THE EFFECTIVENESS OF AN EMPLOYEE’S CHOICE PROGRAMME IN CREATING AN EQUITY CULTURE AND ESTABLISHING PRIVATE PENSIONS IN THAILAND: A CASE STUDY

A thesis submitted to the University of Manchester for the degree of Doctor of Business Administration in the Faculty of Humanities

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ABSTRACT

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Candidate: Panukorn Chantaraprapab
Degree Title: DBA
Thesis Title: The Effectiveness of An Employee’s Choice Programme in Creating an Equity Culture and Establishing Private Pensions in Thailand: A Case Study
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This DBA thesis is an empirical study of the new private pension programme in Thailand, an Employee’s Choice (EC) programme, which is structured as a self-directed defined contribution plan that permits workers to make their own investment decisions for their pension assets. The growing acceptance of the new pension programme is placing greater responsibility for managing pension assets on workers. The shift from committee-directed pension plans to self-directed pension plans has meant that Thai workers now must make investment decisions, such as what type of plan to choose and how to allocate their pension assets among different asset classes. This raises some concerns about the financial literacy of workers and their ability to make informed decisions. This study aims to analyse the effectiveness of this programme by examining empirical evidence from a case study. Specifically, it asks whether workers are able to make appropriate investment decisions for their pension plans as investment theory has suggested.

This study has shown that the new pension programme in this case study is effective. Most importantly, the study finds that, regardless of their level of financial literacy, workers are able to make reasonable investment choices as suggested by portfolio and lifecycle investing theories. Specifically, when workers were offered investment options ranging from low risk to high risk, workers are able to choose investment choices consistent with their age and risk tolerance. However, this study finds that financial literacy does matter if workers are asked to make asset allocation decisions instead of choosing between options. The study finds that workers with low levels of financial literacy are likely to allocate less of their pension assets in equities.

The findings from this study make several contributions to the growing literature on household finance. In addition, this study has a number of important management implications for pension design. With the simple plan design which offers choices ranging from low risk to high risk, workers appear to make rational investment decisions regardless of their level of financial knowledge. Therefore, the simple plan design could be very useful for workers who have less financial knowledge. This research has also shown that many workers do not plan to review or revise their portfolios as lifecycle theory has suggested. The implication from this study is that the new self-directed pension programme is not effective in the long-run. There is, therefore, a definite need for a better pension design. Innovative pension design should be used in order to minimize workers’ investment mistakes. This study advocates the use of lifecycle funds and recommends policymakers to promote and support the usage of lifecycle funds in the Thai private pension context.
DECLARATION

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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DEDICATION

To my parents
ACKNOWLEDGEMENT

My deepest gratitude to Professor Ismail Erturk, my supervisor, for his intellectual guidance and invaluable support, which helped shape both the contents and the process of completing this thesis. Without my supervisor, it would not have been possible for me to complete this thesis. I am also deeply grateful to Professor Karel Williams, my co-supervisor, for helpful comments and advice. Thanks also to my professors and colleagues at Manchester Business School.

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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AIMC</td>
<td>Association of Investment Management Companies</td>
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<tr>
<td>AOP</td>
<td>Association of Provident Fund</td>
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<tr>
<td>CFPB</td>
<td>Consumer Financial Protection Bureau</td>
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<tr>
<td>DC</td>
<td>Defined Contribution</td>
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<tr>
<td>DB</td>
<td>Defined Benefit</td>
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<tr>
<td>DOL</td>
<td>Department of Labor</td>
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<tr>
<td>EBRI</td>
<td>Employee Benefit Research Institute</td>
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<tr>
<td>EC</td>
<td>Employee’s Choice Programme</td>
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<tr>
<td>ERP</td>
<td>Equity Risk Premium</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GPF</td>
<td>Government Pension Fund</td>
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<tr>
<td>ILO</td>
<td>International Labour Organization</td>
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<tr>
<td>NEST</td>
<td>National Employment Savings Trust</td>
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<tr>
<td>NSO</td>
<td>National Statistical Office of Thailand</td>
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<tr>
<td>OAA</td>
<td>Old-age Allowance</td>
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<tr>
<td>OAPF</td>
<td>Old-age Pension Fund</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation and Development</td>
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<tr>
<td>P/E</td>
<td>Price to Earnings Ratio</td>
</tr>
<tr>
<td>PVD</td>
<td>Provident Fund</td>
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<tr>
<td>RMF</td>
<td>Retirement Mutual Fund</td>
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<tr>
<td>SSO</td>
<td>Social Security Office</td>
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<tr>
<td>SEC</td>
<td>Securities and Exchange Commission</td>
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<tr>
<td>SET</td>
<td>Stock Exchange of Thailand</td>
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<tr>
<td>THB</td>
<td>Thai Baht</td>
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<tr>
<td>TIPS</td>
<td>Treasury Inflation-Protected Securities</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
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<td>US</td>
<td>United States of America</td>
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1 CHAPTER 1: INTRODUCTION

“The individuals, though not as familiar with the theory of investing as the professionals, have generally received some investment education from their employers. Many have learned about the relationship between risk and return. They have discovered that over the long run stocks have outperformed bonds and other conservative instruments. Many are now able to match their investments with their own financial status, future financial needs, and risk tolerance. They themselves decide how much they will invest in growth stocks or value stocks, large-cap or small-cap stocks, bonds, or guaranteed investment contracts through their decisions about how much to put into which mutual fund options offered by their employers. These employees have become investors”

Clowes (2000)

“I should have computed the historical covariance of the asset classes and drawn an efficient frontier. Instead I visualized my grief if the stock market went way up and I wasn’t in it—or if it went way down and I was completely in it. My intention was to minimize my future regret, so I split my [pension scheme] contributions 50/50 between bonds and equities.”

Harry Markowitz as quoted in Zweig (1998)

1.1 Introduction

This study analyses and evaluates the new pension programme by testing the hypothesis raised by Clowes (2000) in the preliminary quotes. To the best of the researcher’s knowledge, this is the first study to examine the effectiveness of the new pension program in Thailand which is structured as a self-directed pension plan and permits workers to make investment decisions for their pension assets. Until recently, private pension plans in Thailand offered workers a retirement income without the responsibility of making investment decisions. This has changed in recent years as the new pension programme has been replacing the previous scheme. The shift from committee-directed pension plans to self-directed pension plans has meant that Thai workers now must make investment decisions, such as what type of investment plan to choose or how to allocate their pension assets among asset classes. This raises some concerns about the financial literacy of workers and their ability to make informed decisions.
Workers vary in their level of financial knowledge and risk taking.\(^1\) How investment choice is exercised in the new pension plans is not well understood in the Thai pension context. Although traditional finance theory assumes that people are rational decision makers, research has consistently shown that people often find it difficult to make the right decision about retirement savings. Evidence from other countries suggests that many workers have low levels of financial literacy and fail to make rational investment decisions. Therefore, there is substantial concern that Thai workers may not be sophisticated enough to manage risks and take advantage of the investment opportunities offered by the new pension programme. In addition, as the previous pension scheme generally invest conservatively with very low allocation to equities, it is interesting to know how much workers will invest in equities if they are allowed to make asset allocation decisions.

This study aims to evaluate the effectiveness of the new private pension programme by investigating whether Thai workers are able to make complex and rational investment decisions for their pensions. This study intends to explore if there is a significant difference between the goals and the outcomes of the program in the real-world setting by presenting evidence from a case study. The ultimate goal of this study is to contribute to the household finance literature and to provide management and policy implications on the new private pension programme in Thailand. Findings from this study have important implications for developing effective private pension programmes in Thailand as these findings can be used to shape how the pension design in Thailand can be improved similar to the case of the UK’s National Employment Savings Trust (NEST) which draws on the research findings to shape its pension plan design in order to accommodate workers who are likely to be less sophisticated financially.\(^2\)

This introductory chapter provides an introduction and background of the study. The structure of the remaining part of this chapter is as follows: Section 1.2 provides the background and discusses the research problems in this study. In section 1.3, the motivation of the study is described. Section 1.4 discusses the research objectives while

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\(^1\) Note that this study uses the terms “financial literacy” and “financial knowledge” interchangeably.

\(^2\) The National Employment Savings Trust (NEST) is a new Defined Contribution (DC) workplace pension scheme that was introduced in the UK from 2012. It was previously known as the Personal Accounts scheme and has been created as part of the government’s pension reforms in order to increase private savings with low charges. For more detailed information, see http://www.nestpensions.org.uk.
section 1.5 outlines the research questions and hypotheses. Next, section 1.6 provides a brief overview of the research methods used in the study. Then, section 1.7 discusses the contributions to research. Finally, section 1.8 presents the overall structure of this thesis.

1.2 Background of the Study

**Self-directed defined contribution (DC) plans**

Although private pension plans vary in design, they are usually classified according to how the benefits are determined. In general, private pension plans offer two types of scheme: a) defined benefit (DB) and b) defined contribution (DC). In a defined benefit (DB) plan, the pension benefit is paid in the form of an annuity. Typically, the pension benefit is guaranteed according to a formula which takes into account years of service for the employer and also the member’s salary. In contrast, DC pension plans do not provide a fixed benefit but provide benefits based largely on the workers’ contributions, asset allocation decisions and the costs associated with that investment. Workers bear different types of risks, depending mainly on what type of pension plan is provided. For example, workers under DB plans bear company insolvency and job mobility risk while those who are under DC plans bear all the investment risk, disability risk as well as longevity risk (World Bank, 1994).

Previously, the most common type of private pension scheme in many countries, especially in US and UK was defined benefit plan. DB plans or final salary schemes provide pension members predictable, stable, and long-lasting pension income (Clark, 2003). In this respect, defined benefit is regarded as the best option for workers for its simplicity and income security, but not the best option for employers as it is comparatively more expensive than defined contribution plan (Choi et al., 2001; Merton, 2006). The employers’ contributions under DC plans are predictable and do not depend on stock market and interest rate volatility (Munnell, 2006). It means that when the stock markets or interest rates fall, workers realize a lower pension income, rather than the employer paying more for an annuity. For these reasons, it is not surprising that, in recent years, many companies in the US and UK do not offer the defined benefit scheme to new members, but instead introducing the defined contribution scheme as an alternative (Langley, 2004). In addition, increased workforce mobility has been another
Self-directed Defined Contribution (DC) plans have become one of the most widely used plans for private pensions in many countries. Around the world, there has been an increasing trend toward giving pension members freedom to make investment choices for their pension portfolios. The shift from Defined Benefit (DB) to Defined Contribution (DC) and the promotion of ‘self-directed’ pension plans has shifted the decision-making responsibility away from employers and toward individual workers. This means that workers are increasingly asked to make sophisticated investment decisions for their pension under the self-directed pension plans. For this reason, several researchers have shown an increased interest in the self-directed pension plans and have examined workers’ saving and investment behaviour (e.g., Bodie and Crane, 1997; Benarzi and Thaler, 2001, 2002; Byrne, 2007; Papke, 2003; Madrian and Shea, 2001; Choi et al., 2002; van Rooij et al., 2007).

Previous studies on self-directed pension plans have focused mainly on the implicit assumption about investment decision. Consistent with the traditional finance framework, the self-directed DC plans assume that workers are well-informed economic agents who make rational decisions in order to maximize their welfare. Rationality means that they are able to update their beliefs correctly when they receive new information, and then make choices that are normatively acceptable (Barberis and Thaler, 2005, pp.1). Thus, workers are assumed to be able to ‘interpret and weigh information presented regarding options offered by employers and governments, appropriately evaluate and balance these choices, and then make an informed decision based on a weighing of the alternatives’ (Mitchell and Utkus, 2004, pp.3). Advocates of this concept suggest that, in such a self-directed DC pension plans, pension members are able to allocate their retirement assets among financial instruments in a way that best suits their preferences (Feldstein and Rangelova, 2001; Shiller, 2003). In other words, in an ideal world, workers would be expected to make wise investment decisions and
consequently construct an optimal pension portfolio that is suitable for their risk and return objectives.

One question that needs to be asked, however, is whether workers are able to make rational investment decisions. Despite the fact that the new pension programme offers workers more investment opportunities, little is known about workers’ capability to make informed investment decisions in order to exploit these investment opportunities.\(^3\) However, due to the complexity of the product and financial markets, it seems reasonable to question whether ordinary workers can be transformed into investors, able to make informed investment decisions for their own pension assets. Moreover, it is likely that mis-selling of financial products (if any) will make it even more difficult for them to have truly suitable financial products.\(^4\)

The key problem with the self-directed DC plans is that making an investment decision is not an easy task for workers. Under the self-directed DC plans, workers are expected to make complex investment decisions. They need to make asset allocation decisions which require them to have good foresight about risk and return of each asset class. They have to face the challenge of deciding either how to make investment choice or how to allocate their retirement portfolios across broad asset classes with the objective to grow their retirement portfolio as much as possible given their level of risk aversion. Moreover, they have to achieve respectable investment returns by avoiding significant losses along the way in order to provide the required standard of living after their retirement. Because pension investing is not a one-off task, these investment decisions are on-going, requiring members to periodically monitor their investments, evaluate the performance of their investment choice, and decide whether to switch to another investment option offered by the pension plan (Gallery et al., 2011). Failure to do so may require members to save more, work longer, or reduce their standard of living in retirement.

\(^3\) There is no formal definition of an informed decision because it depends on the theoretical predisposition of the researcher. In this study, an informed investment decision means 1) the final decision is in accord with an underlying theory, or 2) the process in which individual follows a particular theory.

\(^4\) According to the Global Market Sentiment Survey 2013, mis-selling by financial advisers is ranked as the most serious ethical problem (CFA Institute, 2012).
In the context of self-directed DC plans, it is not surprising that several studies have reported that many individuals do not make well-informed decisions and they often make mistakes in managing their self-directed pension plans due to the lack of financial literacy and behavioral biases that hinder their decision-making. Previous studies have shown that many individuals display low level of financial knowledge and investment savvy (Bernheim, 1998; John Hancock, 2002; OECD, 2005; Lusardi and Mitchell, 2007; van Rooij et al., 2007 and 2011), fail to understand basic financial concepts (Hilgert, Hogarth, and Beverly, 2003), fail to participate in the stock market (Campbell, 2006), and may not possess the skills and ability to perform the investment calculations (Erturk et al., 2007).

Making investment decisions is difficult for most people because there are uncertainties in the financial and capital markets which are not easily predictable, especially during a volatile market. Moreover, although workers can choose the theoretically best investment choice, it does not guarantee that ex-ante best will translate into ex-post best. Workers have to make investment decisions whose outcome cannot be known in advance. Outcomes can be guessed or imagined, but never known until the time these workers retire. Managing a pension portfolio is not easy as noted by the Nobel Laureate, Robert C. Merton in his speech at a conference:

“Finding and executing a dynamic portfolio strategy to achieve such a [retirement] goal is an extremely complex problem to solve, even for the best financial minds. Yet through the use of defined-contribution plans, the financial services industry is, in effect, asking employees of all sorts—from brain surgeons, to teachers, to assembly line workers—to solve just such a problem.”
Merton (2007, pp. 6)

The recent global financial crisis in 2008-2009 also suggests that wide fluctuation in asset prices makes it even more difficult for workers to make sensible investment strategy for their pensions (Burtless, 2010). It is a great challenge for workers to make effective investment choices in volatile and sophisticated financial markets where risk and return are difficult to calculate and predict. The recent financial crisis has forced investors to rethink asset allocation and retirement portfolio construction in a completely new way.
Another potential problem is that workers may not make rational decisions to maximize their self-interest as traditional economic theory assumes. Although traditional finance theory assumes that people are rational and should be able to construct efficient portfolios, behavioral finance literature shows that many individuals are at odds when they make investment decisions for their pension assets and do not follow what finance theory has suggested. For example, many individuals use naïve allocation strategies (Benartzi and Thaler, 2001; Huberman and Jiang, 2006); exhibit inertia when making asset allocation and rebalancing decisions (Ameriks and Zeldes, 2004; Agnew et al., 2003); and are subject to framing and default effects in investment choices (Benartzi and Thaler, 2002; Karlsson et al., 2007).

Apart from behavioural bias problems, workers may also have financial literacy problems. A lack of financial knowledge and skills is believed to be problematic since it prevents individual from optimizing their own welfare. Logically, workers would have made better investment decisions for their pension plans if they had received financial education. It is argued that the promise of democratized finance can be delivered only if individuals have adequate calculative competence to appropriately evaluate different financial products (Erturk et al., 2007, pp. 562). To make informed investment decisions, individuals need to have adequate levels of financial knowledge and skills to manage their pension portfolios and make appropriate asset allocation decisions that work best for them. In other words, under the new pension programme, individuals are expected to become investors. However, many studies have documented that financial illiteracy is widespread (John Hancock, 2002; Byrne, 2007; van Rooij, Kool, and Prast, 2007; OECD, 2005; Lusardi and Mitchell, 2008; Lusardi and Mitchell, 2011). Therefore, it is not surprising that financial literacy programmes have become a cornerstone of the self-directed pension plans.

5 If individuals do not act rationally as traditional portfolio theory predicts, then how do they make investment decisions for their pension plans? From the observation that individuals do not act consistent with traditional portfolio theory, later behavioral portfolio theory is developed as an alternative to traditional portfolio theory (Shefrin and Statman, 2000). The behavioral portfolio theory is a positive portfolio theory built on the foundation of SP/A theory (Lopes, 1987) and prospect theory (Kahneman and Tversky, 1979). Basically, the theory argues that investors view their portfolio as ‘distinct layers in a pyramid of assets, where layers are associated with particular goals and where attitudes towards risk vary across layers’ (Statman, 2004, pp. 71). In other words, behavioral portfolio theory suggests that investors construct pyramid portfolios because they want downside protection as well as upside potential. For example, investors may divide their pension assets into two layers. The first layer might consist of low-risk assets, designed to protect them from being poor. The second layer, an upside potential layer, might consist of stocks, designed to make them rich.
Self-directed pension plans in Thailand: an employee’s choice programme

Following worldwide trends, an “employee’s choice” (EC) programme has been initiated in Thailand and widely promoted among employers that currently offer pension plans for their workers. The new pension programme is a relatively recent innovation in the Thai pension context. The new pension programme in Thailand was established in line with the global trend towards increased investor autonomy. It is based on a self-directed DC scheme constructed along the neoliberal economics ideology which has been promoted in Thailand by supranational institutions including the IMF, World Bank, and Asian Development Bank after the 1997 financial crisis (Hewison, 2005).

Based on neoliberal ideology, policymakers typically argue that old-age protection would be effectively secured if individuals are allowed to have freedom to manage and select the saving products that are best suited to them (Whiteside, 2006, pp. 687). World Bank argues that defined contribution plans in which employers choose the investment policy but workers bear the investment risk pose a potential agency problem since employers might make risk/return tradeoffs different from those preferred by workers (World Bank, 1994). In the World Bank’s perspective, ‘decentralized DC plans’ which workers are able to make investment choice are far superior to centralized pension plans (World Bank, 1994, pp. 177). However, the concept of individualize responsibility for pension investment decisions may run “well ahead of individual capacity to manage complex choices and unknowable risks” (Erturk et al., 2007, pp. 570) because financial markets are increasingly unpredictable and the frequency of systemic financial crisis has increased.

The new pension programme is structured as a self-directed DC scheme which permits members to make their own investment decisions for their pension assets.\(^6\) In the past, the responsibility for the allocation of plan assets rested with the fund committee who decides how plan assets are to be invested. Therefore, every worker in the same pension plan owns the same portfolio regardless of their risk and return preferences.

This has changed in recent years as the Securities and Exchange Commission of Thailand has recognized that individuals’ preferences may vary over their lifecycle and

\(^6\) This program is similar to the DC pension plans in the Anglo-Saxon countries such as the participant-directed pension plan in the US, the Self-invested personal pension (SIPP) in the UK, and the Self-Managed Superannuation Fund in Australia.
the presence of a single plan programme may not accommodate such changes in their preferences. Therefore, it recently introduced the new pension programme that, for the first time, offers workers the chance to choose their own investment policies that most suits their needs (SEC, 2005, pp. 1). In practice, this new self-directed pension plan will allow each worker to make investment choices at their own discretion, within the plan’s investment guidelines. However, the shift from committee-directed plans to self-directed plans has also transferred the responsibility for investment decisions from the fund committee to individual workers. Workers must take an active role in managing their own pension assets. Therefore, workers in the EC programme have to face considerable challenges navigating the complex financial products and investment options required for retirement planning and take the risk of mismanaging their investments during the saving phase.

After the introduction of the new programme, it has become increasingly accepted with about one-third of private pension plans in Thailand now operating under the EC programme. The Securities and Exchange Commission reports that there were 12,323 companies offering private pension plans to their workers at the end of 2012 whereas the number of companies who adopted an EC programme increased to 4,156, an increase of nearly 217 percent from 2009 (SEC, 2013).

**Table 1.1: Growth of the Employee’s Choice programme**

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of provident fund members (million)</td>
<td>2.0</td>
<td>2.1</td>
<td>2.3</td>
<td>2.4</td>
</tr>
<tr>
<td>Number of Employers offering provident fund to their employees</td>
<td>9,379</td>
<td>9,976</td>
<td>11,249</td>
<td>12,323</td>
</tr>
<tr>
<td>Number of Employers using an Employee's Choice programme</td>
<td>1,312</td>
<td>1,765</td>
<td>3,348</td>
<td>4,156</td>
</tr>
<tr>
<td>Number of Employee's choice programme / total number of the provident fund</td>
<td>14.0%</td>
<td>17.7%</td>
<td>29.8%</td>
<td>33.7%</td>
</tr>
</tbody>
</table>

*Source: Securities and Exchange Commission of Thailand (2013) and Author’s calculation*

Apparently, it appears that the concept of an ‘individualisation of responsibility and risk’ (Langley, 2006) in saving for retirement is becoming increasingly accepted among Thai workers. Before there was an employee’s choice programme, workers did not make investment decisions. Those who were in the same pension plan shared the same asset allocation strategy since all investment decisions were made solely by the fund committee. Under the new programme, Thai workers have to assume more of the
responsibility and risk for investment decisions as they are allowed to decide among the various investment choices offered by the pension plan to determine where their pension assets should be invested. Therefore, their retirement income largely will depend upon the amounts they have saved during their accumulation phase and the performance of the investments that they have chosen. Choosing poor choices may potentially jeopardize their retirement welfare in the future.

Effectiveness of the self-directed pension plans

How effective is the new pension programme? Conceptually, the new pension programme seems to provide more benefits to workers. In an ideal world, workers are expected to actively participate in the new programme and take full advantage of the programme by choosing the most appropriate investment choice. However, it is important to address the question whether it is an effective programme in a real-life setting.

Generally, the effectiveness of the programme is measured by comparing the outcomes of the program against its goals. For the self-directed DC plans, the effectiveness of the programme is typically measured by comparing actual pension member behaviour with what a good financial advisor might recommend or do (MacFarland, Marconi, and Utkus, 2004). It is assumed that a well-trained financial advisor should make investment decisions according to what financial theory has suggested. Therefore, to evaluate the effectiveness of the new pension programme, it is important to know how workers make investment decisions so the analysis can be performed to evaluate whether or not workers make investment decisions according to what financial theory has suggested. If workers follow the suggestions of financial theory when they make investment decisions, then, the new pension programme is considered to be effective.

In addition, financial literacy is often viewed as a precondition of the self-directed pension plans. Conventional wisdom suggests that financial literacy leads to better investment decisions, and better investment decisions then ultimately leads to improved financial outcomes. Empirical evidence also suggests that individuals who are financially literate are likely to invest more efficiently (Calvert, Campbell, and Sodini, 2007). This study aims to explore whether this argument holds in the Thai pension
context. If financial literacy is an important precondition in effective investment decision making, it is also important to know how financially literate workers are. Are workers well-equipped to make complex investment decisions? How does the level of financial literacy affect investment decisions? Does financial literacy actually lead to improved investment choices? These are also the major research questions of this study.

**Retirement savings in Thailand**

Like many countries around the world, Thailand is facing demographical challenges due to falling fertility rates and rising life expectancy. According to the World Health Organization’s statistics, in 2011, Thai population aged 60 years can expect to live another 21 years on average, 4 years longer than in 1990. As Thailand is moving towards an aging society, there will be fewer young people to support their elderly relatives in the future. Traditionally, Asians, including Thai people, have relied upon their children to support their material needs in their old age (Park, 2009). A recent survey in Thailand confirms this traditional belief as 38.9 percent of survey participants expect to have retirement income from family members (National Statistical Office, 2009). However, it may become more difficult to rely on income from family members since Thailand will have more aged population and the old-age dependency ratio (ratio of population aged 65+ per 100 population aged 15-64) will increase from 12.6 percent in 2010 to 41.4 percent in 2050 (United Nations, 2011).

With the changing demographical structure, it is becoming more difficult to rely solely on supports from family members in the future. Thai people need to take more responsibility for their retirement prospects by their own pensions and personal savings. This suggests a greater role for formal pension systems in Thailand. Due to the limited Social Security benefit payments, Social Security covers a smaller portion of the retirement needs as income rises. In addition, the future Social Security benefit is uncertain as the Thai Social Security fund is expected to be in deficit in the next 10 years (Thai Capital Market Plan, 2009). Since workers cannot rely solely on Social Security to retire, private pensions are increasingly important for Thai workers.

The typical goal of retirement plans for individuals is to be able to maintain the standard of living after retirement. To achieve that goal, an average individual is advised to
accumulate pension assets adequate enough to provide income replacement ratios of around 70-90 percent (World Bank, 1994; Alford et al., 2004; OECD, 2009; Brady, 2010). Having adequate pension assets is not easy because the size of pension assets at retirement depends on many factors. First, it depends on the amount invested. Second, it depends on how workers make asset allocation during their working years. Third, it depends on how well those asset classes perform. And finally, it also depends on the time workers retire and whether they sell their portfolios in a good year or a bad year.

For most Thai workers, it is difficult to accumulate large pension assets, especially when the saving rate of their pension is low. For example, consider the average worker who saves 10 percent of their salary to the pension plan for 40 years, from the age of 20 until retirement age of 60. To live until 80, the pension assets have to provide adequate income for 20 years. How can saving 10 percent of a salary for 40 years provide 70 percent of the final salary for at least 20 years? Pension arithmetic suggests that, to achieve that goal, investment returns during the accumulation period must be high enough. Unless workers are able to achieve high investment returns for their pension portfolios, they may have to either accept a lower standard of living by having lower income replacement ratio or postpone their retirement by working longer. Therefore, investment returns are one of the most important factors determining the success of defined contribution plans. For self-directed pension plans, workers need to maximize the investment return given their risk tolerance.

Another option is to save more outside their pension plans. However, making voluntary saving may be difficult for most people as they have tendency to postpone saving because of the self-control problem (Thaler and Shefrin, 1981). Moreover, lower-income groups may never save enough; they may find it difficult to increase their saving rates since these people may have many fixed expenses against limited income (Froud et al., 2010). In addition, more saving is subjected to the crowding out effect (Borsch-supan and Brugiavini, 2001); for example, people may buy a smaller home when they save more for their retirement and end up having smaller fixed-assets at retirement.
Pension asset allocation in Thailand

Asset allocation is the allocation of an investor's portfolio among a number of "major" asset classes (Sharpe, 1992, pp. 7). How important is asset allocation? Previous studies have argued that asset allocation is critically important because it largely explains the investment performance of their portfolios (Brinson, Hood, and Beebower, 1986; Hensel, Ezra, and Ilkiw, 1991; Ibbotson and Kaplan, 2000; Ibbotson, 2010). Therefore, for the self-directed pension plans, asset allocation decisions that workers make determine the rate of return on pension assets, and therefore the adequacy of their retirement income.

The optimal asset allocation of pension funds is somewhat debatable. Too conservative investment might leave pension members with little retirement income as they shy away from risky investments with high expected returns. On the other hand, too many aggressive investments also might leave pension members with inadequate retirement income as they squander their pensions in highly volatile capital markets.

In Thailand, it appears that pension plans typically have exceptionally conservative asset allocation. This issue has been the major concern from policymakers’ perspective (e.g., SET, 2012) because the conservative investments may not be able to generate returns sufficient for a secure retirement. Evidence suggests that the equity culture in the Thai pension context is relatively poor. The Securities and Exchange Commission reports that most pension members select either fixed-income funds or balanced funds (SEC, 2013). Thai leading pension funds such as the Government Pension Fund (GPF) and the Social Security Office (SSO) allocate most of their assets into low-risk assets such as bank deposits and government bonds. Table 1.2 shows that an average equity allocation for Thai pension funds was only at 14.3 percent in 2012, suggesting that pension funds in Thailand focus mainly on capital preservation rather than growth.
Table 1.2: Asset allocation of Thai pension funds in 2012

<table>
<thead>
<tr>
<th></th>
<th>Stocks</th>
<th>Bonds</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Pension Fund</td>
<td>19.2%</td>
<td>72.7%</td>
<td>8.1%</td>
</tr>
<tr>
<td>Social Security Fund</td>
<td>9.6%</td>
<td>86.4%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Provident Funds (Private Occupational Pension)</td>
<td>14.2%</td>
<td>79.9%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Average</td>
<td>14.3%</td>
<td>79.7%</td>
<td>6.0%</td>
</tr>
</tbody>
</table>

Source: Government Pension Fund website, Social Security Fund website, and SEC

Asset allocation of Thai pensions is completely different to developed countries where majority of assets are invested in equities. In developed countries, equity allocation is relatively high. For example, at the end of 2012, the average asset allocation of the seven largest pension markets (Australia, Canada, Japan, Netherland, Switzerland, UK, and US) was 47.3 percent equities and 32.9 percent bonds (Towers Watson, 2013). According to Towers Watson, Australia, US, and UK have higher allocations to equities than other major pension markets. The average allocation to equities for these three countries was about 54 percent, 52 percent, and 45 percent, respectively.

It appears that pension participants in the US invest aggressively in the stock market. For example, public pension plans in the US typically invest around 60 percent of pension assets in equities with about three-fourths of the plans investing between 50 percent and 70 percent (Lucas and Zeldes, 2009). Private pension plans in the US share a similar investment pattern. According to Investment Company Institute’s research, the average allocation of account balances to equities for 401(k) plans in the US was approximately 61 percent in 2011 (ICI, 2012). As Table 1.3 shows, 41 percent of participants had more than 80 percent of their account balances invested in equities, while 11 percent held no equities at all at the end of 2011. Interestingly, 401(k) participants were likely to reduce their exposure to equities as they age. For example, 81 percent of participants in their twenties had more than 60 percent in equities while older participants held less percentage in equities for their 401(k) plans. Only about 37 percent of participants in their sixties continue to hold more than 60 percent in equities.

Nevertheless, following the financial and economic crisis of 2008-9, it appears that many pension funds and pension members had reduced the investment risk by reallocating assets more towards fixed income securities. DC participants in the US reduced their investment in equities from 73% of their pension assets in 2006 to 68 percent in 2010 (Wray, 2012). Similarly, the DB plans in the US also reduced its allocation to equities from about 70 percent in 2006 to under 50 percent by 2009 (Warshawsky, 2012). However, these equity allocations are still relatively high if compared to the average equity allocation in Thailand.

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7 Nevertheless, following the financial and economic crisis of 2008-9, it appears that many pension funds and pension members had reduced the investment risk by reallocating assets more towards fixed income securities. DC participants in the US reduced their investment in equities from 73% of their pension assets in 2006 to 68 percent in 2010 (Wray, 2012). Similarly, the DB plans in the US also reduced its allocation to equities from about 70 percent in 2006 to under 50 percent by 2009 (Warshawsky, 2012). However, these equity allocations are still relatively high if compared to the average equity allocation in Thailand.
Table 1.3: Asset allocation to equities among 401(k) participants in the US in 2011

<table>
<thead>
<tr>
<th>Age group</th>
<th>Zero 1 to 20 percent</th>
<th>&gt;20 to 40 percent</th>
<th>&gt;40 to 60 percent</th>
<th>&gt;60 to 80 percent</th>
<th>&gt;80 percent</th>
<th>Total</th>
<th>&gt;60 percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>20s</td>
<td>9.4</td>
<td>1.5</td>
<td>2.3</td>
<td>5.3</td>
<td>19.6</td>
<td>61.9</td>
<td>100</td>
</tr>
<tr>
<td>30s</td>
<td>8.8</td>
<td>2.8</td>
<td>3.7</td>
<td>7.7</td>
<td>20.4</td>
<td>56.6</td>
<td>100</td>
</tr>
<tr>
<td>40s</td>
<td>9.4</td>
<td>4.0</td>
<td>4.8</td>
<td>9.2</td>
<td>31.3</td>
<td>41.3</td>
<td>100</td>
</tr>
<tr>
<td>50s</td>
<td>11.4</td>
<td>6.2</td>
<td>7.0</td>
<td>20.2</td>
<td>30.5</td>
<td>24.7</td>
<td>100</td>
</tr>
<tr>
<td>60s</td>
<td>16.2</td>
<td>8.3</td>
<td>13.3</td>
<td>25.1</td>
<td>16.5</td>
<td>20.6</td>
<td>100</td>
</tr>
<tr>
<td>All</td>
<td>10.8</td>
<td>4.5</td>
<td>6.0</td>
<td>12.8</td>
<td>25.4</td>
<td>40.6</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: ICI (2012) and author’s calculations

Investing mainly in low risk assets may prevent the poverty in old age; however, too conservative a strategy may not generate enough retirement income for workers to maintain their lifestyle and live comfortably after retirement. If the goal is to achieve the same standard of living after retirement, Thai workers may need a more aggressive asset allocation strategy by investing more in risky assets because it is infeasible for them to achieve high returns without taking more risks.

In the US, the large equity allocation among households can be explained partly by the growth of the self-directed pension plans (Ameriks and Zeldes, 2004). Previous study has found that workers tend to invest more in equities if they are allowed to make investment choice (Papke, 2003). It will be interesting to see whether the introduction of this new self-directed DC programme can change the pattern of the asset allocation going forward. Will the introduction of self-directed pension plan create higher demand for equities and help improving the equity culture in the Thai pension context? In other words, will workers invest more aggressively in the stock market if they are allowed to make investment decisions for their pension portfolios? The answer to this question has serious implications for the future outlook of the Thai equity market. If workers are likely to shift their pension assets towards more equities, the aggregate demand for equities in Thailand should increase. Higher demand for equities may lead to a ‘wall of money’ (Engelen et al., 2010) looking for investment opportunities in the stock market. On one hand, it is possible that higher demand for equities can lead to an increase in the stock prices as well as the asset price bubbles in the stock market. On the other hand,
the Thai equity market should also benefit from lower volatility and be better able to withstand external shocks (such as 2008-09 financial crisis) as domestic pension money tends to be more ‘sticky’ than foreign investors’ money.

**Pension and stock market**

Why are equity investments important in the pension context? First, previous studies suggest that equity allocation is important in determining the pension replacement rate (Burtless, 2003; Poterba, Rauh, Venti, and Wise, 2005). Compared to other asset classes such as bonds and cash, equities have the highest expected return but also the highest volatility. Therefore, equity allocation is one of the key factors determining the risk and return profile of a pension portfolio, and therefore the size of pension assets. Second, investing mainly in the low-risk assets generates low returns and may not be enough to generate sufficient income without extremely high contribution rates (Hu, 2006). Moreover, the major risk in investing mainly in low-risk assets is inflation risk, which is the risk that inflation will outpace and erode returns over time. Third, in the past, stocks have traditionally offered higher average returns than low-risk assets such as bonds. Therefore, greater allocation to stocks typically leads to a higher retirement wealth.⁸

Equity investments play an important role in the Thai pension context for several reasons. Although it is difficult to predict future returns, the Thai stock market historically offers high return in the long-run. Compared to other equity markets in the world, the Thai equity market was ranked at 26 from 54 major markets globally, with the market capitalization to GDP of 108 percent (SET, 2013). In terms of market performance, although the stock market in Thailand is highly volatile, historical data suggest that long-term equity return in Thailand is positive. Figure 1.1 shows the historical movement of the Stock Exchange of Thailand index from 1975 to 2012.

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⁸ However, the promotion of saving for retirement through stock market investment has been challenged due to the declining of the equity risk premium in recent years. Recent evidence suggests that the stock market has become more volatile and provides lower return that it did in the past. The future of the stock return is uncertain, but it seems that investors who invest in the stock market need better foresight and ability to read and assess the financial conditions than ever before. It is not the aim of this study to provide a review of the different perspectives on future equity returns; rather, it aims to explore the allocation to equities among workers after they are permitted to make investment decisions for their pension plans.
Table 1.4 shows that real equity return compared with the return from bank deposits during the past 30 years. The real returns per annum from investing in the Stock Exchange of Thailand were highly volatile, ranging from -57.6 percent in 1997 to +115.9 percent in 1989. Similarly, real returns from bank deposits were less volatile, ranging from -3.3 percent in 2008 to +11.5 percent in 1984.

On average, stock market investments performed better than bank deposits. Table 1.5 also shows that, during the same period, the stock market had an average (geometric) return of 5.1 percent compared to 3.1 percent of bank deposit rate (if investors invest through funds, the actual return received would be reduced because of management fee deduction). On the other hand, the volatility in the stock market was much higher with the standard deviation of 42.2 percent compared to 3.7 percent of bank deposits. This shows that returns on each financial asset can differ if these assets have different risk.

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9 Bond returns are excluded in the analysis because the lack of long-term historical data. The Thai government did not actively issue government bonds or Treasury bills before 2001. Bank deposits may be used as a risk-free rate in the Thai context since bank deposits were completely guaranteed by the Thai government in the past. However, with the establishment of the Deposit Protection Agency, from August 2013, the insured amount will be reduced to THB50 million per account and to THB1 million per account after August 2016 onwards.
profiles. A fair comparison of rates of return must adjust for risk. From the risk-adjusted return perspective, equity investment may not appear to be attractive. As Table 1.4 also shows, the Sharpe ratio for equity investment was only 0.1 compared to 0.8 of bank deposits.
Table 1.4: Historical return of the stock market and bank deposits

<table>
<thead>
<tr>
<th>Year</th>
<th>Inflation (%)</th>
<th>1-year Deposit rate (%)</th>
<th>SET index (%)</th>
<th>Real return from Bank Deposits (%)</th>
<th>Real return from the stock market (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>5.2</td>
<td>12.5</td>
<td>15.8</td>
<td>7.0</td>
<td>10.1</td>
</tr>
<tr>
<td>1983</td>
<td>3.8</td>
<td>12.5</td>
<td>8.9</td>
<td>8.4</td>
<td>4.9</td>
</tr>
<tr>
<td>1984</td>
<td>0.9</td>
<td>12.5</td>
<td>5.8</td>
<td>11.5</td>
<td>4.9</td>
</tr>
<tr>
<td>1985</td>
<td>2.5</td>
<td>11.0</td>
<td>-5.2</td>
<td>8.3</td>
<td>-7.5</td>
</tr>
<tr>
<td>1986</td>
<td>1.9</td>
<td>7.3</td>
<td>53.5</td>
<td>5.3</td>
<td>50.7</td>
</tr>
<tr>
<td>1987</td>
<td>2.4</td>
<td>7.3</td>
<td>37.5</td>
<td>4.7</td>
<td>34.3</td>
</tr>
<tr>
<td>1988</td>
<td>3.9</td>
<td>9.5</td>
<td>35.7</td>
<td>5.4</td>
<td>30.6</td>
</tr>
<tr>
<td>1989</td>
<td>5.3</td>
<td>9.5</td>
<td>127.3</td>
<td>4.0</td>
<td>115.9</td>
</tr>
<tr>
<td>1990</td>
<td>5.9</td>
<td>15.5</td>
<td>-30.3</td>
<td>9.0</td>
<td>-34.2</td>
</tr>
<tr>
<td>1991</td>
<td>5.7</td>
<td>10.5</td>
<td>16.1</td>
<td>4.5</td>
<td>9.8</td>
</tr>
<tr>
<td>1992</td>
<td>4.1</td>
<td>8.5</td>
<td>25.6</td>
<td>4.2</td>
<td>20.6</td>
</tr>
<tr>
<td>1993</td>
<td>3.4</td>
<td>7.0</td>
<td>88.4</td>
<td>3.5</td>
<td>82.2</td>
</tr>
<tr>
<td>1994</td>
<td>5.0</td>
<td>10.3</td>
<td>-19.2</td>
<td>5.0</td>
<td>-23.0</td>
</tr>
<tr>
<td>1995</td>
<td>5.8</td>
<td>11.0</td>
<td>-5.8</td>
<td>4.9</td>
<td>-11.0</td>
</tr>
<tr>
<td>1996</td>
<td>5.9</td>
<td>9.3</td>
<td>-35.1</td>
<td>3.2</td>
<td>-38.7</td>
</tr>
<tr>
<td>1997</td>
<td>5.6</td>
<td>13.0</td>
<td>-55.2</td>
<td>7.0</td>
<td>-57.6</td>
</tr>
<tr>
<td>1998</td>
<td>8.1</td>
<td>6.0</td>
<td>-4.5</td>
<td>-1.9</td>
<td>-11.7</td>
</tr>
<tr>
<td>1999</td>
<td>0.3</td>
<td>4.3</td>
<td>35.4</td>
<td>3.9</td>
<td>35.0</td>
</tr>
<tr>
<td>2000</td>
<td>1.6</td>
<td>3.5</td>
<td>-44.1</td>
<td>1.9</td>
<td>-45.0</td>
</tr>
<tr>
<td>2001</td>
<td>1.6</td>
<td>3.0</td>
<td>12.9</td>
<td>1.4</td>
<td>11.1</td>
</tr>
<tr>
<td>2002</td>
<td>0.7</td>
<td>2.0</td>
<td>17.3</td>
<td>1.3</td>
<td>16.5</td>
</tr>
<tr>
<td>2003</td>
<td>1.8</td>
<td>1.0</td>
<td>116.6</td>
<td>-0.8</td>
<td>112.8</td>
</tr>
<tr>
<td>2004</td>
<td>2.7</td>
<td>1.0</td>
<td>-13.5</td>
<td>-1.7</td>
<td>-15.8</td>
</tr>
<tr>
<td>2005</td>
<td>4.5</td>
<td>3.5</td>
<td>6.8</td>
<td>-1.0</td>
<td>2.2</td>
</tr>
<tr>
<td>2006</td>
<td>4.7</td>
<td>5.0</td>
<td>-4.7</td>
<td>0.3</td>
<td>-9.0</td>
</tr>
<tr>
<td>2007</td>
<td>2.3</td>
<td>2.4</td>
<td>26.2</td>
<td>0.1</td>
<td>23.4</td>
</tr>
<tr>
<td>2008</td>
<td>5.5</td>
<td>2.0</td>
<td>-47.6</td>
<td>-3.3</td>
<td>-50.3</td>
</tr>
<tr>
<td>2009</td>
<td>-0.9</td>
<td>1.0</td>
<td>59.4</td>
<td>1.9</td>
<td>60.8</td>
</tr>
<tr>
<td>2010</td>
<td>3.3</td>
<td>1.7</td>
<td>44.0</td>
<td>-1.5</td>
<td>39.4</td>
</tr>
<tr>
<td>2011</td>
<td>3.8</td>
<td>3.0</td>
<td>-0.7</td>
<td>-0.8</td>
<td>-4.4</td>
</tr>
<tr>
<td>2012</td>
<td>3.0</td>
<td>2.5</td>
<td>35.8</td>
<td>-0.5</td>
<td>31.8</td>
</tr>
</tbody>
</table>

*Source:* The Bank of Thailand, the Stock Exchange of Thailand, and author’s calculation

*Note:* Real return = [(1 + Nominal Return) / (1 + Rate of Inflation)] -1

Table 1.5: Mean real return of the stock market and bank deposits (1982-2012)

<table>
<thead>
<tr>
<th></th>
<th>Geometric Mean (%)</th>
<th>Arithmetic Mean (%)</th>
<th>Standard Deviation (%)</th>
<th>Sharpe Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real SET Index Return</td>
<td>5.1</td>
<td>12.6</td>
<td>42.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Real 1-Year Deposit Return</td>
<td>3.1</td>
<td>3.1</td>
<td>3.7</td>
<td>0.8</td>
</tr>
</tbody>
</table>

*Source:* The Bank of Thailand, the Stock Exchange of Thailand, and author’s calculation
In the pension literature, stock returns are traditionally compared with the bond returns as they are used as a benchmark of risk-free rate. However, in the Thai context, it is difficult to compare the stock market returns to bond returns since the return data from bond investment is rather limited because the Thai government had not actively issued government bonds or Treasury bills before 2001. Table 1.6 shows the historical return of bond investments in Thailand from 2001 to 2012. The real returns per annum from investing in 1-year government bonds ranged from -3.1% in 2008 to +2.4% in 2009, with the average return of 0.0% during the past 12 years. Investors received higher returns for investing in government with longer duration. For 10-year bonds, real return per annum ranged between -2.5% to +5.3% with the average return of 1.6% per annum. Data suggest that government bonds, either short-term or long-term, historically offered relatively low return for Thai investors.

