#### PhD Research Proposal

# THE IMPACT OF THE ATTACHMENT OF A FINANCIAL PRODUCT ADVISER TO A RETIREMENT SAVINGS PLAN ON THE INVESTMENT DECISIONS OF THE MEMBERS

Ray Boffey School of Finance and Business Economics Edith Cowan University 100 Joondalup Drive Joondalup, Western Australia 6027 Phone: 61 8 6304 5264 Fax 61 8 6304 5633 Email: r.boffey@ecu.edu.au

Seventy seven percent of working Australians are effectively investors by government mandate: They are required to participate in retirement savings (RS) plans that incorporate investment choice. There is evidence that these working Australians, and their counterparts overseas, find these investment choice decisions difficult. Moreover, this difficulty may result in decisions that are not fully rational. For instance, some researchers have highlighted the significant numbers of members who remain in company-selected default investment options and don't seem interested in making active investment choice decisions. If decisions are "not fully rational" then the result can be a retirement savings shortfall. This is an outcome about which both researchers and policy makers have expressed concern. From a theoretical point of view, behavioral models have been developed in recent years to explain decision-making that is "not fully rational". In contrast, the longer-standing Life Cycle Permanent Income Hypothesis (LCPIH), depicts an economically rational individual, making decisions that optimally smooth consumption over a life cycle. Previous research has considered the role played by both financial education and RS plan design in moving individuals closer to the rational ideal modeled in the LCPIH. The aim of the proposed research is to investigate whether the attachment of a financial adviser to an RS plan will lead the members to make more rational investment choice decisions as per the LCPIH. A unique data set for this research will be provided by an industry partner that has a large number of client companies for its RS plan product. A pilot study has identified logistical issues associated with the extraction, management and analysis of this data. A sample of RS plans will be grouped according to whether or not a financial adviser is attached. Using panel data techniques, a range of hypotheses will be tested, two of which follow for illustrative purposes: RS plans which have a financial adviser attached will have (a) a relatively smaller percentage of members in the default investment option, and (b) members investing a relatively larger percentage in shares. If the attachment of a financial adviser is shown by this research to lead to investment choice decisions that are closer to the rational ideal modeled in the LCPIH, then this could have important public policy implications. These implications would arise from the large numbers of individuals making these decisions, both in Australia and overseas, and the concern expressed by some with their existing decisions.

Keywords: superannuation, retirement savings plan, investor choice, investment decisions, behavioral models, life cycle permanent income hypothesis, financial product adviser.

#### 3. Introduction

#### **3.1** The Background to the Study

The Australian population is ageing (Australian Bureau of Statistics, 2002). In 2001, 11% of the population was aged 65 and over, an age by which most working Australians have retired. The Australian Bureau of Statistics forecasts that by 2051 this figure will increase to 26%, due, in part, to declining fertility levels, increasing longevity and ageing of the large baby boomer<sup>1</sup> cohort.

The ratio of numbers of people aged 65 and older to those aged between 15 and 64, known as the aged dependency ratio, is an approximate index of the "proportionate burden that the aged will place on working members of the population" (Bateman, Kingston, & Piggott, 2001, p.6). In 2001, the aged dependency ratio was 18%. In 2051, it is forecast to increase to 43%. Changes in the aged dependency ratio of this magnitude would have placed a severe strain on the traditional government-funded pension system, had it been maintained, since the taxes of a reducing proportion of workers would have been required to fund the pensions of a growing proportion of retirees (Commonwealth of Australia, 2002). Faced with these projections, the Australian government began, during the 1980's, to develop policy to encourage retirement saving by individuals.

Current government policy makes retirement saving mandatory for most Australian workers<sup>2</sup>. Further, it sets the minimum level of contribution at 9 % of salary and offers tax incentives on those contributions. In addition, those tax incentives are also extended to any voluntary

<sup>&</sup>lt;sup>1</sup> A "baby boom" is widely recognized as any period over which the total fertility rate is greater than or equal to 3.00. Many countries experienced such a boom in the years following World War II. For Australia, this period extended from 1946 to 1965. Since 1965, the total fertility rate has been below 3.00 (Australian Bureau of Statistics, 2003).

