jk} R_{jk} Z_i + \varepsilon_{ijk} \quad (1)$$

where  $R_{jk} = [M_{jk} \ H_{jk}]$  is a vector of two dummy variables indicating the risk and return level. As there are three risk and return levels (low, medium, and high), two dummy variables are required. Specifically, these are

$$M_{jk} = \begin{cases} 1 & \text{when the risk and return level is medium} \\ 0 & \text{otherwise} \end{cases}$$

$$H_{jk} = \begin{cases} 1 & \text{when the risk and return level is high} \\ 0 & \text{otherwise} \end{cases}$$

$C_{jk}$  is a dummy variable, which takes on the value of 1 if financial advising service is available and takes on the value of 0 if such service is not provided.

$Z_i$  is a vector of demographic variables, which includes investment experience in years  $investexp_i$  and the dummy variable  $aged_i$ , which takes on the value of 1 if the respondent is 50 years or older and 0 otherwise.

$\varepsilon_{ijk}$  is the random error term, which is assumed to be distributed Type I Extreme Value to render the logit discrete choice model.

The model explains and predicts what consumers will choose given discrete alternatives of financial products. The model is unique because the influence of each attribute on consumers' preference is allowed to be related to investment experience as well as age. This relationship is expressed in the model as the inclusion of interaction terms between financial product attributes and demographic variables. Parameter estimates of these interaction terms ( $\delta$  and  $\eta$ ) are analysed to determine their statistical significance.

The model as specified in (1) also allows for the impact of financial advising service on financial product preference to vary by risk and return level and age. In particular, the model includes the three-way interaction term between risk and return level ( $R_{jk}$ ), financial advising service availability ( $C_{jk}$ ), and the age dummy ( $aged_i$ ).

From (1), the choice probability can be derived as

$$P_{ik}^{logit}(j|\beta, \gamma, \delta, \eta, \lambda) = \frac{\exp(\beta R_{jk} + \gamma C_{jk} + \delta R_{jk} Z_i + \eta C_{jk} Z_i + \lambda C_{jk} R_{jk} Z_i)}{\sum_{l=1}^4 \exp(\beta R_{lk} + \gamma C_{lk} + \delta R_{lk} Z_i + \eta C_{lk} Z_i + \lambda C_{lk} R_{lk} Z_i)} \quad (2)$$

and the likelihood function can be defined as

$$\ln \mathcal{L} = \sum_i \sum_k \sum_j y_{ijk} \ln P_{ijk} \quad (3)$$

where  $y_{ijk}$  takes on the value of 1 if the individual  $i$  chooses the financial product  $j$  at the choice occasion  $k$ .

#### 4. Results

**Table 1.1. Parameter Estimates of the Logit Discrete Choice Model**

Variables	Parameter Estimate	Standard Error	Marginal Effects
<b>Risk and returns</b>			
Low	0	N/A	N/A
Medium	<b>0.389</b>	0.047	<b>0.073</b>
High	-0.009	0.051	-0.002
<b>Financial consulting</b>			
None	0	N/A	N/A
Yes	<b>0.611</b>	0.038	<b>0.114</b>
<b>Risk and returns*Investment experience</b>			
Medium*Investment experience	0.011	0.009	0.002
High*Investment experience	0.015	0.009	0.003
<b>Financial consulting*Investment experience</b>			
Yes*Investment experience	<b>0.014</b>	0.007	<b>0.003</b>
<b>Risk and returns*Age</b>			
Medium*Age	<b>-0.508</b>	0.107	<b>-0.095</b>
High*Age	<b>-0.606</b>	0.130	<b>-0.113</b>
<b>Risk and returns*Financial consulting*Age</b>			
Medium*Yes*Age	<b>0.437</b>	0.108	<b>0.082</b>
High*Yes*Age	0.116	0.138	0.022
<b>Model fit</b>			
LL		-5868.693	

\* boldface denotes statistically significance at alpha = 0.05

LL = log-likelihood, N/A = not available.

Source: Authors' calculation.

Results demonstrate that a medium level of risk and returns is significantly the most preferred choice (0.389), while older people are relatively much more risk averse. For older consumers, particularly, low risk and returns tend to be the most appealing option. This is warranted by the significantly negative parameter estimates for Risk and Return\*Age (-0.508 and -0.606). The parameter estimate shows that financial advising service will increase the likelihood of a choice being chosen (0.611). Interestingly, this effect is amplified for consumers who are highly experienced in investing (0.014), implying that amateurs do not yet know the importance and benefits of seeking professional advice on wealth management. Finally, results show that financial advising service would encourage the elderly to invest in assets with medium risk and returns (0.437) but not in those with high risk and returns.



## 5. Discussion

The findings reveal many avenues for policymakers to encourage the elderly to invest and ensure that their savings will last until they die, which is particularly important as people are living longer. The empirical results emphasise the fact that average customers compromise between risk and return. Older consumers, however, tend to choose financial instruments with low risk and returns. To vitalise the financial activities of older people, the government should encourage them to invest in moderately risky assets such as bonds.

Fortunately, the results suggest that the availability of financial advising service can increase risk tolerance amongst older investors. The government could require funds to provide the service, especially for older consumers. Results show that those with ample investment experience realise the importance of seeking advice from financial advisors more than those with limited investment experience, rather than the other way around. This implies that providing service alone will not be adequate. Awareness campaigns must be established so that those without much investment experience will understand the underlying benefits of seeking professional advice.

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