Table 1.6: Historical return of the 1-year and 10-year Government Bond

<table>
<thead>
<tr>
<th>Year</th>
<th>Inflation</th>
<th>1-year Government Bond yield</th>
<th>10-year Government Bond yield</th>
<th>Real return from 1-year Government Bond</th>
<th>Real return from 10-year Government Bond</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>1.6</td>
<td>2.6</td>
<td>5.0</td>
<td>1.0</td>
<td>3.4</td>
</tr>
<tr>
<td>2002</td>
<td>0.7</td>
<td>1.8</td>
<td>3.7</td>
<td>1.1</td>
<td>3.0</td>
</tr>
<tr>
<td>2003</td>
<td>1.8</td>
<td>1.3</td>
<td>5.0</td>
<td>-0.5</td>
<td>3.1</td>
</tr>
<tr>
<td>2004</td>
<td>2.7</td>
<td>2.4</td>
<td>4.9</td>
<td>-0.3</td>
<td>2.1</td>
</tr>
<tr>
<td>2005</td>
<td>4.5</td>
<td>4.4</td>
<td>5.8</td>
<td>-0.1</td>
<td>1.2</td>
</tr>
<tr>
<td>2006</td>
<td>4.7</td>
<td>4.8</td>
<td>5.0</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>2007</td>
<td>2.3</td>
<td>3.6</td>
<td>5.1</td>
<td>1.3</td>
<td>2.8</td>
</tr>
<tr>
<td>2008</td>
<td>5.5</td>
<td>2.3</td>
<td>2.8</td>
<td>-3.1</td>
<td>-2.5</td>
</tr>
<tr>
<td>2009</td>
<td>-0.9</td>
<td>1.5</td>
<td>4.4</td>
<td>2.4</td>
<td>5.3</td>
</tr>
<tr>
<td>2010</td>
<td>3.3</td>
<td>2.3</td>
<td>3.7</td>
<td>-1.0</td>
<td>0.4</td>
</tr>
<tr>
<td>2011</td>
<td>3.8</td>
<td>3.1</td>
<td>3.3</td>
<td>-0.7</td>
<td>-0.5</td>
</tr>
<tr>
<td>2012</td>
<td>3.0</td>
<td>2.8</td>
<td>3.6</td>
<td>-0.3</td>
<td>0.5</td>
</tr>
<tr>
<td>Average Return</td>
<td>2.7</td>
<td>4.4</td>
<td>0.0</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Standard deviation</td>
<td>1.1</td>
<td>0.9</td>
<td>1.4</td>
<td>2.1</td>
<td></td>
</tr>
</tbody>
</table>

Source: The Bank of Thailand and Author’s calculation
Note: Real return = [(1 + Nominal Return) / (1 + Rate of Inflation)] - 1

If the goal of retirement savings is to maximize pension assets rather than to maximize risk-adjusted returns, then equity investments become more attractive. From the absolute return perspective, it seems that equity investments historically offer higher return than bonds or bank deposits. In a study of the Stock Exchange of Thailand, it shows that stock market investments, in the long run, gave the highest return to
investors when compared to other investments such as bonds, cash, and gold (SET, 2012). Figure 1.2 presents the long-run real returns from investing THB1,000 in equities, bonds, cash, and gold in 1975. After more than 30 years, investors could have done well if they had invested into the stock market as the money had increased to THB9,165 in 2011. The study also shows that the stock market investments appreciated about two times more than bonds, four times more than bank deposits, and six times more than gold.

**Figure 1.2:** The value of THB1,000 invested in various asset classes in real values (1975-2011)

*Source:* Adapted from the Stock Exchange of Thailand (2012)
*Note:* Years shown in this figure are in Thai Calendar year. The Thai calendar years are counted in the Buddhist era which is 543 years greater than western years.
Table 1.7 shows the simulated retirement income replacement rate for a typical worker in Thailand using the real investment returns from the table 1.5. The income replacement rate is a measure of how effectively pension assets provide income during retirement to replace pre-retirement earnings. Simply speaking, it is the stream of money that a retired worker has the potential to generate from retirement savings when regular employment comes to an end. Typically, the worker’s income replacement rate depends mainly on the size of pension assets at retirement which in turn depends on employee and employer contributions and the performance of the worker’s investments during the investment periods.\(^{10}\) As presented in Table 1.7, those who invest 100% the stock market will enjoy 29% replacement rate while those who invest only in bank deposits will have only 20% replacement rate. Those who invest equally between bank deposit and stocks will have replacement rate of 24%. In relative terms, it means that those who invest all in equities would end up having about 43% larger income streams after retirement than those who place all of their money in bank deposits.

Table 1.7: Simulated income replacement rate for Thai workers

<table>
<thead>
<tr>
<th>Retirement Income Replacement Rate</th>
<th>Percentage over making investment solely in bank deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% in bank deposits</td>
<td>20%</td>
</tr>
<tr>
<td>100% in stocks</td>
<td>29%</td>
</tr>
<tr>
<td>50% bank deposits, 50% stocks</td>
<td>24%</td>
</tr>
</tbody>
</table>

*Source*: Author’s calculation

*Note*: Simulation is based on the hypothetical assumption of an average worker who starts working at 25 and retires at 60 and has 20 years of life expectancy after retirement. The starting salary is THB15,000 with 3% annual increase (real rate) which translate into the final salary of THB42,208. Worker contributes 5.5 percent of his or her salary. Employer’s contribution is 5.5 percent. Investment returns are real geometric returns taken from the table 1.4. Since the annuity market in Thailand is not active, monthly retirement income is derived from final pension assets divided by 240.

Nevertheless, equity investing is not easy as history suggests that long-term investors have to go through both bull markets and bear markets. Different market conditions at the time of retirement may have a large impact on workers’ retirement income. As Figure 1.2 previously shows, Thai workers who invest mainly in equities would receive less pension money than those who invest mainly in bonds if they retired right after either the Asian financial crisis in 1997 or the recent financial crisis in 2008-2009.

\(^{10}\) An income replacement rate also depends on the type of annuity product, on interest rates at retirement, and on life expectancy (Froud *et al*., 2010). However, this analysis does not take into account the annuity products because the annuity market has not been developed yet in Thailand.
Those who share the same investment strategy but retire a few years apart can receive substantially different pension benefits unless workers follow a very conservative investment strategy (Burtless, 2010). The recent financial and economic crisis of 2007-2008 has highlighted the importance of market conditions at the time of retirement for the DC pension assets. For example, for workers who retired in 2008, those who were invested all in equities in the Thai stock market would have suffered a 48% loss as the SET index dropped from 858.1 points to only 449.96 points in December 2008. Those who retired later, on the other hand, may suffer less or even gain as the SET index rebounded back to its pre-crisis level in August 2010. The stock market then performed continuously well and the index reached 1,391.93 points at the end of 2012.

It appears that making appropriate investment and asset allocation decisions is important to the security in old age. Making asset allocation decisions is not easy because it is difficult to precisely predict the future returns. Because of these unknown variables, it is also not easy to predict precisely how much retirement income will be generated from the private pension plan. As seen from the Stock Exchange of Thailand’s study, the value of portfolios can fluctuate widely unless all the assets are invested in very low-risk assets such as cash or Treasury bills. Although workers’ pension portfolios are more predictable and less risky if their retirement savings are invested mainly in low-risk assets, it is almost certain that workers will receive a low rate of return and a low level of retirement income. Although the return from the stock market is highly volatile and it is not certain that the long-run equity returns will continue to be positive in Thailand, investing mainly in low-risk assets such as government bonds may not provide sufficient income for members after retirement. Especially since during recent years the return on low-risk assets has been exceptionally low as major central banks globally have been easing their monetary policies by reducing interest rates. A question raised is whether the introduction of this new self-directed DC programme can encourage Thai workers to invest more in the stock market. The answer to this question also has serious implications for the equity culture as well as the prospect of pension security in Thailand.

However, investors who invest in low-risk assets are typically charged lower management fees. In Thailand, funds that invest in equity securities tend to charge higher management fees than funds that invest in bonds. For example, Wongsurawat (2011) finds that retirement mutual funds in Thailand charged about 0.66% to 0.72% of the funds’ net asset values as management fees for bond funds and about 1.32% to 1.41% for equity funds during 2004-2007.
1.3 The motivation of the study

This study aims to increase understanding of the real world application of the new pension programme in Thailand. Since the employee’s choice programme is relatively new, there is no known prior research on the programme. Despite the fact that the new pension programme allows members to make investment choices, little is known about members’ capabilities to make appropriate investment decisions in order to exploit these investment choices. In recent years, there has been an increasing interest in the field of pensions and household finance. Most of the existing literatures rely mainly on empirical evidence from developed countries such as the US and the UK. So far, however, little is known about household investment decisions in emerging countries such as Thailand. In addition, little is known about the level of financial literacy of Thai workers.

Motivated by this absence of empirical research, this study aims to address this literature gap by investigating the effectiveness of the self-directed pension plan in a less developed country like Thailand and by exploring how workers make their investment decisions. In addition, this study is also motivated by the work of several prominent researchers. First, this study is inspired by the work from Erturk et al., (2007) which is skeptical about the notion of the ‘democratization of finance’ or the promise that households are able to manage their household finance matters by choosing suitable financial services products. Second, it is inspired from the work of Campbell (2006) which outlines several households’ investment mistakes and encourages scholars to conduct more research in the field of household finance. Last but not least, this study is inspired by the work of Mitchell and Utkus (2004) which attempts to explain households’ investment mistakes by using insights from the behavioural finance. This study intends to explore if findings from this research can shape how the pension design in Thailand can be simplified to accommodate workers’ investment mistakes similar to the case of the UK’s National Employment Savings Trust (NEST) which used research findings to shape its pension plan design to accommodate workers who are likely to be less sophisticated financially.

Household finance is one of the fields of finance literature which focuses on how households use financial instruments and markets to achieve their objectives (Campbell, 2006). Overall, household finance considers both the heterogeneity of household characteristics and the variety of institutional environments in which households operate (Guiso and Sodini, 2012).
1.4 Objectives of the study

The main goal of this study is to seek management and policy implications that can be derived from the research findings. Findings from this study are expected to shed light on how the design of self-directed DC pension plans can be improved in order to help workers to make more informed investment choices. In addition, findings from this study are expected to address the question whether workers should be allowed to make investment decision for their own pension. Specifically, there are four main objectives for this study as follows:

1) To seek a better understanding of the programme through an exploratory interview with policymakers and industry experts in order to identify key problems or concerns of the programme.

2) To assess the effectiveness of the new pension programme by investigating whether the new pension programme is able to achieve its stated objective through a case study of a large private pension plan in Thailand. It intends to assess whether workers are able to make informed investment decisions by investigating how they make their investment decisions compared to what financial and portfolio theory have suggested.

3) To measure financial literacy of workers and examine the relationship between financial literacy and investment choice decision.

4) To explore how the pension products can be simplified or redesigned to accommodate workers’ investment mistakes.

1.5 Research Questions and hypotheses

Based on the objectives of the study, research questions are developed as follows:

1) What are the key concerns and problems of the new pension programme from the perspective of policymakers and asset management companies? This study aims to gain a better understanding of the new pension programme through an exploratory interview with policymakers and industry experts from asset management companies.
2) What type of individual benefits this new programme? This study hypothesizes that workers who have greater financial knowledge or have received financial advice are more likely to actively participate in the programme by making investment decisions.

3) Is the new pension programme in Thailand an effective programme? In other words, does the new pension programme achieve its stated objective? For the self-directed DC plans, the effectiveness of the programme is measured by comparing actual pension member behaviour with what financial theory has suggested. Therefore, in order to evaluate the effectiveness of the new pension programme, this study aims to explore how workers make investment decisions. The study hypothesizes that workers are able to make informed investment decisions that are proposed by portfolio theory and lifecycle investing theory. Specifically, it hypothesizes that younger workers or higher risk tolerance workers are likely to invest more in risky assets (or choose riskier choices).

4) What are the levels of financial knowledge of workers under the new pension programme? This study aims to explore this question by using the standard financial literacy test to examine the level of financial knowledge of workers.

5) Does the level of financial knowledge affect their investment decisions? The study hypothesizes that financial literacy affects investment choice decisions.

1.6 Data and research methods

This study uses mixed method research to answer the above research questions. Exploratory interviews with experts in the private pension industry and secondary data are used to analyse the programme. It also uses a real life example of a new pension programme that was offered to pension members in a large organization in Thailand as a case study to evaluate the effectiveness of the programme. The framework for evaluating the effectiveness of the programme is adopted from the analysis of promise and outcome framework (Erturk et al., 2007) which aims to explore discrepancy between the economic promises and what can be delivered. Within the selected case, this study collects a survey data to examine investment decisions made by members. The use of surveys offers several advantages. The most distinct benefit is that a survey
offers greater flexibility and allows the researcher to collect micro-level data which is important in household finance study (Guiso et al., 2003).

1.7 Research contributions

This research contributes to the literature in the field, management practice, and also policy implications. For literature, this study adds three contributions to literature. First, this study adds to the growing literature on household finance by examining how individuals make their investment decision in the pension context. Second, this study adds to the literature on self-directed pension plans since there are only a few studies that examine the way workers make their investment decisions in emerging countries such as Thailand. Third, it adds contribution to financial literacy literature by exploring the level of financial knowledge among workers in less developed countries.

For management practice, findings from this study are expected to shed light on how the programme can be improved in order to help workers to make more informed investment choices and protect their pension assets from unwise investment behaviour. Findings of the study should provide both employers and asset management companies more insights on the effectiveness of the programme. Insights on how workers actually make investment decisions for their pension portfolios should provide asset management companies more understanding of the programme so they can develop better pension products or more effective plan design for their clients.

For policy implications, this study should provide regulators and policymakers the evidence on the effectiveness of the new pension programme that has been promoted recently. Policymakers often believe that workers are able to make informed investment decisions if they are provided with adequate financial knowledge. The results of the study are expected to shed more light on the effectiveness of the self-directed pension plan in Thailand and in other less developed countries that are considering reforming their private pension programme. This case study examined whether those who work in a financial institution are able to make rational investment decisions. If the study found that a significant number of these workers, who are perceived to have better-than-average financial knowledge, do not make rational investment decisions, then to suggest
that the new pension programme should be promoted and implemented to all employers in Thailand might be a bad idea. Therefore, encouraging those less knowledgeable in finance to make their own investment decisions might do more harm than good to their retirement welfare. In that case, policymakers may have to consider an alternative programme. Otherwise, they have to establish policies or guidelines that can significantly improve the effectiveness of the programme.

1.8 Outline of the study

The overall structure of this thesis takes the form of seven chapters, including this introductory chapter. Chapter 2 surveys the related literature. Chapter 3 explains the overall research methodology employed in the study. Chapter 4 describes the background of the Thai pension system. Next, Chapter 5 analyses the new private pension programme. This chapter explores information on the programme including interview data from various pension stakeholders. Chapter 6 presents the findings from empirical work. Finally, Chapter 7 summarises the findings, discusses implications of the study, and provides suggestions for future research.
2 CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter reviews the important literatures related to the self-directed pension plans. Section 2.2 discusses challenges and issues that plan members may face in the self-directed DC plans. Section 2.3 reviews traditional investment advice used by professional financial advisors. Section 2.4 reviews the theoretical literature on portfolio theory and asset allocation. Section 2.5 reviews the empirical literature concerning pension investment decision making. Section 2.6 discusses the role of stock investment in pensions. Next, Section 2.7 discusses the role of financial literacy in the self-directed pension plans. Section 2.8 discusses the role of financial education in the self-directed pension plans. Then, section 2.9 discusses the pension design and structure as an alternative to financial education. Finally, section 2.10 summarises the chapter.

2.2 Challenges of self-directed defined contribution (DC) pension schemes

The major challenges individuals will face when they reach retirement is how to achieve an adequate level of income, maintain their standard of living, and not outlive their financial assets. To overcome these challenges, individuals need to have sufficient retirement savings. In DC pension plans, individuals set aside for savings a certain proportion of their income and invest this savings in financial assets to earn a return. Insufficient retirement savings generally is a result of low saving rates, short investment horizon, and low investment returns. Thus, to reduce the risk of insufficient retirement savings, individuals may have to save more, work longer, or increase the risk of their investment. Those who fail to achieve adequate retirement income may have to accept a lower standard of living, rely more on their family, or even seek assistance from the government.
There are three main issues that individuals face when they save for their DC pension plans. The first issue in DC pension plans is what constitutes an adequate level of retirement income. The most widely accepted measure used to assess the adequacy of retirement income is the replacement rate\(^{13}\) which is the ratio of retirement income relative to final salary at the time of retirement. The replacement rate has been the primary measure of the adequacy of retirement income as well as the primary goal in the retirement planning. Academics and financial advisors generally recommend individuals to achieve income replacement ratios of around 70-90 percent of their final salary in order to keep the same standard of living before and after retirement (World Bank, 1994; Alford et al., 2004; OECD, 2009; Brady, 2010). For lower income individuals, the required replacement rate may need to be higher than 70 percent because there is a risk that they may fall below the poverty line (OECD, 2012b). Recently, Fidelity Investments, a US-based mutual fund company, suggests individuals to save at least eight times of their final annual salary in order to achieve a target replacement rate of 85 percent (Fidelity Investments, 2012).\(^{14}\) Since there are wide differences of opinion as to what the target replacement rate should be, it is quite difficult for individuals to choose an appropriate replacement rate for themselves. This creates a serious challenge for individuals in their retirement planning process.

Typically, the main sources of retirement income for individuals are from individuals’ private pension, public pension and non-pension assets (such as personal savings). Retirement income from DC pension plans is viewed as an integral part of the target replacement rate. Therefore, the need of retirement income from DC pension plans also depends on the proportion of retirement income coming from public pensions and other non-pension assets. In countries where public pensions are generous and already provide high benefits, retirement income from DC pension plans may be lower. For example, if the target retirement income is taken as a 70 percent replacement rate and social security provides benefits that amount to 40 percent of final salary, individuals many need retirement income from their pension equal to only 30 percent of their final salary. However, in countries where payments from public pension are not certain to be

\(^{13}\) However, the replacement rate measure has some weaknesses because it is calculated at the time of retirement and does not take inflation into account (Antolin, 2009).

\(^{14}\) The 85\% income replacement rate calculation also includes the payment from Social Security.
available in the future due to fiscal deficit problems, private pension plans need to provide benefits equal to 70 percent of final salary.

Retirement income from DC pension plans depends on several factors. Unlike defined benefit (DB) pension plans which offer workers guaranteed retirement income in relation to their final salary, retirement income under defined contribution (DC) pension schemes depends largely on pension contribution rates, the length of the contribution, investment returns, administrative and management costs, and interest rates at the time workers retire, as well as life expectancy (Antolin et al., 2010). In general, the retirement income or the level of replacement rate is positively correlated with all of these variables except the administrative costs and life expectancy. Increases in the contribution rates, the length of the contribution, interest rates at the time workers retire as well as investment returns lead to increases in retirement income. On the other hand, increases in management fee or the number of years in retirement lead to decreases in retirement income. Many of these variables affecting pension benefits from DC plans are uncertain and risky. Although the contribution rates and the length of the contribution may be known and controllable, the investment returns, future level of interest rates, and life expectancy are unknown and are beyond the control of individuals.\(^\text{15}\) Since these risk factors can have a large impact on retirement income, it is much more difficult to precisely predict the retirement income under the DC pension plans.

The second issue for DC pension plans is how to invest the pension savings. Self-directed DC plans generally offer a great variety of investment choices to members. Members then are required to choose investment choices that most suit their risk and return preferences. Under the self-directed DC plans, it is important for individuals to maximize the investment returns of their pension portfolios given their level of risk preference. More precisely, they have to manage their pension assets in a way that can maximize probability of achieving that target replacement rate. Generally, the investment returns depend mainly on asset allocation strategy and the performance of financial markets during the accumulation phase. Although the performance of financial markets are unknown, investment returns can be partly managed using the asset

\(^{15}\) In addition, the wage growth as well as unemployment risk during their careers is also unknown.
allocation strategy and risk management techniques. For example, individuals can invest all or most of their pension assets in low-risk assets such as treasury bills or bank deposits so they can know in advance the nominal return from those investments. Even though investing mainly in low-risk assets can reduce the investment risk, it does not reduce the retirement income adequacy risk, replacement rate risk, and the inflation risk unless the saving rates are high enough. On the other hand, if individuals want to obtain higher returns, they should invest in assets with higher risk given that the risk and return are positively correlated (Shapira, 1995). However, they have to face investment risks including the risk of capital loss when they invest in higher-risk assets such as stocks.

Therefore, asset allocation and retirement portfolio management are critical to individuals’ retirement welfare. It is important for individuals to make wise and appropriate asset allocation strategy decisions for their pension portfolios. Recent data also shows that it is difficult to have high investment return, in particular, after the financial crisis of 2008-2009 (OECD, 2012b). For example, according to the OECD statistics, pension funds in the 21 OECD countries suffered a negative 10.5 percent real rate of return and even when measured over the longer term (2001-10), real rate of return was only 0.1 percent annually on average.

Apart from making asset allocation strategy, members may have to make fund selection decisions whether they prefer to invest in actively managed funds or passively managed funds such as index funds and exchanged traded funds (ETFs). Typically, active funds charge higher investment management fees than passive funds. Different levels of investment management fees also have an impact on retirement portfolios. For example, Sharpe (2013) examined the terminal wealth levels for those investing in funds with different investment expense ratios and found that workers saving for retirement who invest in low-cost funds could have higher retirement income compared to those who invest in high-cost funds.16

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16 Ellis (2012) argues that investment management fees for fund investments are higher than most people think. He suggests investors to calculate fees as a percentage of returns, not as a percentage of assets. For example, if an average return is 8% a year, then the investment management fees of 1% of assets will be as high as 12.5% of the total returns.
The third issue deals with the retirement asset decumulation. DC plans require individuals to assume the investment risk and to be responsible for converting assets into income upon retirement. At the same time, they also need to protect the purchasing power of retirement income during the retirement years. Basically, they need investment strategies that ‘preserve all, or most of, their liquidity while attaining, to the extent possible, the goals of longevity-risk protection and minimal investment risk’ (Sexauer et al., 2012).

There are three main strategies of converting assets accumulated in DC pension plans into retirement income: lump-sum payments, programmed withdrawals, and annuities (Antolin, 2008). For lump-sum payments individuals receive the entire value of the assets accumulated for retirement as a single payment, so they can manage their money at their discretion. With programmed withdrawals, individuals may come up with their own withdrawal scheme which can be either periodic fixed or variable payments. Alternatively, individuals may use their retirement assets to purchase annuity products that provide lifetime payment for purchasers. The key differences of those three strategies are the tradeoff between the degree of flexibility and the degree of protection from longevity risk. Lump-sum payments and programmed withdrawal allow individuals to have more flexibility to finance retirement and also permit individuals to leave bequests, but fail to protect individuals from the longevity risk. On the other hand, annuities can protect individuals from longevity risk, but are less flexible, illiquid, and do not allow for bequests. Therefore, in order to choose from these three options, individuals need to balance out between protection from longevity risk on one side and flexibility, liquidity and bequests on the other. In a seminal article, Yaari (1965) suggests that in the absence of bequest motives, rational individuals would find it optimal to annuitize all of their retirement assets. Antolin (2009) suggests that individuals may combined a programmed withdrawal with a deferred life annuity that starts paying at later age to reduce longevity risk and maintain some flexibility, liquidity and bequests. Similar to Antolin (2009)’s suggestion, Sexauer et al. (2012) argue that the best strategy to finance retirement is the combination of a withdrawal programme and a deferred annuity. Specifically, they recommend US individuals to allocate 88 percent of their assets to a laddered portfolio of Treasury Inflation-Protected Securities.

17 Deferred annuity products are designed to provide life annuity payments that start at some future date.
(TIPS) for the first 20 years of retirement while another 12 percent is used to purchase a deferred annuity that begins its payout when the cash flows from the TIPS portfolio end.

2.3 Popular investment advice and portfolio management process

How can individuals invest for their retirement? Among the abundant investment advice offered in books, magazines or websites, there are several commonly used investment recommendations (Bodie and Crane, 1997; Canner, Mankiw, and Weil, 1997; Ackert, Church, and Englis, 2002). First, investors should hold a well-diversified portfolio across asset classes whereas those who save for retirement should invest primarily in equities and long-term fixed income securities. For an average investor who has neutral risk aversion, a 60/40 stock/bond asset allocation is recommended as a starting point for normal market conditions (Maginn et al., 2007). Second, risk-averse investors should hold more bonds than stocks. Third, the equity allocation should decline with age. Younger investors should hold more stocks than older investors with the basic rule of thumb that the equity allocation should be equal to 100 minus the investor’s age (Canner, Mankiw, and Weil, 1997). For example, a 40-year-old individual should invest 60% of the portfolio in stocks and another 40% in bonds. This advice is based on the time diversification wisdom which suggests that the risk of equity investment falls as the length of the investment horizon increases. The time diversification advice is a popular investment advice and is also the basis for most DC pension education (Mitchell and Utkus, 2004). Finally, the allocation to equities should increase with wealth as wealthier investors have higher ability to take risk.

Furthermore, there is a great deal of advice on how to manage portfolios. According to the required textbook for the Chartered Financial Analyst (CFA) examination, the portfolio management process includes planning, execution, and feedback steps (Maginn et al., 2007). In the planning step, individuals are recommended to identify and specify their investment objectives and constraints.\textsuperscript{18} Moreover, another important task

\textsuperscript{18} Investment objectives involve both return and risk objectives. In formulating a risk objective, individuals typically have to address their risk tolerance or risk aversion level. Risk tolerance is defined as the capacity to accept risk and is largely dependent on both individuals’ willingness and ability to take risk. Constraints include, for example, liquidity, time horizon, tax concerns, legal and regulatory factors, and unique circumstances. See Maginn et al. (2007) for more details.
in the planning step is to form capital market expectations. Individuals are advised to make long-run forecasts of both risk and return of each asset class.

In the execution step, individuals are recommended to perform the asset allocation decision which is the most important investment decision as it explains most of the investment returns (Brinson, Hood, and Beebower, 1986; Ibbotson, 2010). The asset allocation process begins with the strategic asset allocation in which strategic long-term decisions are made about how to allocate assets based on estimates of expected returns and risks (Fabozzi, Focardi, and Jonas, 2010, pp.7). Strategic asset allocation is the process to define a set of portfolio weights for asset classes by considering an individuals’ return objective, risk tolerance and investment constraints as well as the long-run capital market expectations, such as future returns, risks, and correlations (Sharpe et al., 2007). Traditionally, major asset classes include stocks, bonds, and cash. However, during the last two decades of the 20th century, there was an expansion of alternative asset classes such as currencies, private equity, and natural resources. Finally, in the feedback step, individuals are advised to monitor their portfolio and its investment performance periodically to make sure that their investment objectives are maintained and the capital market conditions are in line with their expectation. This ongoing process allows individuals to change and revise their portfolio if there is either a change in investment objectives or constraints due to changes in their circumstances, or a change in economic and market factors.

2.4 Theoretical literature on portfolio theory and asset allocation

A central question of pension investing is how pension members should construct retirement portfolios that will give them their required rates of return so they can achieve their retirement goals. The previous section reviewed popular investment advice on portfolio allocation. This section reviews the portfolio and investment theory used in pension asset allocation. It summarises the theoretical literature on household portfolio allocation, particularly focusing on the risky asset allocation such as equities.

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19 Towers Watson (2012) estimated that the allocation to alternative assets of the seven largest pension markets have increased from only 5 percent in 1995 to 20 percent in 2011.
2.4.1 Modern Portfolio Theory

As mentioned before, asset allocation involves the process of allocating an investment portfolio among different asset classes, such as stocks and bonds. How investors should allocate their assets is an important question. For pension investment and asset allocation, rational economic agents are expected to invest in their portfolios consistent with modern portfolio theory (Blake, 2006, pp. 227). Modern portfolio theory (MPT) or mean-variance model, pioneered by Markowitz (1952) and Tobin (1958), has been widely used for asset allocation and is considered to be the most influential in the practice of asset management (Campbell and Viceira, 2006, pp. 447). It also has been used as a main investment tool for defined contribution pension plans in the US (Mitchell and Utkus, 2004, pp.14). The theory suggests that individual investors should hold diversified portfolios. Its theoretical framework focuses largely on the choice between risk-free and risky assets. The simplest form of modern portfolio theory suggests that it is sufficient to have only two assets to construct an optimal portfolio—the market portfolio and risk-free assets, so individuals can mix these two assets according to their risk preference.20

Markowitz (1952)’s mean-variance model is a prescription of how rational investors should construct portfolios. He theorizes that an optimal portfolio would provide maximum return for a given level of volatility, or minimum volatility for a given level of return. An optimal set of portfolios can be constructed if expected returns, standard deviation of returns, and the correlation between securities are known. These optimal portfolios, when mapped on the mean-variance diagram, form a curve known as the efficient frontier. Markowitz argues that there is a diversification benefit if securities selected in portfolio do not perfectly correlate with each other. As a result, investors are able to construct a portfolio that has the same expected return and less risk if they diversify because diversification minimizes non-systematic risk of the portfolio. The first implication of MPT is that all investors should hold well-diversified portfolios. This implication has become one of the most popular investment advices for investors.

Tobin (1958) expands on Markowitz’s mean-variance framework by adding a risk-free asset such as cash to the portfolio and leads to a two-fund separation theorem. When

20 In modern portfolio theory, the market portfolio is formed by all investable securities weighting in proportion to their market capitalization.
cash is added to the portfolio, the efficient frontier is then converted into a straight line connecting cash and risky portfolio. Therefore, an optimal portfolio is somewhere on this line. This straight line offers the highest mean return for any given standard deviation. The tangency portfolio is the most efficient portfolio and if investors care only about the mean and standard deviation, they will hold the same portfolio of risky assets. This leads to the second implication of the MPT: all investors should hold the same portfolio of risky assets.

Under a two-fund separation theorem, each investor, based on his personal utility function, finds the appropriate point on this line, which then prescribes an optimum allocation between risk-free and well-diversified risky assets where the combination of the risky assets should be identical for all investors. Risk-averse investors should invest some money in cash and the rest in the tangency portfolio. Meanwhile, risk-tolerant investors should use leverage by borrowing at the risk-free rate to invest more than 100 percent of their capital in the tangency portfolio. Therefore, the third implication of the MPT is that more risk-averse investors should hold a greater proportion of the risk-free asset while risk-seeking investors should hold more in risky assets.

In summary, the modern portfolio theory suggests that all investors should allocate their portfolio to both riskless assets and risky assets. The combination of risky assets should be the same for all investors. However, the allocation to the risky assets can vary among investors and depends solely on their risk preference. Therefore, conservative investors should hold more cash while aggressive investors should hold more risky assets or even borrow to leverage their risky portfolio holdings. Hence, the differences in risk tolerance will lead to different portfolio returns. Portfolios of higher risk tolerance investors should have higher expected return than portfolios of those who have lower levels of risk tolerance.

Modern Portfolio Theory has been widely used as a framework for asset allocation. However, it has some limitations in its practical application to pension asset allocation. First, it focuses solely on the financial assets and ignores non-financial assets such as...

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21 Traditional riskless assets are T-bills. However, T-bills are not truly riskless asset especially at long investment horizon due to inflation risk; therefore, for long-horizon, investors are recommended to hold long-term inflation indexed Treasury bonds, or TIPS (Campbell and Viceira, 2002).
labour income. Second, the model is a static, single period model and assumes that all investors have a short-term investment horizon, which is not true for pension investments. For pension members, this single period can be as long as 40 years.

2.4.2 Asset allocation for long-term portfolios

How should long-term investors allocate their assets? The main theoretical asset allocation model was developed by Merton (1969) which is an extension of the modern portfolio theory to the continuous time case. Merton’s model assumes that investors make choice dynamically over time and are free to change their choice at any time. According to Merton (1969), the optimal allocation to risky assets such as stocks is determined by expected risk premium, individual’s risk preference, and stock market volatility. Based on the theory, the optimal asset allocation to risky assets such as stocks is determined by the formula shown below:

\[
    w^* = \frac{a - r}{\delta \sigma^2}
\]

As can be seen from (1), the optimal equity allocation, \(w^*\), is determined by the ratio of the difference between expected equity return \((a)\) and risk-free rate \((r)\), relative to one-year variance of the stock market \((\sigma^2)\) weighted by an investor’s risk preferences \((\delta)\).

The model implies that as long as the expected equity premium is positive, all investors should invest in the stock market, but the degree of stock market participation will be driven mainly by their risk preference since this model assumes that expected returns, risk, and real interest rates are constant regardless of the investment horizon.

Given that an investor has constant relative risk aversion, Merton’s model suggests that the allocation to risky assets will remain constant regardless of time horizon and investors should maintain the asset allocation in the portfolio throughout their life. Similarly, Samuelson (1969) argues that optimal portfolios for both short-term and long-term investors are the same if investment opportunities are constant over time. Therefore, both short-term and long-term investors should hold the same portfolio. This suggestion is completely different from the time diversification advice suggested.
Both Merton (1969) and Samuelson (1969) suggest that risky asset allocation should be constant with age. Therefore, the optimal portfolio choice depends mainly on the risk preference and is independent of the investment horizon. However, this suggestion assumes that there is no labour income (i.e., no human capital). If this assumption is relaxed and labour income is taken into consideration, portfolio allocations do not need to be fixed and can be varied with age as suggested in the lifecycle investing model presented in the next section.

2.4.3 Lifecycle Investing Model

For individuals, financial advisors generally advise older investors to invest less in equities than young investors with a rule of thumb that the equity allocation should be equal to 100 minus one’s age (Malkiel, 2007). This advice is widely adopted in practice because it is simple and also has theoretical background. The argument for age-dependent equity allocation originates from life-cycle saving and investing models (e.g., Bodie, Merton, and Samuelson, 1992; Campbell and Viceira, 2002; Cocco, Gomes, and Maaenhout, 2005; Ibbotson et al., 2007).

Typically, an investor’s total wealth consists of financial assets and human capital. When building portfolios for individual investors, Bodie, Merton, and Samuelson (1992) suggest that human capital should be taken into the consideration in asset allocation decision. The term human capital can be defined as ‘the present value of an investor’s future labour income’ (Chen et al., 2006, pp. 98). Typically, young investors have more human capital than financial capital as they have more time to work and accumulate financial assets than older investors. On the other hand, older investors have more financial assets than human capital.

As seen from Merton (1969) and Samuelson (1969), if human capital is ignored, individuals’ risky asset allocation should be constant throughout their life. When human capital is included in the model of portfolio choice, the model then suggests that investor’s allocation to risky assets such as stocks should normally decline with age. The basic version of the lifecycle investing model is shown below (see Bajtelsmit, Bernasek, and Jianakoplos, 1999; Hariharan, Chapman, and Domian, 2000; Campbell and Viceira, 2002).
\[ w^* = \frac{H + F}{F} \frac{a - r}{\delta \sigma^2} \] (2)

\( H \) is the human capital which is the total of current and discounted future wages of an individual where \( F \) is the current financial capital. As can be seen from (2), the optimal equity allocation under the lifecycle investing, \( w^* \), is now determined by the ratio of the difference between expected equity return (\( a \)) and risk-free rate (\( r \)), relative to one-year variance of the stock market (\( \sigma^2 \)) weighted by an investor’s risk preferences (\( \delta \)), plus the ratio of total wealth (sum of human capital and financial wealth) to financial wealth.

This model assumes that expected returns, risk, and real interest rates are constant and the same for all individuals.

The model suggests that individuals who have more human capital should have higher investment in stocks. As they age, their human capital declines, so they should invest less in stocks and move towards low-risk assets. Bodie, Merton, and Samuelson (1992) provide two justifications for the model. First, safe human capital is a large part of investors’ total wealth when they are young and have many years of earning labour income ahead of them, so they should invest in risky assets to achieve sufficient overall risk exposures. Second, investors with a high degree of labour flexibility should take more risk in their investment portfolios. If the investment results in a poor outcome, they can choose to work harder to recoup the losses. If young people have greater flexibility in labour than older people, the allocation to risky assets should decline with age. Therefore, the lifecycle investing model is able to justify the standard investment advice that younger investors should invest more in stocks while older investors should move out from stocks to more conservative assets like bonds.

In summary, the lifecycle investing model suggests that younger people with many years until retirement should invest more in risky assets to achieve sufficient overall risk exposure and to take advantage of the risk premium because they have large and flexible human capital. Later in life, as they age, their human capital is also diminishing and they should scale back their risky assets allocation. To have an optimal investment in stocks, individuals have to consider their human capital in addition to their risk preferences, the equity risk premium, and the variance of stock market returns.
2.4.4 Asset allocation strategies for self-directed pension plans

Traditionally, the investment objective for DC plan members is to maximize investment return given a risk tolerance. But how pension portfolios should be constructed to achieve the investment objective is an important but unsettled question. It appears that the literature does not provide clear-cut answers but rather provides several asset allocation frameworks for pension members to construct their retirement portfolios.

Based on the modern portfolio theory and lifecycle investing theory, to construct retirement portfolios, it appears that individuals should hold a well-diversified portfolio across both risky and riskless assets, leveraged according to each investor's risk tolerance, and then periodically adjust the portfolio risk according to their changing human capital. Risk-averse individuals should hold less risky assets than those who are risk-seeking individuals. Individuals with higher human capital (e.g. younger individual) should hold more risky assets to balance out the risk.

For risky assets, individuals should diversify their retirement portfolio across different risky asset classes to gain from diversification benefits. For riskless assets, Campbell and Viceira (2001) suggest that long-term investors (e.g. pension members) should focus more on investing in inflation-indexed bonds rather than cash or T-bills because inflation-indexed bonds are considered to be the safest asset for long-term investors due to lower inflation risk. Long-term nominal bonds carry inflation risk and are safe only in the low inflation environment.

In terms of asset allocation strategy, as Viceira (2006) has suggested, individuals are expected to use the modern asset allocation strategy by revising their strategic asset allocation in response to changes in market conditions. Viceira (2006) classifies asset allocation strategy into two approaches: traditional and modern. The traditional approach assumes that capital market assumptions do not change overtime. On the contrary, the modern approach suggests that investors are required to adjust their asset allocations in response to the changing capital market conditions. It is based on the belief that investment opportunities, real interest rates, and risk premium change constantly depending on business and economic conditions. Therefore, the modern approach recommends investors to revise capital market assumptions periodically in
order to adjust asset allocation mix accordingly. Unlike the tactical asset allocation which involves high-frequency trading in and out of asset classes, the modern approach typically makes gradual and periodic changes to the portfolio. Institutional investors who are sophisticated and highly literate, such as endowment funds or pension funds, are the major users of the modern approach (Viceira, 2006).

Recently, many academics have proposed several asset allocation strategies that focus more on risk allocation. They have argued that the traditional asset allocation has lost its ability to manage risk when correlations between assets increase. After the 2008-2009 global financial crisis, researchers have been attempting to evaluate what went wrong and develop strategies to avoid or mitigate the impact of future crises. For example, Chhabra (2012) proposes the wealth allocation framework that is a goal-driven, risk-based asset allocation strategy. This strategy focuses on risk allocation and attempts to achieve individuals’ investment objectives regardless of the future behavior of financial markets by allocating assets optimally among three portfolios: safety portfolio, market portfolio, and aspirational portfolio.

In recent years, a new strategy called risk parity (RP) has been gaining popularity as an alternative to the traditional asset allocation approach. In the risk parity portfolio, investors allocate and diversify their assets by risk, not by amount. To diversify by risk, lower risk assets such as bonds comprise a greater percentage of the assets than risky assets such as equities. Then, investors can determine the appropriate amount of leverage to increase an expected return of the portfolio. As a result, investors can have risk balanced portfolios and at the same time they can take enough risk to achieve sufficient returns (Asness, Frazzini, and Pedersen, 2012).

More recently, the concept of asset allocation has been challenged by the concept of strategy allocation. For instance, Straatman (2013) argues that the best way to achieve investment returns is through strategy allocation rather than asset allocation. He suggests that, in post-crisis paradigm, investors should adopt strategies, not asset classes, as the foundation of the portfolio construction because multi-strategy portfolios offer better diversification benefits.
Clearly, these new asset allocation strategies are much more challenging than the traditional investment advice suggested, especially in today’s complex investment environment with many uncertainties and unpredictable factors. The recent financial crisis suggests that investors must rethink their methods of asset allocation and risk management in the “new normal” world. Obviously, it implies that pension members have to be more active in portfolio management and are required to have higher level of financial knowledge and good foresight. Overall, it suggests that asset allocation decisions for pension members are not easy at all.

2.5 Empirical literature on pension investment decision making

In recent years, there has been an increasing interest in self-directed pension plans. A number of researchers have studied the asset allocation decisions of pension plan participants. Some researchers have found that individuals follow asset allocations strategy recommended by financial experts and consistent with suggestions from financial theory. For example, Bodie and Crane (1997) used a 1996 survey data of Teachers Insurance and Annuity Association – College Retirement Equities Fund (TIAA-CREF) and find that equity allocation in retirement accounts declines with age and rises with wealth, consistent with the lifecycle investing theory and recommendations of financial advisors. Although respondents in their survey may be better educated and more experienced at managing their pension plans than the general population, Bodie and Crane (1997, pp. 21) also suggest that individuals are likely to manage their self-directed pension plans appropriately if they have ‘enough education, information, and experience’.

Waggle and Englis (2000), using a survey conducted by the Stanford Research Institute (SRI), found that equity allocation decreases as individuals age while it increases with having higher new worth and with having a college degree. Byrne, Blake, and Mannion (2009) examined the investment decisions of pension members using a case study of a large UK company listed in a FTSE-100 index. They found that many members are relatively rational when making financial decisions and consistent with lifecycle investing theory. van Rooij, Kool, and Prast (2007) analysed the pension preferences
and investor autonomy using a survey of about 1,000 Dutch citizens and find that those who have higher risk tolerance are likely to choose more risky investment choices.

However, several studies have also found that many workers do not make rational investment decisions as theory has suggested and may make serious investment mistakes (Campbell, 2006). For example, Ameriks and Zeldes (2004) used both the TIAA-CREF data as well as data from the Surveys of Consumer Finances (SCF) and found that allocation to the stock market does not decline with age as recommended by financial theory. Moreover, instead of making rational diversification, many pension members follow ‘naïve diversification’ strategy. Benartzi and Thaler (2001) showed that pension members rely on heuristics by allocating $1/n of their contributions to funds offered when there are n investment choices available (for example, they divide their contributions evenly across the funds offered in the plan). Similarly, Huberman and Jiang (2006) also demonstrated that a substantial fraction of 401(k) plan participants tend to allocate their contributions evenly among the funds they choose.

Bhandari and Deaves (2008) examined the asset allocation decisions of members in a self-directed defined contribution pension plan in Canada by using a survey. They investigated asset allocation confusion and decisions among members by asking them two questions. The first question asks them to allocate $100,000 among a government bond fund, a corporate bond fund, and a stock fund while the second question asks them to allocate the same amount of money among a bond fund, a growth stock fund, and a value stock fund. Based on a survey method, they found that most members rely on $1/n strategy and tend to diversify equally among funds offered which is similar to findings from Benartzi and Thaler (2001). They also showed that those who are wealthy tend to make more sensible asset allocation. They suggest that the stock-bond mix is influenced mainly by gender, age, education and income, with younger, higher income, and well-educated males investing more in stocks. In addition, they reported that those who receive investment advice tend to invest more in equities as well.

Mottola and Utkus (2008) examined the investment decisions of nearly 2.9 million 401(k) plan participants in the U.S. by measuring the quality of their portfolio decisions compared to professional advice. They showed that about 25 percent of participants
hold either too-aggressive or too-conservative portfolios while another 30 percent of participants make irrational decisions either by not investing in equities or by investing too much in employer stock. They also found that less financially sophisticated workers are more likely to hold too-conservative portfolios.

Benartzi and Thaler (2002) found that many workers do not have well-defined preference. In their survey, a large number of the survey respondents prefer the median portfolio selected by their peers rather than the portfolio that they actually selected. Duflo and Saez (2002) investigated whether peer effects play an important role in retirement savings decisions and found that workers follow their peers when making investment decisions. They suggest that peer effect may be an important determinant of savings decisions.