<sup>&</sup>lt;sup>2</sup> Not all employees are covered by the Australian Government's RS legislation (e.g., Superannuation Guarantee (Administration) Act 1992). Some of the main exceptions are employees who are "paid less than \$450 per calendar month, 70 years of age or over, or under 18 years and working 30 hours a week or less" (Australian Taxation Office, 2003). Clare and Connor (2003, p.1) have noted that superannuation coverage was 87% in 2001, having more than doubled since 1984. Amongst casual part-time employees, superannuation coverage in 2001 was only 62% versus 91% for permanent full-time employees. Ninety-one percent of males had super versus 85% for females in 2001. In 1995, only 51% of employers were covered and for individuals who were self-employed and employed no one else (i.e., own account workers), the coverage was 36%.

retirement savings above the 9 % minimum. The impact of these arrangements has been widespread. Eighty seven percent of working Australians now have mandatory retirement savings. And retirement savings assets now form the second largest component of household wealth after dwellings (Connolly & Kohler, 2004)

The vehicle for retirement savings is known as a retirement savings (RS) plan (or scheme/fund). RS plans are typically structured either as defined contribution plans (also known as accumulation plans) or defined benefit plans<sup>3</sup>. Defined contribution plans (DCP's), of which 77 % of working Australians are members, typically have three main features.

- The individual makes regular (or defined) contributions to the plan (usually out of each wage/salary payment).
- 2. The individual has a choice as to how these contributions are invested, with the investment choices typically ranging from low risk/return (i.e., mainly cash) through to high risk/return (i.e., mainly shares).
- 3. The sum of money accumulated at retirement will be determined by two main factors; the total contributions made by the individual, and the returns generated on those contributions by the investment choices selected.

This study will conduct research into the investment choice decisions made by the members of DCP's. While there is a body of finance research that has considered the behavior of different types of investors, these "mandated investors" may form a distinctive and interesting subset. Certainly, they are different from their counterparts in the US, who choose to participate in RS plans (e.g., Choi, Laibson, Madrian, & Metrick, 2001b). They are also likely to be different from those individuals who trade shares and other financial products by choice and who, for instance, have been characterized by Barber & Odean (2000) as displaying overconfidence.

<sup>&</sup>lt;sup>3</sup> A defined benefit plan is a retirement savings plan "where the formula for calculating the retirement benefit (and possibly other benefits also) is specified in terms of years of service with the employer (or years of membership of the fund) and average salary level over the last few years prior to retirement" (The Association of Superannuation Funds of Australia Ltd, 2003). In this type of plan, the investment risk is borne by the sponsor/employer.

#### **3.2** The Significance of the Study

The importance of researching the investment choice decisions of members is that it could identify problems with existing decisions and, in turn, ways that those problems could be overcome.

But what grounds are there for having concerns with existing investment choice decisions? A starting point is that these decisions are widely recognized as being complex for the typical DCP member (Lusardi, 1999, p.81). In addition, research conducted in Australia (Roy Morgan Research, 2003) suggests that the typical DCP member does not have the skills to cope with this complexity. Finally, there is evidence suggesting that a proportion of members do not actually make deliberate investment choice decisions. This is a specific reference to the large proportion of members who commonly end up in a default investment option chosen by their company. For instance, US-based research by Choi, Laibson, Madrian & Metrick (2001b) found that 80% of members in the DCP's that they considered, were in the default investment option. While no similar figures have been published for Australia, the industry partner to this proposed research has confirmed that similar percentages occur in Australia.

While it could be argued that some members make a deliberate and independent choice to be in the default investment option, it seems unlikely that such a high percentage of members would be acting in this way. A more likely possibility is that there are other explanations for the prevalence of default behavior on such a wide scale. Some of these explanations follow.

 The complexity and difficulty of investment choice decisions, which has been mentioned previously here, may cause some members to decide that they are unable to make a decision. As a result, they end up in the default investment option. As support for this explanation, the first Australia-wide survey of adult financial literacy, reported in Roy Morgan Research (2003), found a general lack of understanding of the fundamentals of investing - especially the risk-return relationship. It also found that there is a more specific lack of understanding of the risk-return properties of shares and the role that they can play as a long-term investment.

- 2. Members who find these decisions difficult and time-consuming, but not impossible, to make, may procrastinate about making them (O'Donoghue & Rabin, 1999).
- 3. Members may believe that the default investment option of the DCP is actually implied advice by the company on the best investment option (Madrian & Shea, 2001).
- 4. Members may look "to do whatever requires the least current effort" (Choi et al., 2001b, p.4), which in this case means making a passive decision to be in the default investment option.
- 5. Members may feel that investment choice decisions are not that important "today" because their consequences will be felt so far into the future. (Munnell, Sunden, & Taylor, 2000).
- 6. Members may not make these decisions as a way of avoiding thinking about themselves ageing, retiring, and eventually dying (Lusardi, 2000, p.7).

Whatever the reasons for "default behavior", it can result in relatively low investment returns, since the default investment option may be a low or middle risk investment option. As a consequence, the quantum of savings at the point of retirement can end up being inadequate, an outcome about which both researchers and policy makers have expressed concern (e.g., Choi, Laibson, Madrian, & Metrick, 2001a).

This concern has led some researchers to consider ways of improving the quality of these investment choice decisions. To date, two main avenues of research have been explored. The first has been the obvious one of financial education. The second has centered on the design of DCP's, particularly which investment option to use as the default investment option.