Some researchers have found that workers exhibit inertia when making asset allocation and rebalancing decisions. Ameriks and Zeldes (2004) found that almost 50 percent of their sample members did not actively rebalance their portfolios. Agnew, Balduzzi, and Sunden (2003) examined asset allocations and trading activities of workers in a 401(k) plan in the US and found that they tend to hold on to their default asset allocation and fail to rebalance their portfolio regularly. They also found that asset allocations vary with demographics and other workers’ characteristics. For example, male, married, or higher salary workers are likely to invest more in equities.

Several studies have reported that workers’ investment decisions are subject to framing and default effects in investment choices. For example, Madrian and Shea (2001) found that many new pension members invest in the plan's default investment option and are slow to move out of that option for potentially higher-return assets. Similarly, Choi, Laibson, Madrian, and Metrick (2002) examined the data from 401(k) plans in the US and found that many workers chose to invest in the default options. Cronqvist and Thaler (2004) examined the asset allocation behavior of participants in the Swedish social security system and found that one-third of the investments of those who were initially enrolled were directed to the default fund. One of the possible explanations for this inactive decision is the information overload problem. Iyengar, Huberman, and Jiang (2004) found that pension members become paralyzed when they are offered more investment choices.
A number of studies have found that many individuals do not construct well-diversified portfolios. For example, Benartzi (2001) finds that some pension members, instead of having a well-diversified portfolio, invest a large part of their pension into company stock. Munnell and Sunden (2004) examined the investment behaviour of members in the 401(k) plan which is a self-directed defined contribution plan widely used in the US and found that over 50 percent of those members fail to diversify their portfolio. Many of them invest heavily in their company stock, and only a few rebalance their portfolios according to their age and changing market condition.

2.6 The role of equity investment and the equity risk premium

For long term investors, the asset allocation decision is the most important and the main determinant of the variability of return. Since the traditional asset classes for pension investment are bonds and stocks, the most important asset allocation decision is the allocation between those two asset classes. Therefore, the expected return between stocks and bonds has to be estimated since they are one of the most important inputs in asset allocation decisions.

As seen from the previous sections, both theory and standard financial advice typically suggest long-term investors such as pension member to invest in equities. Campbell (2006) points out that the limited participation in risky assets (e.g. equities) is considered as one of the serious investment mistakes. However, as seen from the previous sections, financial theories predict that investors will invest in the stock market only in the presence of a positive equity risk premium. Evidence in the US shows that bonds outperformed stocks in recent periods (Chen, 2011) and the question is raised whether the equity risk premium will be positive in the future. Since the equity risk premium is the important input for investment and asset allocation decisions, this section reviews the literature on stock market investment and also the equity risk premium.
2.6.1 Benefits of Stock Market Investment

“Generally, the longer you have until retirement and the greater your other sources of income, the more risk you can afford...Why take any risk at all? Because the greater the risk, the greater the potential reward. By investing carefully in such things as stocks and bonds, you are likely to earn significantly more money than by keeping all of your retirement money in a savings account, for example...Many financial experts feel it is important to save at least a portion of your retirement money in higher risk — but potentially higher returning assets. These higher risk assets can help you stay ahead of inflation, which eats away at your nest egg over time”

US Department of Labor (2010)

Financial advisors typically suggest individuals to invest in the stock market for their retirement accounts for the reasons illustrated by DOL (2010). Investment in the stock market historically has provided higher returns than low-risk assets. Researchers examined the historical data of stock returns and found that stock returns exceed bond returns in the long run (Shiller, 2005; Siegel, 1994). Not only does the stock market provide higher return, but Campbell and Viceira (2005) also argue that the risk of the stocks, which is measured by the annualized standard deviation, falls sharply when the investment horizon lengthens, implying that the investment risk in the stock market declines in the long run. Some researchers believe that stock market returns can be predictable; therefore, for long term investors, equities appear to be an attractive investment due to the relative predictability in equity risk premium and the diminishing volatility of returns over time (Barberis, 2000). Investing in equities also allows investors to have a share in economic growth. Cornell (2010) examine the linkage between stock market return and economic growth and argues that the long-run equity return is fundamentally linked to corporate earnings growth which, in turn, is linked to real Gross Domestic Product (GDP) growth. He suggests that the real return on the US stocks should be around 4 to 5 percent on average while international equities should provide similar returns.

Since stock market investment generally offers higher expected returns, the decision to invest in the equities has a great impact on pension portfolios. Burtless (2003) examined the likely success of defined-contribution pension using historical and simulated data on financial market performance in five industrialized countries such as France, Germany, Japan, UK, and US. Over a long run, he finds that the replacement rates for pension members are linked to allocation to equities. For example, based on the 92 overlapping 40-year careers using historical data from 1872 to 2003, hypothetical US
workers who invest solely in equities have an average replacement rate of 70 percent with the standard deviation of more than 33 percent. The replacement rates are reduced if workers start to invest part of their portfolios in bonds; for example, the expected replacement rate will fall by 13 percent, from 71 percent to 58 percent if 20 percent of pension portfolios are invested in government bonds. From his simulation study, Burtless argues that conservative investment strategy such as investing mainly in government bonds may protect workers from financial market risk but it offers poor protection against the replacement rate risk.

Poterba, Rauh, Venti, and Wise (2005) also found that investing only in bonds generates substantially lower wealth than investing only in stocks. They used a simulation model to calculate the 401(k) pension plan balances in the US to evaluate the risk of different investment strategies. They compared the investment performance of investing pension assets between all in index bonds, all in large-cap stocks, and in a fifty-fifty mix of bonds and stocks. The stock return used in the simulation relies on the historical data during 1926-2001 and has a mean return of 9.4 percent and a standard deviation of 20.4 percent. They found that investing only in stocks generates the highest level of wealth (about four-times higher than investing only in bonds) while there is only about 10 percent chance that the 100 percent stock strategy will be worth less than the 100 percent bond strategy, and the chance will increase to 30 percent if the risk premium used in the simulation is reduced by 300 basis points.

2.6.2 Concerns of Stock Market Investment

Some researchers have argued that placing retirement saving in the financial market is hazardous and should not be encouraged (Langley, 2004; Engelen, 2003). Bodie (2011) argues that the assertion of time diversification that stocks are safe in the long run is dangerous and fundamentally incorrect. In the long run, he believes that the worst possible outcome for the stock market investment is becoming more possible as the investment horizon increases. He also believes that this mistaken belief is the root of the problems pension funds are currently facing. Stock markets have been found to be highly volatile and have greatly affected the value of pension assets in recent years. During the financial crisis in 2008, global pension assets declined by 20-25 percent on average (Antolin and Stewart, 2009). From October 2007 to October 2008, the value of
equities in pension plans and retirement accounts declined by almost $4 trillion in the US (Munnell and Muldon, 2008).

To mitigate the investment risk, alternatively, workers may choose a simpler and easier route by investing all in risk-free assets so that their retirement capital can be fully secure no matter what happened in the financial markets. However, this method appears to be an expensive approach as the size of fund required might be exceptionally high especially during the time when the risk-free rates are low (Froud et al., 2010). As Burtless (2003) argues, if pension members prefer to invest their large part in bonds, in order to achieve the same replacement rate, they have to provide much higher contribution rates. For example, based on his simulation, to achieve the replacement rate of 70 percent, worker needs to contribute approximately 7.5 percent of their salary for a 100-percent stock portfolio. On the other hand, the required contribution rate then rises to 12 percent for a 50-percent stock/50-percent bonds portfolio. This means that those who favour safer asset class such as bonds need to save more to offset the reduction in expected returns.

2.6.3 Equity Risk Premium

The mean-variance framework suggests that individuals, no matter how risk averse, should invest some in equities as long as the equity risk premium is positive. Therefore, the prospect of the equity risk premium is the key to answer to the debate whether pension members should continue to place their retirement assets into the stock market. The equity risk premium (ERP) is one of the most important variables in finance (Grinold, Kroner, and Siegel, 2011). As seen from the previous section, the equity risk premium is an important input in the asset allocation model. Other things being equal, the higher the ERP, the higher the allocation to stocks should be, whereas the lower risk premium suggests investors to lower their allocation to equities.

As shown in (3), the equity risk premium is an expected return for equities in excess of an expected risk-free rate (Hammond and Leibowitz, 2011, pp. 1). In other words, it is the expected incremental return that investors will likely earn from a willingness to hold stocks instead of risk-free assets such as bonds or cash.
Equity risk premium = E(return for equities) – E(risk-free rate)  \hspace{1cm} (3)

It is important to note that the equity risk premium is an *ex ante* equity premium which is a forward-looking estimate of stock returns, and is not the same as the historical excess return. This forward-looking premium is critical to asset allocation especially when investors make the asset allocation decision between equities and bonds. Traditional finance theory suggests that investors should diversify and hold some equities as long as the equity risk premium is positive. A negative equity risk premium may convince investors to move their assets to riskless assets. Therefore, good asset allocation decisions need good forecasts of the equity risk premium.

However, forecasting the equity risk premium is not an easy task for investors. Investors need to forecast both the expected stock return as well as expected risk-free rate return. Chen (2011) provides the model of stock return as follows:

\[
\text{Stock return} = \text{Current yield} + \text{Earnings growth} + \text{P/E change} \quad \hspace{1cm} (4)
\]

As seen from (4), if investors need to forecast expected risk premium, they need to forecast the expected stock return which means that they need to forecast the earnings growth of the stock market and the change in Price-to-Earnings (P/E) multiple.

Alternatively, Ibbotson (2011) suggests that there are four different methods to estimate the equity risk premium. The equity risk premium can be estimated by using 1) historical data, 2) consensus estimate of market participants, 3) demand approach to estimate extra return an investor would demand for taking extra risk, and 4) supply approach to estimate what the economy or the companies can supply to the market in the form of cash flows.

Equity risk premium has been the topic of intense debate over at least the last three decades about whether it can be sustained into the future.\(^{22}\) Many experts believe that stock market returns will be very low or even negative over the immediate future and low by historical standards over the coming decade (Arnott and Bernstein, 2002). On

\[^{22}\text{See Song (2007) for detailed discussion on the equity risk premium.}\]
the contrary, Mehra (2003) argues that the future equity premium should be similar to what it has been in the past and the equity returns should also continue to be higher than returns from investment in T-bills for investors with a long term investment horizon. Hammond and Leibowitz (2011) reviewed the estimates of the equity risk premium by many academics and found that the estimated equity risk premium ranges widely between 0.0 to 7.0 percent with the average of 3.70 percent. Siegel (2011) expects the future equity risk premium in the US to range between 5-6 percent. Recently, Dimson, Marsh, and Staunton (2011) estimated the equity risk premium for 19 countries using historical data from 1900 to 2010 and suggest that the worldwide expected equity risk premium should be around 3.0-3.5 percent on a geometric mean basis and 4.5-5.0 percent on an arithmetic mean basis.

Clearly, the estimation of the future equity risk premium is complex and as yet unresolved. Nevertheless, since the equity risk premium is one of the most important inputs in asset allocation decisions, investors need to have a good foresight on how the expected equity risk premium will be in the future.

2.7 Financial Literacy

Recent research has documented that many people do not have adequate financial literacy. A lack of financial knowledge is problematic in the pension context if less knowledgeable workers cannot make informed financial decisions to optimize their financial well-being. But what is financial literacy? OECD defines financial literacy as follows:

“knowledge and understanding of financial concepts, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life”

23 Often called “financial capability”. The terms are considered synonymous for this study.
Financial literacy can also be defined as an ‘ability to process economic information and make informed decisions about financial planning, wealth accumulation, pension, and debt’ (Lusardi and Mitchell, 2013). Previous studies have documented that financial illiteracy is widespread and many individuals lack even the most basic economic concepts required to make rational saving and investment decisions (Lusardi and Mitchell, 2007). A survey of US employers offering 401(k) plans reports that 81 percent of employers admit that their employees are confused about where to invest and what funds to use (Deloitte, 2008). According to John Hancock’s survey of defined contribution participants in the US, about 42 percent of the respondents who are offered an investment choice in their pension plans report that they have little or no investment knowledge (John Hancock, 2002). Moreover, many US workers believe that company stock is less risky than diversified stock funds and many of them do not realize that they can lose money from bond investments. Using the 2004 Health and Retirement Study (HRS) data, Lusardi and Mitchell (2008) found that the financial illiteracy problem is prevalent among specific groups of the US population such as women, the elderly, and the lower educated group.

Financial illiteracy is not only in the US; researchers also found that it is widespread around the world (Lusardi and Mitchell, 2011; OECD, 2005). In the UK, Byrne (2007) conducted a survey with one UK company and found that knowledge and interest in pensions and investment choice is low among pension members. van Rooij, Kool, and Prast (2007) examined workers’ pension preference in Netherlands and found that people do not have confidence in their financial knowledge and prefer not to make pension investment decisions. The study suggests that they lack skills to make investment decisions for their pension assets. In Thailand, using data from a 2006 household survey, Ariyapruchya, Sinswat, and Chutchotitham (2007) found that the average household in Thailand has a moderate level of financial literacy. They also showed that those who have higher income, live in Bangkok and the vicinity, and work in professional, technical, and managerial sectors are more likely to have greater financial literacy. On the other hand, households with the lowest level of financial literacy are more likely to be those who are low income earners, live in the rural areas, and are labour workers, unemployed, or work in the agricultural sector.
Why is financial literacy important? Recent studies have explored the relationship between financial literacy and financial outcomes, including savings decisions and investment choices. Conventional wisdom often believes that to make informed investment decisions and to be able to manage related investment risk, workers need to have adequate level of financial knowledge. In other words, financial literacy enables individuals to make better financial decisions and avoid behavioural biases while individuals with low levels of financial literacy are more likely to make suboptimal investment decisions. Consistent with the conventional wisdom, empirical evidence also suggests that financial literacy affects investment decisions.\(^{25}\) Many researchers have found that highly educated individuals are more likely to invest more efficiently. For example, Hibbert, Lawrence, and Prakash (2012) found that finance professors are significantly more likely than the general public to invest in equities and are less prone to some behaviour biased relating to stock market participation such as overconfidence, house-money effect, and the break-even effect. Campbell (2006) found that less educated individuals are likely to make more investment mistakes than better educated individuals. Calvert, Campbell, and Sodini (2007) investigated household investment decisions in Sweden and found that more financially sophisticated individuals tend to buy risky assets and invest more efficiently. Agnew and Szykman (2005) also showed that individuals with below average financial knowledge become “overwhelmed” by making investment decisions. Evidence, therefore, suggests that the lack of financial literacy has serious implications especially for retirement planning and pension investment decisions.

In a recent study, researchers have found that pension wealth is associated with financial literacy. Gustman, Steinmeier, and Tabatabai (2012) used data from the Health and Retirement Study (HRS) in the US and found that the more valuable the pension, the more knowledgeable workers are about their pensions. They suggest that the causality is more likely to run from the level of pension wealth to the level of pension knowledge rather than the other way around.

\(^{25}\) Even though financial literacy literature has documented the impact of financial literacy on financial decision-making; however, Lusardi and Mitchell (2013) suggest that more experimental work is needed to explore endogeneity and causality issues.
There is also evidence that financial literacy affects the stock market investment. Lusardi (2003) found that those who have low financial literacy are significantly less likely to invest in stocks. In the Netherlands, van Rooij, Lusardi, and Alessie (2011) found that those with greater financial literacy are likely to invest in the stock market. They develop a questionnaire to measure and test financial literacy and knowledge of Dutch household. They found that lack of financial literacy may explain the stockholding puzzle. They develop two sets of questionnaire. The first set of questions are designed to measure basic financial literacy by asking respondents the basic questions covering interest rate, interest compounding, inflation, time value of money, and nominal versus real values. The second set of questions measures more advanced financial knowledge and covers more advanced topics such as the difference between stocks and bonds, the stock market, and diversification, for example. They found that advanced literacy is low among younger people and women. They also investigated the impact of financial literacy on the decisions to invest in the stock market and the empirical evidence suggests that members who are not financially knowledgeable are less likely to hold stocks. In Australia, Cardak and Wilkins (2009) studied the portfolio allocation decisions of Australian households using the Household, Income and Labour Dynamics in Australia (HILDA) Survey and found that financial literacy is an important influence on risky asset allocations. One possible explanation is that there are fixed costs to enter the market. One of the major participation costs is the information costs such as financial literacy.\(^ {26} \) Lack of understanding and knowledge may hinder the members in investing in equities. Therefore, fostering financial literacy by providing financial education may be a good strategy to cultivate the equity culture as those in the higher financial literacy group are likely to hold high return assets such as stocks.

Several studies have attempted to measure individuals’ level of financial literacy. The measures of financial literacy are mainly in the form of self-reported financial knowledge or a test-based measure (Hasting, Madrian, and Skimmyhorn, 2012). Literature suggests that the self-reported measure has some drawbacks, especially that individuals are often too optimistic about their financial knowledge (Agnew and Szykman, 2005). For the test-based measure, the most notable financial literacy test is the 2004 Health and Retirement Study (HRS). This test consists of a set of financial

\(^ {26} \) Fixed costs can be psychological factors that make equity ownership uncomfortable for some household (Campbell, 2006).
literacy questions aiming to measure basic financial concepts such as compound interest, real rates of return, and investment diversification (Lusardi and Mitchell, 2006). These questions are also used extensively in other national and international surveys; for example, the National Longitudinal Survey of Youth (Campbell, Jackson, Madrian, and Tufano, 2011).

### 2.8 Financial Education

In recent years, developed and emerging countries have become increasingly concerned about the level of financial literacy of their citizens. For example, policymakers in the US, the UK, the OECD as well as Thailand have introduced initiatives to improve financial literacy among their citizens (OECD, 2004; FSA. 2004; Federal Reserve Board, 2004; SET, 2011). Traditionally, it is assumed that financial education can improve financial literacy, and in turn, greater financial literacy can lead to good financial decisions and behaviour (Hathaway and Khatiwada, 2008; Willis, 2008). If pension members do become financially educated, they are more likely to make wise decisions and be able to make informed investment choices. OECD (2005) defines financial education as follows:

> “Financial education is the process by which financial consumers/investors improve their understanding of financial products and concepts and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of 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, 2005, pp. 13)

Given that financial literacy is important, it is necessary to provide adequate financial education to pension members so they are able to achieve their retirement objectives (Arnone, 2005). Financial education may provide workers with the information and skills to select the investment options that are most appropriate for their context (OECD, 2005, pp. 51). Therefore, it is not surprising that financial education is a cornerstone of the self-directed pension plans in many countries and has been promoted in many countries in order to improve financial literacy.

Nevertheless, it is still debatable that

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27 Some can argue that formal financial education is not important as individuals can learn to behave optimally through experiential learning using a trial and error process. For example, data from the University of Michigan Survey of Consumers conducted in 2010 indicates that about half of respondents
providing financial education can increase financial literacy. Moreover, research on effectiveness of financial education is quite limited (Hathaway and Khatiwada, 2008). A number of studies have found that formal education can affect individuals’ investment behaviour. For instance, for pension saving, financial education appears to raise both participation and saving rates (Bernheim and Garrett, 2003; Lusardi, 2004). Madrian and Shea (2001) found that workplace financial education increases participation and greater portfolio diversification. Several studies have reported that financial educational programmes might be able to help participants to have more efficient portfolios (Dolvin and Templeton, 2006; Tang et al., 2010), and psychological biases documented by the behavioural finance might be corrected (Campbell and Viceira, 2002). In addition, Muller (2003) showed that education programmes appear to inspire low risk tolerant individuals to increase their equity allocation. Byrne (2007) found that investors who have received advice about pension are more likely to have calculated their saving needs, to have higher levels of investment knowledge, and to actively review their investments than those who have not. Shum and Faig (2006) found that equity allocation in retirement accounts is also positively correlated with having financial advice. However, in his study, Mandell (2006) found that there is no difference in terms of financial literacy between high school students who took a financial education class and those who did not and suggests that there is no connection between education and financial literacy.

Many researchers now argue that financial education has often been found to be ineffective because making an investment decision is too difficult for individuals. For example, Merton (2000, pp. 8-9) argues that the asset allocation decisions are difficult for households because they are decisions that ‘they had not had to make in the past, are not trained to make in the present, and are unlikely to execute efficiently in the future, even with attempts at education’. Willis (2008) argues that the financial literacy education is ineffective as the financial markets are too complex for anyone who is not an investment expert as he stated that:

“Consumers generally do not serve as their own doctors and lawyers and for reasons of efficient division of labor alone, generally should not serve as their own financial experts.

admitted that personal financial experience is the most important way respondents’ learned about personal finance which is about four to five times the fraction who credit formal financial education as their most important source of financial knowledge (Hilgert and Hogarth, 2003).
The search for effective financial literacy education should be replaced by a search for policies more conducive to good consumer financial outcomes.”

He also argues that financial literacy may not be sufficient for informed investment decision because some behavioural biases cannot be corrected by financial education. Similarly, Erturk et al. (2007) also argue that the individualized responsibility for making complex investment decisions may be beyond an individual’s capacity because individuals cannot predict their own futures, lack calculative competence and many financial products are opaque.

Several studies have examined the most effective way to provide financial education. Ideally, the most effective financial education programme does not only provide information but must empower individuals so that they can evaluate their options and make appropriate financial decisions in their own self-interest (World Bank, 2009). Previous research suggests that individuals prefer to receive financial information via a variety of media sources such as television, radio, magazines and newspapers as well as informational videos and brochures, whereas more financially educated individuals prefer the Internet (Hilgert and Hogarth, 2003). However, it seems that the more effective way to disseminate the financial education is through retirement seminars rather than brochures and other written materials (Bayer, Bernheim, and Scholz, 2009).

Also, personalized counselling programs are most effective in changing worker behaviour, which suggests that providing financial information alone is not effective without providing one-on-one counselling (Ernst and Young, 2004). For example, Mottola and Utkus (2008) examined nearly 12,000 participants who signed up for the pension advisory service and found that the advice program can improve their portfolio efficiency with an average of 22 percent increase in Sharpe ratio.

2.9 Pension design and structure

Having financial education programmes may not be the only effective way to improve members’ retirement welfare (OECD, 2005, pp. 16). Previous section also shows that there is no conclusive evidence on the effectiveness of financial education programme. More recently, literature has emerged that offers an alternative to the provision of
financial education. Several researches have suggested innovative pension design that can result in better retirement outcome. For example, Benartzi and Thaler (2007) suggest that the main alternative to the provision of education as a method of influencing decisions about pensions is to choose the pension design in a way that will promote the desired objectives. Similarly, Mitchell and Utkus (2004) argue that financial education may have reached its effective limits and suggest that the design of pension plan may have a profound effect on members’ investment decisions.

Another vein of academic research has addressed the impact of pension plan design on investment decisions. Previous studies suggest that plan design and its characteristics are important factors for asset allocation decisions in pension portfolios (Benartzi and Thaler, 2007). For example, default options may affect asset allocation. As discussed earlier that many workers invest in the plan's default investment option, it is possible that the equity allocation of pension members largely depends on the design of the default fund and how much equity allocation the default fund has. So, default options are important as they can either facilitate or hinder better savings outcomes.

Also, the number and mix of investment choices provided to members can influence the asset allocation decision. For example, Benartzi and Thaler (2001) found that some DC plan participants make their asset allocation by spreading their contributions evenly across the funds made available by their plans. Similarly, Brown, Liang, and Weisbenner (2007) found that members appear to allocate more in equities if the number of equity funds offered in the plans increases. Therefore, changing the number and mix of investment choices may also change the investors’ asset allocation between stocks and bonds.

The self-directed pension plans can be seen as a libertarian decision making model, where workers are able to act to maximize their retirement welfare while the employer has minimal active decision-making role. Mitchell and Utkus (2004) suggest that pension plan design may play a major role in the “paternalistic libertarianism” concept (Thaler and Sunstein, 2003), where members are still allowed to make investment choice, but paternalistic elements of pension plan design also play a major role in shaping the choices offered. Therefore, financial education is complementary but does not replace effective pension plan design such as automatic default contribution rates.
and default investment choices, so that even if they do not have adequate financial knowledge and do nothing they will have a chance to meet their retirement goals.

2.10 Summary

This chapter reviews related literature to the study. Literature suggests that making an investment decision is one of the most difficult tasks for households. There are several theories regarding how to construct an optimal portfolio and make sensible asset allocation decisions. The modern portfolio theory has been widely used for asset allocation and as a main investment advice for defined contribution pension plans. In addition, the lifecycle investing model is also developed to guide asset allocation decisions for long-term investors. Those two theories suggest that individuals should consider their human capital, their risk tolerance, the expected equity risk premium, and the variance of stock market returns and then construct their portfolio accordingly. Individuals are recommended to revise their asset allocation according if there are changes in these variables.

In the context of DC pension plans, it implies that pension members have to engage in an active portfolio management which requires members to have higher levels of financial knowledge and good foresight. It is debatable whether the literacy level required to make those complex and challenging decisions can be acquired by typical workers. They need to be highly educated to have a sophisticated understanding about finance and investment since the basic rules of thumb are not adequate for investment decisions in a volatile market.

Managing pension portfolios appears to be difficult in the real world setting where illiteracy is widespread. Empirical evidence suggests that many individuals have inadequate financial knowledge and do not act rationally as finance theory has suggested. Some individuals do not follow the advice from finance theory as well as financial advice. Moreover, many individuals do not participate in the stock market. Asset allocation decisions, especially the decision whether or not to invest in a high expected return asset such as stock, has a major implication on pension members’ retirement welfare. Literature has documented that there are many factors affecting
individuals’ investment decisions. Among those factors, financial knowledge appears to gain much attention from both academics and policymakers. It is widely believed that financial education can improve pension members’ financial knowledge and lead to better, more informed investment decisions. However, the effectiveness of financial education is still debatable. Another vein of literature suggests that the more effective route is to develop pension designs or products that can produce good financial outcomes and are much easier to understand by pension members.
3 CHAPTER 3: RESEARCH DESIGN AND METHODS

3.1 Introduction

The previous chapter provided the relevant literatures for this study. This chapter explains the research design and methods used in this study. This mixed method study is divided into two main parts, corresponding to the two phases of research involved in this study. It used qualitative data collection methods to gain a better understanding of the programme and quantitative data methods to determine if the programme is effective in achieving its stated objectives. The main focus was on the case study conducted in this research. A case study of a large organization in Thailand was selected. Within the case study, investment choice decisions of survey respondents were examined in light of finance theory and the traditional financial advice. The study investigated whether investment choice decisions vary for respondents across different characteristics including age, gender, risk tolerance, and level of financial literacy. The survey results were used to assess whether pension members are able to make informed decisions and to understand how such decisions are made.

The rest of the chapter proceeds as follows: Section 3.2 restates research questions and hypotheses of the research. Section 3.3 provides the philosophical framework of this study. Section 3.4 describes the specific research design of this study, both the first phase and the second phase of research. Then section 3.5 provides a detailed description of the data collection. Section 3.6 explains the process of data analysis. Section 3.7 discussed the limitations of the research. Finally, section 3.8 summarises the chapter.

3.2 Research questions and hypotheses

Research questions and hypotheses of this study are as follows:

1) What are the key concerns and problems of the new pension programme from the perspective of policymakers and asset management companies? This study aims to gain a better understanding of the new pension programme through an exploratory
interview with policymakers and industry experts from asset management companies.

2) What type of individual benefits this new programme? This study hypothesizes that workers who have greater financial knowledge or have received financial advice are more likely to actively participate in the programme by making investment decisions. Hence, the following hypotheses are proposed:

**Hypothesis 1:**

H₀: There is no significant difference between workers who have greater financial literacy and workers who have lesser financial literacy in terms of making active participation in the self-directed pension plan.

H₁: Workers who have greater financial literacy are more likely to actively participate in the self-directed pension plan.

**Hypothesis 2:**

H₀: There is no significant difference between workers who have received financial advice and workers who have not received financial advice in terms of making active participation in the self-directed pension plan.

H₁: Workers who have received financial advice are more likely to actively participate in the self-directed pension plan.

3) Is the new pension programme in Thailand an effective programme? In other words, does the new pension programme achieve its stated objective? For the self-directed DC plans, the effectiveness of the programme is measured by comparing actual pension member behaviour with what financial theory has suggested. Therefore, in order to evaluate the effectiveness of the new pension programme, this study aims to explore how workers make investment decisions. The study hypothesizes that workers are able to make informed investment decisions that are proposed by portfolio theory and lifecycle investing theory. Specifically, it hypothesizes that younger workers or higher risk tolerance workers are likely to invest more in risky assets (or choose riskier choices). Hence, the following hypotheses are proposed:

**Hypothesis 3:**
Hₐ: Age does not affect how workers make risky investment choices.

Hₐ: Younger workers are likely to invest more in risky investment choices.

**Hypothesis 4:**

H₀: Level of risk tolerance does not affect how workers make risky investment choices.

H₁: Higher risk tolerance workers are likely to invest more in risky investment choices.

4) What are the levels of financial knowledge of workers under the new pension programme? This study aims to explore this question by using the standard financial literacy test to examine the level of financial knowledge of workers.

5) Does the level of financial knowledge have an effect to their investment choice decisions? The study hypothesizes that financial literacy affects investment choice decisions. Hence, the following hypothesis is proposed:

**Hypothesis 5:**

H₀: Financial literacy does not affect how workers make their investment choices.

H₁: Financial literacy affects how workers make their investment choices.

### 3.3 Philosophical worldview

This section explains the philosophical worldview for this study. In this study, the term worldview is defined as “a basic set of beliefs that guides action” (Guba, 1990, pp. 17). As research is influenced by the researcher’s set of beliefs, philosophical worldview is important and needs to be identified before conducting research (Creswell, 2009). The pragmatic worldview is used to guide this study. It was chosen because pragmatism allows researchers to choose the methods, techniques, and procedures of research that best meet their needs and purposes in order to understand the research problem (Creswell, 2009, pp. 10-11). Because this study attempted to understand the problems, application, and effectiveness of the new pension programme, pragmatism is the most appropriate worldview for this study because it allows the researcher to use multiple
methods as well as different forms of data collection and analysis in order to provide the best understanding of the research problem.

3.4 Research design

This section describes the research design for this study. Research design is important because it provides a framework for the collection and analysis of data (Bryman and Bell, 2007). Different authors have defined research design in different ways. Yin (2009, pp. 26) describes the research design as “a logical plan for getting from here to there, where here may be defined as the initial set of questions to be answered, and there is some set of conclusions (answer) about these questions.” However, the research design in this study was based on definition suggested by Creswell (2009, pp. 3) who defines the research design as “plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis.”

Guided by pragmatism, this study looked to many approaches for collecting and analysing data rather than subscribing to only one way (Creswell, 2009). As a result, mixed methods research was chosen as a main research design for this study. Mixed methods research is “an approach to inquiry that combines or associates both qualitative and quantitative forms” (Creswell, 2009, pp. 4). Following this, the study employed both quantitative and qualitative methods. The rationale for mixing quantitative and qualitative data is to have more complete analysis in order to provide a better understanding of research problems than when using either approach alone (Tashakkori and Teddlie, 1998; Creswell, 2009). In addition, mixed method research allows researchers to address “more complicated research questions and collect a richer and stronger array of evidence than can be accomplished by any single method alone” (Yin, 2009, pp. 63).

The research design for this study was prepared according to the procedure proposed by Creswell (2009). Specifically, the study followed a sequential mixed method study in the form of sequential exploratory strategy. Creswell (2009, pp. 211) explains that sequential exploratory strategy involves “a first phase of qualitative data collection and analysis, followed by a second phase of quantitative data collection and analysis that
builds on the results of the first qualitative phase.” Therefore, this study was divided into two phases of research, beginning with collecting documents and conducting qualitative interviews for exploratory purposes and following up with a quantitative, survey method within a case study framework.

Figure 3.1 illustrates the overall research design of this study. This study was conducted in two phases: 1) Detailed analysis of the Employee’s Choice programme and 2) Case study of the implementation of the programme. The first phase intended to be more exploratory research while the second phase incorporated all information in order to test the study proposition and research questions.

3.4.1 First phase of the study

The first phase involved review of relevant literatures and understanding of the new pension programme. Since the Employee’s Choice programme has been recently established in Thailand, the first task of this study was to gain a better understanding of the pension system in Thailand as well as the details of the new programme and its underlying rationale. In order to understand the new pension programme, a series of interviews were conducted with key policymakers and asset management companies. Secondary data were also collected and analysed, including, secondary interview data, industry data, and capital market data.

In an attempt to understand the Thai pension system, the study first examined and analysed the overall pension and retirement system in Thailand. Related documents as well as historical financial and capital market data were collected and analysed in order to gain a better understanding of the overall Thai pension system. Next, the study specifically analysed the newly introduced pension programme, the “Employee’s Choice” programme. It collected all the relevant documents related to the programme which were taken mostly from the government-related institutions that promote the programme such as the Thai Securities and Exchange Commission, the Association of Investment Management and the Stock Exchange of Thailand. Finally, the study sought to explore the various viewpoints from pension stakeholders. Primary interviews were conducted with policymakers and industry experts. For pension committee and pension members’ perspectives, this study used the secondary interview data collected by the
Thai Securities and Exchange Commission which are published on its website. These data were examined in order to identify the key problems and concerns of the programme.

3.4.2 Second phase of the study

Once the first phase of the study was completed, the second phase of the study was carried out using a case study to examine the programme in-depth and in a real-life situation. After a case was selected, this study used surveys to collect data about their pension and related information from workers. A case study approach was chosen because it is viewed as the most appropriate research design for investigating a contemporary phenomenon in depth and within its real-life context, especially when the research questions ask how and why a certain phenomenon exists and the investigator has little control over the phenomenon (Yin, 2009). Creswell (2009, pp. 13) defines case study as “a strategy of inquiry in which the researcher explores in depth a programme, event, activity, process, or one or more individuals.” The aim of case study is to provide an analysis of the context and processes which illuminate the theoretical issues being studied (Hartley, 2004).

Case studies have been used extensively in previous studies on self-directed pension plans (e.g., Byrne, 2007; Byrne, Blake, and Mannion, 2009; Agnew, Balduzzi, and Sunden, 2003; Bhandari and Deaves, 2008; Ameriks and Zeldes, 2004; Choi, Laibson, Madrian, and Metrick, 2004). Most of these case studies have been performed by selecting either a single pension plan or multiple plans. Byrne (2007) contends that although the case study provides empirical evidence, there are limitations to the conclusions that can be drawn. He points out that if the data are drawn from only one plan, the results may be biased due to particular characteristics of participants in that plan. In addition, since most surveys rely on self-reported information, it may be impossible to know how accurate the data are. Generalization has been seen as a drawback of doing case study research.

However, this study was not intended to be characterized as “statistical generalization” but as “analytic generalization” (Yin, 2009) as it attempted to use previously developed theory as a template which it then compared with the empirical results of the case study.

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28 http://www.thaipvd.com/content_th.php?content_id=00282
Moreover, this case study can be viewed as a “falsification” test (Popper, 1959). Flyvbjerg (2006, pp. 228) argues that “Falsification is one of the most rigorous tests to which a scientific proposition can be subjected: If just one observation does not fit with the proposition, it is considered not valid generally and must therefore be either revised or rejected.” Since this case study attempted to reveal whether a pension plan with the new pension programme is effective, if it was found to be ineffective, this case study can be used to falsify the programme proposition. In this way, this study can be significant because it can stimulate further investigation and theory.

Case Study

While there are different definitions of what a case study is, this study used the definition suggested by Stake (2005) who defines the case as a choice of what is to be studied and Robson (1993) who sees it as a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence. Stake (1998) points out that case study should be defined by interest in individual cases and not by the methods of inquiry used. The case study used in this study, therefore, focused on the interest in the individual case which is the new pension programme used in a large organization in Thailand. It used many data collection methods, including survey. A questionnaire survey directed to pension members at Bangkok Bank was conducted to gather their views and also information regarding their investment decision process. In addition, programme data and all relevant documents such as educational materials were collected.

This study can be viewed as an evaluation research study because the main objective of the study was to evaluate the effectiveness of the programme where effectiveness refers to the extent to which a programme achieves its goals (Rutman, 1980; Green, 1994). Case study was deemed appropriate for this study as it has been used extensively and is the preferred method for programme evaluation study (Patton, 2002; GAO, 1990). By definition, an evaluation research study involves systematic application of social science procedure in assessing effectiveness of a particular programme (Rossi, Lipsey, and Freeman, 2004). According to Yin (2009), in evaluation research, a case study approach allows researchers to describe an intervention and the real-life context in which it occurred. Therefore, case study was chosen to provide rich and detailed description of
the pension programme and to illustrate how pension members actually make their investment choice in order to evaluate the effectiveness of the programme.

Case selection

This study used a single-company case study design. Bangkok Bank was chosen as a research site for this study. A selected case provided a real life example of a new private pension programme that had been offered to pension members at Bangkok Bank since July 2010. Bangkok bank is a leading commercial bank in Thailand, and also one of the leading commercial banks in South East Asia. It provides a wide range of business and consumer banking and financial services both in Thailand and abroad. Its main business activities are conducted through 5 key business units: Corporate, Commercial, Business, Consumer, and International. Currently, Bangkok Bank employs over 20,000 people and its revenues exceed Baht 20,000 million (US$ 667 million) per year.

Following guidelines from Stake (1998), Bangkok Bank was chosen as a research site since the selected case was the most accessible and the researcher was able to spend the most time with it. For doing a single-case study, Yin (2009) suggests to choose the case that is likely to yield the best data. Bangkok Bank was able to provide rich data since it was the employer of the researcher of this study. Therefore, the researcher was able to have access to information about its pension programme including the programme description, pension plan structure, and workplace financial education materials.

This study examined whether the new pension programme used at Bangkok Bank is effective. It is natural to wonder whether those who work in a financial institution are able to make rational investment decisions. If the study found that a significant number of these workers, who are perceived to have better-than-average financial knowledge, do not make rational investment decisions, then to suggest that the new pension programme should be promoted and implemented to all employers in Thailand might be a bad idea.

Studying the researcher’s own organization or “Backyard” research (Glesne and Peshkin, 1992) may lead to compromises in the researcher’s ability to disclose information in qualitative data collection (Creswell, 2009, pp. 177). To improve
confidence in the accuracy of the findings, this study employs multiple strategies of validity suggested by Creswell (2009). This study used rich, thick descriptions of the setting in order to add to the validity of the findings. In addition, this study presented both positive and negative information to improve its validity.

In addition to being viewed as an evaluation case study, this study can also be viewed as an “instrumental case study” (Stake, 1995) as the case was examined mainly to provide insight and understanding of a particular issue or to help refine a theory. The case was of secondary interest and played a supporting role. The major role of the case was to provide insight into a new pension programme in order to draw an analytical generalization about how workplace financial education affects investment decisions of pension members. It can also be viewed as the “critical case” (Yin, 2009) because it can make a significant contribution to knowledge. Bangkok Bank was selected because it is the largest bank and one of the most reputable financial institutions in Thailand and could not be claimed to suffer from lack of financial knowledge. If the new pension programme did not work effectively at Bangkok Bank, it would be difficult to apply this new programme to other companies outside the financial industry. If it was the case, this study could help to refocus future implementation of the programme elsewhere.

**Survey**

Buckingham and Saunders (2004, pp. 13) defines social survey as “a technique for gathering statistical information about the attributes, attitudes or actions of a population by administering standardized questions to some or all of its members”. Therefore, this study used survey as a method of gathering information of workers at Bangkok Bank. Survey data was a major part of this case study evidence. The use of surveys has been a central part of social research (Punch, 2003). In addition, survey has been a preferred research method to assess the impact of academic finance research on real-world investment practice (Amenc, Goltz, and Lioui, 2011; Smith and Goudzwaard, 1970; Block, 1999; Graham and Harvey, 2001). Survey was used because it permits researchers to collect and integrate quantitative survey data to gain a holistic understanding of the situation being studied (Baxter and Jack, 2008).
Survey in this study was characterized as factual and attitudinal, as well as explanatory. It aimed to gather basic information about the respondents’ pensions, their attitude toward the programme, and their beliefs regarding equities investment. It also asked questions about investment behaviour and sought to understand how pension members’ investment decisions were linked to their background or other explanatory variables.
Figure 3.1: Overview of Research Design

Phase 1: Analysis of an Employee’s Choice program
- Literature Review
- Data Collection #1 Initial Exploratory Interview
- Data Collection #2 Employee’s Choice Program Document and Capital Market Information & Statistics

Phase 2: Case Study
- Research site identification
- Data Collection #3 Company’s Pension Program Document & Educational Materials
- Data Collection #4 Questionnaire Survey with pension members
- Data Analysis & Write-up
3.5 Data collection methods

This study used both qualitative and quantitative data. Therefore, for this study, data sources including semi-structured interviews, documentation, official statistics, and also survey were collected as part of the case study evidence.

3.5.1 Interviews

Interview methods are not extensively used in finance, although they are widely used methodology in empirical social sciences (Gaskell, 2000). In this study, the interview method appears to be appropriate since the study also aims to understand the new pension program from various perspectives of pension stakeholders. Prior to doing the case study, initial exploratory interviews with policymakers and leading industry players were conducted in order to explore viewpoints and gain initial insights about the programme in order to understand fully the description of the employee’s choice programme as well as obtain the knowledge necessary to develop the questionnaire. Therefore, initial exploratory interviews with 15 experts with significant experience and expertise in the area of private occupational pensions were conducted. The interviewees consisted of two groups: a policymaker group and an industry player group.

The Policymakers group consisted of senior officers from the Ministry of Finance, the Securities Exchange Commission (SEC), the Association of Investment Management Companies, the Stock Exchange of Thailand, the Association of Provident Fund, and the World Bank. The Industry players group included senior managers from the asset management companies in Thailand which currently are offering the employee’s choice programme. At present, there are 19 asset management companies who hold the license to operate pension fund businesses in Thailand.
Purposive sampling was used in this study as a sampling strategy. The objective is to sample and explore the range of opinions (Gaskell, 2000). Among those 19 asset management companies, the study purposefully selected and interviewed with 9 companies with the objective to help the researcher understand the problem and the research questions (Creswell, 2009). The size of pension assets that those 9 companies managed was approximately 79.47 percent of the total industry assets according to data from the SEC as of December 2011.

Interviews took place during June to December 2010. The format of these interviews is in-depth, semi-structured with open-ended questions in order to elicit views and opinion from the participants. The objective was to create a conversation during which interviewees could talk in depth and express their view about the topic. All interviews were conducted in Thai, and digitally recorded for transcription, in order to secure accurate information and allow the interviewer to concentrate on conversation rather than taking of notes. Confidentiality was guaranteed to all respondents and permission to record interviews was obtained orally from each participant prior to each interview. Most of the interviews were face-to-face interviews except one that was conducted by phone due to the participant’s preference. The interviews were conducted for normally one to one and a half hours. The interview starts with an introduction about the research,

### Table 3.1: Interviewees List

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Interviews</th>
<th>Name List</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Policymakers</td>
<td>6</td>
<td>▪ Senior Officer, Ministry of Finance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Senior Officer, The Securities and Exchange Commission</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Senior Officer, The Stock Exchange of Thailand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Senior Officer, Association of Investment Management Companies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Senior Officer, Association of Provident Fund</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Senior Officers, World Bank</td>
</tr>
<tr>
<td>2) Asset Management</td>
<td>9</td>
<td>▪ Senior Manager /Heads of Pension Business</td>
</tr>
<tr>
<td>Companies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>
a word of thanks to the interviewee, and a request for permission to tape record the interview. The detailed interview protocol is included in Appendix A.

3.5.2 Documents and official statistic

Documentary information is considered to be relevant for almost every case study (Yin, 2009). The study used a variety of documents that relates to pension and the Employee’s Choice programme such as brochures, presentation and educational materials. Most information was obtained through the government and organizations’ websites. Secondary interview data were also collected. The Thai SEC had interviewed a number of pension fund committees and pension members from a variety of organizations and publicly disclosed those interview transcripts on its website. Official statistics, especially time-series financial data from capital markets as well as the information on household and retirement savings were collected. The major sources of financial and official statistical data are from the Bank of Thailand, the Stock Exchange of Thailand, the Ministry of Finance, the Association of Investment Management Companies, and the National Statistic Office.

3.5.3 Survey

This section outlines how the survey was conducted. Survey in this study aimed to gather basic information about respondents’ pensions as well as their investment choices. It also asked questions about investment behaviour and sought to understand how pension members make their investment decisions. Moreover, the survey also incorporated questions measuring the risk tolerance and the financial literacy of pension members.

3.5.3.1 Questionnaire design

To learn about the pension members’ response to the new pension programme and to examine their investment behaviour and capabilities—information not available through any secondary source— a questionnaire was developed. The questionnaire was developed in three steps. First, the questions were drafted with the idea that each question should translate into a specific construct that can be used to test the research
proposition and to answer research questions. To improve the response rate, the questionnaire included only questions necessary to provide the required data for the study. Second, the questionnaire was sent to the supervisor for review and feedback. Then questions were revised to make them simple, consistent and clear as possible. Finally, once the questionnaire was completed, a pilot survey was conducted to ensure that the questionnaire was well understood.

The questionnaire was designed to be self-administered questionnaires (Fink, 2002) and in hardcopy format. Using self-administered questionnaires has several advantages including lower cost, ability to deal effectively with sensitive issues, and allowing respondents to take their own time to fill in the questionnaire and consider their responses (May, 1997).

The final questionnaire is presented in Appendix B. It is divided into four sections. The first section asks pension members general information about their pension saving including the investment choice they made. The second section measures pension members’ financial literacy by using a financial literacy test taken from van Rooij et al. (2011) which is designed primarily to measure advanced financial knowledge related to investment and portfolio choice for households in the Netherlands. The financial literacy test was designed to assess knowledge about financial assets; the risk and return profiles of different assets; the working of the stock market; the concept of risk diversification; the working of mutual funds; and the relationship between bond prices and interest rates. Using the standard test has an advantage as it allows researcher to evaluate and compare financial knowledge of workers across countries.

However, since the financial literacy test used in this study is designed primarily for households in more developed countries, using the questions to measure financial knowledge of respondents in a developing country such as Thailand may have some limitations as the financial market environment including the risk and return conditions is different in Thailand compared with more developed countries. Developing the new

---

29 Some of the questions in this financial literacy test are taken from the US Health and Retirement Survey (HRS). Questions in the HRS, in the past decade, have been used to measure financial literacy in the U.S. and other countries.
financial literacy test to better fit the financial conditions in Thailand is suggested for the future research.

In addition, the third section measures members’ level of risk tolerance using the questions developed by the Thai Securities Exchange Commission (SEC). The last section gathers general background and demographic information. Table 3.1 provides a summary of questionnaire questions including the source from which questions are taken or adapted.

### 3.5.3.2 Questionnaire collection

In order to collect members’ detailed data on their pension, level of risk tolerance, level of financial literacy, and demographic variables, 400 sets of hard-copy questionnaires were sent out to the pension members using a convenient sampling (Babbie, 1990). Questionnaires also contained the introductory letter which briefly described the objective of the study. Confidentiality was guaranteed to all respondents. The surveys were sent out during March and April 2012 and respondents were asked to return the surveys by the end of May 2012. There were 236 responses or a response rate of 59 percent, of which 232 responses were useable. This response rate is considered to be relatively high judging from the length of the questionnaire (five pages).

### 3.6 Data analysis

This study used multiple sources of evidence generated from both qualitative and quantitative methods. Therefore, the data analysis procedure followed both the procedure of analysing qualitative data and also quantitative data.

#### 3.6.1 Analysis of interview data and documents

Interview and document data were analysed according to the qualitative data analysis procedure based on the method outlined by Creswell (2009, pp. 185-190). The analysis procedure includes the following:

1) Organizing and preparing data for analysis by reading through transcripts
2) Reading through all the data to obtain a general sense of the information
3) Organizing the materials into categories
4) Develop themes
5) Presenting the findings of the analysis in a narrative form
6) Interpreting the meaning of the data.

In this study, all raw data from interview transcripts were reviewed and organized in order to identify themes. Then, these themes were presented in a narrative form supported by actual quotations and specific evidence.

3.6.2 Analysis of the survey

This study analysed survey data using both descriptive and statistical analysis. All the analysis was done using STATA/IC version 12 due to its capability of doing advanced regression analysis such as probit and ordered logistic regression. Moreover, STATA has gained considerable popularity among social scientists, especially survey researchers, in recent years (Lavrakas, 2008). First, basic descriptive statistics of the survey data were summarised in the text and reported in tabular form. Then, to test the hypotheses developed in this study, a complex statistical analysis technique such as regression was used.

3.6.2.1 Descriptive analysis

In this study, all descriptive analysis of survey responses was presented in narrative and also in cross tabulation form as well as in graphical form.

3.6.2.2 Statistical and econometric analysis

A questionnaire allows a researcher to examine patterns among replies to questions and explore the relationships between variables that the questions represent (May, 1997). Bivariate analysis and multiple regression models were used in order to analyse the survey data and relationship between variables. This study used multiple regression models such as probit, and ordered logit regression to analyse the relationship between the dependent variable and independent variables depending on the nature of the
dependent variable. Previous literatures typically employed regression analysis to examine an individual’s investment decision. For example, Papke (2003) employed linear regression to examine factors that affect asset allocation in DC plans. Guiso, Haliassos, and Jappelli (2003) used probit regression to examine the determinants of households’ stock market participation and linear regression for analysing equity allocation in households’ portfolios.

**Probit regression**

This model aims to explore what type of individual that takes advantage of this new program (Hypothesis 1 and 2). One of the objectives of the new pension programme is to encourage member to make active investment decisions. This study hypothesizes that workers who have greater financial knowledge or have received financial advice are more likely to make active investment decisions. The questionnaire asks whether pension members actively made investment choice decision for their pension plans. Since the decision whether or not they made active investment decision is considered to be a binary outcome variable, probit regression was employed since it is the data analytic tool of choice when the equation to be estimated has a dichotomous dependent variable (Pampel, 2000).

The probit model is as follows:

\[
Pr (ACTIVE_i = 1) = \beta_0 + \beta_1 AGE_i + \beta_2 GENDER_i + \beta_3 MARITAL_i + \beta_4 CHILDREN_i + \beta_5 WEALTH1_i + \beta_6 WEALTH2_i + \beta_7 ADVICE_i + \beta_8 FINLIT_i + \epsilon_i
\]  

(1)

In Equation 1, the dependent variable is an active choice dummy (ACTIVE), which takes the value of one if the worker has reported that they made active choice on his or her own decision and zero otherwise. The model aims to investigate whether respondents who have received financial advice or those who have higher level of financial literacy are more likely to actively participate in the new pension programme even after controlling for the demographic factors. The independent variable is the respondents’ financial literacy score. Control variables include demographic variables such as age, a gender dummy, a marital status dummy, having children dummy, and two wealth dummies corresponding to those who accumulate between THB1-3 million and those who accumulate more than THB3 million in their financial wealth. In addition, the
model also includes an advice dummy to control for differences between those who received financial advice and those who did not. The description of all variables is set out in Table 3.2.
<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Variable Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIVE</td>
<td>Dummy variable, equals one if respondent actively participate in the new pension programme</td>
</tr>
<tr>
<td>CHOICE</td>
<td>Type of investment choice selected by respondent (1= very low risk policy; 2= low risk policy; 3= moderate risk policy; 4= high risk policy; 5= very high risk policy)</td>
</tr>
<tr>
<td>EQUITY</td>
<td>Preferred equity allocation selected by respondent (1= none; 2= 20% or less; 3= 21%-40%; 4= 61%-80%; 5= 81%-100%)</td>
</tr>
<tr>
<td>AGE</td>
<td>Respondent’s age</td>
</tr>
<tr>
<td>GENDER</td>
<td>Dummy variable, equals one if respondent is male</td>
</tr>
<tr>
<td>MARITAL</td>
<td>Dummy variable, equals one if respondent is married</td>
</tr>
<tr>
<td>CHILDREN</td>
<td>Dummy variable, equals one if respondent has at least one children</td>
</tr>
<tr>
<td>WEALTH1</td>
<td>Dummy variable, equals one if respondent has financial wealth between THB 1 million to THB 3 million</td>
</tr>
<tr>
<td>WEALTH2</td>
<td>Dummy variable, equals one if respondent has financial wealth greater than THB 3 million</td>
</tr>
<tr>
<td>RETURN1</td>
<td>Dummy variable, equals one if respondent’s expected return for pension assets is between 6% and 10%</td>
</tr>
<tr>
<td>RETURN2</td>
<td>Dummy variable, equals one if respondent’s expected return for pension assets is between 11% and 15%</td>
</tr>
<tr>
<td>RETURN3</td>
<td>Dummy variable, equals one if respondent’s expected return for pension assets is greater than 15%</td>
</tr>
<tr>
<td>RETURN4</td>
<td>Dummy variable, equals one if respondent does not know his or her expected return for pension assets</td>
</tr>
<tr>
<td>ADVICE</td>
<td>Dummy variable, equals one if respondent has received financial advice for pension investment or retirement planning</td>
</tr>
<tr>
<td>RISK</td>
<td>Dummy variable, equals one if respondent has higher than average risk tolerance score based on the risk tolerance test</td>
</tr>
<tr>
<td>FINLIT</td>
<td>Financial literacy score based on the financial literacy test</td>
</tr>
</tbody>
</table>
**Ordered logistic regression (Ordered logit)**

The research question in this study asks whether the new pension programme achieves its stated objective. The study also asks if the level of financial literacy does have an effect on workers’ investment choice decisions. In order to answer these questions, the study hypothesizes that workers are able to make informed investment decisions according to what portfolio theory and lifecycle investing theory have suggested. Specifically, it hypothesizes that younger workers or higher risk tolerance workers are likely to invest more in risky assets (or choose riskier choices). Moreover, the study hypothesizes that financial literacy affects investment choice decisions. In order to test these hypotheses, the ordered logistic regression was employed to test the effect of age (hypothesis 3), risk tolerance (hypothesis 4), and financial literacy (hypothesis 5) on investment choice decisions.

In this case study, since the investment choice offered to member ranges from low risk to high risk, these investment choices are considered to be a discrete ordered outcome. Therefore, the ordered response method such as ordered logit is appropriate in this study to examine the investment choice decision since it deals primarily with the analysis of categorical (nominal or ordinal) dependent variables with more than two categories (Menard, 2002). For the equity allocation decision, the questionnaire asks members to choose their equity allocation from none to all stocks, which again are considered to be a discrete ordered outcome; therefore, ordered logit is chosen as an appropriate model.

The first ordered logistic regression model is as follows:

\[
Pr (\text{CHOICE}= h | x_i) = \beta_0 + \beta_1 \text{AGE}_i + \beta_2 \text{GENDER}_i + \beta_3 \text{MARITAL}_i + \\
\beta_4 \text{CHILDREN}_i + \beta_5 \text{WEALTH1}_i + \beta_6 \text{WEALTH2}_i + \\
\beta_7 \text{RETURN1}_i + \beta_8 \text{RETURN2}_i + \beta_9 \text{RETURN3}_i + \\
\beta_{10} \text{RETURN4}_i + \beta_{11} \text{ACTIVE}_i + \beta_{12} \text{ADVICE}_i + \beta_{13} \text{RISK}_i + \\
\beta_{14} \text{FINLIT}_i + \epsilon_i,
\]

\[ h = 1, 2, \ldots, M-1 \quad (2) \]

where the subscription \( i \) refers to specific independent variables \( X \) and the subscript \( h \) refers to specific values of the dependent variable \( Y \). For dependent variables with some number of categories \( M \), this requires the calculation of \( M-1 \) equations, one for each
category relative to the reference category, to describe the relationship between the
dependent variable and the independent variables.

In the first ordered logistic regression model (Equation 2), investment choices within
pension programmes are the dependent variables. Currently, there are five choices for
pension members and each investment choice has different asset allocations and risk
profile. For independent variables, explanatory variables include respondent
characteristics and control variables, return objective, risk tolerance level, and financial
literacy score.

In addition, the study aims to explore how workers make investment decisions under
pension plans with more complex design in which they are allowed to make their own
asset allocation strategies. Specifically, the study asks how they make asset allocation
decisions in terms of equity allocation. Therefore, in order to answer this question, the
second ordered logistic regression model is developed as follows:

\[
Pr (EQUITY_i = h | x_i) = \beta_0 + \beta_1AGE_i + \beta_2GENDER_i + \beta_3MARITAL_i + \\
\beta_4CHILDREN_i + \beta_5WEALTH1_i + \beta_6WEALTH2_i + \\
\beta_7RETURN1_i + \beta_8RETURN2_i + \beta_9RETURN3_i + \\
\beta_{10}RETURN4_i + \beta_{11}ACTIVE_i + \beta_{12}ADVICE_i + \beta_{13}RISK_i + \\
\beta_{14}FINLIT_i + \epsilon_i, \\
h = 1, 2, \ldots, M-1
\]  

(3)

where the subscription \( i \) refers to specific independent variables \( X \) and the subscript \( h \)
refers to specific values of the dependent variable \( Y \). For dependent variables with some
number of categories \( M \), this requires the calculation of \( M-1 \) equations, one for each
category relative to the reference category, to describe the relationship between the
dependent variable and the independent variables.

In the second ordered logistic regression model (Equation 3), equity allocation
preferences are the dependent variables. The survey asks workers the hypothetical
question regarding their preferred asset allocation strategy if the programme allows
them to make their own asset allocation decisions. The second ordered logistic
regression model is similar to the first model but the dependent variable is now the
preferred equity allocation selected by workers rather than the chosen investment
choice. There are five equity allocation choices for pension members as follows: 1) 0%, 2) 20% or less, 3) 21%-40%, 4) 41%-60%, 61%-80%, and 5) 81%-100%. For independent variables, explanatory variables include respondent characteristics and control variables, return objective, risk tolerance level, and financial literacy score.

3.7 Limitations of the Research

This study also has several limitations. First, the most apparent is the generalisation of the findings which is typical for a case study research. This study used a single-company case study design rather than a multiple case study design. Therefore, the findings in this study are specific to the case study of only one company rather than to the broader Thai context. However, this study was not intended to be characterized as “statistical generalisation” but as “analytic generalisation” (Yin, 2009) as it attempted to use previously developed theory as a template which it then compared with the empirical results of the case study. In other words, the case study is expected to provide insight and understanding of a particular issue or to help refine a theory (Stake, 1995). The major role of the case was to provide insight into a new pension programme in order to draw an analytical generalisation about how effective the new pension programme is.

A single-case study can be used as a “falsification” test (Popper, 1959). Flyvbjerg (2006, pp. 228) argues that “Falsification is one of the most rigorous tests to which a scientific proposition can be subjected: If just one observation does not fit with the proposition, it is considered not valid generally and must therefore be either revised or rejected.” Since this case study attempted to reveal whether a pension plan with the new pension programme is effective, if it was found to be ineffective, this case study can be used to falsify the programme proposition. In this way, this single-case study can be significant because it can stimulate further investigation of the effectiveness of the new pension programme.

The second limitation of this study deals with the case selection. For doing a single-case study, Yin (2009) suggests to choose the case that is likely to yield the best data. Therefore, Bangkok Bank was chosen as it was the employer of the researcher of this
study so the researcher was able to have full access to information about its pension programme including the programme description, pension plan structure, and workplace financial education materials. However, studying the researcher’s own organization or “Backyard” research (Glesne and Peshkin, 1992) may lead to compromises in the researcher’s ability to disclose information in qualitative data collection (Creswell, 2009, pp. 177). Therefore, in order to improve confidence in the accuracy of the findings, this study employs multiple strategies of validity suggested by Creswell (2009). This study used rich, thick descriptions of the setting in order to add to the validity of the findings. In addition, this study presented both positive and negative information to improve its validity.

Finally, the third limitation deals with the sampling method. For interviews, participants were purposefully selected rather than randomly selected. Therefore, the interview data in this study may not be representative of all policymakers and industry experts from asset management companies. This sampling strategy was used mainly to help the researcher understand the problem and the research questions (Creswell, 2009) and to explore the range of opinions (Gaskell, 2000). In addition, the researcher was able to use his knowledge of the investment community to handpick key people who, in his judgment, best represented the range of those experts who would best know about the new pension programme. Although, the study employed purposive sampling, but, the asset management companies that this study purposefully selected have altogether relatively large market share. The total size of pension assets that those selected companies managed were approximately 79.47 percent of the total industry assets according to data from the SEC as of December 2011.

For a survey, the study used convenience sample rather than a random sample, in which each individual in the population has an equal probability of being selected (Creswell, 2009). A convenience sample is a nonprobability sample, in which respondents are selected based on their convenience and availability (Babbie, 1990). Therefore, the findings of the survey may not represent the total workers in the new pension program. The advantage of convenience sampling is that it is less expensive than other methods and because other sampling strategy may not be feasible (Rubin and Babbie, 2013). However, the disadvantage of this sampling method is that the data may not be accurately representative of the populations (Black, 1999). As a result, to minimize the
bias, this study attempted not to overgeneralise their findings (Rubin and Babbie, ) and emphasized that the interpretation of these findings must be done with care.

### 3.8 Summary

This chapter describes the research design and methods for conducting the research. This mixed method study employed both qualitative data collection methods to gain a better understanding of the programme and to identify key preconditions of the programme and also quantitative data methods to determine if the programme was effective in achieving its stated objectives. A case study of a large organization in Thailand was selected. A survey was conducted to collect workers’ pension information and investment choice as well as to measure their risk tolerance and level of financial literacy. The survey results were used to assess whether workers are able to make informed decisions and to understand how such decisions are made. Descriptive and econometric analyses were used to analyse workers’ investment choice decisions in light of finance theory and the traditional financial advice.
CHAPTER 4: THE PENSION SYSTEM IN THAILAND

4.1 Introduction

The objective of this chapter is to describe the current pension system in Thailand. In this chapter, Section 4.2 provides the history and background of pension systems in Thailand. Section 4.3 describes the public pension system whereas section 4.4 describes the private pension system. Section 4.5 discusses problems in the Thai pension system in terms of asset allocation, coverage, adequacy and sustainability. Finally, Section 4.6 summarises the chapter.

4.2 An overview of the Thai pension and retirement income system

Pensions have become a serious issue globally, including in Thailand, as the world populations are moving toward aging societies with rising life expectancies. The recent global financial crisis, with widespread unemployment and weak global economies, may continue to threaten the pension security for workers around the world. Volatile and unpredictable financial markets have also altered the landscape in which pension systems must be managed. Current pension programmes need to be improved, rethought and reformed in order to keep up with these challenges.

Because of the looming global pension crisis, there have been efforts from the Thai government to reform its pension system. In order to improve pension systems, Thailand has sought advice and received technical assistance from several international financial or economic organizations such as the World Bank, the Asian Development Bank (ADB), the International Labour Office (ILO), and the Organization for Economic Cooperation and Development (OECD) in the form of the service of a pension reform and actuarial experts (Krongkaew, 2007).
Pensions are increasingly important as a source of retirement income for Thai people. Traditionally, Asians, including Thais, have relied upon their children to support their material needs in their old age (Park, 2009). Thailand is no exception, as a recent survey from the National Statistical Office shows that 38.9 percent of survey participants expect to have retirement income from family members (National Statistical Office, 2009). However, it may become more difficult to rely on income from family members since Thailand will have a more aged population. The old-age dependency ratio, which is the ratio of population aged 65+ per 100 population aged 15-64, will increase from only 12.6 percent in 2010 to 41.4 percent in 2050 (United Nations, 2011). With the changing demographical structure, it is becoming more difficult to rely solely on supports from family members in the future. Thai citizens need to be more responsible for their income after retirement. This suggests a greater role for formal pension systems in Thailand.

The first pension system in Thailand dates back more than 100 years to the reign of King Rama V with the enactment of the Pension Act in 1902 (Kanjanaphoomin, 2004). The Act had continued its use (with two changes in 1939 and 1951) for government officials and was the only pension provision in Thailand until 1987 when the government introduced a private sector provident fund system. In 1990, a social security system was established under the Social Security Fund Act to provide welfare protection for all employees in the formal sector, including an old age pension. Later on, the Retirement Mutual Funds (RMFs) was introduced in 2001 in order to provide a voluntary retirement saving vehicle for those who are not in the provident fund or those who need to make additional contributions. In 2009, the Old Age Allowance programme was established as a social pension in order to assure a minimum standard of living for poorest older people in Thailand.

Thailand’s current pension systems are designed primarily to achieve some absolute, minimum standard of living as ADB (2002, pp. 1) puts it:

“According to the Government’s policy statement of October 2000, the primary objectives of Thailand’s pension policy are (i) prevention of poverty among the elderly through provision of adequate wage replacement upon retirement, appropriately indexed to inflation; (ii) phased expansion of coverage to as many people as possible through a system that is financially sustainable; and (iii) reduction of labour market distortions
and promotion of savings needed to develop financial markets and stimulate economic
growth.”

ADB’s Technical Assistance to the Kingdom of
Thailand for Pension System Design

Thailand currently has various types of pension systems. Interestingly, the current
Thailand’s pension systems have all of the pillars suggested by the World Bank’s
multipillar framework described in Holzmann and Hintz (2005). Specifically, Thailand’s
pension system, summarised in Table 4.1 and 4.2, consists of a flat-rate basic pension;
a social security system with a progressive benefit formula based on contribution
period; a mandatory pension scheme for government officers and voluntary private
pensions.30 Those who are not covered by the formal pension schemes must depend on
their own savings or family support. Currently, the majority of pension systems in
Thailand serve formal workers, both in the public and private sectors. Informal workers
appear to be most at risk in terms of retirement savings. However, the Thai government
recently established the National Savings Fund (NSF) under the mandate of the National
Savings Fund Act of 2011 to provide a social safety net for Thai people including those
who are informal workers.

Table 4.1: Thailand’s current multipillar pension system

<table>
<thead>
<tr>
<th>Pillar</th>
<th>Characteristics</th>
<th>Participation</th>
<th>Thai Pension System</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Basic or Social Pension (universal or means tested)</td>
<td>Universal</td>
<td>• Old-Age Allowance</td>
</tr>
<tr>
<td>1</td>
<td>Public pension plan, publicly managed (defined benefit or notional defined contribution)</td>
<td>Mandated</td>
<td>• Social Security Fund</td>
</tr>
<tr>
<td>2</td>
<td>Occupational or personal pension plans (fully funded defined benefit or fully funded defined contribution)</td>
<td>Mandated</td>
<td>• Government Pension Fund</td>
</tr>
<tr>
<td>3</td>
<td>Occupational or Individual Retirement plans (partially or fully funded defined benefit or funded defined contribution)</td>
<td>Voluntary</td>
<td>• Provident Fund • Retirement Mutual Fund</td>
</tr>
<tr>
<td>4</td>
<td>Access to informal support (family), other formal social programmes (health care), and other individual financial and nonfinancial assets (homeownership)</td>
<td>Voluntary</td>
<td></td>
</tr>
</tbody>
</table>

Source: Holzmann and Hintz (2005) and Author

30 Apart from the major type of pension outlined above, there are also other pension systems that can be either informal or a subset of the formal systems; for example the community-based social welfare and the Private Teachers’ Provident Fund system.
Table 4.2: Current structure of pension systems in Thailand

<table>
<thead>
<tr>
<th>Group</th>
<th>Private-Sector Workers</th>
<th>Public-Sector Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Self-Employed</td>
<td>Employees</td>
</tr>
<tr>
<td>Provision</td>
<td>Public</td>
<td>Public and Private</td>
</tr>
<tr>
<td>Participation</td>
<td>Universal</td>
<td>Voluntary</td>
</tr>
<tr>
<td>Pension Type</td>
<td>- Old Age allowance</td>
<td>- Social Security</td>
</tr>
<tr>
<td></td>
<td>- Provident Fund</td>
<td>- Provident Fund</td>
</tr>
<tr>
<td></td>
<td>- Retirement Mutual Fund</td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled by Author

Thai pension assets are considered relatively small compared to the global standard. According to the global pension assets study, pension assets amounted to 78 percent of global GDP in 2012, which is significantly higher than the 72 percent recorded in 2011 and substantially higher than the 61 percent recorded in 2008 (Tower Watson, 2013). Meanwhile, as Table 4.3 shows, the ratio of the Thai pension assets relative to Gross Domestic Product (GDP) was only 19.6 percent in 2012.

Table 4.3: Thai pension fund assets to GDP (2003-2012)

<table>
<thead>
<tr>
<th>Year</th>
<th>Provident Fund Assets as % of GDP</th>
<th>Retirement Mutual Fund Assets as % of GDP</th>
<th>Government Pension Fund Assets as % of GDP</th>
<th>Social Security Fund Assets as % of GDP</th>
<th>Total Pension Assets as % of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>4.9</td>
<td>0.1</td>
<td>3.6</td>
<td>3.9</td>
<td>12.4</td>
</tr>
<tr>
<td>2004</td>
<td>4.7</td>
<td>0.2</td>
<td>3.4</td>
<td>4.5</td>
<td>12.8</td>
</tr>
<tr>
<td>2005</td>
<td>4.9</td>
<td>0.3</td>
<td>3.5</td>
<td>5.1</td>
<td>13.8</td>
</tr>
<tr>
<td>2006</td>
<td>4.9</td>
<td>0.3</td>
<td>3.5</td>
<td>5.6</td>
<td>14.4</td>
</tr>
<tr>
<td>2007</td>
<td>5.2</td>
<td>0.4</td>
<td>3.7</td>
<td>6.3</td>
<td>15.6</td>
</tr>
<tr>
<td>2008</td>
<td>5.1</td>
<td>0.4</td>
<td>3.4</td>
<td>6.3</td>
<td>15.2</td>
</tr>
<tr>
<td>2009</td>
<td>5.7</td>
<td>0.6</td>
<td>3.7</td>
<td>7.4</td>
<td>17.4</td>
</tr>
<tr>
<td>2010</td>
<td>5.7</td>
<td>0.8</td>
<td>3.7</td>
<td>8.1</td>
<td>18.3</td>
</tr>
<tr>
<td>2011</td>
<td>5.8</td>
<td>0.9</td>
<td>3.7</td>
<td>8.4</td>
<td>18.8</td>
</tr>
<tr>
<td>2012</td>
<td>6.1</td>
<td>1.1</td>
<td>3.7</td>
<td>8.7</td>
<td>19.6</td>
</tr>
</tbody>
</table>

Source: Association of Investment Management Companies and Author’s calculations. Available from http://www.aimc.or.th/23_overview_detail.php?nid=20&subid=0&ntype=4

Note: Total pension assets include assets from the Provident Fund, the Retirement Mutual Fund, the Government Pension Fund, and the Social Security Fund.
4.3 Public Pensions in Thailand

4.3.1 Old-Age Allowance (OAA)

The Old-Age Allowance (or social pensions) is the latest addition to the pension system in Thailand and is considered to be a zero pillar according to the World Bank’s multipillar model. The universal Old-Age Allowance was established in 2009 by the Regulation of the Ministry of Interior in order to assure a minimum standard of living for older people. The Old-Age Allowance is non-contributory and is funded from general taxation. It is a universal pension that provides a minimal level of protection to Thai elderly group who reach the retirement age of 60 and who no longer earn any income. The allowance, which is a lifelong scheme, is paid monthly in the amount of THB600-1,000 according to the age group. As of Jun 2009, the Old-Age Allowance programme covered 6 million people.  

4.3.2 Old-Age Pension Fund (OAPF)

The Old-Age Pension Fund (OAPF) operates as a part of the Social Security Fund which is administered by the Social Security Office under the Ministry of Labour and Social Welfare. The Social Security fund introduced the OAPF benefit in 1998. OAPF is a mandatory defined benefit scheme and is partially funded from Social Security contributions. The statutory retirement age for Social Security benefits is 55 for both women and men. The contribution rate is set at 6 percent of salary payment and is divided equally between employers and employees while another 1 percent is contributed from general government revenues. The minimum earnings needed to contribute are THB1,650 per month, and the maximum taxable earnings are THB15,000 per month. The contributions by employers and employees are tax deductible and the benefits received are tax exempted. According to the Social Security Office, as of end of 2011, it covered about 10.5 million formal workers in 404,195 private enterprises.

The old-age benefits provided by the OAPF follow a defined-benefit formula. Contributors who retire with more than one year but less than 15 years of participation will receive a lump-sum payment equal to the contributions of the employee and the

31 http://www.pm.go.th/works/old-age-pension
employer plus interest at the rate set by the Social Security Office in each year. If someone contributes for less than 12 months, their employee contributions will be returned. A person who contributes more than 15 years will receive monthly pension at the rate of 20 percent of the average salary of the last 60 months before retirement (not to exceed THB15,000). In addition, if member contributes more than 15 years, the pension replacement rate will be increased by an addition 1.5 percent for every additional year of contribution.

For example, the replacement rate of a person who starts working at the age of 25 and retires at the age of 60 will be at 50 percent of the average earning over the last 5 working years (OECD, 2009). Based on the OECD calculation, the maximum benefits is THB7,500 per month. The problem, however, arises in the case of those who earn more than THB15,000. Because the government places a ceiling for social security benefits, those who are high earners will receive less replacement rate. For example, those who earn twice than average (THB30,000) will receive only 25% replacement rate while those who earn three times more than average (THB45,000) will receive only 17% replacement rate from the OAPF.32

4.3.3 Government Pension Fund (GPF)

The Government Pension Fund (GPF) was established under the Government Pension Fund Act of 1996 to replace the previous unfunded PAYG system. Government officials who were employed before 1997 can decide whether or not to join the GPF scheme. Government officials employed after 1997 must join the GPF scheme. Contributions are 3 percent of monthly wages from the government officials and 5% from the government. For the sole benefits of members, GPF invests in compliance with ministerial regulations which states that the fund must invest in the following highly secure securities at not less than 60 percent of the fund’s total assets (e.g., cash, deposits, T-bills, government bonds, for example). Under the GPF, government officials receive the amount accumulated in the GPF scheme plus interest as a lump sum at the age of 60. Annuity payments are not available and assets are not portable. Benefits are

32 A wage ceiling in the OAPF scheme is THB15,000 which is equal to the starting salary of most workers with a bachelor degree. Therefore, the final salary for Thai workers will be significantly higher than THB15,000. Hence, the actual replacement rates for Thai workers will be much lower than 50 percent when they retire.
tax exempt on retirement. As of the end of 2012, there were 1.16 million members that are covered by the Government Pension Fund scheme. In 2010, GPF began allowing its members to make investment choices. Under its “Member Investment Choice” programme, members can choose an investment choice from four available options, ranging from low risk to high risk. Only a few members (less than 1 percent) participated in the new programme. As of July 2012, there were only 2,226 members participating in the programme, up slightly from 1,881 members in 2011.

4.4 Private Pensions in Thailand

In general, the private pensions in Thailand are relatively less important for Thai households as Ariyapruchya et al. (2007) finds that the Provident Fund represents about 7 percent while the Retirement Mutual Fund accounts for less than 1 percent of the aggregate household financial assets in Thailand. This section provides the overview of the private pension system in Thailand. Currently, the private pension system in Thailand consists of two major schemes: 1) the Provident Fund scheme which is provided by companies for their workers, and 2) the Retirement Mutual Fund scheme which provides a means of the voluntary retirement savings to those who are not in the provident fund system or who wish to make additional contributions.

4.4.1 Provident Fund (PVD)

Government enacted the Provident Fund Act in 1987 in order to provide retirement income for workers in the private sector. Provident funds are generally established in large companies. The Provident fund is set up voluntarily between the employer and employees. The Thai Provident Fund follows a defined contribution (DC) pension plan. Provident Funds are managed by a fund committee which comprises representatives from the employer and employees. The fund committee then chooses professional asset management companies to manage the fund under general regulations set up by the Thai Securities and Exchange Commission (SEC). Previously, the Fiscal Policy Office under the Ministry of Finance was appointed as fund registrar. Later on in

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33 GPF has added the lifecycle fund as the fifth option for its members in March 2013.
34 http://www.gpf.or.th/eng2012/member_profile.asp
35 However, it is mandatory for firms listed on the stock exchange of Thailand.
2000, the responsibility was transferred to the Securities and Exchange Commission, which had already supervised and regulated mutual and private funds.

According to the Thai Securities Exchange Commission and the Association of Investment Management Companies data, as of the end of 2012, there were 12,753 employers participating in the provident fund scheme which covered around 2.44 million members. There is currently approximately THB696 billion invested in the Provident Fund system, split between 19 authorized fund managers. According to these data, on average, each employee had accumulated about THB285,000 (US$9,500) in each of their accounts.

Table 4.4: Percentage of company offering provident funds

<table>
<thead>
<tr>
<th>Year</th>
<th>Registered Company in Thailand</th>
<th>Companies offering Provident Funds</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>433,090</td>
<td>4,660</td>
<td>1.1%</td>
</tr>
<tr>
<td>2002</td>
<td>442,515</td>
<td>5,166</td>
<td>1.2%</td>
</tr>
<tr>
<td>2003</td>
<td>456,799</td>
<td>5,760</td>
<td>1.3%</td>
</tr>
<tr>
<td>2004</td>
<td>479,118</td>
<td>6,338</td>
<td>1.3%</td>
</tr>
<tr>
<td>2005</td>
<td>502,372</td>
<td>7,119</td>
<td>1.4%</td>
</tr>
<tr>
<td>2006</td>
<td>528,844</td>
<td>7,892</td>
<td>1.5%</td>
</tr>
<tr>
<td>2007</td>
<td>544,033</td>
<td>8,692</td>
<td>1.6%</td>
</tr>
<tr>
<td>2008</td>
<td>555,437</td>
<td>9,545</td>
<td>1.7%</td>
</tr>
<tr>
<td>2009</td>
<td>552,857</td>
<td>10,355</td>
<td>1.9%</td>
</tr>
<tr>
<td>2010</td>
<td>561,933</td>
<td>10,996</td>
<td>2.0%</td>
</tr>
<tr>
<td>2011</td>
<td>507,375</td>
<td>11,663</td>
<td>2.3%</td>
</tr>
<tr>
<td>2012</td>
<td>528,757</td>
<td>12,753</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

Source: Association of Investment Management Companies and the Ministry of Commerce

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36 Provident fund Report 2012
37 Assuming US$1 = THB30
Table 4.5: Asset size of the provident funds in Thailand

<table>
<thead>
<tr>
<th>Year</th>
<th>Provident Fund Assets</th>
<th>Growth of Provident Fund NAV (%)</th>
<th>Provident Fund Assets / GDP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>222,901</td>
<td>10.73</td>
<td>4.34</td>
</tr>
<tr>
<td>2002</td>
<td>244,823</td>
<td>9.83</td>
<td>4.49</td>
</tr>
<tr>
<td>2003</td>
<td>287,329</td>
<td>17.36</td>
<td>4.86</td>
</tr>
<tr>
<td>2004</td>
<td>305,462</td>
<td>6.31</td>
<td>4.71</td>
</tr>
<tr>
<td>2005</td>
<td>345,896</td>
<td>13.24</td>
<td>4.88</td>
</tr>
<tr>
<td>2006</td>
<td>386,657</td>
<td>11.78</td>
<td>4.93</td>
</tr>
<tr>
<td>2007</td>
<td>441,720</td>
<td>14.24</td>
<td>5.18</td>
</tr>
<tr>
<td>2008</td>
<td>465,296</td>
<td>5.34</td>
<td>5.12</td>
</tr>
<tr>
<td>2009</td>
<td>514,237</td>
<td>10.52</td>
<td>5.69</td>
</tr>
<tr>
<td>2010</td>
<td>574,075</td>
<td>11.64</td>
<td>5.68</td>
</tr>
<tr>
<td>2011</td>
<td>615,259</td>
<td>7.17</td>
<td>5.84</td>
</tr>
<tr>
<td>2012</td>
<td>696,144</td>
<td>13.15</td>
<td>6.13</td>
</tr>
</tbody>
</table>


Note: NAV is the Net Asset Value in Thai Baht.

Both employer and employee must contribute to the fund. Current law states that Employee’s contributions must be at least 2 percent but not to exceed 15 percent of the salary. The law also states that the employer’s contributions must be at least equal or higher than the employee’s contributions, implying that employees cannot contribute at the rate higher than the employer’s contribution rate. As shown in the Table 4.6, according to the Thai SEC data, more than half of employers and employees contribute between 2-5 percent of the salary to the provident fund. If employee’s contributions and employer’s matching contributions are combined, data suggest that more than half of workers in the Provident Fund system save between 4 to 10 percent of their salary each month. These contribution rates are relatively low when compared to other countries in ASEAN such as Singapore (33 percent) and Malaysia (23 percent) and may lead to pension inadequacy problem in the future. Moreover, workers in Thailand have relatively low accumulation periods as the eligible retirement age for Thai workers to withdraw their Provident Fund is 55 which is 10 years lower when compared to the typical average retirement age of 65 for OECD countries (OECD, 2011). The contributions paid to the pension fund by employees and employers are tax deductible and the benefit payment is tax exempted as long as the employee has been enrolled in the scheme for at least five years.
### Table 4.6: Contribution rates to the provident fund

<table>
<thead>
<tr>
<th>Contribution Rates (%)</th>
<th>Employees</th>
<th>Employers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.00-3.00</td>
<td>27%</td>
<td>23%</td>
</tr>
<tr>
<td>3.01-5.00</td>
<td>35%</td>
<td>32%</td>
</tr>
<tr>
<td>5.01-10.00</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>10.01-15.00</td>
<td>13%</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Source: SEC at http://capital.sec.or.th/webapp/thaipv/apps/popreps/qrate_sum.php*

The retirement benefits depend on the contributions plus investment returns over the working life. Investment returns are determined by asset allocation, investment performance of pension provider, and administrative costs. In the Thai private pension context, companies do not offer minimum or guaranteed investment returns. Table 4.7 shows asset allocation of the Provident Fund during 2003 to 2012. Typically, provident funds invest mainly in low-risk assets such as bank deposits, Treasury bills, and Government Bonds. Risky assets such as corporate bonds and equities normally represent less than 40 percent of the total portfolio. During 2003-2012, equity allocation has been in the range of 7 to 15 percent. Equity allocation declined substantially from 11 percent in 2007 to only 7 percent in 2008 due to the financial crisis before it rebounded back to 14 percent of the total assets as of the end of 2012.

Recently, the Employee’s Choice (EC) programme was introduced for workers in the Provident Fund scheme. The new pension programme was developed and promoted by the Thai Securities Exchange Commission (SEC). For the first time in Thailand, the EC programme permits workers to have more freedom to direct their own pension assets by choosing investment choices that are appropriate to their needs. The programme has increasingly gained popularity from plan sponsors. According to the Thai Securities Exchange Commission data, as of the end of 2012, there were 4,156 employers (about 33.7 percent) that had adopted the EC programme and allow their employees to make their own investment decisions.
Table 4.7: Asset allocation of the provident funds

<table>
<thead>
<tr>
<th>Year</th>
<th>Deposits and Promissory %</th>
<th>T-Bills and Government Bonds %</th>
<th>Corporate Bonds %</th>
<th>Stocks %</th>
<th>Others %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>117,564 41%</td>
<td>53,338 19%</td>
<td>59,645 21%</td>
<td>42,252 15%</td>
<td>14,416 5%</td>
</tr>
<tr>
<td>2004</td>
<td>126,931 41%</td>
<td>73,298 24%</td>
<td>56,492 18%</td>
<td>41,880 14%</td>
<td>6,841 2%</td>
</tr>
<tr>
<td>2005</td>
<td>124,067 36%</td>
<td>109,195 31%</td>
<td>70,273 20%</td>
<td>35,868 10%</td>
<td>6,472 2%</td>
</tr>
<tr>
<td>2006</td>
<td>143,524 37%</td>
<td>107,363 28%</td>
<td>90,866 23%</td>
<td>36,640 9%</td>
<td>8,245 2%</td>
</tr>
<tr>
<td>2007</td>
<td>99,062 22%</td>
<td>183,220 41%</td>
<td>94,124 21%</td>
<td>50,449 11%</td>
<td>14,844 3%</td>
</tr>
<tr>
<td>2008</td>
<td>117,908 25%</td>
<td>198,034 42%</td>
<td>101,808 22%</td>
<td>34,594 7%</td>
<td>12,946 3%</td>
</tr>
<tr>
<td>2009</td>
<td>100,819 19%</td>
<td>266,369 51%</td>
<td>78,377 15%</td>
<td>52,589 10%</td>
<td>16,082 3%</td>
</tr>
<tr>
<td>2010</td>
<td>122,636 21%</td>
<td>273,762 48%</td>
<td>80,912 14%</td>
<td>76,654 13%</td>
<td>20,112 4%</td>
</tr>
<tr>
<td>2011</td>
<td>225,690 37%</td>
<td>211,005 34%</td>
<td>85,667 14%</td>
<td>70,092 11%</td>
<td>22,805 4%</td>
</tr>
<tr>
<td>2012</td>
<td>192,740 28%</td>
<td>244,028 35%</td>
<td>123,765 18%</td>
<td>99,499 14%</td>
<td>36,113 5%</td>
</tr>
</tbody>
</table>

Average 31% 35% 19% 11% 3%

Source: Securities and Exchange Commission and the Association of Investment Management Companies
4.4.2 Retirement Mutual Fund (RMF)

The retirement mutual funds (RMFs) were established in Thailand in 2001. The RMFs aim to provide a means of the voluntary retirement savings to those who are not in the provident fund system or who wish to make the additional contributions. Most asset management companies in Thailand currently offer the retirement mutual fund products to their clients. Typically, investors are able to choose the type of fund that matches their risk and return profiles such as money market fund, bond fund, equity fund, etc. Investors are allowed to switch their investment from one fund to other funds or to other fund managers, but they are not allowed to withdraw these funds before reaching the retirement age of 55, without tax penalty.

The contributions to the Retirement Mutual Funds are tax deductible. Retirement benefits are paid in the form of a lump sum and also exempted from tax. To obtain the full tax benefit, the rate of contributions must be restricted to 3-15 percent of income and subject to a maximum contribution of THB500,000 per annum. Investors must invest in the RMF at least once a year with at least 3 percent of the annual earnings or at least THB5,000 whichever is lower, and hold the funds until the age of 55. Based on the Association of Investment Management data, as of the end of 2011, the Retirement Mutual Funds assets were at THB92.8 billion.

4.5 Problems of the Thai pension and retirement income system

Pension systems in Thailand are explained in the previous section. This section analyses current problems relating to the Thai pension and retirement income system, including issues in pension asset allocation, coverage, adequacy, and sustainability.

4.5.1 Pension Asset Allocation

Different from the developed markets, pension funds in Thailand are conservatively managed with most of the pension assets concentrated in the low risk assets such as Treasury Bills and Deposits. This has raised concern on the adequacy of the retirement
income since this conservative strategy may protect against investment risk, but not against inflation risk if the investment return is too low.

Previously, in developed markets, equity investments generally account for more than half of the total pension assets. Recently, the asset allocation pattern has shifted more towards bond investments. According to the Towers Watson’s global pension assets study, at the end of 2012, the average equity allocation of the seven largest pension markets declined from 61 percent in 1999 to only 47.3 percent in 2012 (Towers Watson, 2013). The situation in Thailand is completely different. As Table 4.8 shows, most of the pension assets in Thailand concentrate in the low risk assets such as Treasury Bills, Government Bonds, and Bank Deposits and the equity allocation remained relatively low.

<table>
<thead>
<tr>
<th>Table 4.8: Thai pension asset allocation in 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stocks</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Government Pension Fund</td>
</tr>
<tr>
<td>Social Security Fund</td>
</tr>
<tr>
<td>Provident Funds (Private Occupational Pension)</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

Source: GPF, SSO, and SEC. Equity allocation of the Government Pension Fund includes both domestic and foreign equities; Data are as of Dec 2012

In general, asset allocation helps diversify the investment risk and it has to be managed in a way that the fund can achieve its return and risk objectives. Too cautious investment policy would bring in too little return, and make it unable to meet return objectives, while too risky investment policy could jeopardize the future retirement security of the members. It is a question of how to maintain an appropriate balance between return and risk.

Obviously, from the empirical data, pension funds in Thailand have been focusing mainly on capital preservation rather than growth. They give more weight to risk objective rather than seeking high return. Kanjanaphoomin (2004) suspects that the lack of broad range of quality instruments, due to relatively small and underdeveloped financial and capital markets, is the major obstacle for pension funds in achieving efficient diversification. This has raised concern over the adequacy of the participants’
retirement income as returns from low risk assets such as T-bills have been declining in recent years and returns from bonds are expected to remain low for many years to come.

4.5.2 Coverage

Pension coverage in Thailand is largely limited to public workers and formal workers in the private sector. There was approximately 39.6 million total workforce in Thailand based on NSO’s 2012 employment survey.\(^{38}\) Interestingly, the informal workers accounted for 62.6 percent or 24.8 million, while only 37.4 percent or 14.8 million are formal workers. As shown in table 4.9, the Thai pension system now covers an estimated 13 million workers or only 33 percent of the total workforce through the Government Pension Fund, Provident funds, and the Social Security Fund. This leads to significant inequality among the retired workers. For public workers, all government employees are covered by either pension, Government Pension Fund, or Provident Fund. For formal workers in the private sector, 9.4 million workers are covered by Social Security. On the other hand, there are only 2.4 million workers that are members of the private pension since it is a voluntary pension type.