The research proposed here will investigate a third avenue which does not appear to have been considered in the literature to date; the attachment of a financial adviser to a DCP. This is an

arrangement that occurs in some DCP's in Australia, but does not appear to be common in other countries.

### **3.3** The Purpose of the Study or a Statement of the Problem:

The purpose of this research is to establish whether the attachment of a financial adviser to a DCP has an impact on the investment choice decisions of the members. If this attachment can be shown as an effective way of improving the quality of member investment choice decisions, then this could be a significant research finding, given the large numbers of individuals in DCP's making these decisions and the concern expressed with the quality of these decisions.

#### **3.4 Research Questions**

In its broadest form, the proposed research aims to address the following research question: What impact does the attachment of a financial adviser to a DCP have on the investment choice decisions of the members? Does it lead the members to make investment choice decisions which, from the perspective of the LCPIH, are more rational?

This broad research question is set against a background, courtesy of the "first national survey of financial literacy levels of adult Australians" (Roy Morgan Research, 2003, p.1), which characterizes members of Australian DCP's as follows. They have a low level of interest in and understanding of retirement savings decisions generally and investment choice decisions in particular. They are conservative when it comes to long term investing in growth assets generally. In more specific terms, they are reluctant to invest long term in shares due to a lack of understanding of shares as well as a general anxiety about the possibility of negative returns, Given this background, it is possible to frame the following more specific research questions. Does the attachment of a financial adviser to a DCP lead to a reduced percentage of members in the default investment option; members taking relatively higher levels of investment risk; and/or

members investing a larger percentage in shares?

In addition, there are another set of research questions that involve identifying whether the impact of a financial adviser is constant for the same financial adviser who is attached to different DCP's; for different financial advisers who are attached to different DCP's; and through time for a financial adviser who is attached to a DCP.

#### 4. **Review of the literature**

Section 3 of this document has already reviewed some relevant literature in the process of outlining the background, significance, importance, and research questions of this proposed research. To recap, the literature quoted supports the case that many DCP members find investment choice decisions complex and difficult to make. In part, this is because they lack the skills necessary to make these decisions. As a consequence, there are concerns with the overall quality of the decisions being made.

The review of the literature that follows considers the following questions. What theoretical models exist to explain investment choice decision-making by DCP members? Do the predictions from these theoretical models fit with the decision-making problems previously identified?

#### 4.1 An Overview Of The Two Main Models

There are two main alternative models of investment choice decision-making: the life cycle permanent income hypothesis (LCPIH) and the behavioral models. The behavioral models highlight the "not fully rational" side of investment choice decision-making. In contrast, the LCPIH is based on the perspective of an economically rational individual. Strictly speaking, the LCPIH does not address the question of investment choice, but is rather a more general model of retirement saving. Nevertheless, in its formulation of a rational, forward looking individual, some inferences can be drawn about investment choices.

# 4.2 The Life Cycle Permanent Income Hypothesis (LCPIH)

The LCPIH was first enunciated by Modigliani (Ando & Modigliani, 1963; Modigliani & Brumberg, 1954) and also Friedman (Friedman, 1957). A recent overview of this model has been provided by Burtless (1999). Individuals in the LCPIH are modeled as rational, forward looking and capable of solving an optimisation problem which allows them, subject to their time preferences, to optimally "smooth consumption over the life cycle, saving during their working years to accumulate assets, which they use to sustain consumption after they retire". (Lusardi, 1999, p.83).

There have been a number of criticisms of the LCPIH based on its predictions not matching reality. For example, Lusardi (1999) has noted that the elderly do not seem to use up their wealth as predicted by the model (i.e., some individuals make large bequests); consumption is not smoothed but rather tracks income; baby boomers are not saving large amounts in their prime earning years; and many households reach retirement with little or no wealth and having made no plans for retirement.

# 4.3 Behavioral Models

These criticisms have led to alternative behavioral models that "seek to incorporate behavioral explanations into models of savings behavior" (Madrian & Shea, 2001, p.1150). As Barberis & Thaler (2002) have explained in a recent survey article on the developing area of behavioral finance, this is part of a wider trend in finance that involves developing models "in which some agents are not fully rational" (p.1).

Behavioral models of retirement savings relax the 'rational' assumptions of the LCPIH and emphasize the difficulties that individuals have in acquiring necessary information, solving complex maximization problems implied by the LCPIH, delaying gratification, and exercising the self-control necessary for saving (Lusardi, 1999, p.84).

As Choi, Laibson, Madrian & Metrick (2001a, p.26) have explained, this complex maximisation problem can involve making decisions at three levels. At the first level is the decision whether to participate in a savings program. The second decision involves how much to save conditional on participation. The final decision relates to the allocation of savings among different asset classes. These authors claim that behavioral issues (i.e., "not fully rational" behavior) have been shown to be present in each of these decisions.