Table 4.9: Number of pension members in 2012

<table>
<thead>
<tr>
<th></th>
<th>Number of pension members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Pension Fund (GPF)</td>
<td>1,164,085</td>
</tr>
<tr>
<td>Social Security Fund (SSO)</td>
<td>9,425,478</td>
</tr>
<tr>
<td>Provident Funds (PVD)</td>
<td>2,441,923</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13,031,486</td>
</tr>
</tbody>
</table>

*Source*: GPF, Available at: https://www.gpf.or.th/download/annual/Gpf2555.pdf  
SSO, Available at: http://www.sso.go.th/sites/default/files/R&D122009/statisticsmid3.html  
PVD, Available at: http://www.thaipvd.com/upload/annual2012.pdf

Table 4.10: Summary of pension coverage by working-group

<table>
<thead>
<tr>
<th>Informal Workers</th>
<th>Private Sector</th>
<th>Public Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pillar 0</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old Age Allowance</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Pillar 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Old Age Pension Fund</td>
<td>X</td>
</tr>
<tr>
<td><strong>Pillar 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Government Pension Fund</td>
<td>X</td>
</tr>
<tr>
<td><strong>Pillar 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Pension Fund</td>
<td>Provident Fund (Voluntary)</td>
<td>X</td>
</tr>
<tr>
<td><strong>Pillar 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal Support within their family</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source*: Compiled by Author

4.5.3 Adequacy

Retirement income adequacy has been the major concern for policymakers in Thailand. Generally, pension benefit levels should be high enough to prevent poverty and allow retirees to maintain their living standard. For Thai people, ADB (2008) suggests that the income replacement rate of 50-55 percent of average pay is adequate enough to prevent the poverty in old age. Nevertheless, to maintain a standard of living, Thai people need to achieve higher replacement rate. OECD (2009) recommends the replacement rate of 70 percent of average lifetime earnings to maintain the pre-retirement standard of living. Researchers recommend even higher replacement rates at between 75 to 80 percent (Scheiber, 2007), 75 to 90 (Alford, Farnen, and Schachet, 2004), or even 85 to 95 (Steinberg and Lucas, 2004). However, the wide variation in the suggested replacement rate clearly adds more problems to Thai workers since they may find it more difficult to make the right decision about their retirement savings.

Informal sector workers in Thailand currently have inadequate retirement income. For informal sector workers, the benefit from the basic pension for the poorest elderly group is quite low and far below the poverty line. Old Age Allowance seems to be insufficient for elderly to prevent them from poverty as the current amount paid is only THB600-1,000, which is definitely inadequate if compared to the national poverty line of THB2,422. Formal workers fare better than informal workers in terms of retirement income. For Social Security benefits, the replacement rate of a person who starts working at the age of 25 and retires at the age of 60 will be 50 percent of the average earning over the last 5 working years (OECD, 2009). However, since the Social Security benefits are not indexed, the maximum wage of THB15,000 is not revalued at retirement which lowers the pension benefit substantially in terms of purchasing power. In addition, there is no adjustment in benefits post-retirement which makes the pension’s purchasing power even worse over time.

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39 In general, the replacement rate is defined as the ratio of the pension benefits over the final earnings before retirement. It is commonly used to assess the adequacy of the pension system.

Therefore, in order to fill the pension gap, Thai workers have to acquire supplementary pensions beyond Social Security benefits. The voluntary, private pension is needed and it must be able to produce a target replacement rate of 20-30 percent in order to raise the total replacement rate to 70 percent of average pay as OECD suggested. This target replacement rate for supplementary pension needs to be higher for high earners. For those who are not covered by occupational pensions to maintain pre-retirement lifestyle, they must rely on additional saving through other voluntary individual savings such as bank deposits, life insurance, or Retirement Mutual Funds in order to achieve income replacement rate targets.

The low pension eligible age in Thailand adds more adequacy problems to Thai workers since the pension eligible age determines the investment periods over which contributions are made. In most OECD countries, average retirement age is 65 with some countries having raised retirement age to 68 (OECD, 2009). In Thailand, the normal pension age is only 55. Using the baseline assumption of labour-market entry at age 25, Thai workers will have only 30 years of contributions and investment horizon, which is relatively short and appears to be one of the shortest among Asian Countries. For example, the retirement age is 55 for Thailand, Indonesia, and Malaysia; 60 for China and Vietnam; 62 for Singapore; and 65 for the Philippines (OECD, 2012, pp. 28).

Due to low contribution rates and short investment period, Thai workers need high investment returns from their pension assets to achieve the targeted replacement rate. Take an example of a hypothetical worker who works 30 years from age of 25 to 55, and has a life expectancy of 80 years. If that worker saves regularly 10 percent in his Provident Fund account every month for 30 years, how can those savings grow large enough to replace 70 percent of his final salary for another 25 years after he retires? Simple pension mathematics suggests that the investment return must be relatively high in order to meet the targeted replacement rate. This suggests workers cannot achieve this targeted replacement rate if they invest mainly in low-risk assets with low returns.

To offset the lower expected returns, Thai workers may have to save more outside their pension plans or accept lower replacement rates and lower standards of living.

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41 OECD countries also have pension gap problems. There are at least 11 countries in which gross replacement rates from mandatory national pension systems fall below the average (OECD, 2007)
However, evidence finds that the capacity of Thai workers to save outside their pensions may be quite limited. According to the 2011 Household Socio-Economic Survey, Thai household debt to monthly income has been increased from 5.6 times in 2000 to 5.8 in 2011. Clearly, Thai workers have been facing an income problem and if they are not able to achieve high investment return for their pensions, they might have to settle for lower retirement welfare.

Undoubtedly, for workers who do not have capacity to save more, but who need to maintain or improve their living standard after retirement, high pension investment returns are greatly needed. To achieve higher return, workers need to participate in the higher risk, higher (potential) return assets such as equities. However, stock market investment contains higher investment risk and does not guarantee high return. This is a major challenge that Thai workers need to navigate if they are permitted to make investment choices under the newly promoted Employee’s Choice programme.

4.5.4 Sustainability

Sustainability is a critical issue in the Thai social security system due to the low level of contributions, the conservative way the money is invested, and the defined-benefit structure. On the other hand, the Thai private pension system does not have the sustainability issue because it is structured as a fully-funded, Defined Contribution scheme. In recent years, questions have been raised about the sustainability of the social security in Thailand. According to the Thai Capital Market Plan (2009), the Social Security Fund is forecasted to be in deficit in 2029 and is expected to be depleted completely in 2049 if there is no government assistance. As a result, it is not a surprise when Thailand was ranked 34th (with 1st meaning there is the least need for reforms and 37th the most) based on the Allianz Global Investors’ International Pension Sustainability Index in 2010 which covers 37 countries. The only countries which scored worse are India, China and Greece. Therefore, private pensions are expected to become more important in the Thai context due to their better sustainability outlook.

43 The index is designed to illustrate the pressure on governments to reform their pension systems by taking into account factors such as demographics and public finances.
4.6 Summary

In this chapter, Thai pension and retirement income systems are reviewed. Thai pension systems are challenged with low pension coverage and inadequacy as well as sustainability problems. Thailand needs an integrated and more efficient pension system to ensure financial security in retirement. The demographic transition in Thailand means fewer children to look after older generations, and saving for the future through formal schemes is becoming increasingly important for each individual.

Private pensions are expected to play a crucial and growing role to avert old age crisis for formal workers in Thailand. Private pensions are necessary for Thais because of uncertain outlook of the Social Security Fund; therefore, there is an increasing possibility that private pensions may become the major source of retirement income for Thai workers. As a result, this study focuses mainly on the private pension system, in particular the Provident Fund scheme.
5 CHAPTER 5: AN ANALYSIS OF THE EMPLOYEE’S CHOICE PROGRAMME

5.1 Introduction

This chapter analyses the new private pension program in Thailand. It has three objectives. First, it aims to explore the reasons why Thailand has adopted the self-directed pension plans. Second, it aims to explore viewpoints of different stakeholders towards the new pension programme. Third, it aims to explore the strengths and weaknesses and to discuss some of the main challenges of the program. This chapter uses both primary and secondary data for the analysis. It uses official documents, interviews with policymakers and industry experts as well as secondary data from various sources to provide a critical review and detailed analysis of the Employee’s Choice programme in Thailand in order to gain a better understanding of the programme.

In this chapter, Section 5.2 analyses the current pension programme. Section 5.3 describes and analyses the new pension programme. Next, section 5.4 discusses the strengths and weakness of the programme. Then, section 5.5 identifies the problem and discusses necessary Preconditions of the programme. Finally, section 5.6 summarises and concludes the chapter.

5.2 Analysis of the current private pension programme

The current private pension programme in Thailand has several drawbacks and limitations. First, because a pension committee acts on behalf of pension members in terms of investment decision making, members may not have an appropriate investment policy because every member in each pension plan must share the same pension policy regardless of their risk and return appetite. This raises the question about an agency problem between the pension committee and pension members since the goal conflict
may result when the goal of a pension committee is to preserve the capital while the goal of pension members is to grow the capital.

Second, the current scheme typically provides low investment return due to insufficient diversification as most pensions invest mainly in low-risk low-return assets. Contrary to US and UK which have strong equity culture (Haliassos and Hassapis, 2002; Guiso et al., 2003), private pensions in Thailand are conservatively managed with investment mainly in low-risk assets as Thai SEC explained:

> “Since the Provident fund committee needs to choose the investment policy for every member; therefore, the committee tends to opt for the least risky plan in order to preserve the capital and that normally resulted in low investment return for members”

SEC (2005)

As Table 5.1 shows, during 2003-2012, private pensions in Thailand generally allocated more than 80 percent of assets in fixed-income products, especially bank deposits and government bonds, while the average equity allocation was low at only 11.6 percent. Although investing in low risk assets such as bank deposits and government bond provides predictable returns, the typical returns from those investments have been relatively low; therefore, doing so may not grow pension assets large enough to provide adequate income after retirement.
Table 5.1: Asset allocation of provident funds, 2003-2012 (THB millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Bank deposits</th>
<th>(%)</th>
<th>Government debt securities</th>
<th>(%)</th>
<th>Corporate Bonds</th>
<th>(%)</th>
<th>Equities</th>
<th>(%)</th>
<th>Other Assets</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>117,564</td>
<td>40.7%</td>
<td>53,338</td>
<td>18.5%</td>
<td>59,645</td>
<td>20.7%</td>
<td>42,252</td>
<td>14.6%</td>
<td>15,986</td>
<td>5.5%</td>
</tr>
<tr>
<td>2004</td>
<td>126,931</td>
<td>41.3%</td>
<td>73,298</td>
<td>23.9%</td>
<td>56,492</td>
<td>18.4%</td>
<td>41,880</td>
<td>13.6%</td>
<td>8,637</td>
<td>2.8%</td>
</tr>
<tr>
<td>2005</td>
<td>124,067</td>
<td>35.6%</td>
<td>109,195</td>
<td>31.3%</td>
<td>70,273</td>
<td>20.2%</td>
<td>35,868</td>
<td>10.3%</td>
<td>9,124</td>
<td>2.6%</td>
</tr>
<tr>
<td>2006</td>
<td>143,524</td>
<td>36.9%</td>
<td>107,363</td>
<td>27.6%</td>
<td>90,866</td>
<td>23.3%</td>
<td>36,640</td>
<td>9.4%</td>
<td>10,944</td>
<td>2.8%</td>
</tr>
<tr>
<td>2007</td>
<td>99,062</td>
<td>22.3%</td>
<td>183,220</td>
<td>41.2%</td>
<td>94,124</td>
<td>21.2%</td>
<td>50,449</td>
<td>11.3%</td>
<td>18,070</td>
<td>4.1%</td>
</tr>
<tr>
<td>2008</td>
<td>117,908</td>
<td>25.2%</td>
<td>198,034</td>
<td>42.3%</td>
<td>101,808</td>
<td>21.8%</td>
<td>34,594</td>
<td>7.4%</td>
<td>15,430</td>
<td>3.3%</td>
</tr>
<tr>
<td>2009</td>
<td>100,819</td>
<td>19.4%</td>
<td>266,369</td>
<td>51.4%</td>
<td>78,377</td>
<td>15.1%</td>
<td>52,589</td>
<td>10.1%</td>
<td>20,356</td>
<td>3.9%</td>
</tr>
<tr>
<td>2010</td>
<td>122,636</td>
<td>21.2%</td>
<td>273,762</td>
<td>47.3%</td>
<td>80,912</td>
<td>14.0%</td>
<td>76,654</td>
<td>13.2%</td>
<td>24,607</td>
<td>4.3%</td>
</tr>
<tr>
<td>2011</td>
<td>225,690</td>
<td>36.5%</td>
<td>211,005</td>
<td>34.1%</td>
<td>85,667</td>
<td>13.8%</td>
<td>70,092</td>
<td>11.3%</td>
<td>26,627</td>
<td>4.3%</td>
</tr>
<tr>
<td>2012</td>
<td>192,581</td>
<td>27.4%</td>
<td>242,834</td>
<td>34.6%</td>
<td>125,132</td>
<td>17.8%</td>
<td>99,542</td>
<td>14.2%</td>
<td>41,924</td>
<td>6.0%</td>
</tr>
<tr>
<td>Simple Average</td>
<td>30.6%</td>
<td>35.2%</td>
<td>18.6%</td>
<td>11.6%</td>
<td>4.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The advantage of investing in low-risk assets such as government bonds or bank deposits is that members can avoid market risk which is outside the control of pension members. However, doing that may cause pensions to face replacement risk, the risk that pension assets are not adequate. Based on the retirement income replacement simulation conducted by the Thai Securities and Exchange Commission in 2003 using the historical return during 1975-2002, those who invest mainly in low-risk assets such as money market instruments would have to save as high as 51 percent of their income for 30 years in order to achieve 73 percent replacement rate, whereas those who invest mainly in the stock market would have save less than 15 percent to achieve similar replacement rate (SEC, 2003).

In addition, low risk investments such as bank deposits or treasury bills carry an inflation risk as well as a reinvestment risk or the risk of having to reinvest at low rates in the future (Campbell and Viceira, 2002, pp. 86-87). The paragraph below from the Employee Benefit Research Institute (EBRI), a leading organization that also focuses on pension investment gives a vivid explanation:

“If participants are overly conservative with their plan money, e.g., they prefer low-risk, low-return investments and shy away from equities, they may increase the risk of having an inadequate retirement income. Participants should be aware of the desirability of earning a rate of return in excess of the rate of inflation. When investing long term for retirement, having inflation eat way at the value of what is set aside should be a concern as well as potential nominal losses from equity investments”

EBRI (1995)

Typically, final pension size is determined by contribution rate, investment period, and investment return. This study argues that investment return is the most critical factor for retirement success for Thai occupational pension members since the average contribution rates for Thai workers are less generous while the typical investment period is short compared to developed countries. Therefore, the final pension size for Thai workers is mainly driven by the investment returns during the accumulation phase.

Despite current Thai law setting the official contribution rates between 2 to 15 percent for both employee and employer contribution, the data from the Association of Investment Management Companies (AIMC) shows that an average contribution rate from employees was only 5.5 percent while the average contribution rate from employers was almost the same at 5.9 percent. Investment period for Thai workers is also comparatively low. The official retirement age in Thailand is 55 for both women and men, substantially lower than the UK and US where the normal retirement age is 65 and 67, respectively. Therefore, those who start working at the age of 25 will have only 30 years to save and invest for their pension, compared to 40 years in the UK and 42 years in the US.
and those returns need to be high enough to compensate for low contribution and short investment period. Clearly, in the future, Thai pensions need a reform both in terms of the contribution and the retirement age as the investment return may not be large enough to compensate the shortcomings in investment period and contribution rates.

How much return do workers need to produce adequate retirement income and be able to maintain their standard of living after retirement, if they start working at 25 and retire at age 55, which is the eligible pension age for Thai workers? The results of this simulation are presented in Table 5.2 below. To illustrate, take a hypothetical worker who is an average earner as an example. For simplicity, this simulation assumes that there is no inflation. If an average earner has a constant salary of THB15,000 for all his or her career, the target income replacement rate of 70 percent means that an average earner must achieve a monthly income of THB10,500 after retirement. Assuming that an average earner can receive social security payment of THB6,375 per month, an additional THB4,125 per month is needed to achieve the target retirement income. To receive an additional THB4,125 per month, an average earner must have savings of THB990,000 at retirement (this calculation assumes that annuity return is zero with no management fee). The question is how much return an average earner needs to build a pension asset of THB990,000, if he or she contributes regularly about 11 percent of salary (about THB20,520 a year) in private pension plans for 30 years. With the basic financial calculation, an average earner has to achieve at least 3.1 percent return every year for 30 years in order to produce retirement income that replaces 70 percent of his average lifetime salary as financial advisors have suggested.

As shown in the Table 5.2, low earners (income multiple of 0.5x) and average earners (income multiple of 1x) require only 3.1 percent investment return per annum for their pension portfolios. However, the required rate of return increases substantially to 6.3 percent for those who earn twice the average. Pension arithmetic indicates that the higher the income, the higher the required return needed in order to maintain the standard of living. Moreover, the required rate of return may be higher in the real world context because there will be inflation and management fees involved in the calculations.

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45 Typically, if workers cannot seek higher return, there are three possible responses: 1) save more via personal saving, 2) adopt a lower standard of living, and 3) work longer.
Table 5.2: Example of required return for a hypothetical worker

<table>
<thead>
<tr>
<th>Income Multiple</th>
<th>0.5x</th>
<th>1x</th>
<th>2x</th>
<th>3x</th>
<th>4x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross pre-retirement income (in Thai Baht)</td>
<td>7,500</td>
<td>15,000</td>
<td>30,000</td>
<td>45,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Target Replacement Rate</td>
<td>70.0%</td>
<td>70.0%</td>
<td>70.0%</td>
<td>70.0%</td>
<td>70.0%</td>
</tr>
<tr>
<td>Target Retirement income</td>
<td>5,250</td>
<td>10,500</td>
<td>21,000</td>
<td>31,500</td>
<td>42,000</td>
</tr>
<tr>
<td>Estimated Social Security Benefit</td>
<td>3,188</td>
<td>6,375</td>
<td>6,375</td>
<td>6,375</td>
<td>6,375</td>
</tr>
<tr>
<td>Required income from occupational pension</td>
<td>2,063</td>
<td>4,125</td>
<td>14,625</td>
<td>25,125</td>
<td>35,625</td>
</tr>
<tr>
<td>Required Pension assets</td>
<td>495,000</td>
<td>990,000</td>
<td>3,510,000</td>
<td>6,030,000</td>
<td>8,550,000</td>
</tr>
<tr>
<td>Contribution Rate</td>
<td>11.4%</td>
<td>11.4%</td>
<td>11.4%</td>
<td>11.4%</td>
<td>11.4%</td>
</tr>
<tr>
<td>Year</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Saving per month</td>
<td>855</td>
<td>1,710</td>
<td>3,420</td>
<td>5,130</td>
<td>6,840</td>
</tr>
<tr>
<td>Annual Saving</td>
<td>10,260</td>
<td>20,520</td>
<td>41,040</td>
<td>61,560</td>
<td>82,080</td>
</tr>
<tr>
<td>Required Investment Return</td>
<td>3.1%</td>
<td>3.1%</td>
<td>6.4%</td>
<td>7.2%</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

Source: Author’s Calculations

According to the Association of Investment Management Companies data, Thai workers who are offered occupational pensions are generally higher-than-average earners with the average monthly salary of THB 23,570, or approximately 1.57 times more than the average earner. Therefore, in order to maintain their standard of living, these higher earners need higher investment returns. For these high earners, it is likely that the required rates of return need to be even higher because they have higher life expectancy. Empirical evidence suggests that life expectancy growth rate is higher for high earners than for low earners (Elo and Smith, 2003). Therefore, these high earners may have greater need of high investment returns to build larger pension assets in order to minimize the risk of outliving their savings.

In summary, the current pension scheme is far from perfect since it may result in an agency problem and cause workers exposure to replacement and inflation risk. As workers under the occupational pension are likely to be higher-than-average earners; therefore, they need higher investment returns to compensate for their low contribution rates and short investment horizon. But workers, at the same time, have to take higher investment risk if they need to achieve higher returns by investing in risky assets. This poses a dilemma for workers. On one hand, the risk of capital loss is higher if workers
invest their pension money in risky assets. On the other hand, if they invest only in low-risk assets and fail to achieve higher rates of return, their standard of living after retirement may have to be compromised.

5.3 The new private pension programme: An Employee’s Choice programme

5.3.1 Rationale

The new pension programme was developed and promoted by the Thai Securities Exchange Commission (SEC) as a way of allowing pension members to direct their own pension assets and to choose investment choices that are appropriate to their needs. Therefore, the new programme provides more freedom to members compared to the current programme since members are allowed to decide how to invest their account balances.46

SEC explains its rationale as follows:

“Having a single investment policy may not be proper owing to the diverse characteristics of different members such as age, risk-taking behaviour, and expected return. In addition, large investment proportion of the single investment policy is normally aimed at low-risk debt instrument and investment in risky assets is capped. Therefore, the single policy cannot satisfy all members’ needs. As a result, employee’s choice concept was established to broaden choices for employees in 2000. The employee’s choice concept enables fund members to select their own investment policies that best suit their needs. However, employee’s choice is not compulsory for employers but rather an alternative for fund members. However, fund committee needs to make certain that the members understand each different investment policy in order to avoid any mistakes that could occur. Understanding of employee’s choice concept and the readiness of employers and employees are the key issues to the success of the implementation of employee’s choice”

Securities and Exchange Commission Thailand47

“Companies and organizations consist of diverse groups of employees in terms of ages, returns expectations and risk tolerance. Provident funds with employee’s choice should serve fund members’ demands better than those with single investment policy. We, therefore, encourage employers to offer choices of investment policies that would manage retirement savings for their employees more efficiently”

Secretary, Securities and Exchange Commission Thailand (SEC, 2011a)

46 This type of program is commonly referred to as participant-directed pension plan, or self-directed plan in the US or UK.
47 http://www.thaipvd.com/content_en.php?content_id=00303
Government supports the new programme and views that the use of an Employee’s Choice (EC) programme can promote the investment culture in Thailand and encourage members to learn more about investment. In addition, it places an EC programme as a part of the government’s new 5-year Capital Market Development Plan which stated that:

“This measure aims to provide choices when investing in provident fund and Government Pension Fund, so that investors’ needs are met. It will also encourage investors to be proactive about acquiring new knowledge on financial products, so that investors can truly determine what types of products suit them”

Thai Capital Market Plan (2009)

The president of the stock exchange of Thailand believes that the EC programme can be instrumental to improve an equity culture in Thailand. As seen in the previous section, equity culture in Thailand is still poor judging from the fact that occupational pensions in Thailand typically allocate only 11.6 percent of assets in the stock market. The EC programme may encourage members to invest more in equities as the president of the Stock Exchange of Thailand has envisioned:

“One investment policy cannot optimally support employees of widely varying ages and needs. Thus, SET encourages employers having provident funds and Government Pension Fund to offer multiple investment policies for their staff to choose from – such as ‘Employee’s Choice’. Employee’s Choice will help expand investor base through institutional investors and increase long-term savings in the economic system, helping build a large fund source for the capital market and build a sustainable economy. Over the past ten years, the Government Pension Fund and provident funds have invested in equities at an average of 9-11% annually, which still has room to grow”

President, the Stock Exchange of Thailand (SET, 2010)

Besides the SEC, other organizations also support and promote the EC programme. For example, in 2010, the Stock Exchange of Thailand signed a memorandum of understanding with the Government Pension Fund and the Association of Investment Management Companies to promote the EC programme and build a long-term investment culture for Thailand (SET, 2010). In this memorandum, the Stock Exchange of Thailand would encourage listed companies to adopt the EC programme for their employees and would promote investment knowledge through various media channels. Later in 2011, to further support the EC programme, the Stock Exchange of Thailand with the Association of Investment Management Companies and the Association of Provident Funds organized the “Employee’s Choice @ Workplaces” project to provide
training for members of provident fund committees across Thailand on financial planning for retirement (SET, 2011). Under this project, provident fund committee members were recruited and trained in order to pass on knowledge in retirement planning to provident fund members.

In summary, the Employee’s Choice programme is designed to correct the limitations of the current pension programme by allowing members to have more freedom to make their own investment decisions. Moreover, the new programme should benefit the capital market as it may provide more sources of funds and lead to a more sustainable economy.

5.3.2 Ideology of the programme

The new pension programme is based on a self-directed defined contribution model constructed along the neoliberal economics ideology. Based on neoliberal ideology, policymakers typically argue that old-age protection would be effectively secured if individuals are allowed to have freedom to manage and select the saving products that are best suited to them (Whiteside, 2006, pp.687). Among those who are the chief advocates of neoliberalism are the top officials of intergovernmental organizations including the World Bank which is a leading adviser of national governments reforming and implementing pension systems (Williamson and Williams, 2005).

The Thai government has also adopted the World Bank approach of multipillar pension systems including the establishment of the DC scheme. It seems that the World Bank had influenced the Thai pension system substantially as the respondent explained when asked about the adoption of the DC scheme for the Provident Fund system:

“I think it’s a global trend. DB is risky and might not be survive in the long run due to demographical change. You know, slowing birth rate and aging society means higher burden for pension fund for younger generations. So when someone pointed out that the DB pension is going to be deficit in the future, we need to listen. Everyone believes the World Bank”.

Senior officer, SEC

The reason why Thailand adopted the self-directed pension model was not entirely because it was more effective than the current scheme. This study argues that a recent pension reform in Thailand is in part a response to the neoliberal policy promoted by
international organizations and in part to the desire to be respected as a player in world society as Thailand has sought advice and received technical assistance from several international financial or economic organizations such as the World Bank, the Asian Development Bank (ADB), the International Labour Office (ILO), and the Organization for Economic Cooperation and Development (OECD) in the form of the service of a pension reform and actuarial experts (Krongkaew, 2007).

Thailand’s decision to adopt the new pension programme can be better understood if analysed through the world society model. The world society model sees the nation-state as a “worldwide institution constructed by worldwide cultural and associational processes” (Meyer et al., 1997, pp. 1). Supranational institutions such as the World Bank are seen as carriers of world culture which define what is legitimate, and a nation-state which adheres to their advice can be viewed as a legitimate player in the world society. Therefore, it is likely that an Employee’s Choice programme is adopted and promoted partly because Thai policymakers desire international legitimacy in a world dominated by neoliberal institutions.

The Employee’s Choice programme is viewed as an attempt to bring the current private pension system closer to the international standard as one respondent argued:

“Employee’s Choice is our idea. It goes back to 1997 when we had financial crisis in Thailand. The Thai government wanted to improve the fund management industry, making it on par with international standard”

Senior officer, SEC

The intention of the Thai SEC to make pension fund systems in Thailand to be on par with the international standard supports the world society model. By adopting the neoliberal based programme, Thailand is acting in a way that is consistent with world culture in an effort to demonstrate to the world society that Thailand should be seen as a legitimate actor in the world society. Williamson et al. (2006, pp. 169) described that “national goals of economic progress and social justice are preached by carriers of world culture and in turn are sometimes adopted by nation-states not because internal actors truly view them as viable national goals, but because adherence to such ideals give the state legitimacy in the world society”. The EC programme may be initiated partly because policymakers need to have legitimacy in the world economy.
5.3.3 Structure and plan design of the EC programme

The Employee’s Choice programme is based on the self-directed defined contribution (DC) pension plan framework which is widely used among Anglo-Saxon countries. Under the new programme, workers are able to direct their own asset allocation with their own discretion and allowed to change their choice at least once a year. Nevertheless, the pension fund committee remains important as it has to be responsible for fund manager selection and pension plan design.

For plan design, basically, there are two main designs: 1) simple plan and 2) advanced plan. The simple design provides workers with the number of choices, ranging from low risk to high risk. The number of investment choice offered is varied by company. Each investment choice has a pre-determined asset allocation strategy. For example, a low risk option invests 100 percent of the portfolio in bonds, a medium risk option invests 50 percent each in bonds and stocks, and a high risk option invests 100 percent in stocks. On the contrary, the advanced plan provides more freedom for workers to make their own asset allocation and investment strategy. This plan generally offers several funds such as bond fund, money market fund, and equity fund for workers to choose from. Then, workers are allowed to discretionarily allocate their pension assets among those funds. For example, the employees of the Securities Exchange Commission (SEC) are offered two funds: a bond fund and an equity fund. Then, each employee decides on how much to allocate into those two funds. On the other hand, a pre-determined asset allocation platform typically offers members few choices, ranging from low-risk to high-risk.

5.3.4 Attitude towards the new programme

This section examines pension stakeholders’ attitudes to the new pension programme. Overall, most of the pension stakeholders had positive attitude toward the new pension programme. An Employee’s Choice programme was viewed as a better alternative compared to the current scheme as it allows each individual member to make investment choices that fit their profiles. For example, policymakers summarised their beliefs as follows:
“We support the Employee’s Choice programme because we see that our members have a variety of saving behaviour and one policy does not match their saving behaviour”

Senior Officer, Association of Provident Fund

“We think that everyone should have an opportunity to manage different level of return/risk. Young individuals are able to tolerate more risk. So we think Employee’s Choice is a better idea and more appropriate. If members are able to achieve higher return, they will have adequate retirement saving. And adequate saving means the success of the pension system”

Senior Officer, Securities Exchange Commission

Most of the asset management companies and pension committees also shared positive responses to the Employee’s Choice programme. For example, three respondents stated that:

“I strongly agree with the concept. I wish the programme could have launched earlier”

Senior Manager, MFC Asset Management

“I believe Employee’s choice is the right and practical way. One clear advantage is that each member of the fund has different needs. Giving them only one fund may not meet with their needs. Variety is definitely better”

Senior Manager, Kasikorn Asset Management

“The programme provides opportunity to members to choose their preferred investment policy. Those who like to take risk are able to choose high risk policy while those who are risk averse are able to choose low risk policy”

Pension committee member, Suratin International Company Limited

Pension members appeared to like the programme. For some, the programme was seen as useful for them as it can provide the ‘right’ choice for them. For example, one respondent noted that:

“If possible, I prefer to make my own choice. Investment concept for each person is different. Some want to take risk and some don’t. Having fund committee choosing for you may not be “right” for you… employees are also happy that they are allowed to be able to manage their own investment”

Male, 24, Securities Exchange Commission (SEC)

5.3.5 Impacts of the programme

It is likely that the new programme may increase profitability of the asset management companies if members invest more in equities since equity funds in Thailand normally
charge higher management fees and total investment expenses (Wongsurawat, 2011). For example, one respondent stated:

“Company may gain higher fees if members switch from fixed-income product to equity product since we charge about 1% for equities but only 0.4-0.5% for fixed income product”

Senior Manager, MFC Asset Management

But some respondents disagreed and expected that management fees should remain the same due to intense competition.

“Provident fund business is just a complementary service, not a core business for asset management companies. So, large asset management companies are cutting fees. Some even offer free service. As a result, Provident fund clients have high bargaining power and willing to move pension to other companies that offer lower fees…We do not have higher fees from offering an Employee’s Choice programme”

Senior Manager, TISCO Asset Management

The introduction of the new programme is likely to lessen the fund committee’s burden by reducing the fiduciary responsibility of fund committees for the consequences of members’ investment decisions. Previously, the fund committee was responsible for asset allocation decisions and was blamed for poor investment performance. For instance, two respondents illustrated:

“The good thing of having this programme is that committee members, going forward, do not have to make investment decisions ever again”

Pension committee member, Securities of Exchange Commission (SEC)

“Before we implement the Employee’s Choice programme, members asked the pension committee so many questions regarding the return and we had to prepare to answer those questions. But now after members choose their own investment choice, instead of asking pension committee why we made investment decision this way, they tend to discuss the investment results with their colleague, asking them about what choice they made and what the results are”

Pension committee member, Spansion (Thailand) Company Limited

In addition, it is possible that the preceding crisis is instrumental for the adoption of the new pension program. Economic crises often make policy changes acceptable as the crises or emergencies help to convince opposition groups to agree to the changes (Drazen and Grilli, 1993) as two respondents stated:
“During the 2008-2009 financial crisis, members were unhappy [because of investment loss] and tried to ask fund committee to be responsible. Some committee members had to resign”

Senior officer, Association of Provident Fund

“Some fund committee view that having an Employee’s Choice programme should reduce their risk of investment management duty. At first, many employers reject the idea of an Employee’s Choice programme because their track record of pension investment performance was ok. But since there have been too many financial crises, more and more employers became interested to adopt the programme. Now, it’s easier to convince them to adopt the programme than before”

Senior Manager, TISCO Asset Management

5.3.6 Financial Advice

Typically, companies rely on educational materials prepared by pension providers. However, those educational materials are influenced by the guidance from the Thai SEC. The Thai SEC generally provides basic financial guidance on how to choose appropriate asset allocation. This advice is commonly used among plan sponsors and asset management firms as part of their financial education material. The Thai SEC recommends young individuals to invest mainly in equities, and then gradually switch into fixed-income instruments as they age. This general advice is found to be consistent with the traditional financial advice and lifecycle investing theory. Table 5.3 shows investment guideline provided by the SEC. It provides a set of examples of how to make an appropriate investment choice based on age group.
Table 5.3: SEC Investment Guideline

<table>
<thead>
<tr>
<th>Age group</th>
<th>Preferred Choice</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 30</td>
<td>Mainly invest in high-risk, high-return</td>
<td>Members have approximately 30 to 40 years until retirement; therefore, a high-risk, high-return investment would be a good choice. In case they make loss, they still have time to make up in their later years.</td>
</tr>
<tr>
<td>years</td>
<td>assets</td>
<td></td>
</tr>
<tr>
<td>30 years to 50</td>
<td>Diversify investment to reduce risk</td>
<td>At this point, members only have more or less 10-30 years until they retire; hence, instead of mainly investing in high-risk, high-return assets, they should allocate part of fund to secured assets.</td>
</tr>
<tr>
<td>years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than 50</td>
<td>Mainly invest in low-risk, low-return</td>
<td>As retirement approaching, there is not much time left for savings; thus, it is crucial to invest in low-risk, low-return assets. However, they may put a small proportion of fund in high-risk, high-return assets.</td>
</tr>
<tr>
<td>years</td>
<td>assets</td>
<td></td>
</tr>
</tbody>
</table>

Source: SEC. Available at: http://www.thaipvd.com/content_en.php?content_id=00303
Note: a person’s age, time until retirement, expected return and risk tolerance level play a vital role in selecting the investment policy.

Interview data confirmed that most asset management companies rely on the same guideline as a basis for asset allocation recommendations. It is interesting that the rationale behind the recommendation to invest in stocks is based on the past performance as one respondent explained:

“It is very common that if you are young you have more time to invest. If you are only 30 years-old, and expect to retire at 60 years-old, you will have 30 years to invest. And if you look at the historical return and compare the 30 years performance between stocks and bonds, it is quite obvious that stocks have performed better. This is a fact”

Senior Manager, MFC Asset Management

However, the SEC admitted that the provided guideline is just a basic principle; therefore, it recommended members to consult with the pension provider before making investment decisions.

“We typically provide only the basic principle. We tell them that having choice is better than not having one. Rather, we focus more on the importance of saving for retirement. We tell them that they should choose investment choice that is matched well with their risk profile. We do not provide them a detailed guideline. It’s a duty of asset management companies. Their job is to advise their clients, isn’t it?”

Senior Officer, Securities and Exchange Commission
5.4 Benefits of the new programme

This section discusses the potential benefits of the new pension programme from the perception of various pension stakeholders. The Employees’ Choice programme provides workers more freedom to make investment decisions and also helps to reduce the agency problems between fund committees and fund members.

5.4.1 More freedom

It seems that the self-directed pension plans are viewed positively by many respondents. Many respondents hope to benefit from the programme promise about pension portfolio management. From the perspective of pension stakeholders, the most important benefit of the new pension programme is its ability to allow members to make their own investment decisions that are best for them. As respondents noted:

“The good thing is that we have “right” to make decision according to our needs”
Female, 29, Suratin International Company Limited

“The advantage of the new pension program is that members can change or switch their investment policy according to the changing financial and capital markets condition in order to seek higher return”
Female, 40, Provincial Electricity Authority

Having more freedom to manage one’s own pension portfolio seems to be the key promise of the program. However, shifting the investment responsibility from the pension committee to individual members has both pros and cons. On one hand, pension members may have greater freedom to direct their own investment decisions. On another hand, they have to have investment capability to manage their own pension otherwise the new pension program gives only a false freedom to members and the underlying problem of pensions is not resolved.

5.4.2 Reduction of the agency problems

The new pension programme may solve the agency problems risk between pension committees and members as agency problems risk is one of the main sources of risk in preparing for retirement.
Agency problems can arise when a fund committee acts on behalf of pension members in terms of investment decision making. One of the major problems in agency theory is the problem of risk sharing that takes place “when the principal and agent have different attitudes toward risk” (Eisenhardt, 1989, pp. 58). The problem is that the principal and the agent may prefer different actions because they have different sets of risk preferences. In the Thai pension context, investment style of fund committees is considered to be conservative because they invest mainly in low-risk assets, which may not in the best interests of each individual member. The goal conflict may result when the goal of a fund committee is to preserve the capital while the goal of a pension member is to grow the capital. One respondent made this point clearly:

“Having single investment policy is not appropriate, especially for a large group of member who have different age profile. It is so difficult to have the right policy for everyone. It ends up some group will benefits and some group lose benefits”

Male, 53, Securities and Exchange Commission

An employee’s choice programme should help solving the agency problems. Therefore, in an ideal world, allowing members to select their own investment policy will allow them to make investment decisions that are best for their self-interest.

In addition, there is also concern that fund committees may lack competence executing investment decisions. In the UK, Clark et al. (2006) raise questions about the competence of trustees to make investment decisions and find that pension fund trustees are prone to cognitive anomalies and biases. In Thailand, Vinaiphat (2004) raised concerns about fund committee competence as fund committee members normally are recruited from various professions and most of them are not investment professionals. Also, the term of duty of one to two years is too short to build expertise. Interview data also support this argument as two respondent stated:

“Sometimes we got a headache with the Fund Committee. Some fund committee has no investment knowledge at all and they understand only deposit-like product”

Senior Officer, Association of Investment Management Companies

“If I had to rate the level of financial literacy of fund committee from 1 to 5 (5 means highest level), I would rate them around 2 to 3 only”

Senior Officer, Association of Provident Fund
This raises an important question for the EC programme. It appears that one of the concerns of the previous programme rests on the fact that pension fund committee members are not investment experts and they often make overly conservative and inappropriate investment for workers. Therefore, it is interesting to know whether an ordinary worker can make better investment decisions than the fund committee.

5.5 Concerns and problems of the programme

As the study has argued earlier, it is a political choice to adopt the self-directed pension model because Thai policymakers intend to demonstrate that Thailand is a legitimate actor in neoliberal system. In exchange, Thai workers need to shoulder more responsibility in managing their pension assets. Therefore, there are several concerns whether workers have adequate capacity to take this responsibility. Are they willing to take on this responsibility? Can workers make informed investment decisions for their retirement assets? Do they have adequate level of financial knowledge? These are the most important questions for workers under the self-directed pension plans. These questions will also be addressed in more detail in the next chapter.

Under the self-directed pension plans, the retirement future of workers will be at risk for two reasons. First they may mismanage their investments or make too many irrecoverable investment mistakes during the savings phase. Second, although they may make appropriate decisions, they may have to face the ex-post performance risk due to market volatility which has been increasing sharply in recent years. To mitigate those risks, workers need to become investment experts. They need to have basic knowledge and understand the investment concept, know how to make appropriate initial asset allocation, and be able to have good foresight on financial and capital markets in order to revise their portfolios accordingly. These skills are not easy to develop, particularly in an environment where risks and returns are not easy to predict and calculate.

The EC programme is based on neoliberal policy; therefore, it also rests on the assumption that if individuals are provided with the appropriate information, they will be able to make informed decisions. The question is whether the assumption of
calculating, prudent, and rational person is valid in reality; otherwise, responsibilization increases individuals’ burden and risks (Jordan and Treisch, 2010).

**Do all workers want to take this responsibility?**

Evidence from the interview data suggests that there are several concerns on the new programme. First, some workers may not be willing to manage their pension assets. With greater responsibility, potential weakness of the programme may result if workers try to deny the responsibility as two respondents explained:

> “Members have different views and opinions. Some want to choose their investment choice by themselves and some prefer not to. Some prefer the committee to make decisions for them. Some even refuse to choose any choice at all”
> Pension committee member, Provincial Electricity Authority of Thailand

> “We got a feedback from asset management companies that members do not want to make decisions. Interestingly, they said that some of them even did not respond at all. They just do not care”
> Senior Officer, Securities and Exchange Commission

Under the EC programme, if workers do not make active investment choice, their pension assets will be directed to the default choice, which may be or may be not appropriate for them.

**Can workers make informed investment decisions for their retirement assets?**

Workers under the Employee’s Choice programme must make investment decisions; they have to choose the investment choice or create their own asset allocation plan. From the interview data, members consider a variety of factors when they make investment decisions, for example, past return, risk tolerance, age, investment horizon, inflation, and investment outlook.

> “For me, it is quite simple. I’m going to be 55 in the next 2 years, so I invest mainly in fixed-income.”
> Male, 53, Securities and Exchange Commission

> “I consider my risk tolerance, how many years I have to work, and next year investment outlook…investment returns must not below inflation”
> Female, 40, Bank of Thailand
“I base my investment decision on how each investment policy has performed in the past. I also consider the economic outlook too”

Female, 37, National Housing Authority

**Why do workers invest less in risky assets?**

Traditional investment advice views that the stock market is a good place to invest retirement assets since it improves portfolio diversification and historical data suggests that stocks normally provide higher long-term returns. However, it seems that there are several factors that may prevent workers to invest in the stock market. First, it appears that some fund committees do not encourage workers to invest too much in the stock market due to bad memories of a financial crisis as one respondent explained:

“We try to encourage members to invest in the stock market. We always tell them that stock gives the highest return over the long run. But some fund committee members are reluctant to offer employees a choice with higher equity portion. They are conservative in nature. They have seen many financial crises”

Senior Officer, Association of Provident Fund

It is also possible that poor corporate governance may prevent investors from allocating their portfolios into the stock market as the President of the Association of Provident Fund stated:

“Provident funds do have the ability to invest in local property funds and equity funds. The problem is that stocks are seen as very risky assets because of the troubles in the stock market last year [2009], we need to see better governance at companies on the stock market, so that people feel more secure and don’t see equities as such a risky venture”

President, Association of Provident Fund (Asian Investor, July 2010)

In addition, workers may reluctant to invest in the stock market because they perceive that stock market as very risky. Placing retirement money in the volatile and risky assets such as equities can make investors worry. Therefore, to minimize investment anxiety, individuals may choose not to invest in equities. For example, one respondent explained that:

“I guess others may think that I should invest mainly in equities since I am still very far away from retirement. But I prefer to invest conservatively. I invest mainly in fixed-income and only small portion in equities. Surprise? For me, I think investment serves many purposes and the objective of pension money is for retirement. I want it to be like
“safe harbour”. Small return is ok as long as I do not need to worry much about it. If I need higher return, I will invest it outside my pension”
Female, 30, Securities and Exchange Commission

Another possible reason of limited stock market investing is that some individuals perceive that the return on investment for their retirement assets must always be positive. Therefore, individuals may not choose to invest in any assets that can produce negative returns.

“They [members] tend to have a belief that the Provident fund should not have negative return at all. They even lobbied us to propose to the Ministry of Finance that if the fund has a negative return, the employer will have to compensate for those losses”
Senior Officer, Association of Provident Fund

Do they have adequate financial literacy?

Interview data show that there are concerns about the level of financial literacy of workers. Many respondents admitted that Thai workers may not have adequate financial knowledge. Respondents stated that the Employee’s Choice programme should not be implemented for those who have low financial literacy.

“Employee’s Choice programme is a good programme, but it is not for everyone, especially for small companies whose employees do not know anything about investment”
Senior Officer, Association of Provident Fund

Policymakers are well aware of the financial literacy problem in Thailand. Therefore, it is easy to understand why financial literacy programmes are now being promoted in Thailand. For example, the SEC believes that financial illiteracy can be solved by providing education to members as two senior officers from the SEC explained:

“[T]here is a nation-wide problem of poor financial literacy. A large portion of our population still lacks the skills to manage their own money. Nor do they see the need to invest for old age. Given the fact that Thailand is now an aging society, poor financial literacy will lead to the problem of poverty and burden to the government in the long run. Low financial literacy is also a major obstacle to capital market development. This is why the SEC has begun to put a great emphasis on building financial literacy”
Senior Assistant Secretary General, SEC (SEC, 2011b)

“Thais, in general, do not know or understand much about how to make investment choice. That’s why we are focusing on training, and giving out the educational materials on the investment matters. We establish the investment fundamental course, targeting
fund committees. We also constantly educate the public by writing articles in newspapers, magazines and on our website.”

Senior Officer, SEC

**How effective is the workplace financial education programme?**

There is also a concern on the effectiveness of the financial education provided by employers. Is the workplace financial education programme effective in improving workers’ financial knowledge? Workplace financial education is a crucial element in the new pension programme. Companies typically provide workers some guidance on pension investment through a workplace financial education programme. The typical workplace financial education programme was summarised as:

“We provide monthly documents reporting the investment performance to our members. We also have intranet that members can find information and ask questions. We also provide telephone number if they prefer to call and ask questions. Our committee members and fund managers from the asset management company also meet with our members regularly, 20-30 times a year, at our different offices across country”

Pension committee member, Provincial Electricity Authority of Thailand

The objective of providing workplace financial education is to improve financial capability for workers so they are able to manage their pension assets appropriately which are evident from quotes below.

“The main expected outcome is to enable members to choose investment choice that match their profile”

Senior Officer, Association of Investment Management Companies

“We try to continue educating them [pension members] until one day they are able to manage their asset allocation themselves”

Senior Officer, Association of Provident Fund

However, some workers do not attend the financial education seminar provided by plan sponsors. Moreover, those who do attend may have difficulty understanding the educational materials. Providing financial education to workers is not an easy task as two respondents argued:

“Despite providing seminar to members, they may be too lazy and do not want to attend. Maybe they think that they may not be able to understand. Perhaps it is due to the Thai culture. Thai people want simple and easy things. Thai people want someone to think for them, manage for them, and even take responsibility for them when there is a problem”
“I can give you an example. If the company has only white collar workers, it is quite easy for us to educate them. But if the company has both white and blue collar, it is another story. We find that we cannot explain to blue collar workers. We simply have different modes of communication”

Senior Manager, TISCO Asset Management

Interview data show that the assumptions about a homogeneous *homo economicus* in the traditional economics can be challenged. In the context of financial education, it seems that one mode of financial education program cannot be used effectively for everyone. Each group of individuals needs a different type of financial education programme. Future research should address the question of what type of financial education programme can work effectively with different types of individuals.

5.6 **Precondition of the programme**

Even though there are a number of preconditions for a successful pension programme, this study focuses mainly on the financial literacy and financial capability of workers. Interview data are in line with the argument of Erturk *et al.* (2007, pp. 562) which argue that “the promise of democratized finance can only be realised if enough citizens in the relevant socio-economic groups have the calculative competence to appraise different financial services and products”. Interview data suggests that financial literacy is important in conducting a successful programme and lack of financial knowledge is seen as the main concern of the programme.

“Actually, I think Thailand has not yet ready for the programme. That’s why we did not make the employee’s choice programme a compulsory programme as in other countries like Hong Kong or Singapore. The main reason is that our workers still lack knowledge and understanding about investments”

Senior Officer, Association of Provident Fund

Without financial literacy, members may choose inappropriate investment policy; for example, they may choose investment choices made by their co-workers as one respondent argued:
“One of the most frequent problems is that workers usually copy their colleague’s investment choice. Therefore, these workers did not analyse their own profile, their wealth or their investment skills”

Senior Manager, ING Fund (Thailand)

5.7 Summary and concluding remarks

This chapter reviews and analyses the new private pension programme using various sources of data including viewpoints from pension stakeholders. The new programme was developed to correct some limitations of the current pension scheme. The interview data suggests that the most important advantage of the programme is that it allows pension members to make their own investment decision; hence, the programme can reduce the existing agency problem between pension committees and pension members.

From the data, most pension stakeholders believe that the Employee’s Choice programme has a good intention and the implementation of this new programme should be able to improve the retirement welfare of Thai workers. Thai policymakers suggest that workers having choice is more preferable. Meanwhile workers seem to agree with this view. However, it is possible that the promotion of the new self-directed pension plans may benefit policymakers and plan sponsors more than workers for several reasons. The new programme may be promoted because policymakers need to have legitimacy in world economy. Adopting a self-directed pension model based on neoliberal policy may be seen as evidence that Thailand can be respected as a player in the world society model. Moreover, it seems that many pension fund committees support the new programme because they do not want to be responsible for investment results, especially after the 2008-2009 financial crisis where some fund committees were literally asked to take responsibility for the investment losses.

Interview data provide several interesting insights that can potentially reduce the effectiveness of the new programme. It appears that some workers do not want to make investment decisions. Some workers do not participate in the stock market investment because of lack of trust in the stock market due to poor governance, investment anxiety, and fear of investment losses. Although many workers reported that they prefer the programme because they feel that they deserve to have more freedom to make right choices, some policymakers and industry experts admitted that not every Thai worker is
ready to make complex investment decisions. Many view that the programme is not effective unless workers have the necessary knowledge and understanding about financial products and are able to make informed investment decisions. Using a case study as a real life example, the next chapter will investigate and examine whether this hypothesis holds true.
CHAPTER 6: AN EVALUATION OF THE EMPLOYEE’S CHOICE PROGRAMME: A CASE STUDY OF A NEW PENSION PROGRAMME

6.1 Introduction

The objective of this chapter is to evaluate the new private pension programme by using a case study. To measure the programme effectiveness, this study uses a customized survey to investigate how workers make their investment decisions and compare those actual decisions with what financial theory and previous literature have suggested. Are they willing to take this responsibility by making active investment choices? Do they make investment decisions that are consistent with prescriptions of financial theory? Can workers make informed investment decisions for their retirement assets that reflect their profile and risk tolerance? Do they have an adequate level of financial knowledge? What are the factors that determine their investment decisions? This chapter addresses the above questions.

The previous chapter has analysed and described the concerns of the Employee’s Choice programme, especially on the issue of worker’s investment decisions. This chapter explores workers’ investment behaviour in a real life context. It presents the findings of the survey data from a large financial institution which is currently operating its pension plan under the Employee’s Choice programme, along with the discussions of the findings. Section 6.2 provides the detailed description of a case study. Next, section 6.3 presents the descriptive data of the survey and analyses the relationships between variables using cross tabulation analysis. Section 6.4 examines the survey data using econometric models in order to find factors that determine workers’ investment decisions. First, it examines the determinants of workers’ decision to make active investments using the probit regression model. Second, the determinants of investment choice made by workers under the current pension scheme are analysed using the ordered logistic regression. Third, the study explores workers’ investment choice if the pension plan gives members more flexibility by examining their preferred equity.
allocation using the ordered logistic regression. Finally, section 6.5 summarises and concludes the chapter.

6.2 Case Description

Bangkok Bank, a leading financial institution in Thailand, established a pension scheme for its employees in 1990 in order to promote long-term saving of its employees in accordance with the Provident Fund Act B.E. 2530 (1987). The company and its employees contribute to the funds at the determined rates. Currently, the company contributes 5.5 percent while members can choose to contribute either 3% or 5.5% of their monthly salary. The pension plan is an automatic enrolment programme which requires all employees to participate in the plan unless they choose to opt out. A fund committee is set up to supervise pension fund administration. At present, the fund committee has appointed two fund management companies to manage the pension assets. As of December 2011, there were 18,150 pension members and the total pension assets was THB6,312 million of which fund manager A managed THB3,203 million or 51 percent and fund manager B managed THB3,109 million or 49 percent of the plan assets. Management fees are based on the net asset value of the fund. In 2011, the management fees were charged by fund manager A and B at 10 basis points (0.10%) and 8 basis points (0.08%), respectively.

In July 2010, the fund committee decided to adopt the Employee’s Choice programme to provide an opportunity for members to choose the most appropriate choice for themselves. Before the new pension programme, members were not required to make any investment decision; everyone participated in the same investment policy selected by the fund committee. Members now are able to choose from among five different investment options offered in the pension plan. These investment choices are classified as life-style funds (also known as balanced funds), which generally have specific target asset allocation and are automatically rebalanced periodically in order to maintain the same asset allocation over time. Each choice has been designed for a particular risk attitude. These choices are built on the concept of “risk-based investing,” or the concept

48 As evidence in the interview data in chapter 5, the management fee for Thai Provident Funds is typically low due to an intense competition among asset management companies.
that the risky allocation is a function of investors’ risk tolerance (Viceira, 2009). Table 6.1 shows the asset allocation mix for each investment option.

To assist members, the investment risk was explained by the name of the option. For example, the least risky option is labelled as “very low risk” policy and the most risky choice is labelled as “very high risk” policy. Each investment option has different mixes of low risk and risky assets. The least risky option allocates 90 percent in bank deposits, Treasury Bills, and Treasury Bonds while another 10 percent of assets are invested in corporate bonds.49 The most risky option invests only 50 percent in low risk assets and another 50 percent in risky assets. Within the risky assets, it allocates 20 percent in corporate bonds, 15 percent in domestic equities, and another 15 percent in the mix of international securities and alternative investments such as commodities.

Table 6.1: Investment options and their asset allocation strategy

<table>
<thead>
<tr>
<th>Policy</th>
<th>Name of Investment Choices</th>
<th>Low risk assets (Bank deposits, Treasury bonds, Treasury bills)</th>
<th>Corporate Bonds</th>
<th>Domestic Stocks</th>
<th>Foreign Bonds, Foreign Stocks, and Alternative Investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very low risk policy</td>
<td>90%</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2</td>
<td>Low risk policy</td>
<td>80%</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>3</td>
<td>Current policy</td>
<td>70%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>High risk policy</td>
<td>60%</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>5</td>
<td>Very high risk policy</td>
<td>50%</td>
<td>20%</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: Company’s data

Considering the portfolio composition of all five investment options, it implies that those who designed this pension plan are focused more on capital preservation than growth of the capital. The most aggressive option has a maximum equity allocation of only half of what most financial planners would suggest. The most risky choice is a 30/70 portfolio (30% in stocks and 70% in bonds). This is significantly different from a 60/40 portfolio (60% in stocks and 40% in bonds) which has been quite popular among financial planners as a good starting point for most investors who want to build adequate retirement savings. The plan also offers a default option for members who do not make their own investment choice. Members who do not make active decisions are automatically assigned to the default fund (policy 3) which allocates 70 percent in low-

49 According to the SEC regulation, fund must invest only in bonds with credit rating of BBB+ or higher.
risk assets and another 30 percent in risky assets. Members are allowed to change their investment choice twice a year. Members will receive the account balance details and the investment performance report once a year. They also are able to check monthly performance and investment outlook reports through the company’s intranet which is updated regularly.

The company provides historical data and also a return simulation of each option which is shown in Table 6.2. For each investment option, the investment risk was explained by name and also the historical standard deviation. The historical and simulation data shown to pension members suggest that low-risk assets offer low return with low standard deviation while risky assets offer higher return but with higher standard deviation. Although pension funds are long-term investments, the education materials provide only 8 years of historical investment performances, only during 2002-2009, and in nominal return only.50 This material shows that investments in bank deposits, treasury bonds, and Treasury bills gave an average return of only 2.9% whereas domestic equities yielded as much as 20.4%.51 However, investing in stocks showed much higher volatility. During the same period, investing in stocks gave an annual return ranged from -47% to +114% with the standard deviation of as high as 55%.

Similarly, the simulation data showed that riskier policy generally offers higher returns and vice versa. The average return of the least risky policy was only 3% with the standard deviation of 2% while the average return increased to 6.3% with the standard deviation of 10% in the most risky policy.

The company did not provide members risk-adjusted return information such as sharpe ratio, which measures the excess return per unit of deviation in an investment asset. Use of nominal rates and a short period, and no use of risk-adjusted return means that pension members may not receive adequate information for their pension fund investments.

50 According to the Bank of Thailand data, the average inflation during the same period (2002-2009) was about 2.7 percent.  
51 These return data are nominal return. If the inflation data had been used, the real return for bank deposits, Treasury bonds, and Treasury bill would have been only 0.2 percent whereas return from domestic stocks would have been 17.7 percent.
<table>
<thead>
<tr>
<th>Sub fund</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>Average</th>
<th>Max</th>
<th>Min</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank deposits, Treasury Bonds, and T-bills</td>
<td>3.4%</td>
<td>1.9%</td>
<td>0.9%</td>
<td>0.7%</td>
<td>4.7%</td>
<td>4.5%</td>
<td>5.2%</td>
<td>1.5%</td>
<td>2.9%</td>
<td>5.2%</td>
<td>0.7%</td>
<td>0.02</td>
</tr>
<tr>
<td>Corporate Bonds</td>
<td>3.8%</td>
<td>3.3%</td>
<td>1.9%</td>
<td>3.9%</td>
<td>5.9%</td>
<td>6.2%</td>
<td>4.9%</td>
<td>4.8%</td>
<td>4.3%</td>
<td>6.2%</td>
<td>1.9%</td>
<td>0.02</td>
</tr>
<tr>
<td>Domestic Stocks</td>
<td>17.3%</td>
<td>114.4%</td>
<td>-12.6%</td>
<td>6.8%</td>
<td>-4.8%</td>
<td>26.2%</td>
<td>-47.6%</td>
<td>63.3%</td>
<td>20.4%</td>
<td>114.4%</td>
<td>-47.6%</td>
<td>0.55</td>
</tr>
<tr>
<td>Foreign investments and Alternative investments</td>
<td>5.9%</td>
<td>19.0%</td>
<td>13.0%</td>
<td>18.9%</td>
<td>-4.8%</td>
<td>-3.4%</td>
<td>-20.4%</td>
<td>22.1%</td>
<td>6.3%</td>
<td>22.1%</td>
<td>-20.4%</td>
<td>0.16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Investment Choice</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>Average</th>
<th>Max</th>
<th>Min</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low risk policy</td>
<td>3.5%</td>
<td>2.1%</td>
<td>1.0%</td>
<td>1.0%</td>
<td>4.8%</td>
<td>4.7%</td>
<td>5.2%</td>
<td>1.8%</td>
<td>3.0%</td>
<td>5.2%</td>
<td>1.0%</td>
<td>0.02</td>
</tr>
<tr>
<td>Low risk policy</td>
<td>4.3%</td>
<td>8.5%</td>
<td>0.9%</td>
<td>2.2%</td>
<td>3.9%</td>
<td>5.4%</td>
<td>1.3%</td>
<td>5.9%</td>
<td>4.1%</td>
<td>8.5%</td>
<td>0.9%</td>
<td>0.03</td>
</tr>
<tr>
<td>Current policy</td>
<td>5.1%</td>
<td>15.0%</td>
<td>0.9%</td>
<td>3.4%</td>
<td>2.9%</td>
<td>6.1%</td>
<td>-2.7%</td>
<td>10.0%</td>
<td>5.1%</td>
<td>15.0%</td>
<td>-2.7%</td>
<td>0.06</td>
</tr>
<tr>
<td>High risk policy</td>
<td>5.2%</td>
<td>15.2%</td>
<td>1.0%</td>
<td>3.7%</td>
<td>3.0%</td>
<td>6.2%</td>
<td>-2.7%</td>
<td>10.4%</td>
<td>5.2%</td>
<td>15.2%</td>
<td>-2.7%</td>
<td>0.06</td>
</tr>
<tr>
<td>Very high risk policy</td>
<td>6.0%</td>
<td>21.6%</td>
<td>0.9%</td>
<td>5.0%</td>
<td>2.1%</td>
<td>6.9%</td>
<td>-6.6%</td>
<td>14.5%</td>
<td>6.3%</td>
<td>21.6%</td>
<td>-6.6%</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Source: Company data
The company did not offer formal educational sessions or retirement seminars to its members. However, prior to the programme implementation, the company provided some advice on investment selection to pension members by placing all financial education material on the company’s intranet where they can search and download financial education materials and performance reports as well as investment outlook reports from their computers. The company suggests pension members to examine their own investment attitude, investment objective, and investment horizon as well as the ability to take risk and expected return before making decisions. The company also offers some basic investment guidelines for members which is based on the lifecycle investing theory.

At present, all investment options have different characteristics in terms of risk and return expectations. Table 6.3 shows the detailed summary of all available investment choices while table 6.4 shows the historical performance of each investment option. Among all five investment choices, the very low-risk strategy option (policy 1) is recommended for those focused on capital preservation or those who are close to retirement. Workers who are in their mid-40s and early 50s or those who are able to take some risk are advised to choose low-risk strategy (policy 2) and moderate-risk policy (policy 3). Those who are younger or able to take higher investment risk are advised to choose moderately high risk strategy (policy 4) and high risk strategy (policy 5). For expected return, the first two policies aim to produce return higher than 12-month fixed deposits while the other three policies aim to produce returns that are higher than inflation rates.

Interestingly, the investment guideline does not adequately provide workers complete descriptions of risk and return. The return objectives for policy 3, 4, and 5 should be different because risk profiles of these options are different. However, these three investment options are expected to share the same investment returns which should be higher than inflation. Thus, the investment guideline seems to be confusing. It is interesting to know if workers can navigate this confusing guideline and be able to make informed decisions.
Table 6.3: Company’s Investment Guideline

<table>
<thead>
<tr>
<th>Choice Name</th>
<th>Risk level</th>
<th>Suitable for</th>
<th>Expected return</th>
<th>Recommended for ages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Very low-risk policy</td>
<td>Very low</td>
<td>Member who focuses on interest income and capital protection</td>
<td>Higher than 12-month fixed deposits</td>
<td>56-60</td>
</tr>
<tr>
<td>2 Low-risk policy</td>
<td>Low</td>
<td>Member who focuses on long term return and is able to tolerate some risk</td>
<td>Higher than 12-month fixed deposits</td>
<td>51-55</td>
</tr>
<tr>
<td>3 Current policy (Default option)</td>
<td>Moderate</td>
<td>Member who focuses on long term return and is able to tolerate moderate risk</td>
<td>Higher than inflation</td>
<td>46-50</td>
</tr>
<tr>
<td>4 Risky policy</td>
<td>Moderately high</td>
<td>Member who focuses on long term return and is able to tolerate more risk than the current policy</td>
<td>Higher than inflation</td>
<td>41-45</td>
</tr>
<tr>
<td>5 Very risky policy</td>
<td>High</td>
<td>Member who focuses on long term return and is able to tolerate higher risk</td>
<td>Higher than inflation</td>
<td>21-40</td>
</tr>
</tbody>
</table>

Source: Company data

Table 6.4: Historical performance (taken from company’s education material)

<table>
<thead>
<tr>
<th>Year</th>
<th>Investment Return (nominal return net of fees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>7.6%</td>
</tr>
<tr>
<td>2008</td>
<td>-6.1%</td>
</tr>
<tr>
<td>2009</td>
<td>7.7%</td>
</tr>
<tr>
<td>Jan-Jun 2010</td>
<td>1.8%</td>
</tr>
<tr>
<td>Jul-Dec 2010</td>
<td></td>
</tr>
<tr>
<td>• Very low risk policy</td>
<td>0.5%</td>
</tr>
<tr>
<td>• Low risk policy</td>
<td>2.5%</td>
</tr>
<tr>
<td>• Current policy</td>
<td>4.5%</td>
</tr>
<tr>
<td>• Risky policy</td>
<td>4.5%</td>
</tr>
<tr>
<td>• Higher risk policy</td>
<td>6.5%</td>
</tr>
<tr>
<td>2011</td>
<td></td>
</tr>
<tr>
<td>• Very low risk policy</td>
<td>2.8%</td>
</tr>
<tr>
<td>• Low risk policy</td>
<td>2.6%</td>
</tr>
<tr>
<td>• Current policy</td>
<td>2.4%</td>
</tr>
<tr>
<td>• Risky policy</td>
<td>2.4%</td>
</tr>
<tr>
<td>• Higher risk policy</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

Source: Company data
6.3 Descriptive Analysis

This study conducts a comprehensive survey that describes the investment behaviour of pension members in a large financial institution in Thailand. Table 6.5 provides the summary statistics about pension members in the sample. Apparently, the sample is not fully representative of the Thai population. As all the respondents work in the financial industry, they are thus expected to be better informed and more experienced about finance and investment than the general population. In addition, the survey respondents tend to have higher education and income levels than the Thai population as a whole. The average age of respondents is about 36 years and almost all have university education (97%).52 The average monthly wage for the general population is THB9,927, compared with the starting salary of THB15,000 for staffs who have university education.53 The respondents are predominantly female (73%). Only 24% are married with 20% of respondents having at least one child. About 75% of respondents have financial wealth less than THB1 million (approximately US$32,000). According to the SEC risk profile questionnaire, an average respondent has moderately high risk tolerance (average score of 25.80 out of 38). The respondent has an average score of 7 out of 11 in the financial literacy test.

More than half (56%) of the respondents report that they have tried to calculate how much they need to save for their retirement. Interestingly, preliminary analysis indicates that not all respondents have made investment choices under the Employee’s Choice programme. There are about 13% that did not choose any investment choice and consequently were directed to the default option. Although the company has provided the retirement planning and investment guideline, surprisingly, only 29% of respondents report that they have received financial advice for their pension or their retirement planning. Clearly, this implies that the company has failed to provide all members the financial advice they need.

In terms of investment choice, the survey reveals that approximately 40% invest in the current policy while about 13% invest in lower risk policies and about 47% invest in

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52 Due to the fact that almost all have university education, in subsequent analysis, this study is not able to do the analysis conditional on respondents’ education.

higher risk policies, with the mean number of 3.52. If respondents are allowed to be more flexible in terms of asset allocation decision, the mean equity allocation is 3.08, implying that an average respondent would allocate approximately 21%-40% of their pension assets in stocks. Many workers already have some exposure in the stock market. About two-thirds of respondents currently invest in the stock market directly or through mutual funds.

In addition, this study performs cross tabulation and univariate analyses on the survey responses conditional on respondents’ characteristics where it is applicable. Those characteristics are, for example, age, gender, wealth, financial literacy, and risk tolerance. Moreover, since not every respondent received financial advice, if it is applicable, this study split the sample into those who have received financial advice and those who have not.
### Table 6.5: Sample means of selected variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>36.62</td>
<td>10.48</td>
<td>22</td>
<td>60</td>
</tr>
<tr>
<td>Education (college = 1)</td>
<td>0.97</td>
<td>0.16</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Gender (male = 1)</td>
<td>0.27</td>
<td>0.44</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Marital status (married = 1)</td>
<td>0.24</td>
<td>0.43</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Children (has = 1)</td>
<td>0.20</td>
<td>0.40</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Financial wealth &lt; THB 1 million</td>
<td>0.75</td>
<td>0.43</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Financial wealth THB 1-3 million</td>
<td>0.16</td>
<td>0.36</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Financial wealth &gt; THB 3 million</td>
<td>0.09</td>
<td>0.29</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Risk Tolerance Score (full score = 38)</td>
<td>25.80</td>
<td>4.33</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td>Financial Literacy Score (full score = 11)</td>
<td>7.09</td>
<td>2.91</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Planner (used to calculate retirement income =1)</td>
<td>0.56</td>
<td>0.50</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Self Investment (makes own investment decisions =1)</td>
<td>0.87</td>
<td>0.34</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Received advice (yes = 1)</td>
<td>0.29</td>
<td>0.46</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Invests in equities outside pension (yes = 1)</td>
<td>0.66</td>
<td>0.47</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Investment Option (1 = very low risk; 5 = very risky)</td>
<td>3.52</td>
<td>1.02</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Equity Allocation (1 = 0%; 6 = 100%)</td>
<td>3.08</td>
<td>1.27</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>
6.3.1 Retirement Planning

Table 6.6 reports respondents’ awareness of the retirement planning. Retirement planning is important, but not everyone takes it seriously. The respondents were asked if they “have tried to calculate how much they need to save for retirement” and only about half of respondents (56.5%) report that they have tried to calculate how much they need to save for their retirement. In the US, the Retirement Confidence Survey (EBRI, 2012) finds that only 42% of respondents in the US have tried to calculate how much money they need to save for a comfortable retirement and 42% of those who have done the calculation report that guessing is the main method when they calculated the amount they need to save.

In addition, the survey results are analysed conditionally based on respondents’ characteristics. It analyses the relationship between the members’ responses and financial advice, financial literacy, and risk tolerance to test whether responses differ across these characteristics. There appears to be some evidence that financial advice influences pension member’s retirement planning and investing. Those who received advice seem to plan better for their retirement. About 69% of those who received financial advice have tried to calculate how much they need to save compared to only 51% of those who have not. Interestingly, there appears to be no significant effect from the level of financial literacy and retirement planning. About 55% of those who have greater financial literacy have tried to calculate how much they need to save compared to 58% of those who have less financial literacy. It suggests that those who display financial knowledge are not likely to plan better than those who have lesser financial knowledge. This finding is contrary to the previous study which finds that financial literacy is strongly and positively associated with financial planning (Lusardi and Mitchell, 2011a). It is possible that a key obstacle to financial planning is not necessarily lack of financial knowledge, but rather the ability to take action on the knowledge. One possible explanation is that individuals may exhibit problems of self-control: that is, people try to plan for retirement, but they too often prove to be limited in their capacity or desire to execute intentions (Thaler and Shefrin, 1981).

Many respondents state that they are concerned about their retirement future with about 38.8% and 25% of them agreeing and strongly agreeing when they were asked if they
are concerned about their saving adequacy after retirement. Those who received advice, have greater knowledge, or are more risk averse, appear to be more concerned. About 9.5% and 14.2% of respondents state that they strongly agree and agree that income from family members is important after they retire. Those who received advice, have greater financial knowledge, or have higher risk tolerance view that income support from family members is less important to them. Surprisingly, this contradicts the recent survey by the Thai National Statistical Office (NSO, 2009) which reports that about 38.9 percent of respondents are expected to have retirement income from family members. A possible explanation is that the respondents in this case study work in a financial institution and typically have higher income than an average Thai respondent in the NSO survey, so they are more likely to rely more on their own personal savings.

Many respondents do not expect a lavish lifestyle in retirement. As mentioned before, the OECD suggests that the appropriate retirement income replacement rate should be around 70%. However, as Table 6.7 shows, less than half (44%) of respondents report that they intend to achieve the replacement rate higher than 75%. Interestingly, about 17 percent indicate that their preferred replacement rate is as low as 25% or less. Again, it appears that those who received advice tend to aim for higher replacement rates. In addition, those who have greater financial knowledge or those who have higher risk tolerance appear to aim for higher replacement rates.

Respondents appear to have a highly optimistic view about expected return for their pensions. About 24% of respondents expected pension return to be between 11-15% per annum and another 24% expected investment return of more than 15% per annum, which is relatively high compared to the past returns simulated by the company shown in table 6.2. The respondents who received advice tend to expect higher return than those who did not. A possible explanation is that those who had advice realized that they need to grow their pension portfolio large enough to provide adequate retirement income; therefore, having higher investment return is very important.

Financial knowledge appears to affect respondents’ return expectations. Many respondents who have lower financial knowledge expect very high return (more than 15% per annum) while those who have greater financial knowledge appear to have a more realistic view in their expectation, given that the historical simulated return
provided in the education material in section 6.1 shows that the average return ranges between 3-6% per annum only.

Interestingly, almost half of those who have lower risk tolerance expect relatively high return for their pension, expecting more than 10% return per annum. In theory, those who have lower risk tolerance are suggested to invest in lower risk choices; therefore, they should expect lower return from their pension portfolios. This evidence shows that risk and return expectations are not correctly correlated. This suggests that workers need to be educated so they can have more realistic expectations that are consistent with their risk tolerance level; otherwise, unrealistic assumptions may lead them to overestimate their future retirement welfare and underestimate the need for additional retirement savings.
### Table 6.6: Retirement planning awareness

<table>
<thead>
<tr>
<th>Have you ever tried to calculate how much you need to save for retirement?</th>
<th>All</th>
<th>Advice</th>
<th>Financial Literacy</th>
<th>Risk Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>56.5</td>
<td>51.2</td>
<td>69.1</td>
<td>57.7</td>
</tr>
<tr>
<td>No</td>
<td>43.5</td>
<td>48.8</td>
<td>30.9</td>
<td>42.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I am concerned about my retirement income adequacy</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>No opinion</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>1.3</td>
<td>-</td>
<td>4.4</td>
<td>-</td>
<td>2.5</td>
</tr>
<tr>
<td>Disagree</td>
<td>9.9</td>
<td>12.2</td>
<td>4.4</td>
<td>9.9</td>
<td>9.9</td>
</tr>
<tr>
<td>No opinion</td>
<td>25.0</td>
<td>28.1</td>
<td>17.7</td>
<td>30.6</td>
<td>19.8</td>
</tr>
<tr>
<td>Agree</td>
<td>38.8</td>
<td>34.8</td>
<td>48.5</td>
<td>30.6</td>
<td>46.3</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>25.0</td>
<td>25.0</td>
<td>25</td>
<td>28.8</td>
<td>21.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income from family members is important to me when I am retired</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>No opinion</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>12.5</td>
<td>9.8</td>
<td>19.1</td>
<td>4.5</td>
<td>19.8</td>
</tr>
<tr>
<td>Disagree</td>
<td>33.2</td>
<td>31.7</td>
<td>36.8</td>
<td>27.0</td>
<td>38.8</td>
</tr>
<tr>
<td>No opinion</td>
<td>30.6</td>
<td>34.2</td>
<td>22.1</td>
<td>37.8</td>
<td>24.0</td>
</tr>
<tr>
<td>Agree</td>
<td>14.2</td>
<td>12.2</td>
<td>19.1</td>
<td>12.6</td>
<td>15.7</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>9.5</td>
<td>12.2</td>
<td>2.9</td>
<td>18.0</td>
<td>1.7</td>
</tr>
</tbody>
</table>

*Note: Figures are shown in percentages.*
Table 6.7: Retirement goals

<table>
<thead>
<tr>
<th>In your opinion, what will be the appropriate replacement rate from your pension?</th>
<th>All</th>
<th>Advice</th>
<th>Financial Literacy</th>
<th>Risk Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% or less</td>
<td>17.2</td>
<td>22.6</td>
<td>4.4</td>
<td>31.5</td>
</tr>
<tr>
<td>26% - 50%</td>
<td>19.4</td>
<td>18.3</td>
<td>22.1</td>
<td>18.0</td>
</tr>
<tr>
<td>51% - 75%</td>
<td>19.4</td>
<td>20.7</td>
<td>16.2</td>
<td>15.3</td>
</tr>
<tr>
<td>76 % - 100%</td>
<td>16.0</td>
<td>13.4</td>
<td>22.1</td>
<td>18.0</td>
</tr>
<tr>
<td>More than 100%</td>
<td>28.0</td>
<td>25.0</td>
<td>35.3</td>
<td>17.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What is your expected return per annum for your pension assets?</th>
<th>All</th>
<th>Advice</th>
<th>Financial Literacy</th>
<th>Risk Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5% or less</td>
<td>12.9</td>
<td>15.2</td>
<td>7.4</td>
<td>19.8</td>
</tr>
<tr>
<td>6% - 10%</td>
<td>32.8</td>
<td>33.5</td>
<td>30.9</td>
<td>21.6</td>
</tr>
<tr>
<td>11% - 15%</td>
<td>23.7</td>
<td>21.3</td>
<td>29.4</td>
<td>16.2</td>
</tr>
<tr>
<td>More than 15%</td>
<td>24.1</td>
<td>21.3</td>
<td>30.9</td>
<td>30.6</td>
</tr>
<tr>
<td>Don’t know</td>
<td>6.5</td>
<td>8.5</td>
<td>1.5</td>
<td>11.7</td>
</tr>
</tbody>
</table>

*Note*: Figures are shown in percentages.
6.3.2 Investment Process

Retirement savings is an on-going process. As suggested by the lifecycle investing theory, individuals need to revise their asset allocation according to their age. Therefore, individuals should review and rebalance their asset allocation periodically. How frequently should the portfolio be monitored? Tokat and Wicas (2007) suggest that investors should monitor their portfolio at least once or twice a year.

However, evidence indicates that not all of them plan to revise their asset allocation. Table 6.8 shows that about 71.1% of the respondents report that they intend to review or change their investment choice at least once a year, with 17.7% stating that they will review more than once a year. Interestingly, almost one-fifth (17.2%) of respondents state that they will not review or change their investment policy at all. This may be explained largely by the status quo bias documented by Samuelson and Zeckhauser (1988). This is also consistent with the finding from Agnew, Balduzzi, and Sunden (2003) who studied the portfolio choice and trading activity of a sample of US workers’ pension plans and found that workers infrequently rebalance their retirement portfolios.

The results also show that those who plan not to review or change their investment choice at all are more likely to be those who had not received financial advice or are less knowledgeable financially. This finding emphasizes that having adequate financial knowledge is greatly important. It is possible that those who have received financial advice or financial education are taught that they should review their portfolio regularly so they act according to what a financial planner has advised.
Table 6.8: Investment monitoring and review process

<table>
<thead>
<tr>
<th>How often do you plan to review your pension portfolio?</th>
<th>All</th>
<th>No</th>
<th>Yes</th>
<th>Financial Literacy</th>
<th>Risk Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>No</td>
<td>Yes</td>
<td>Financial Literacy</td>
<td>Risk Tolerance</td>
</tr>
<tr>
<td></td>
<td>17.7</td>
<td>17.7</td>
<td>17.7</td>
<td>17.1</td>
<td>18.2</td>
</tr>
<tr>
<td></td>
<td>53.5</td>
<td>49.4</td>
<td>63.2</td>
<td>44.1</td>
<td>62.0</td>
</tr>
<tr>
<td></td>
<td>10.3</td>
<td>9.2</td>
<td>13.2</td>
<td>5.4</td>
<td>14.9</td>
</tr>
<tr>
<td></td>
<td>1.3</td>
<td>0.0</td>
<td>4.4</td>
<td>1.8</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>17.2</td>
<td>23.8</td>
<td>1.5</td>
<td>31.5</td>
<td>4.1</td>
</tr>
</tbody>
</table>

*Note: Figures are shown in percentages.*
6.3.3 Financial Advice

The respondents were asked to express their opinion whether they agree or not with the popular investment advice. Participants can state the extent they agree with that advice from ‘strongly agree’ to ‘strongly disagree’. They also can state that they have no strong opinion on the advice. The survey results show that most of respondents tend to agree with the typical and popular investment advice. The results in table 6.9 indicate that diversification advice is by far the most trusted financial advice. In particular, 94.4% of respondents believe that they either agree or strongly agree that they should hold a diversified portfolio in order to reduce investment risk. It also finds that about 69.8% of respondents believe in the lifecycle investing proposition that young should invest heavily in equities and then reduce the holdings as they age. Interestingly, almost 60% of respondents believe in equity risk premium which means that they believe that stocks generally provide higher return than bonds in the long run. Approximately 60% of respondents think that investment for long-term is less risky than for short-term. Finally, about half (50.5%) of respondents agree that those who have more money should invest more in the stock market.

The respondents were also asked to give their view to the extent of the importance of sources of financial advice. As Table 6.10 shows, it appears that respondents believe that an employer is the most important source of information when they make their pension investment decision. About two-third of respondents believe that information from an employer is either important (48.7%) or very important (25.4%). This finding emphasizes the importance of workplace financial education as it is possible that workers generally have trust in the company that they work for.
Table 6.9: Respondents’ view on conventional financial advice

<table>
<thead>
<tr>
<th></th>
<th>Average Score</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>No strong opinion</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investors should diversify their assets</td>
<td>4.4</td>
<td>0.4</td>
<td>1.7</td>
<td>3.5</td>
<td>49.1</td>
<td>45.3</td>
</tr>
<tr>
<td>Younger investors should invest heavily in equities</td>
<td>3.8</td>
<td>0.4</td>
<td>10.8</td>
<td>19.0</td>
<td>44.4</td>
<td>25.4</td>
</tr>
<tr>
<td>Stocks provide higher return than bonds over the long run</td>
<td>3.6</td>
<td>0.4</td>
<td>12.9</td>
<td>27.6</td>
<td>41.4</td>
<td>17.7</td>
</tr>
<tr>
<td>Long-term investment is less risky than short-term investment</td>
<td>3.6</td>
<td>0.4</td>
<td>14.2</td>
<td>25.4</td>
<td>44.0</td>
<td>16.0</td>
</tr>
<tr>
<td>Wealthier investors should invest more in the stock market</td>
<td>3.4</td>
<td>1.7</td>
<td>16.4</td>
<td>31.5</td>
<td>39.7</td>
<td>10.8</td>
</tr>
</tbody>
</table>

Note: Figures are shown in percentages. Average score is based on scale 1 = “strongly disagree” through to 5 “strongly agree”. Exact wording of this question is shown in an appendix B.

Table 6.10: Source of financial advice

<table>
<thead>
<tr>
<th></th>
<th>Average Score</th>
<th>Not important at all</th>
<th>Not important</th>
<th>Moderately Important</th>
<th>Important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer</td>
<td>3.9</td>
<td>0.9</td>
<td>7.8</td>
<td>17.2</td>
<td>48.7</td>
<td>25.4</td>
</tr>
<tr>
<td>Asset Management Company</td>
<td>3.7</td>
<td>3.5</td>
<td>9.5</td>
<td>17.2</td>
<td>52.6</td>
<td>17.2</td>
</tr>
<tr>
<td>Friend or Family member</td>
<td>3.7</td>
<td>0.0</td>
<td>6.9</td>
<td>32.8</td>
<td>45.3</td>
<td>15.1</td>
</tr>
<tr>
<td>TV/ Newspapers/Magazines</td>
<td>3.4</td>
<td>0.9</td>
<td>15.1</td>
<td>35.8</td>
<td>44.4</td>
<td>3.9</td>
</tr>
<tr>
<td>Internet / Online resource</td>
<td>3.5</td>
<td>0.4</td>
<td>12.1</td>
<td>31.9</td>
<td>48.3</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Note: Figures are shown in percentages. Average score is based on scale 1 = “strongly disagree” through to 5 “strongly agree”.
6.3.4 Investment Decisions

To evaluate the effectiveness of the new pension programme, the survey asked several questions about how respondents made investment choices. As shown in table 6.11, almost all of respondents (91.8%) prefer to make the investment decision themselves. Moreover, 86.6% of respondents state that the investment choice they made is the result of their own choice. This suggests that the respondents are quite active in their pension plans. However, another 13.4% say they did not make any decision; hence, their pension assets were directed to the plan default choice. It is possible that these respondents do not care about how their pension assets are invested or they may think that the default fund is appropriate for them. This is not surprising since the evidence in the US also shows many pension members tend to accept the default option in their pension plan and make few active choices (Choi et al., 2002). According to Choi et al. (2002)’s study, between 48% and 81% of pension plan assets are invested in the default fund.

The most interesting results come from examining the responses conditional on members’ characteristics. It appears that respondents who received financial advice, or are more financially knowledgeable or less risk averse are more likely to make active investment decisions. This implies that the new pension programme is more likely to be well-received among companies that provide financial education to members or companies that have financially knowledgeable workers.

The survey results also report that about half of respondents (53%) view that the number of investment choices is appropriate especially for those who had advice and have greater financial knowledge, whereas 26.6% view that the investment choices are either too broad or too narrow. Interestingly, as much as 20.3% of respondents admit that they do not know what the investment choices offered are, especially among those who had no advice, or have lesser financial knowledge. This “choice overload” hypothesis (Iyengar, Huberman, and Jiang, 2004) may be one of the possible explanations why not every worker made active investment choices.
Table 6.11: Investment decisions

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Advice</th>
<th>Financial Literacy</th>
<th>Risk Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>As regards the investment choices in your pension scheme, do you prefer to</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make the decisions yourself</td>
<td>91.8</td>
<td>90.2</td>
<td>95.6</td>
<td>89.2</td>
</tr>
<tr>
<td>Have fund committee make the decisions for you</td>
<td>8.2</td>
<td>9.8</td>
<td>4.4</td>
<td>10.8</td>
</tr>
<tr>
<td>Are the investment choices in your pension the result of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An active choice you made</td>
<td>86.6</td>
<td>83.5</td>
<td>94.1</td>
<td>83.8</td>
</tr>
<tr>
<td>A default option set by the scheme</td>
<td>13.4</td>
<td>16.5</td>
<td>5.9</td>
<td>16.2</td>
</tr>
<tr>
<td>Is the range of investment choices in your pension scheme</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Too narrow—there are not enough options</td>
<td>5.6</td>
<td>4.3</td>
<td>8.8</td>
<td>5.4</td>
</tr>
<tr>
<td>About right</td>
<td>53.0</td>
<td>48.2</td>
<td>64.7</td>
<td>43.2</td>
</tr>
<tr>
<td>Too broad—there are too many options</td>
<td>21.1</td>
<td>22.0</td>
<td>19.1</td>
<td>14.4</td>
</tr>
<tr>
<td>I don’t know what the options are</td>
<td>20.3</td>
<td>25.6</td>
<td>7.4</td>
<td>36.9</td>
</tr>
</tbody>
</table>

*Note:* Figures are shown in percentages.
The main goal of an Employee’s Choice programme is to allow workers to make appropriate investment choices by offering more choices for them to choose from. The survey asked what investment choice that respondents choose for their pension plans. Figure 6.1 shows the histogram of the investment options chosen by respondents. It shows that about 39.7% of respondents remain with the current policy, whereas 47.4% prefer to have higher risk policies and 12.9% prefer the lower risk policies. The data suggests that workers generally invest more aggressively under the new pension programme compared to the previous programme.

Table 6.12 reports the investment choice chosen grouped by financial advice, financial literacy, and risk tolerance. Interestingly, respondents who have chosen higher risk policies tend to be those who received advice, have higher level of financial literacy, and are less risk averse. About 42.1% of those who had no advice appear to remain in the current policy compared to about 33.8% of those who had received advice. Those who have lower financial knowledge tend to remain more in the current policy than those who have greater knowledge, although the difference is relatively small (40.5% vs. 38.8%).

How well are respondents faring in making investment choices? To assess the ability to make investment choices, this study compares respondents’ respective investment choices to their levels of risk tolerance. Interestingly, Table 6.12 shows that many respondents appear to make reasonable investment choices. It appears that many respondents make investment choices consistent with financial advice. Workers with lower level of risk tolerance are more likely to choose less risky investment choices. Specifically, about 76.0% of those who have lower risk tolerance remain in the current policy or choose lower risk policy while about 66.4% of those who have higher risk tolerance choose higher risk policies.

This study also examines the pattern of investment choice selected by members across demographic variables such as age, gender, and wealth in Table 6.13. It is apparent from this table that many respondents appear to make investment choices consistent with expert advice with older workers are significantly more likely to choose less risky investment choices. Specifically, more than half of younger respondents (age 21-40) choose higher risk policies while more than half of older respondents (age 41-60) either
remain in the current policy or choose lower risk policies. This finding is consistent with the lifecycle investing theory and conventional financial advice. Males appear to choose higher risk choices, but the difference is relatively small. The pattern of investment choice has a U-shape with regard to wealth. Respondents who accumulate between THB1-3 million appear to choose a lower risk policy compared to those who have lesser level of wealth, but those who have more than THB3 million seems to opt for a higher risk policy. In other words, those who do not have much money or those who have too much money generally take more risk. It is possible that poorer individuals view that they need to take higher risk in order to build adequate retirement assets. For those wealthier individuals who have more than adequate retirement assets, they may take higher risk simply because they have higher capacity to take more risk. On the other hand, those with moderate levels of wealth may invest less aggressively because they need to preserve their capital to ensure that they have adequate income at retirement.
Figure 6.1: Investment choice selected by pension members under the Employee’s Choice programme

Note: 1=very low risk policy; 2=low risk policy; 3=current policy; 4=high risk policy; 5=very high risk policy
Table 6.12: Investment choice by advice, financial literacy, and risk tolerance

<table>
<thead>
<tr>
<th>What is your current choice in company’s pension fund?</th>
<th>Advice</th>
<th>Financial Literacy</th>
<th>Risk Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Very low risk policy</td>
<td>3.0</td>
<td>3.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Low risk policy</td>
<td>9.9</td>
<td>9.2</td>
<td>11.8</td>
</tr>
<tr>
<td>Current policy</td>
<td>39.7</td>
<td>42.1</td>
<td>33.8</td>
</tr>
<tr>
<td>Risky policy</td>
<td>26.7</td>
<td>28.7</td>
<td>22.1</td>
</tr>
<tr>
<td>Higher risk policy</td>
<td>20.7</td>
<td>16.5</td>
<td>30.9</td>
</tr>
</tbody>
</table>

*Note:* Figures are shown in percentages.
Table 6.13: Investment choice across demographics

<table>
<thead>
<tr>
<th>Age</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Mean*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 21-30</td>
<td>2.4</td>
<td>4.7</td>
<td>38.8</td>
<td>24.7</td>
<td>29.4</td>
<td>3.7</td>
</tr>
<tr>
<td>Age 31-40</td>
<td>1.4</td>
<td>8.1</td>
<td>29.7</td>
<td>36.5</td>
<td>24.3</td>
<td>3.7</td>
</tr>
<tr>
<td>Age 41-50</td>
<td>7.7</td>
<td>18.0</td>
<td>43.6</td>
<td>28.2</td>
<td>2.6</td>
<td>3.0</td>
</tr>
<tr>
<td>Age 51-60</td>
<td>2.9</td>
<td>17.7</td>
<td>58.8</td>
<td>8.8</td>
<td>11.8</td>
<td>3.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Mean*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>6.5</td>
<td>4.8</td>
<td>33.9</td>
<td>21.0</td>
<td>33.9</td>
<td>3.7</td>
</tr>
<tr>
<td>Female</td>
<td>1.8</td>
<td>11.8</td>
<td>41.8</td>
<td>28.8</td>
<td>15.9</td>
<td>3.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wealth</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Mean*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than THB1 million</td>
<td>3.5</td>
<td>9.2</td>
<td>39.1</td>
<td>25.9</td>
<td>22.4</td>
<td>3.5</td>
</tr>
<tr>
<td>THB1-3 million</td>
<td>2.8</td>
<td>16.7</td>
<td>38.9</td>
<td>33.3</td>
<td>8.3</td>
<td>3.3</td>
</tr>
<tr>
<td>More than THB3 million</td>
<td>0.0</td>
<td>4.6</td>
<td>45.5</td>
<td>22.7</td>
<td>27.3</td>
<td>3.7</td>
</tr>
</tbody>
</table>

*Note: Figures are shown in percentages.
* 1=very low risk policy; 2=low risk policy; 3=current policy; 4=high risk policy; 5=very high risk policy

Next, the study investigates the equity investments of respondents by asking a hypothetical question about their preferred equity allocation strategy. In terms of investment, the new pension programme at Bangkok Bank currently offers five choices for employees, ranging from very-low risk policy to high risk policy. Each choice has a fixed asset allocation strategy about how much to invest in equities and bonds. At present, the most risky policy invests between 15% to 30% of assets in equities (both domestic and foreign equities). It is interesting to know exactly how much of an equity portion these workers desire if there was no limitation on the equity allocation. Therefore, in this study, the respondents were also asked to state their preferred equity allocation strategy if they are allowed to make asset allocation decision at their own discretion.

Standard portfolio theory suggests that each investor will hold some risky assets such as stocks as long as the equity premium is positive. Interestingly, as Figure 6.2 shows, not everyone wants to hold equities. About 6.5% of respondents say that do not prefer to invest in equities at all. However, there are many workers who prefer to have higher equity allocations than their current exposure. Specifically, about one-third (34.5%) of respondents indicate that they prefer to invest more than 40% of their retirement assets
in the stock market. As the most risky choice in the pension plan has a maximum equity allocation of only 30%, it suggests that many workers will invest more aggressively in equities if they are allowed to make asset allocation decision at their own discretion. Table 6.14 presents the investment choices chosen by respondents compared to their preferred equity allocation. More than half of respondents (55.4%) who are currently in the default option with the maximum equity allocation of 20% prefer to invest more than 40% of their pension assets in equities. The majority of those who currently invest in the most risky option (83.3%) with the maximum equity allocation of 30% also indicate that they prefer to increase their equity allocation to more than 40% of their pension assets.
**Figure 6.2:** Preferred Equity allocation

![Preferred Equity allocation chart]

**Table 6.14:** Preferred equity allocation and investment choice

<table>
<thead>
<tr>
<th>Investment Choice</th>
<th>Equity Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td>Very low risk policy</td>
<td>28.6</td>
</tr>
<tr>
<td>Low risk policy</td>
<td>8.7</td>
</tr>
<tr>
<td>Current policy</td>
<td>5.4</td>
</tr>
<tr>
<td>Risky policy</td>
<td>9.7</td>
</tr>
<tr>
<td>High risk policy</td>
<td>0.0</td>
</tr>
</tbody>
</table>
The preliminary analysis of data suggests that financial knowledge and risk tolerance may explain the equity allocation decisions. As Table 6.15 shows, respondents who received advice, have higher level of financial literacy, or have higher risk tolerance prefer to allocate more of their retirement assets in equities. For example, about 12.6% of those who have lower financial knowledge stated that they prefer not to invest in equities at all while there are only 0.8% of those who have higher financial knowledge that would prefer zero allocation to equities.

Table 6.16 also shows the preferred equity allocation across demographic variables. On the surface, the youngest group prefers to invest most aggressively compared to others. Nevertheless, about one-third of those who are in the youngest group prefer to invest less than 20% in equities which is quite a contradiction to what the lifecycle investing theory has suggested. While young individuals are recommended to invest heavily in growth assets such as equities, not every respondent in this study intends to follow this suggested guideline. Males are typically more aggressive than females in terms of equity allocation. Again, the pattern of preferred equity allocation has a U-shape with regard to wealth, but only for those who intend to invest more than 40% of their assets in equities. About 35.1% of respondents who accumulate between THB1-3 million prefer to invest more than 40% of their assets in the stock market. The percentage is somewhat lower for those who have between THB1-3 million (30.5%) and higher for those who have more than THB3 million (36.4%).

In addition, the study also examines respondents’ investment outside their pension plans. The respondents were asked if they invest their non-pension assets directly in the stock market or indirectly through mutual funds. Interestingly, about one-third (34%) of respondents report that they have no equity investment at all outside their pension. There appears to be evidence of the stockholding puzzle as documented by Haliassos and Bertaut (1995). However, it is interesting to note that approximately three-fourths of those who had advice or have greater financial knowledge indicate that they have additional savings in the stock market outside their pension plans. This evidence is consistent with the finding of Bernheim and Garrett (2003) that those who were exposed to workplace financial education are more likely to save more, including saving outside of pension plans.
<table>
<thead>
<tr>
<th>Advice</th>
<th>Financial Literacy</th>
<th>Risk Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>None</td>
<td>6.5</td>
<td>8.5</td>
</tr>
<tr>
<td>20% or less</td>
<td>32.8</td>
<td>34.8</td>
</tr>
<tr>
<td>21% - 40%</td>
<td>26.3</td>
<td>24.4</td>
</tr>
<tr>
<td>41% - 60%</td>
<td>19.8</td>
<td>19.5</td>
</tr>
<tr>
<td>61% - 80%</td>
<td>9.9</td>
<td>9.2</td>
</tr>
<tr>
<td>81% - 100%</td>
<td>4.7</td>
<td>3.7</td>
</tr>
</tbody>
</table>

*Note: Figures are shown in percentages.*
Table 6.16: Equity allocation across demographics

<table>
<thead>
<tr>
<th>Equity Allocation</th>
<th>None</th>
<th>20% or less</th>
<th>21%-40%</th>
<th>41%-60%</th>
<th>61%-80%</th>
<th>81%-100%</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 21-30</td>
<td>5.9</td>
<td>30.6</td>
<td>18.8</td>
<td>18.8</td>
<td>16.5</td>
<td>9.4</td>
<td>3.4</td>
</tr>
<tr>
<td>Age 31-40</td>
<td>6.8</td>
<td>28.4</td>
<td>31.1</td>
<td>24.3</td>
<td>8.1</td>
<td>1.4</td>
<td>3.0</td>
</tr>
<tr>
<td>Age 41-50</td>
<td>10.3</td>
<td>35.9</td>
<td>33.3</td>
<td>15.4</td>
<td>5.1</td>
<td>0.0</td>
<td>2.7</td>
</tr>
<tr>
<td>Age 51-60</td>
<td>2.9</td>
<td>44.1</td>
<td>26.5</td>
<td>17.7</td>
<td>2.9</td>
<td>5.9</td>
<td>2.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Equity Allocation</th>
<th>None</th>
<th>20% or less</th>
<th>21%-40%</th>
<th>41%-60%</th>
<th>61%-80%</th>
<th>81%-100%</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3.2</td>
<td>24.2</td>
<td>21.0</td>
<td>29.0</td>
<td>12.9</td>
<td>9.7</td>
<td>3.5</td>
</tr>
<tr>
<td>Female</td>
<td>7.7</td>
<td>35.9</td>
<td>28.2</td>
<td>16.5</td>
<td>8.8</td>
<td>2.9</td>
<td>2.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Equity Allocation</th>
<th>None</th>
<th>20% or less</th>
<th>21%-40%</th>
<th>41%-60%</th>
<th>61%-80%</th>
<th>81%-100%</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than THB1 million</td>
<td>6.9</td>
<td>32.8</td>
<td>25.3</td>
<td>19.0</td>
<td>11.5</td>
<td>4.6</td>
<td>3.1</td>
</tr>
<tr>
<td>THB1-3 million</td>
<td>8.3</td>
<td>30.6</td>
<td>30.6</td>
<td>13.9</td>
<td>8.3</td>
<td>8.3</td>
<td>3.1</td>
</tr>
<tr>
<td>More than THB3 million</td>
<td>0.0</td>
<td>36.4</td>
<td>27.3</td>
<td>36.4</td>
<td>0.0</td>
<td>0.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Note: Figures are shown in percentages.

Table 6.17: Direct and indirect stock investment outside pension

<table>
<thead>
<tr>
<th>Advice</th>
<th>Financial Literacy</th>
<th>Risk Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Do you invest directly in stocks or through mutual funds outside of pension account?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>66.0</td>
<td>61.6</td>
</tr>
<tr>
<td>No</td>
<td>34.1</td>
<td>38.4</td>
</tr>
</tbody>
</table>

Note: Figures are shown in percentages.
6.3.5 Asset Allocation

Respondents were asked to state the extent to which they believe particular asset classes are appropriate to their pension portfolio. The average score is based on scale 1 = “not at all appropriate” to 5 “very appropriate”. There are some interesting observations from the survey results. As Table 6.18 shows, government bonds receive the highest scores (3.9 points) compared to corporate bonds (3.6 points) and domestic equities funds (3.6 points). Surprisingly, bank deposits receive relatively high score (3.4 points) despite typically giving the lowest expected return among other asset classes. Having high preferences for bonds and bank deposits is consistent with the finding from Benartzi and Thaler (1999) who argue that individual pension members may exhibit ’myopic loss aversion’ by favouring stable but low return assets.

Interestingly, gold investments appear to receive a relatively high score (3.5 points). Little academic research has been done on the role of gold in asset allocation. Investors typically hold gold in their portfolio because they believe that it is useful as an inflation hedge, a currency hedge, an alternative to assets with low real returns, and a safe haven (Harvey, 2013). In addition, gold is regarded to be more attractive as an investment in some countries due to differences in economic conditions as well as culture. Starr and Tran (2008) state that in many emerging market countries, physical gold appears to be seen as a store of wealth, especially in countries where financial systems are in the developing stages and investors have limited investment choices or lack confidence in financial markets. In addition, they state that people in many emerging countries, such as China and India, traditionally regard gold as investment due to the perception of timeless intrinsic value.

The least appropriate assets are foreign equities funds (3.1 points). This may be the result of the home bias hypothesis (French and Poterba, 1991) which is the tendency for investors to invest mainly in domestic equities despite the benefits of diversifying into foreign equities.
<table>
<thead>
<tr>
<th></th>
<th>Average Score</th>
<th>Not at all appropriate</th>
<th>Not very appropriate</th>
<th>No strong opinion</th>
<th>Fairly appropriate</th>
<th>Very Appropriate</th>
<th>Among Those with Opinions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank deposits</td>
<td>3.4</td>
<td>9.5</td>
<td>12.1</td>
<td>16.0</td>
<td>54.7</td>
<td>7.8</td>
<td>25.6</td>
</tr>
<tr>
<td>Government bonds</td>
<td>3.9</td>
<td>0.9</td>
<td>4.3</td>
<td>15.5</td>
<td>57.8</td>
<td>21.6</td>
<td>6.1</td>
</tr>
<tr>
<td>Corporate bonds</td>
<td>3.6</td>
<td>0.9</td>
<td>6.0</td>
<td>31.5</td>
<td>53.9</td>
<td>7.8</td>
<td>10.1</td>
</tr>
<tr>
<td>Domestic Equity funds</td>
<td>3.6</td>
<td>1.3</td>
<td>8.6</td>
<td>33.2</td>
<td>46.1</td>
<td>10.8</td>
<td>14.8</td>
</tr>
<tr>
<td>Foreign Equity funds</td>
<td>3.1</td>
<td>4.3</td>
<td>13.8</td>
<td>49.6</td>
<td>28.0</td>
<td>4.3</td>
<td>35.9</td>
</tr>
<tr>
<td>Foreign bonds</td>
<td>3.2</td>
<td>4.3</td>
<td>12.5</td>
<td>49.1</td>
<td>29.3</td>
<td>4.7</td>
<td>33.1</td>
</tr>
<tr>
<td>Gold</td>
<td>3.5</td>
<td>3.9</td>
<td>11.6</td>
<td>31.9</td>
<td>40.5</td>
<td>12.1</td>
<td>22.8</td>
</tr>
</tbody>
</table>

*Note:* Figures are shown in percentages. Average score is based on scale 1 = “not at all appropriate” through to 5 “very appropriate”.
6.3.6 Risk Tolerance

In order to understand how respondents make investment choice, it is important to know their capacity to take risk. The study also examines members’ investment risk tolerance. The survey has separate questions to test respondents’ risk profile. All of these questions are taken from the suitability test questions developed by the Security Exchange Commission Thailand (SEC). According to the SEC, the summation of these scores ranges from 10 to 38. The score reflects individuals’ risk tolerance: low (10-14), low to moderate (15-21), moderate to high (22-29), high (30-36), and very high (37-38). Figure 6.3 shows the histogram of risk tolerance score while table 6.19 reports the summary of risk tolerance score according to the SEC guideline, with the majority of the respondents having moderately high risk tolerance. Next, this study generates a risk tolerance dummy which subsequently will be used in the regression analysis. Respondents are classified into two groups. Those who have risk tolerance scores higher or equal to median (50\textsuperscript{th} percentile, or 26 points) are considered to be a “higher than average” risk tolerance group, while those who score below median are considered to be a “lower than average” risk tolerance group.

According to the SEC guideline, about two-thirds (68.1\%) of respondents have moderately high risk tolerance. This is quite interesting because there seems to be an inconsistency between risk tolerance level and investment choice. If two-thirds of respondents have moderately high risk tolerance, it would be uncommon if about two-thirds of respondents also choose moderately high risk investment choice (policy 4). However, there are only about one-fourth (26.7\%) that actually chose the moderately high risk policy. In other words, it seems that some respondents prefer to invest their pension assets more conservatively than their true capacity to take risk. Table 6.20 shows some interesting patterns. The profile of risk tolerance has a hump shape with regard to age. Male and wealthy respondents are significantly more likely to have higher risk tolerance.

---

\textsuperscript{54} This suitability test was developed to help investors to understand their own risk profile. Since July 2011, the Thai SEC requires all mutual fund investors in Thailand to perform the test before investing.
Figure 6.3: Histogram of risk tolerance score
Table 6.19: Risk tolerance score group by the Thai SEC guideline

<table>
<thead>
<tr>
<th>Group</th>
<th>Score</th>
<th>Average Score</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Risk</td>
<td>Less than 15</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Low to Moderate Risk</td>
<td>15-21</td>
<td>18.2</td>
<td>13.8</td>
</tr>
<tr>
<td>Moderate to High Risk</td>
<td>22-29</td>
<td>25.7</td>
<td>68.1</td>
</tr>
<tr>
<td>High Risk</td>
<td>30-36</td>
<td>31.5</td>
<td>17.2</td>
</tr>
<tr>
<td>Very High Risk</td>
<td>More than 36</td>
<td>37.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>25.8</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 6.20: Risk tolerance across demographics

<table>
<thead>
<tr>
<th>Age</th>
<th>Risk Tolerance Score</th>
<th>&lt; median</th>
<th>&gt;= median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 21-30</td>
<td>37.7</td>
<td>62.4</td>
<td></td>
</tr>
<tr>
<td>Age 31-40</td>
<td>32.4</td>
<td>67.6</td>
<td></td>
</tr>
<tr>
<td>Age 41-50</td>
<td>61.5</td>
<td>38.5</td>
<td></td>
</tr>
<tr>
<td>Age 51-60</td>
<td>70.6</td>
<td>29.4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Risk Tolerance Score</th>
<th>&lt; median</th>
<th>&gt;= median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>27.4</td>
<td>72.6</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>51.2</td>
<td>48.8</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wealth</th>
<th>Risk Tolerance Score</th>
<th>&lt; median</th>
<th>&gt;= median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than THB1 million</td>
<td>48.9</td>
<td>51.2</td>
<td></td>
</tr>
<tr>
<td>THB1-3 million</td>
<td>33.3</td>
<td>66.7</td>
<td></td>
</tr>
<tr>
<td>More than THB3 million</td>
<td>31.8</td>
<td>68.2</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Figures are shown in percentages.*
6.3.7 Financial literacy

This study measures the level of financial literacy using both self-reported financial confidence and a test-based measure of financial literacy. Having financial literacy test in the survey allows this study to assess whether financial literacy influences investment choice decisions. First, the study asked respondents to do self-assessment on their own financial knowledge. Specifically, respondents were asked to evaluate their overall financial skills which are ranged from ‘Not at all knowledgeable’ to ‘Very knowledgeable’. Since all respondents work in a financial industry, it is expected that most of them are likely to be more knowledgeable about financial matters than the general population.

However, as shown in table 6.21, only about half of respondents (48.7%) in this survey are confident that they are moderately knowledgeable about financial matters, whereas about one-third (32.4%) state that they are not very or not at all knowledgeable. Only 19% of respondents think that they are fairly or very knowledgeable about finance. This is interesting as earlier finding reports that almost every respondent prefers to make investment decisions by themselves rather than accept the decision of the pension fund committee. While most respondents prefer to make investment decisions by themselves, almost one-third of those respondents admit that they do not have adequate financial knowledge. A natural question to ask is how these workers can make informed investment choices if they have low confidence in their financial knowledge. This suggests that some workers are too optimistic about their abilities to make investment decisions.

Financial advice seems to influence respondents’ self-assessment of their financial knowledge. Those who received financial advice typically have more confidence to report that they have higher level of financial knowledge than those who did not. Interestingly, the finding suggests that some workers are overconfident in their abilities. Many respondents were able to evaluate their financial knowledge accurately to a certain degree. About 86.8% of respondents who have high financial literacy scores report that they have a moderate amount of financial knowledge or higher, whereas 53.2% of respondents who have low levels of financial literacy report that they are not very or not at all knowledgeable. However, almost half (46.8%) of those who have low
financial literacy report that they are confident that they have moderate or higher knowledge in finance matters. In other words, those who score low on the financial literacy test appear to report that they are quite knowledgeable financially.

Next, the financial literacy test is conducted to measure the overall financial knowledge of pension members. To measure financial literacy, this study follows van Rooij et al. (2011) and uses their advanced financial literacy questions that were developed to measure financial knowledge related to investment and portfolio choice. There are eleven questions in total. The exact wordings of the questionnaire are maintained for comparison purposes. Responses to the financial literacy test are shown in table 6.22. Only about 36% know about bond pricing and about 43% can answer the question about how long-term bonds work correctly. About 78% of respondents know that stocks are riskier than bonds, but less than 50% of respondents know that stocks give the highest return over a long time period. This might partly explains why the equity culture in Thailand remains poor. One possible explanation is that people generally do not recognize that stocks typically give higher return than bank deposits or bonds in the long-run. Another possible reason is that people may think that riskier investments yield lower return. For example, in the previous section, it was shown that about 40% of respondents do not have a strong belief that the stock market will provide higher return than bonds in the long-term and about 28% of respondents admit that investment loss is the first thing that comes into their mind when investing in the stock market. Overall, there are only 12% of respondents that are able to answer all questions correctly. These findings suggest that the lack of financial knowledge is widespread, even among the respondents who work in a financial industry.

The analysis of respondents’ financial knowledge across their characteristics reveals some interesting patterns (shown in table 6.23). Elderly are found to have less financial knowledge with almost two-thirds (64.7%) of those who are between 51-60 year of age appear to have lower financial literacy scores. There are sharp gender differences in financial knowledge with women are more likely to have lower level of financial knowledge than men. Interestingly, wealthier individuals are more likely to have greater financial knowledge. This finding is consistent with Gustman, Steinmeier, and Tabatabai (2012) findings which showed that the greater pension wealth actually leads to greater financial knowledge, rather than the other way around.
<table>
<thead>
<tr>
<th>How would you assess your overall financial knowledge?</th>
<th>All</th>
<th>Advice</th>
<th>Financial Literacy</th>
<th>Risk Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all knowledgeable</td>
<td>3.9</td>
<td>4.3</td>
<td>5.4</td>
<td>2.5</td>
</tr>
<tr>
<td>Not very knowledgeable</td>
<td>28.5</td>
<td>37.8</td>
<td>47.8</td>
<td>10.7</td>
</tr>
<tr>
<td>Moderately knowledgeable</td>
<td>48.7</td>
<td>43.9</td>
<td>38.7</td>
<td>57.9</td>
</tr>
<tr>
<td>Fairly knowledgeable</td>
<td>14.7</td>
<td>11.0</td>
<td>7.2</td>
<td>21.5</td>
</tr>
<tr>
<td>Very knowledgeable</td>
<td>4.3</td>
<td>3.1</td>
<td>0.9</td>
<td>7.4</td>
</tr>
</tbody>
</table>

*Note:* Figures are shown in percentages.
**Table 6.22: Responses of advanced financial literacy test**

<table>
<thead>
<tr>
<th>Question</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which statement describes the main function of the stock market?</td>
<td>63.8</td>
<td>28.9</td>
<td>7.3</td>
</tr>
<tr>
<td>What happens if somebody buys the stock of firm B in the stock market?</td>
<td>76.3</td>
<td>8.2</td>
<td>15.5</td>
</tr>
<tr>
<td>Which statement about mutual funds is correct?</td>
<td>62.1</td>
<td>13.8</td>
<td>24.1</td>
</tr>
<tr>
<td>What happens if somebody buys a bond of firm B?</td>
<td>61.6</td>
<td>14.7</td>
<td>23.7</td>
</tr>
<tr>
<td>Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return: saving accounts, bonds, or stocks?</td>
<td>43.5</td>
<td>38.4</td>
<td>18.1</td>
</tr>
<tr>
<td>Normally, which asset displays the highest fluctuations over time: saving accounts, bonds, or stocks?</td>
<td>95.3</td>
<td>2.2</td>
<td>2.6</td>
</tr>
<tr>
<td>When an investor spreads his or her money among different assets, does the risk of losing money increase, decrease, or stay the same?</td>
<td>86.6</td>
<td>7.8</td>
<td>5.6</td>
</tr>
<tr>
<td>If you buy a 10-year bond, it means you cannot sell it after 5 years without incurring a major penalty. True or false?</td>
<td>43.1</td>
<td>20.7</td>
<td>36.2</td>
</tr>
<tr>
<td>Stocks are normally riskier than bonds. True or false?</td>
<td>78.5</td>
<td>5.2</td>
<td>16.4</td>
</tr>
<tr>
<td>Buying a company stock usually provides a safer return than a stock mutual fund. True or false?</td>
<td>62.5</td>
<td>12.1</td>
<td>25.4</td>
</tr>
<tr>
<td>If the interest rate falls, what should happen to bond prices: rise/fall/stay the same/none of the above?</td>
<td>36.2</td>
<td>33.2</td>
<td>30.6</td>
</tr>
</tbody>
</table>

*Note: Note: Figures are shown in percentages. All questions are taken from van Rooij et al. (2011)*
Table 6.23: Financial literacy across demographics

<table>
<thead>
<tr>
<th>Age</th>
<th>Financial Literacy Score &lt; median</th>
<th>Financial Literacy Score &gt;= median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 21-30</td>
<td>49.4</td>
<td>50.6</td>
</tr>
<tr>
<td>Age 31-40</td>
<td>41.9</td>
<td>58.1</td>
</tr>
<tr>
<td>Age 41-50</td>
<td>41.0</td>
<td>59.0</td>
</tr>
<tr>
<td>Age 51-60</td>
<td>64.7</td>
<td>35.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Financial Literacy Score &lt; median</th>
<th>Financial Literacy Score &gt;= median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>22.6</td>
<td>77.4</td>
</tr>
<tr>
<td>Female</td>
<td>57.1</td>
<td>42.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wealth</th>
<th>Financial Literacy Score &lt; median</th>
<th>Financial Literacy Score &gt;= median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than THB1 million</td>
<td>47.1</td>
<td>52.9</td>
</tr>
<tr>
<td>THB1-3 million</td>
<td>58.3</td>
<td>41.7</td>
</tr>
<tr>
<td>More than THB3 million</td>
<td>36.4</td>
<td>63.6</td>
</tr>
</tbody>
</table>

*Note*: Figures are shown in percentages term.
6.4 Regression Analysis

This section reports results from regression analysis. The previous sections provide the preliminary analysis of the survey data while this section uses regression analysis to perform more complex analysis in order to test the hypotheses and to evaluate the effectiveness of the new pension programme. To do that, the study first tests whether workers make active investment decisions as the programme aspires. Next, it tests whether workers make the investment decision consistent with what the financial theory has suggested. In addition, it tests whether financial literacy is a necessary precondition for the implementation of the programme.

6.4.1 Are workers with greater financial literacy or who have received financial advice more likely to make active investment decisions?

This section aims to test the first two hypotheses of the study. The first hypothesis states that there is no significant difference between workers who have greater financial literacy and workers who have lesser financial literacy in terms of making active participation in the self-directed pension plan. Meanwhile, the second hypothesis states that there is no significant difference between workers who have received financial advice and workers who have not received financial advice in terms of making active participation in the self-directed pension plan. As mentioned earlier, the main objective of the Employee’s Choice programme is to enable workers to choose their own investment policy that is most suitable for them. Traditional economic theory assumes that individuals are rational and will make decisions that can maximize their utilities. Therefore, it is expected that every member should take advantage of this new programme and make active decisions choosing the option that is best for them.

Previous study suggests that many workers do not make active investment decisions but rather passively accept the plan’s default fund (Choi et al. 2002). Consistent to previous literature, this study also finds that not everyone made active investment decisions for their pensions. As discussed earlier, about 13 percent of respondents did not make active investment decisions under the new pension programme. Therefore, it is important to understand whether having financial knowledge or receiving financial advice increases workers’ propensity to be more active decision makers. Preliminary
statistical analysis (section 6.3.4) reports that those who received financial advice, have greater financial knowledge, or are less risk averse, are more likely to make active investment decisions. This section aims to analyse further using regression analysis and take into account other controls.

Table 6.24 shows the results of a probit regression where the dependent variable is an active choice dummy, which takes the value of one if the worker has reported that they made active choice on his or her own decision and zero otherwise. The independent variable is the respondents’ financial literacy score. Control variables include demographic variables such as age, a gender dummy, a marital status dummy, having children dummy, and two wealth dummies corresponding to those who accumulate between THB1-3 million and those who accumulate more than THB3 million in their financial wealth. In addition, the model also includes an advice dummy to control for differences between those who received financial advice and those who did not.

Interestingly, the results show that financial literacy does not have a strong association with workers’ decision to make an active investment choice and the hypothesis 1 is not rejected. In other words, having financial knowledge does not affect whether or not workers make active choices under the new self-directed pension plans. Therefore, the finding implies that the decision to participate actively in the new pension program does not require financial knowledge. Put simply, anyone, regardless of his or her financial knowledge can participate actively in the self-directed pension plans. This finding is in contrast to the results from Gallery et al. (2011) which find that DC plan members in Australia who actively make investment choices are more likely to have greater financial literacy.

There does not appear to be any relationship between the probability of making an active investment choice and other control variables except age. It finds that older individuals are less likely to make active choices. Specifically, the results show that age has a negative coefficient and is statistically significant at 1 percent level. This is consistent with the findings from Byrne, Blake, and Mannion (2009). Given that the default fund invests only 30 percent in risky assets, it is possible that older members are more likely to regard this default asset allocation as appropriate for their risk profiles than younger members who may need more aggressive asset allocation.
Meanwhile, the regression results suggest that financial advice appears to have a strong relationship with respondents’ decision to make an active investment choice and the hypothesis 2 is rejected. This suggests that financial advice has a powerful constructive effect as it does have an influence on respondents’ decisions. It might imply that financial advice is performatory because financial guidelines typically suggest people to make active investment decisions. As can be seen, the coefficient on a financial advice dummy is highest among other variables and is statistically significant at 10-percent level. This is an important finding, because it implies that those who have received financial advice have a 55.4 percent higher probability of making an active investment choice under the employee’s choice programme.

Respondents who receive financial advice tend to involve in the programme by making active investment decisions. However, just being active in the programme is not enough for workers. They also need to be able to pick the right investment choice that is suitable for them. The next section asks whether they are able to make informed investment decisions.
Table 6.24: Probit regression for active fund choice dummy variable

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Make Active Choice</th>
<th>Std. Err.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.031***</td>
<td>0.012</td>
</tr>
<tr>
<td>Gender (male = 1)</td>
<td>-0.249</td>
<td>0.267</td>
</tr>
<tr>
<td>Marital (married = 1)</td>
<td>0.151</td>
<td>0.423</td>
</tr>
<tr>
<td>Children (has children = 1)</td>
<td>0.547</td>
<td>0.480</td>
</tr>
<tr>
<td>Wealth (base = financial wealth &lt;= THB 1 million)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial wealth between THB1-3 million</td>
<td>0.545</td>
<td>0.398</td>
</tr>
<tr>
<td>Financial wealth &gt; THB3 million</td>
<td>-0.341</td>
<td>0.362</td>
</tr>
<tr>
<td>Financial advice (had advice =1)</td>
<td>0.554*</td>
<td>0.308</td>
</tr>
<tr>
<td>Financial literacy Score</td>
<td>0.015</td>
<td>0.043</td>
</tr>
<tr>
<td>Constant</td>
<td>1.991***</td>
<td>0.562</td>
</tr>
</tbody>
</table>

Log likelihood                                -81.533
Pseudo R-squared                               0.106
Number of Observations                        232

Note: ***p<0.01, *p<0.1
6.4.2 Are workers able to make informed investment decisions?

Under the new pension programme, the most important decision members have to make is the selection of the investment choice. This section studies how members choose investment options in order to test the third and the forth hypothesis of the study which states that workers are able to make informed investment decisions according to what financial advisors and investment theory have suggested. As previously mentioned, there are five investment choices, whereas each choice offers different investment strategy regarding risky asset allocation. For instance, the “Very low risk” policy invests 90 percent in low risk assets such as government bonds and bank deposits while the “Very risky” policy allocates 50 percent in risky assets which comprise equities, corporate bonds, and alternative investments such as commodities.

The regression model was used to test whether pension members’ investment decisions are consistent with academic theories and conventional financial advice which suggest that individuals should invest more in risky assets if they are younger or have higher risk tolerance. It relates the investment choice to risk tolerance, return objective, and financial literacy, controlling for demographic variables, wealth, and other potential determinants of investment choice decision. Specifically, this study uses ordered logistic regression where the dependent variable is the actual investment choice selected by the member. For example, the dependent variable is equal to one if respondents choose the lowest risk choice and equal to five if they choose the most risky choice.

The regression model uses a wide set of independent variables as suggested from theories and previous studies. It is important to understand whether heterogeneity across workers is likely to have a large effect on investment decision patterns. Therefore, the model includes demographic variables such as age, gender, marital status, wealth and whether respondents have children. In addition, a dummy for respondents who make their own investment decision is added as one of the control variables as well as a dummy for receiving financial advice to account for those who previously had financial advice for retirement investing. Moreover, a dummy for risk tolerance and the expected return variables are included because it is important to know whether respondents’ risk tolerance and expected return are associated with their choice of investment policy. The
model also includes a variable for financial literacy to account for financial knowledge in order to examine whether financial literacy affects investment decisions.

Table 6.25 shows the regression analysis of respondents’ investment choice decisions. The ordered logistic regression model suggests that older members invest less in risky assets than younger members, consistent with lifecycle investing theory. Gender, marital status, and having children do not appear to have any relationship with investment choices. However, financial wealth has a relationship with members’ investment choice, but the relationship is not linear. Respondents who have financial wealth between THB1-3 million are more conservative in investing their pensions as they appear to choose a lower risk policy compared to other groups. On the other hand, those who have financial wealth more than THB3 million may become more aggressive again; however, the relationship is not statistically significant.

As one would expect, there is a positive linear relationship with members’ expected return and their choices of investment policy, in particular, for those who expect more than 15% return per annum. The results suggest that members who expect higher return are more likely to invest more aggressively, consistent with the advice from financial professionals. Moreover, members who make active investment choices are more likely to choose a riskier policy. This is similar to the findings from Papke (2003) which finds that individuals are estimated to invest higher in risky assets such as stocks when they are allowed to make their own investment choices.55

A notable result is seen from a risk tolerance variable, where its coefficient is positive and it is statistically significant at the 1-percent level. The result shows that, other things being equal, higher risk tolerance workers choose more risky choices than those who have lower risk tolerance. This is an important finding because it suggests that workers choose investment choice according to their risk tolerance. This finding shows that members are able to match their risk profile very well with the investment choice they selected, which is consistent with the portfolio theory and conventional financial advice.

55 Papke (2003) used OLS regression to analyse data from the 1992 National Longitudinal Survey of Mature Women and the 1992 Health and Retirement Study and found that workers that are offered investment choice invest 13 percent more of their pension assets in equities.
Overall, it appears that workers are able to make informed investment decisions under the new self-directed pension programme. Specifically, workers are able to choose investment choices based on their age and risk tolerance which is consistent with what portfolio theory and lifecycle investing theory have suggested. So both hypothesis 3 and 4 are rejected. Therefore the new pension program is considered to be effective. Figure 6.5 shows the conceptual model of individual’s investment choice under the Employee’s Choice programme.
Table 6.25: Ordered logistic regression for investment choice

<table>
<thead>
<tr>
<th>Investment Choice</th>
<th>Coef.</th>
<th>Std. Err.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.047***</td>
<td>0.016</td>
</tr>
<tr>
<td>Gender (male = 1)</td>
<td>0.237</td>
<td>0.314</td>
</tr>
<tr>
<td>Marital (married = 1)</td>
<td>0.084</td>
<td>0.482</td>
</tr>
<tr>
<td>Children (has children = 1)</td>
<td>0.310</td>
<td>0.528</td>
</tr>
<tr>
<td>Wealth (base = financial wealth &lt;= THB 1 million)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial wealth between THB1-3 million</td>
<td>-0.753**</td>
<td>0.370</td>
</tr>
<tr>
<td>Financial wealth &gt; THB3 million</td>
<td>0.438</td>
<td>0.466</td>
</tr>
<tr>
<td>Expected return (base = 5% or less)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6% - 10%</td>
<td>0.618</td>
<td>0.449</td>
</tr>
<tr>
<td>11% - 15%</td>
<td>0.587</td>
<td>0.461</td>
</tr>
<tr>
<td>More than 15%</td>
<td>0.924**</td>
<td>0.464</td>
</tr>
<tr>
<td>Do not know</td>
<td>0.402</td>
<td>0.617</td>
</tr>
<tr>
<td>Active (make active choice =1)</td>
<td>1.089***</td>
<td>0.377</td>
</tr>
<tr>
<td>Financial advice (had advice =1)</td>
<td>0.069</td>
<td>0.306</td>
</tr>
<tr>
<td>Risk tolerance dummy (higher than median =1)</td>
<td>1.737***</td>
<td>0.301</td>
</tr>
<tr>
<td>Financial literacy score</td>
<td>-0.059</td>
<td>0.053</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-279.844</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.126</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>232</td>
<td></td>
</tr>
</tbody>
</table>

Note: ***p<0.01, **p<0.05

Figure 6.5: Conceptual model of individual’s investment decisions under simple pension plan design
6.4.3 Does financial literacy matter?

However, another interesting finding of this study is that workers’ level of financial literacy has no relationship with the investment choice they made. As Table 6.25 shows, the financial literacy variable is not statistically significant and the hypothesis 5 is not rejected. It suggests that financial literacy does not affect workers’ investment choice decisions. In other words, workers are able to make informed investment choices regardless of their level of financial knowledge. Interestingly, this is opposite to what regulators and industry experts have hypothesized. In addition, the financial advice variable is also not statistically significant. It means that workers can make informed investment choices regardless of their level of financial knowledge or whether or not they had received financial advice.

Since the level of financial literacy does not influence workers’ investment choice, the natural question is how this finding can be explained. Is it possible that this type of pension design is simple enough so workers can make decisions without difficulty and without much knowledge? A possible interpretation is that once investment choices are named according to the riskiness of their strategies, it may be easier for workers to make investment decisions, selecting the one that matches well with their perceived risk profile. Thus, financial literacy is less relevant in this context. For example, if members believe that their risk tolerance is low, they are less likely to select the choice labelled either “Risky” or “Very Risky”. It is also possible that how information is provided or presented is more important than the actual risk and return characteristics of these investment choices. As a result, for this type of investment choice, financial literacy seems to be irrelevant and does not affect members’ investment choice selection.

Nevertheless, this finding raises an important question about whether workers are able to correctly evaluate their investment choices and choose the most suitable one. In this case, the risk profile of each investment choice is suggested by the company. It is possible that workers perceive that how information is provided is more important than the actual risk and return calculations. In other words, it is possible that workers make investment decisions solely on the information provided by the company. For example, they may perceive that the low-risk option truly means low-risk investments and the very risky option truly represents very high risk investments. If this is the case, it means
that workers may make their investment decisions based on just the preliminary information. What if the employer labels 60/40 portfolio (60 percent stocks and 40 percent bonds) as a low-risk choice? Would workers who are risk-averse still choose this investment choice? And if so, does it mean that pension plans are easy to missell?

Therefore, it is important to know whether workers are really capable of making appropriate investment decisions. To explore further, these workers were asked a hypothetical question regarding their pension investment if they are offered a different pension scheme, a more complex choice which allows them to allocate their pension assets discretionally. Are workers still able to make informed investment decisions under a more complex pension design? The next section explores this question.

6.4.4 Are workers able to make informed investment decisions under more complex pension design?

The previous section finds that workers can make informed investment decisions regardless of their level of financial literacy. Evidence suggests that workers choose their investment choice for their pension plans according to their age and risk tolerance. They choose more risky investment choices if they are younger or less risk averse. Most importantly, they can make appropriate investment choices no matter what their level of financial literacy. However, these research findings are obtained from the context of simple plan design where workers are provided only five simple choices, ranging from low risk to high risk.

From the interview data shown in the previous chapter, there are two main pension designs under the employee’s choice programme in Thailand: simple design and complex design. The simple plan design typically provides workers with choices of investment strategy, typically ranging from low risk to high risk. Each choice has its own pre-determined asset allocation strategy. On the contrary, the complex plan design provides more freedom for workers to make their own asset allocation. Under the complex plan design, workers are offered several funds with different asset classes such as equity funds, bond funds or money market funds so they can choose their own asset allocation strategy across the different funds offered. It is interesting to explore how these workers make decisions under the more advanced, more complex pension plans.
Therefore, this section asks how workers make investment decisions if they are allowed to make their own asset allocation patterns for their pension portfolio under more complex plan design. Are they still able to make informed investment decisions?

The survey asked workers the hypothetical question regarding their preferred asset allocation strategy if the programme allows them to make their own asset allocation decisions. Since this study focuses on equity investments, the survey question asked workers specifically how much of their pension assets they would like to allocate to equities if they were allowed to make their own asset allocation with no restriction at all.

Regression analysis was performed similar to the previous section. Again, the ordered logistic regression is used but the dependent variable is now the preferred equity allocation selected by workers rather than the investment choice. The question in the survey offers respondents with five allocation strategies, ranging from one (no investment in equities) to five (more than 80 percent in equities).\textsuperscript{56}

Table 6.26 reports the regression results and Figure 6.6 shows the conceptual model of individual’s equity allocation decision under the advanced pension design. Again, the age variable is statistically significant with a negative coefficient. It is consistent with the previous analysis which suggests that older members are likely to invest less in stocks. Interestingly, gender is now statistically significant and has a positive association with allocation to equities. It appears that men invest more in stocks than women, which is consistent with the previous findings (Holden and VanDerhei, 2001; Agnew \textit{et al.}, 2003). There is a positive linear relationship with members’ expected return and their choices of equity allocation, in particular, for those who expect at least 11% expected return per annum. As one would expect, risk tolerance is positively correlated with the equity allocation and is statistically significant at the 1-percent level.

The previous section shows that, under the simple pension plans, financial literacy does not affect investment decisions. However, financial literacy does have an impact on investment decisions under the more complex plan design. Interestingly, the result

\textsuperscript{56} The equity allocation choices offered are: 1) 0%; 2) 20% or less; 3) 21-40%; 4) 41%-60%; 5) 61%-80%; 6) 81%-100%.
suggests that workers with greater financial knowledge allocate their pension assets more in equities if they are allowed to make their own asset allocation decisions. The coefficient on a financial literacy dummy is positive and is statistically significant at 10-percent level. It suggests that the level of financial literacy does influence the investment decisions, which is opposite to the finding in the previous section. Under the complex plan design, knowledgeable workers invest more aggressively than less knowledgeable workers by allocating more of their pension assets in the stock market. If the stock market provides higher return than low-risk assets during their accumulation phase, those with better financial knowledge would accumulate larger pension assets, and vice versa.

This finding has an important policy implication on the choice of pension design when implementing the self-directed pension plan. The choice of pension design appears to be an important factor to the success of the self-directed pension plans. For example, to operate a successful pension programme, a simple plan design should be a preferred choice for employers with less knowledgeable employees. On the other hand, a more complex plan design can be effectively implemented if employees have an adequate level of financial knowledge.

In addition, this finding also suggests that financial literacy does not only impact the participation in the stock market as van Rooij et al. (2011) suggest, but financial literacy may have an impact on the asset allocation to the stock investment in the pension context. The results find that workers with greater financial literacy are more likely to invest more in stocks, even after accounting for a set of control and dummy variables such as age, gender, and wealth. It is possible that the equity culture in the Thai pension context can be improved if workers have greater financial knowledge. In other words, demand for the stock market investments will be higher if workers become more knowledgeable financially. Then, higher demand for equities may lead to an increase in the stock prices and the stock market index. It is interesting to explore whether citizens of rich equity cultures such as in the U.S. or U.K. have greater financial literacy than those who live in countries with poorer equity culture. This also can be the next research question for future research in the field of financial literacy and asset pricing literature.
To summarise, it suggests that the more complex pension scheme may require workers to have more financial knowledge than the simple, pre-determined asset allocation type of design. If provided with only few choices ranging from low risk to high risk strategy, average workers may be able to choose investment choice that is consistent with their attitude toward risk. On the other hand, if a company adopts a more advanced plan design, holding other things constant (including age and risk tolerance variables), less knowledgeable workers are more likely to allocate less in the stock market. It means that those who have less financial knowledge tend to make more conservative investments while those who have greater knowledge tend to make more aggressive investments with higher equity allocation. Is this good or bad for workers? The answer depends largely on the outlook of the equity risk premium. If the equity investments continue to provide higher returns as they did in the past, less knowledgeable workers will be at a disadvantage as they may achieve lower retirement account balances.
Table 6.26: Ordered logistic regression for equity allocation

<table>
<thead>
<tr>
<th></th>
<th>Coef.</th>
<th>Std. Err.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equity Allocation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.027*</td>
<td>0.015</td>
</tr>
<tr>
<td>Gender (male = 1)</td>
<td>0.546*</td>
<td>0.297</td>
</tr>
<tr>
<td>Marital (married = 1)</td>
<td>0.009</td>
<td>0.425</td>
</tr>
<tr>
<td>Children (has children = 1)</td>
<td>0.173</td>
<td>0.469</td>
</tr>
<tr>
<td>Wealth (base = financial wealth &lt;= THB 1 million)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial wealth between THB1-3 million</td>
<td>0.198</td>
<td>0.367</td>
</tr>
<tr>
<td>Financial wealth &gt; THB3 million</td>
<td>-0.125</td>
<td>0.451</td>
</tr>
<tr>
<td>Expected return (base = 5% or less)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6% - 10%</td>
<td>0.708</td>
<td>0.447</td>
</tr>
<tr>
<td>11% - 15%</td>
<td>1.510***</td>
<td>0.451</td>
</tr>
<tr>
<td>More than 15%</td>
<td>1.678***</td>
<td>0.456</td>
</tr>
<tr>
<td>Do not know</td>
<td>0.064</td>
<td>0.656</td>
</tr>
<tr>
<td>Active (make active choice =1)</td>
<td>-0.503</td>
<td>0.386</td>
</tr>
<tr>
<td>Financial advice (had advice =1)</td>
<td>0.010</td>
<td>0.287</td>
</tr>
<tr>
<td>Risk tolerance dummy (higher than median =1)</td>
<td>0.723***</td>
<td>0.281</td>
</tr>
<tr>
<td>Financial literacy score</td>
<td>0.111**</td>
<td>0.052</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-338.662</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.081</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>232</td>
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</tr>
</tbody>
</table>

*Note: ***p<0.01, **p<0.05, *p<0.10

Figure 6.6: Conceptual model of individual’s investment decisions under advanced pension design

```
Return Objective

Level of Risk Tolerance  -->  Asset Allocation Decisions

Demographics
- Age
- Gender

Level of Financial Literacy
```
6.5 Summary and concluding remarks

This study uses survey data to evaluate the new pension programme recently adopted in a large financial institution in Thailand. The findings of this study are both reassuring and surprising. Table 6.27 summarises the results of hypothesis testing. This study shows that financial illiteracy is widespread even for those who work in a financial industry. It also suggests that some workers are too optimistic and overconfident in their financial knowledge. But most importantly, this case study provides evidence that a new pension programme has achieved its stated objective. First, most of the respondents actively participated in the programme by making active investment decisions. Second, pension members were able to make informed decisions, regardless of their level of financial literacy. They were able to choose the investment choice that matches quite well with their age and risk profiles as suggested in the portfolio choice and lifecycle investing theory. Younger people or those who have higher risk tolerance chose more risky choices than those who are older or have a lower level of risk tolerance. Therefore, these findings suggest that the new pension programme in this case study is effective. It implies that financial literacy is not always a necessary precondition for the success of the new pension programme.

One possible explanation is that the pension design in this case study is relatively simple. This suggests that choice architecture is important. It shows that investment decisions are influenced by how the choices are presented. In this case, presenting investment options ranging from low risk to high risk may help members to make easier investment choices, a choice that matches well with their perceived risk tolerance and their age profile. Another possible explanation is that how information is presented is more important than actual risk and return profiles of these investment choices. Workers may make investment decisions based on very little information, such as policy name of the investment choice, rather than based on risk and return calculations. This explanation seems possible judging from the fact that workers were able to choose investment choices despite having inadequate and confusing information. For example, the company provides only 8 years of historical investment performances. Also, it does not provide the real return data. Although the standard deviation data are provided, an investment performance ratio such as the Sharpe ratio is not presented. It is interesting
to find that workers were able to make investment decisions even though the risk and return information are not adequately provided for them to properly evaluate investment choices for their long-term pension fund investments.

Another important finding of this study is the evidence that financial literacy has become a significant and critical factor if the programme was to adopt more advanced pension design. The findings show that if the pension programme allows members to make their own asset allocation, then those who have greater financial literacy are more likely to invest more in equities than those who have a lower level of financial literacy. The results of this study show that financial literacy affects the asset allocation decisions, but not the investment choice decisions. As a result, if a complex pension design is adopted (and the equity risk premium continues to be positive), those who are more knowledgeable financially are more likely to have a higher expected return portfolio and may lead them to have larger pension assets and a better retirement life. In other words, members who are not well-equipped with financial knowledge are likely to be disadvantaged under the advanced pension design.

This study also has documented a number of potential investment mistakes that workers may make if they are allowed to make their own investment decisions under the new pension programme. First, although workers seem to make informed investment decisions for their pension plans, evidence suggests that they may make appropriate decisions at only the inception of the programme. Pension savings and investing are a long-term and on-going process, which requires workers to periodically monitor performance of their portfolio and revise their asset allocation strategy according to changes in their profile as well as financial market conditions. Nevertheless, the survey finding suggests that not all workers plan to review and revise their investment choices. In addition, many workers appear to have too optimistic a view about expected return for their pensions, especially for those with lower risk tolerance. Unrealistic assumptions may lead them to overestimate their future retirement welfare and underestimate the need for additional retirement savings. Moreover, some workers appear to be too optimistic and overconfident about their financial capabilities.

These findings highlight the importance of the pension design. A simple plan typically provides members a number of investment options with each option having a different
asset allocation strategy whereas a more complex plan usually allows member to design asset allocate of their pension portfolio at their own discretion. This study advocates the use of the simple plan design for a company with less knowledgeable workers. Under the complex plan design, workers are required to have adequate financial literacy otherwise they may invest too conservatively. Moreover, workers with less financial knowledge are more at risk in making investment mistakes documented in this chapter. For the simple plan programme, the employer can focus more on investment option design rather than the provision of financial education. However, it is important that employers must provide accurate and unbiased information about risk and return because the survey result suggests that the employer is the most important source of financial advice from workers’ perspective.

Although workers appear to make informed investment choices at the initial stage, it is also equally important for them to be able to monitor and revise their investment choice periodically. An important question is how employers can effectively encourage all workers to monitor and revise their investment choice regularly. In this study, almost one-fifth (17.2%) of respondents state that they have no intention to review their retirement portfolios at all. This group of workers may have appropriate asset allocation strategy at the beginning of their pension program, but there is no guarantee that their investment choices will remain suitable going forward if they do not revise their investment choices at all according to what lifecycle investing theory has suggested. Perhaps, workers need a better, more effective pension plan design which can help them solve this problem. The next chapter will discuss the management and policy implications that can be derived from these research findings.
Table 6.27: Summary table of hypothesis testing

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not rejected</td>
</tr>
<tr>
<td>H₀: There is no significant difference between workers who have greater financial literacy and workers who have lesser financial literacy in terms of making active participation in the self-directed pension plan.</td>
<td></td>
</tr>
<tr>
<td>H₁: Workers who have greater financial literacy are more likely to actively participate in the self-directed pension plan.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Rejected</td>
</tr>
<tr>
<td>H₀: There is no significant difference between workers who have received financial advice and workers who have not received financial advice in terms of making active participation in the self-directed pension plan.</td>
<td></td>
</tr>
<tr>
<td>H₁: Workers who have received financial advice are more likely to actively participate in the self-directed pension plan.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rejected</td>
</tr>
<tr>
<td>H₀: Age does not affect how workers make risky investment choices.</td>
<td></td>
</tr>
<tr>
<td>H₁: Younger workers are likely to invest more in risky investment choices.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rejected</td>
</tr>
<tr>
<td>H₀: Level of risk tolerance does not affect how workers make risky investment choices.</td>
<td></td>
</tr>
<tr>
<td>H₁: Higher risk tolerance workers are likely to invest more in risky investment choices.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Not rejected</td>
</tr>
<tr>
<td>H₀: Financial literacy does not affect how workers make their investment choices.</td>
<td></td>
</tr>
<tr>
<td>H₁: Financial literacy affects how workers make their investment choices.</td>
<td></td>
</tr>
</tbody>
</table>

Note: To summarise, this study finds that financial literacy is not associated with investment decisions. First, level of financial literacy does not explain whether workers are more likely to make active investment decisions. In other words, it is not the case that workers who have better financial literacy are more likely to make their own investment decisions than those who have lower level of financial literacy. In addition, financial literacy is not associated with how workers choose their investment choices. The study shows that, regardless of their level of financial literacy, workers choose their investment choices based on their age and level of risk tolerance as theories have suggested. Furthermore, the findings suggest that young individuals or those who have higher level of risk tolerance are more likely to invest in riskier investment choices.
7 CHAPTER 7: THEORETICAL, MANAGEMENT, AND POLICY IMPLICATIONS

7.1 Introduction

Chapter five and chapter six have presented important findings of this study. The current chapter presents implications from those findings and highlights the contributions to knowledge as well as implications for management practice and policymakers. Section 7.2 highlights the contributions to the literature. Section 7.3 discusses the management implications. Next, section 7.4 suggests the policy implications for policymakers in Thailand. Section 7.5 addresses the limitations of this study and offers some suggestions for further research. Finally, section 7.6 summarises and concludes the chapter.

7.2 Theoretical Implications

This study makes four distinct contributions to the literature. First, it adds to the household finance literature (Campbell, 2006) by examining how individuals make their investment decisions in the pension context. This study supports previous studies which find that individuals are able to make investment choices based on their age and their level of risk tolerance according to portfolio theory and lifecycle investing theory (e.g., Hariharan, Chapman, and Domian, 2000; Holden and VanDerhei, 2001; Agnew et al., 2003; Guiso et al., 1996, 2002, and 2003; Shum and Faig, 2006; Frijns, Koellen, and Lehnert, 2008).

Second, it adds to financial literacy literature by exploring the level of financial knowledge among workers in less developed countries. This study finds that financial illiteracy is widespread in an emerging country like Thailand, even for those who work in the financial industry. This result supports the findings of Lusardi and Mitchell (2011b) and OECD (2005) which document that financial illiteracy is widespread around the world.
Third, this study adds to the growing literature on self-directed pension plans since there are only a few studies that examine the way pension members make their investment decisions in less developed countries. This study fills a gap in existing pension literature by adding more empirical evidence from an emerging country like Thailand since most of the previous studies focus mainly on developed countries such as the US, the UK, and Australia. This case study finds that the self-directed pension plans is relatively effective since most workers are able to select investment choices based on their age and their level of risk tolerance. It shows that type of pension plan design is of great importance for effectiveness of the self-directed pension plans. Findings from this study suggest that under a simple plan design with pre-determined asset allocation, there is no need for pension members to have a high level of financial knowledge to choose the right investment choice. Workers are able to make investment choices based on their age and their level of risk tolerance. On the contrary, if they are allowed to make asset allocation decisions under the more advanced plan design, those who have greater financial knowledge are likely to make more aggressive decisions by allocating their pension assets more towards equities. This finding also suggests that financial literacy is associated with the asset allocation decision, but not the investment choice decision under the simple plan design with risk-based choice structure.

Fourth, this study also adds to the stockholding puzzle documented by Haliassos and Bertaut (1995), and the effect of financial literacy and stock market participation documented by van Rooij, Lusardi, and Alessie, (2011). This study suggests that financial literacy may explain the stockholding puzzle since it finds that those who have greater financial knowledge are more likely to allocate their assets to the stock market. This study extends the finding of van Rooij, Lusardi, and Alessie, (2011) who find that financial literacy affects individuals’ decisions to invest in the stock market. Evidence from this study suggests that not only does financial literacy affect stock market participation, it also affects how much individuals place their pension assets in the stock market. Evidence of widespread financial illiteracy may explain poor equity culture in Thailand.
7.3 Implications for Managerial Practice

As a DBA thesis, this study also focuses on the contributions to management practice. Findings from this study are expected to shed light on how the programme can be improved in order to help workers to make more informed investment choices and protect their pension assets from unwise investment behaviour. Findings of the study should provide both employers and asset management companies more insights on the effectiveness of the programme. There are three main implications for employers and asset management companies in the area of pension plan design, workplace financial education, and pension products.

7.3.1 Pension plan design

This study supports the previous studies that focus on the importance of pension plan design (e.g. Choi, Laibson, and Madrian, 2004; Mitchell and Utkus, 2004; Merton, 2007). As discussed in the previous chapter, empirical evidence finds that most workers are able to make informed investment choices for their pension plans, regardless of their level of financial literacy, under the current plan design. With the simple plan design which offers choices ranging from low risk to high risk, workers appear to make rational and informed investment decisions, as financial theory and financial advisors have suggested. In other words, pension members are able to make investment choices according to their age and risk preference. Therefore, this simplified plan design could be very useful and more appropriate for those who do not have much knowledge and understanding about investment; for example, blue collar workers.

Providing an adequate number of choices is important under the simple plan design. Since typical workers are able to make informed decisions based on their risk tolerance, employers are advised to offer workers an adequate choice to serve workers who may have different risk tolerance levels. For example, in the case study, the most risky choice that is offered to workers invests only 50% in risky assets; therefore, workers who have extremely high risk tolerance will be restricted in their risky asset allocation.\footnote{In the US, financial advisors typically recommend aggressive investors to invest between 65-100% in risky assets (Canner et al., 1997).} It would be more appropriate to offer a variety of choices that can serve the interests of
most workers. However, the maximum number of choices has to be carefully designed as too much choice may lead to a choice overload phenomenon and cause a drop in pension participation rate (Iyengar, Huberman, and Jiang, 2004).

In addition, designing an asset allocation strategy for each investment choice is also an important issue. For example, suppose an individual is offered three investment choices that are labelled as conservative, moderate, and aggressive. Furthermore, suppose that the equity allocation of those three choices is 0 percent, 40 percent, and 80 percent, respectively. In this case, choosing the middle portfolio implies an equity allocation of 40 percent. However, suppose that the equity allocation of the three portfolios is 0 percent, 10 percent, and 20 percent, respectively. In this case, choosing the middle portfolio implies an equity allocation of only 10 percent. Although individuals can correctly assess their risk tolerance, depending on what is being perceived as the "middle" choice, individuals may end with a different asset allocation than they should have.

These issues raise major concerns with respect to the design of pension plans. It suggests that the employer and asset management companies should be more careful in pension plan design as it could have a tremendous impact on the workers’ retirement well-being. Therefore, this study argues that the new pension programme should not completely shift the responsibility of investment decisions from employers to workers. It is important that pension plan committee should design a sensible asset allocation policy that covers the complete spectrum of investment risks. This study suggests an important and more active role for employers and asset management companies to design the well-structured pension plans for workers. Specifically, this study advocates Thaler and Sunstein (2003)’s paternalistic libertarianism approach that pension members’ freedom of choice can be preserved, but pension choices should be carefully designed in order to maximize their welfare.

### 7.3.2 Workplace financial education

“In our dynamic and complex financial marketplace, financial education must be a life-long pursuit that enables consumers of all ages and economic positions to stay attuned to changes in their financial needs and circumstances and to take advantage of products
and services that best meet their goals. Well-informed consumers, who can serve as their own advocates, are one of the best lines of defense against the proliferation of financial products and services that are unsuitable, unnecessarily costly, or abusive.”

Bernanke (2011, pp. 2)

Another important implication deals largely with the provision of workplace education. Findings from this study may help understanding the appropriateness as well as potential efficacy of financial education. This study suggests that members do not require much financial knowledge under the simple design pension plan. However, this study finds that financial knowledge is important to members if the programme allows them to make asset allocation decisions by themselves. Evidence suggests that a more financially literate individual is likely to take more risk by investing more in equities. Therefore, workers who have less financial knowledge may invest overly conservatively when compared to those who have greater financial knowledge.

This study suggests that there is minimum scope for financial education to alter outcomes under a simplified pension plan design. On the other hand, workplace financial education may be needed for workers who are under more advanced plan designs which allow workers to make asset allocation decision at their discretion. However, previous studies also find that financial education is costly and has often been found to be ineffective (e.g. Willis, 2008; Cole and Shastry, 2009). As a result, it may be preferable if resources are spent on creating more simplified pension plans rather than on workplace financial education. For companies that are offering workplace financial education, this study suggests employers to use seminars or personalized counseling programmes to educate their employees rather than brochures and written educational materials because literature suggests that the more effective way to deliver financial education is through seminars and one-on-one counseling. Robert Shiller shared the same view at the 2012 CFA Institute Financial Analysts Seminar:

“People need good, solid financial advice. The complexities of a financial system require that investors be educated, but that alone is not enough. Serious deficiencies exist in modern financial society, and the average person needs financial guidance from a real person—not a website.”

Shiller (2013, pp. 24)
7.3.3 Pension products

“Financial literacy promotes wise financial decisions, but people’s retirement income should not be hampered by poor financial literacy”

Statman (2013, pp. 4)

Another alternative to help workers make effective investment choices is to simplify or redesign pension plans or make more use of innovative financial products to mitigate key old-age risks (e.g. Mitchell and Utkus, 2004; Mitchell, Piggott, Sherris, and Yow, 2006). This study also suggests that innovative financial products are needed in the Thai pension context. There is no doubt that many private pension plans will continue to promote financial literacy by offering financial education at workplaces although literature cannot give conclusive evidence on the causal effects of financial education on either financial literacy or financial outcomes. However, if the ultimate goal of the new private pension programme is to improve financial outcomes instead of improving financial literacy, it is useful to focus on creating products that can improve financial outcomes.

This study proposes that more effective pension products are needed. It argues that the private pension system in Thailand should use risk-based, actively managed, lifecycle funds as a default option for the employee’s choice programme. The uncertainties of the financial market returns as well as some behavioural biases may prevent workers from making optimal investment decisions for their pension plans. It would be more sensible to provide pension products that can help these workers to better manage their investments during the accumulation phase, which can result in better retirement security.

Lifecycle funds (which are also called target-date funds) are pension products which automatically vary the equity allocation as a function of the investor’s age or years until retirement (Poterba, Rauh, Venti, and Wise, 2009, pp. 16). The equity asset allocation path in the lifecycle funds is called the “equity glide path” which the funds follow to become more conservative over time. Typically, the equity allocations are highest for younger members and lowest for those nearing retirement (Mitchell et al., 2008; Mitchell and Utkus, 2012). The equity allocation is reduced as workers are approaching their retirement largely to reduce investment risks at the time of retirement.
Basically, lifecycle funds are developed mainly based on the lifecycle investing theory. Lifecycle funds are designed primarily for those who do not want to make investment decisions or feel that they are not capable enough to make complex choices. In other words, lifecycle funds permit investors to avoid investment decision-making and shift the decision making responsibility back to professional fund managers who are responsible for all asset allocation decisions and rebalancing strategy. In the developed country like the US, lifecycle funds have grown significantly. The size of these funds grew from US$6 billion in 2000 to US$245 billion in 2010, and 70% of DC plans offered these lifecycle or target-date funds to their members (Mitchell and Utkus, 2012). Recently, the Government Pension Fund of Thailand has also introduced the lifecycle funds product as one of the investment choices for its members.58

Even though the findings suggest that members are capable to make informed investment decisions, the study also finds that many pension members do not plan to review or change their investment choices. This is contradictory to the lifecycle investment theory which suggests that investors should reduce risky assets allocation as they approach retirement. Therefore, the study suggests that lifecycle funds should be adopted as a default choice in the new pension programme to overcome the “status quo” problem (Samuelson and Zeckhauser, 1988).

The default fund may signal that it is a choice that is seemingly endorsed by the employer (Madrian and Shea, 2001). Therefore, the default option should be designed to guide what is considered the most appropriate investment option for an average worker and to help a passive decision-maker to achieve the best possible investment results. This study advocates the use of lifecycle funds as a default fund. Viceira (2008) argues that lifecycle funds are a more appropriate default option than money market funds. Lifecycle funds have become increasingly popular in the retirement plan market, are considered as one of the most rapidly growing financial products of the last ten years, and are recommended as a natural choice for the default fund option in pension plans (Poterba et al., 2009, pp.19). These funds are also considered to be a “safe harbour”

58 http://www.gpf.or.th/thai2013/member/choice-mic.asp?micid=5
fund to offer as the default fund in the defined contribution plans in the US according to the US Department of Labor (DOL, 2006).

Lifecycle funds have many advantages but need further innovations to assure their usefulness in the long run. Viceira (2008) suggests that lifecycle products should invest in inflation-index bonds rather than long-term nominal bonds due to lower inflation risk. As investors typically differ in their risk tolerance, he also proposes to offer “conservative,” “moderate,” and “aggressive” life-cycle funds to members rather than offering only a single lifecycle fund per target date in order to assist members to choose the equity profile that best matches their risk tolerance. He also suggests that lifecycle funds should contain international equities and should be tilted toward growth stocks at the onset and tilted more towards value stocks as the funds approach their target date because growth stocks appear to be safer than value stocks at longer investment horizons. Similarly, Kotlikoff, Gomes, and Viceira (2008) also argue that having all investors invest in the same lifecycle fund is not optimal unless they have similar risk tolerance. They propose fund management companies offer “risk-and-age-based” lifecycle funds instead of the current “age-based” lifecycle funds.

This study suggests that risk-based, lifecycle funds as suggested by Viceira (2008) and Kotlikoff, Gomes, and Viceira (2008) should be considered as a default investment option in the new self-directed pension plans in Thailand. Using this type of lifecycle fund as a default choice should improve the effectiveness of the pension programme, as Munnell (2006) suggests that the pension plan will be more effective if it has more automatic features.

Lifecycle funds also have some drawbacks. Lifecycle funds, in terms of their asset allocation strategy, completely ignore the changing economic and market conditions. Therefore, it should be better if there is a lifecycle fund that features a dynamic asset allocation strategy which regularly revises its asset allocation according to changes in members’ age as well as changes in market conditions, both short-term and long-term. This study suggests that fund management companies in Thailand should consider offering risk-based lifecycle funds with the element of dynamic asset allocation along the glide path to pension members under the Employee’s Choice programme. It means that complex investment decisions should shift back to investment experts.
Thai workers deserve more simplified and more effective pension products. If “risk-and-age-based” lifecycle funds are adopted, workers only need to know their risk preference in order to construct an optimal pension portfolio. For example, a 25 year old worker who has moderate risk tolerance will be automatically directed to the lifecycle fund corresponding to his or her age and risk tolerance level. The fund also has a pre-determined equity glide path which the equity allocation will be reduced by certain percentage every five years. Fund managers may strategically change the asset allocation if financial conditions and long-term capital market assumptions have changed.

7.4 Implications for policymakers

“The retirement system should not force people to become investment experts. Most people simply do not have the background, interest, or time to manage their retirement funds effectively.”

US Senate Committee on Health Education Labor & Pensions (2012)

This study provides evidence in the area of individualization and responsibilization for Thai citizens. The rapid growth of the new self-directed pension programme in Thailand offers workers new opportunities and also new risks. Therefore, this case study may be used as a point of reference for policymakers seeking clues about the likely future effectiveness of the pension plans which will in the future adopt the new self-directed pension programme. Although improving financial capabilities through financial education is a desirable goal, this study shows that not everyone is well-equipped with financial knowledge, even those who work in a financial industry. For improving financial outcomes, financial education is just one of many tools. Alternative tools to improve financial outcomes such as innovative pension products or innovative ‘choice architecture’ (Thaler and Sunstein, 2008) may be more cost effective. Therefore, this study suggests a main role for policymakers in developing policies and regulations that encourage or discourage particular types of pension plan design. As previously mentioned, this study finds that a simple plan design appears to be more appropriate for those who do not have much financial literacy. Policymakers should consider and make this type of pension plan design as the most preferred choice for companies that are implementing an Employee’s Choice programme for the first time.
Another possible finding from this study is how a pension product is presented is more important than its actual risk and return characteristics. It is likely that workers are able to make informed choices because the information provided is easy to understand. For example, workers may have less difficulty choosing investment options ranging from low risk policy to high risk policy. Instead, workers may have more difficulty choosing between 60/40 and 40/60 portfolios. This also implies that it is easier for pension providers to missell. Basic financial knowledge may not be sufficient to safeguard workers from fraud and deceptive practices. Therefore, it is important for regulators and policymakers to develop strong consumer financial protection laws to ensure that employers and pension providers present reliable and useful information so workers are able to choose suitable investment choices in the Thai private pension context. For example, in the US, the Consumer Financial Protection Bureau (CFPB) was recently established to safeguard consumers and to ensure that they get the information they need to make the financial decisions.\footnote{The Consumer Financial Protection Bureau was established under Title X of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank Act"). For more information, see http://www.consumerfinance.gov/}

Every worker should have an opportunity to achieve retirement security. It may be better to transform from the ‘ownership society’ to the ‘opportunity society’ where everyone, regardless of their level of financial literacy and investment skills, is given a chance to receive adequate income and achieve their retirement goal. This study suggests that if the goal of policymakers is to allow everyone to have an equal opportunity for a financially secure retirement, regardless of their level of financial knowledge and skills, then policymakers should focus more on improving the pension design. Policymakers need to provide effective pension design that is simple enough for average members to choose from and shift most of the complex investment decisions responsibility and risk management decisions back into the hands of those who are experts in the investment field. For example, Thai policymakers may establish a low cost, national private pension scheme similar to the UK’s National Employment Savings Trust (NEST) which provides over 45 target-dated funds for their members and is primarily designed for those who are likely to be unfamiliar with investment material and concepts in order to minimize their investment mistakes (NEST, 2012).
7.5 Limitations and Suggestions for Further Research

This study also has several limitations. The most apparent is the generalisation of the findings which is typical for a case study research. The survey data is taken from only one company. In addition, this study uses convenience sampling to collect the survey data. The disadvantage of this sampling method is that the data may not be accurately representative of the populations (Black, 1999). As a result, the interpretation of these findings must be done with care.

With those limitations, therefore, there is ample scope for future research to improve the findings. It would be valuable to conduct more cases, particularly a similar study on those companies that are not in the financial industry and compare the results. Such a study may reveal different results on the impact of financial literacy and investment decisions. It would also be interesting to conduct research on companies that offer different plan designs, such as a more advanced design. A further extension of the work would be to examine in greater detail the relationship between investment choice and behavioural bias as documented in the behavioural finance. Interview data also suggest that the memory of financial crisis and corporate governance may affect stock market investment decisions; therefore, future research may add these two variables in a survey as well as in a conceptual framework of stock market investment decisions. In addition, since this study focuses mainly on the accumulation phase of retirement savings, a future study may also focus more on the decumulation of retirement assets decision.

7.6 Concluding remarks

This study analyses and evaluates the new private pension programme in Thailand. It does so by exploring viewpoints of pension stakeholders. It then uses a case study and presents empirical evidence which shows how workers make investment choice decisions in order to evaluate the effectiveness of the programme. Although the study presents evidence with regard to the “Employee’s Choice” programme, it is important to note that the findings and implications discussed in this study are specific to the case study of only one company, and to the sample interviewed, rather than to the broader Thai context.
Before the new pension programme, members were not required to make any investment decision; everyone participated in the same investment policy selected by the fund committee. After the initiation of the new programme, for the first time, workers were required to make investment decisions. The main objective of this study is to evaluate the new pension programme using a real-life case from a large pension programme that has adopted the Employee’s Choice programme and examine whether pension members are capable to make their own investment decisions. The study intends to measure the financial competence of workers using financial literacy questions. In addition, it aims to analyse the investment behaviour of pension members and examine the factors that affect their investment decision including the asset allocation decision toward equities.

The study is divided into two main parts, corresponding to the two phases of research involved in this study. It uses qualitative data collection methods to analyse the rationale and objective of the programme as well as the viewpoints from various pension stakeholders and to identify the key preconditions of the programme. It also uses quantitative data methods to determine if the programme was effective in achieving its stated objectives. To measure the programme effectiveness, this study analyses a case study of the new pension programme and investigates investment decisions of workers in a large financial institution. Whether workers can make informed investment decisions is a main hypothesis of the study. To assess if workers were able to make informed decisions, this study explores their investment decision and examines various factors that affect their investment choice, including their personal characteristics, degree of risk tolerance and level of financial literacy.

This study argues that Thai pension systems are challenged with low pension coverage, inadequacy as well as sustainability problems. Thailand needs an integrated and more efficient pension system to ensure financial security in retirement. Private pensions are expected to play a crucial and growing role to avert old age crisis for formal workers in Thailand. Therefore, the employee’s choice programme is introduced as a part of private pension reform in Thailand in order to provide an opportunity for workers to make an appropriate investment choice. In addition, it is promoted because policymakers need to have legitimacy in the world economy. The major advantage of the programme is that it allows pension members to make their own investment decisions. The new programme
should reduce the existing agency problem between pension committees and pension members.

Based on the sampled interviews, the Employee’s Choice programme is viewed positively from pension stakeholders since it offers several benefits over the current programme. First, workers are convinced that the programme is a better alternative since it allows members to select investment choices that meet their needs. Second, it eases pension committee burden by passing on the responsibilities to workers. Third, asset management companies may enjoy higher profitability if members invest more in riskier products which traditionally charge higher management fees. As a result, the vision of the new pension programme may not completely translate into benefits for workers as they have to take greater responsibility and have to pay more fees.

This study suggests that it may be more difficult to improve financial knowledge among Thai workers because there is a widespread financial illiteracy even among those who work in the financial industry. Nevertheless, the study finds that a new pension programme in this case study has achieved its stated objective. Most of the respondents in the case study make active investment decisions. Surprisingly, pension members appear to make informed decisions, regardless of their level of financial knowledge. Specifically, they are able to choose the investment choice that match quite well with their age and risk profile as suggested in the portfolio choice and lifecycle investing theory. Therefore, the results suggest that the new pension programme in this case study is relatively effective. It implies that financial literacy is not always a precondition for the success of the new pension programme. One possible explanation is that the pension design in this case study is relatively simple. Presenting investment options ranging from low risk to high risk may help members to make easier investment choices, a choice that matches well with their perceived risk tolerance and their age profile. However, the findings show that if the pension programme allows members to make their own asset allocation, then those who have greater financial literacy are likely to invest more in equities than those who have lower levels of financial literacy.

This study makes several contributions to the literature, management practice and policy implications. Findings from this study are expected to shed light on how the programme can be improved in order to help workers to make more informed investment choices.
These findings highlight the importance of the pension design. This study provides empirical evidence supporting the argument that pension design is able to help workers to make better investment choices, and it advocates the use of simple plan design for the new pension programme in Thailand. The main implication from this study is that employers should give equal or even greater importance to pension plan design than to the workplace financial education. For the simple plan programme, employers can focus more on investment option design rather than the provision of financial education.

Retirement planning is certainly not easy, especially in today’s highly volatile investment environment. First, individuals need to calculate how much they need for retirement. Second, they need to save and invest their savings in order to achieve their saving target. This means that they have to know how much they need to save and how to invest their retirement savings. Finally, after retirement, they also need a plan for spending capital and or drawing income from the retirement assets.

It is particularly not easy to invest their retirement assets. The recent financial crisis may require individuals to focus more on their methods of asset allocation and retirement portfolio management. To invest effectively, individuals must first design an investment plan and be able to implement an appropriate asset allocation strategy during their accumulation phase. Next, they should follow the traditional approach of diversification and be able to form initial asset allocation strategy. In order to design an asset allocation strategy, individuals need to be able to form beliefs about the future including the asset returns and the risks of these returns. This allocation problem is also difficult to solve because it is difficult to predict the financial and capital market returns since historical data does not guarantee the future performance. Moreover, since retirement investing is an on-going and dynamic process, individuals need to periodically monitor their investment performances, revise their belief assumptions, and then adjust their portfolio accordingly. Active portfolio management is more critical than ever before in today’s investment marketplace. Finally, they have to carry out these tasks and avoid psychological biases documented by behavioural finance literature.

There are several ways for employers to help their workers to make more effective decisions for their pension plans (Viceira, 2008). First, employers can implement
individually managed accounts for every member. This can be one of the most effective methods but it might be too costly. Alternatively, employers can choose to educate members so they are able to make informed investment choices that best fit their risk and return profile as well as their personal characteristics. Again, this approach is costly and its effectiveness is questionable. Finally, employers may develop well-designed pension products to help workers carry out the task of retirement investing more effectively. This study advocates the use of innovative pension products such as lifecycle funds as default investment options and recommends policymakers and regulators to promote and support this idea.
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APPENDIX A: INTERVIEW PROTOCOLS

A1. Interview Questions for Asset Management Companies

**Introduction (3 mins)**
- Thank participant for giving the interview
- Explain about the research topic and its objectives
- Duration of interview—about 45 mins to 1 hour
- Reassure participants about confidentiality
- Permission to record the interview

1) **Background information about participant and the company**

Could I first of all re-confirm your job title? And could you summarise your role within your organization?

May I first of all ask for a short-hand description of how you would describe your position in the pensions market?
- Background of pension business
- Market share
- Key competitors
- Pension schemes available

2) **Awareness of the Employee’s Choice programme**

How much would you say the industry (providers and employer) knows about the Employee’s Choice option?

How many percent of your clients are there who already implemented the programme?

3) **Attitudes towards an Employee’s Choice programme**

What do you think about previous pension scheme where pensioners have no investment choice?

What do you think about the idea of promoting an Employee’s Choice programme to pensioners in Thailand?
- Pros
- Cons
- Comparison to the previous scheme

4) **Expected outcome of the programme**
- Employer: Adoption rate among employer
- Pensioner: Can it help solving retirement problems?
- Capital Market: Stock vs Bond

5) **Experiences in implementing the programme**
What influenced employers’ choice to switch to the Employee’s Choice Programme?

What are the major barriers or obstacles in promoting the Employee’s Choice option to Employer?
- Financial Literacy
- Laws and Regulations

What might help implement the programme more successfully?

6) Pension Plan Design, Financial Advice, and Asset Allocation Recommendation

Are savings and investments similar or different? If so, why?

Do you view pensions as a type of savings or type of investment? Why?

How do you design the pension scheme for your clients?

How do you educate or recommend pensioners to make their investment choice? Why is that?
- Asset Allocation
- Equity Investment
- Investment Abroad
- Alternative Investment e.g. Hedge Funds

What do you think about the current asset allocation where equity investment accounts for only 10 percent? What level should be optimal for Thailand?

7) Impact to business and the market, and strategic responses

How might the introduction of Employee’s Choice programme affect your own company and your business strategy?
- Changes to business structure
- Changes to product offering/ features
- Changes to fees

How do you see the role of asset management companies changing as a result of the Employee’s Choice programme?

What are the key impacts you expect the reforms to have on the occupational pension market overall? More or less players? Higher or lower fees?

How do you plan to change your business strategy in response to the new pension reforms?

What are the key success factors in running the pension business going forward?

8) Summing Up

Thank you very much again for your help.
Just finally, are there any other points you would like to make which we have not covered but you feel are important?

Occasionally, it is very helpful for us to be able to re-contact people we have spoken to, either to clarify certain issues, or to get a bit more detail where the information we are given is particularly interesting. Would you be happy for us to call you back briefly if necessary?

THANK AGAIN AND CLOSE
A2. Interview Questions for Policymakers and Regulators

**Introduction (3 mins)**
- Thank participant for giving the interview
- Explain about the research topic and its objectives
- Duration of interview—about 45 mins to 1 hour
- Reassure participants about confidentiality
- Permission to record the interview

1) **Background information about participant**

Could I first of all re-confirm your job title? And could you summarise your role within your organization?

2) **Role of the organisation**

3) **Attitudes towards an Employee’s Choice programme**

What do you think about an Employee’s Choice programme in Thailand?
- Pros
- Cons
- Comparison to the previous scheme

Suitability of Employee’s Choice in Thailand

4) **Expected outcome of the programme**

5) **Summing Up**

Thank you very much again for your help.

Just finally, are there any other points you would like to make which we have not covered but you feel are important?

Occasionally, it is very helpful for us to be able to re-contact people we have spoken to, either to clarify certain issues, or to get a bit more detail where the information we are given is particularly interesting. Would you be happy for us to call you back briefly if necessary?

THANK AGAIN AND CLOSE
APPENDIX B: QUESTIONNAIRE

Questionnaire

This questionnaire will take you about 15 minutes. Please kindly answer all questions. All of your responses will be kept strictly confidential. Thank you for taking the time to complete the survey.

Direction: Please cross (X) the appropriate answer in the space provided

PART 1
Information about pension and retirement savings

1. Have you ever tried to calculate how much you need to save for retirement?
   Yes [ ] No [ ]

2. As regards the investment choices in your pension scheme, do you prefer to
   Make the decisions yourself [ ]
   Have fund committee make the decisions for you [ ]

3. What is your current choice in company’s pension fund

<table>
<thead>
<tr>
<th>Choice</th>
<th>Risk Level</th>
<th>Sub Fund 1</th>
<th>Sub Fund 2</th>
<th>Sub Fund 3</th>
<th>Sub fund 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very low risk policy</td>
<td>90%</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2</td>
<td>Low risk policy</td>
<td>80%</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>3</td>
<td>Current policy</td>
<td>70%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>Risky policy</td>
<td>60%</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>5</td>
<td>Higher risk policy</td>
<td>50%</td>
<td>20%</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

4. If you are allowed to make asset allocation decision, how much of your pension portfolio should be invested in equities?
   None [ ] 20% or less [ ] 21% - 40% [ ] 41% - 60% [ ] 61% - 80% [ ] 81% - 100% [ ]

5. Are the investment choices in your pension the result of:
   An active choice you made [ ]
   A default option set by the scheme [ ]

6. Is the range of investment choices in your pension scheme:
   Too narrow—there are not enough options [ ]
   About right [ ]
   Too broad—there are too many options [ ]
   I don’t know what the options are [ ]
7. Have you ever received advice about your pension investment or retirement planning?

Yes [ ]
No [ ]

8. When making investment choice for your pension portfolio, to what extent did you rely on the following source of information? (adapted from Byrne 2007)

<table>
<thead>
<tr>
<th>Source of Information</th>
<th>Not important at all</th>
<th>Not important</th>
<th>Moderately Important</th>
<th>Important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Asset Management Companies</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Friend or Family member</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>TV/ Newspapers/Magazines</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Internet / Online resource</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

9. Do you invest directly in stocks or through mutual funds outside of pension account?

Yes [ ]
No [ ]

10. In your opinion, what will be the appropriate replacement rate (the percentage of your retirement income to your final salary) from your pension?

- 25% or less [ ]
- 26% - 50% [ ]
- 51% - 75% [ ]
- 76% - 100% [ ]
- More than 100% [ ]

11. What is your expected return per annum for your pension assets?

- 5% or less [ ]
- 6% - 10% [ ]
- 11% - 15% [ ]
- 16% - 20% [ ]
- More than 20% [ ]
- Don’t know [ ]

12. How appropriate do you think for the following investments for your current pension portfolio?

<table>
<thead>
<tr>
<th>Investment</th>
<th>Not at all appropriate</th>
<th>Not very appropriate</th>
<th>Moderately appropriate</th>
<th>Fairly appropriate</th>
<th>Very Appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank deposits</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Government bonds</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Corporate bonds</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Domestic Equity fund</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Foreign Equity fund</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Foreign bonds</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Gold</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

13. To what extent do you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>No strong opinion</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investors should diversify their assets</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Younger investors should invest heavily in equities and reduce the allocation as they age</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Stock market will provide higher return than bonds over the long term</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

238
Long-term investment is less risky than shot-term investment

Wealthier investors should invest more in equities

Investment loss is the first thing that comes into your mind when thinking about investing in the stock market

You are worried about your retirement savings and having adequate income after retirement

Financial support from family members is important when you retire

14. How often do you plan to review your pension portfolio?

- More than once a year
- Every year
- Every 2-3 years
- Rarely (less than once every 2-3 years)
- Never

PART 2

Financial Literacy

15. How would you assess your overall financial knowledge?

- Not at all knowledgeable
- Not very knowledgeable
- Moderately knowledgeable
- Fairly knowledgeable
- Very knowledgeable

16. How would you rate your financial knowledge after the introduction of an Employee's Choice programme?

- Improved
- Same
- More confused

17. Which of the following statements describes the main function of the stock market?

- The stock market helps to predict stock earnings
- The stock market results in an increase in the price of stocks
- The stock market brings people who want to buy stocks together with those who want to sell stocks
- None of the above
- Do not know

18. Which of the following statements is correct? If somebody buys the stock of firm B in the stock market

- He owns a part of firm B
- He has lent money to firm B
- He is liable for firm B’s debts
- None of the above
- Do not know

19. Which of the following statement is correct?

- Once one invests in a mutual fund, one cannot withdraw the money in the first year
- Mutual funds can invest in several assets, for example invest in both stocks and bonds
(3) Mutual funds pay a guaranteed rate of return which depends on their past performance  
(4) None of the above  
(5) Do not know

**20. Which of the following statements is correct? If somebody buys a bond of firm B**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>He owns a part of firm B</td>
</tr>
<tr>
<td>2</td>
<td>He has lent money to firm B</td>
</tr>
<tr>
<td>3</td>
<td>He is liable for firm B’s debts</td>
</tr>
<tr>
<td>4</td>
<td>None of the above</td>
</tr>
<tr>
<td>5</td>
<td>Do not know</td>
</tr>
</tbody>
</table>

**21. Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return?**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Savings accounts</td>
</tr>
<tr>
<td>2</td>
<td>Bonds</td>
</tr>
<tr>
<td>3</td>
<td>Stocks</td>
</tr>
<tr>
<td>4</td>
<td>Do not know</td>
</tr>
</tbody>
</table>

**22. Normally, which asset displays the highest fluctuations over time?**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Savings accounts</td>
</tr>
<tr>
<td>2</td>
<td>Bonds</td>
</tr>
<tr>
<td>3</td>
<td>Stocks</td>
</tr>
<tr>
<td>4</td>
<td>Do not know</td>
</tr>
</tbody>
</table>

**23. When an investor spreads his or her money among different assets, does the risk of losing money:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Increase</td>
</tr>
<tr>
<td>2</td>
<td>Decrease</td>
</tr>
<tr>
<td>3</td>
<td>Stay the same</td>
</tr>
<tr>
<td>4</td>
<td>Do not know</td>
</tr>
</tbody>
</table>

**24. If you buy a 10-year bond, it means you cannot sell it after 5 years without incurring a major penalty. True or false?**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>True</td>
</tr>
<tr>
<td>2</td>
<td>False</td>
</tr>
<tr>
<td>3</td>
<td>Do not know</td>
</tr>
</tbody>
</table>

**25. Stocks are normally riskier than bonds. True or false?**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>True</td>
</tr>
<tr>
<td>2</td>
<td>False</td>
</tr>
<tr>
<td>3</td>
<td>Don’t know</td>
</tr>
</tbody>
</table>

**26. Buying a company stock usually provides a safer return than a stock mutual fund. True or false?**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>True</td>
</tr>
<tr>
<td>2</td>
<td>False</td>
</tr>
<tr>
<td>3</td>
<td>Don’t know</td>
</tr>
</tbody>
</table>

**27. If the interest rate falls, what should happen to bond prices?**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rise</td>
</tr>
<tr>
<td>2</td>
<td>Fall</td>
</tr>
<tr>
<td>3</td>
<td>Stay the same</td>
</tr>
<tr>
<td>4</td>
<td>None of the above</td>
</tr>
<tr>
<td>5</td>
<td>Do not know</td>
</tr>
</tbody>
</table>
PART 3
Risk Tolerance

28. How long do you have experience investing in securities? (securities include unit trusts, debentures, stocks, government bonds, and derivatives)
   (1) None
   (2) Less than 1 year
   (3) 1-5 year/years
   (4) More than 5 years

29. When do you plan to withdraw your pension?
   (1) Less than 1 year
   (2) 1-3 year/year
   (3) 3-7 years
   (4) More than 7 years

30. Do you require regular income from your investment to support your monthly expenditures?
   (1) Yes, very much
   (2) Yes, partly
   (3) Yes, a little
   (4) No, not at all

31. What is the percentage of your pension assets comparing with your total assets?
   (1) More than 60%
   (2) Between 31-60%
   (3) Between 11 – 30%
   (4) 10% or less

32. What can best describe your risk tolerance toward your pension portfolio?
   (1) I cannot tolerate any investment loss despite higher returns than the current level are possible
   (2) I can tolerate some degree of investment losses for the chance of receiving some higher returns.
   (3) I can tolerate investment losses for the chance of receiving higher returns.
   (4) I’d like to receive highest returns from my investment and have no restriction on my investment at all.

33. Investment in highly volatile securities often generates high returns in the long-term. However, it involves risks that can cause capital losses as much as its gains. How well can you accept the investment risks?
   (1) Minimum risk is acceptable. I focus on investment that generates regular income with full principle protection despite minimal return.
   (2) Some degree of risk is acceptable in exchange for an increase in long-term potential returns.
   (3) Moderate level of risk is acceptable in exchange for higher potential returns in long term.
   (4) Maximum level of risk is acceptable in exchange for highest potential returns in long term.

34. Sometimes, investment that focuses on capital protection generates returns lower than inflation which affect purchasing power. Taking your investment objectives in consideration, which of the followings apply to you most correctly?
   (1) Investment capital must be safe even if the investment returns are lower than inflation.
   (2) Some degree of risk of losing capital investment can be accepted in exchange for returns higher than inflation.
   (3) Investment risks are accepted with investment returns that are fairly higher than inflation.
   (4) Investment risks are fully accepted with investment returns higher that are as much as possible higher than inflation.

35. How much are you willing to risk the loss from your investment in pension portfolio?
   (1) 10% or less
   (2) Between 11-20%
   (3) Between 21-50%
   (4) More than 50%
36. Age:______ years

37. Educational:

High school & pre-university  [ ]
Bachelor degree or higher  [ ]

38. Gender:

Male  [ ]
Female  [ ]

39. Marital status:

Single  [ ]
Married  [ ]
Divorced/Widowed  [ ]

40. Children

Yes  [ ]
No  [ ]

41. Approximate net worth?

Less than THB 1 million  [ ]
THB 1 -4.99 million  [ ]
More than THB 5 million  [ ]

Thank You