Research in support of this claim includes the following. O'Donoghue & Rabin (1999) have documented how individuals procrastinate about making decisions related to retirement. Choi et al. (2001a) have found significant numbers of individuals in default savings and investment options who don't appear to be interested in making active decisions. Benartzi & Thaler (2001) have highlighted the use of naïve (e.g., 1/n) diversification principles in making investment choice decisions. And Lusardi (1999) has shown that significant numbers of individuals reach retirement without having thought about retirement (i.e., they have no plan for retirement) and with little or no wealth to consume during retirement.

#### 4.4 Determinants Of Investment Choice

If members of RS funds are making investment choice decisions that conform more to a behavioral model than the LCPIH, then what are the factors that are affecting their "not fully rational" decisions? In a recent literature review of this area, Bailey, Nofsinger & O'Neill (2003) identified a collection of factors which they grouped under the following headings:

retirement plan characteristics, employee demographic characteristics, social influences, and psychological biases. Retirement plan characteristics, such as whether the plan incorporated employer matching or automatic enrollment, have limited relevance to an Australian setting where government legislation defines the characteristics of most RS plans. Employee demographic characteristics that have been shown to impact on investment choice include age, income, job tenure, marital status, number of dependents, gender and education level. Social influences, which is the third group of factors, "recognizes that people receive and process information through interacting with others" (Bailey et al., 2003, p.156). As an example, organizational culture and peer pressures have both been shown to be important in the surveyed research in shaping investment decisions. The final group of factors is psychological biases, which includes factors such as framing, familiarity bias, and representativeness bias.

The mathematical models specified in section 6.4 of this research proposal, include, as explanatory variables, a number of the factors identified by Bailey et.al. (2003). The data to be provided by the industry partner has detailed information on employee demographic characteristics and, to a lesser extent, social influences.

# 4.5 Using Financial Education And Plan Design To Make Member Behavior More Rational

Not surprisingly, researchers in this field are typically concerned about the prevalence of behavior that is 'not fully rational'. Suggestions have been made as to what changes might lead individuals to take more active responsibility in saving for their retirement. Broadly, the changes have been grouped under the headings of financial education and plan design.

Research by Clark & d'Ambrosio (2002) on financial education concluded that it "is an effective mechanism for improving the retirement savings process" (p.13).

Choi et al. (2001a) highlighted the importance of plan design, and, in particular, the selection of the default investment option. They found "a key behavioral principle ... that employees often follow 'the path of least resistance'" (p.2). This path of least resistance in the case of investment choice is the default investment option. Their suggestion is that plan administrators can "powerfully affect the savings and investment choices of their employees" (p.2) through their selection of the default investment option.

#### 5. Theoretical framework

Literature reviewed in the preceding section has identified the role that both financial education and plan design can play in making member behavior more rational. Another possible way to increase an individual's sense of responsibility in saving for their retirement is through providing them with financial advice. That is, rather than focusing on trying to educate the individual worker, the provision of financial advice looks to use a financially-educated person<sup>4</sup> to advise the individual.

While providing financial advice has been mentioned in the US literature, many authors have discouraged its use. Liang & Weisbenner (2002, p.18) note that many companies are reluctant to provide financial advice in the form of investment guidelines to members due to the possibility that they could be held liable for poor investment results. In Australia, though, there are individual DCP's which have a financial adviser attached. Appendix 8.2 provides an explanation of the process by which some DCP's come to have a financial adviser attached.

<sup>&</sup>lt;sup>4</sup> While the terms "financial adviser" and "financial planner" are in common use to describe such a financially educated person, the official terms, as used by the industry regulator – the Australian Securities and Investments Commission (ASIC) – are "adviser" or "financial product adviser". These equivalent terms are defined in ASIC's Policy Statement 146 (PS 146) which is titled "Licensing: Training of financial product advisers". An adviser or financial product adviser is anyone who provides financial product advice to a retail client. All such advisers need to have achieved a minimum training standard as set out in PS 146.

# 5.1 The Impact Of A Financial Adviser On Investment Choice Decisions Of Members

As explained previously, the focus of this research is on establishing whether the attachment of a financial adviser to a DCP has an impact on the investment choice decisions of the members. In order to establish this, the following reasoning is employed.

- 1. Part of the impact that a financial advisor has on a DCP member will come from the advice that an advisor gives regarding investment choices to be made by the member.
- 2. This advice is likely to be influenced by the training that an advisor has to satisfactorily complete in order to become qualified under the Australian Security and Investment Commission's (ASIC) Policy Statement 146. This training can come in the form of any of the "Approved Training Courses" which are listed on the ASIC Training Register at www.asic.gov.au. These courses address what ASIC describes as its three requirements: generic knowledge requirements, specialist knowledge requirements, and skill requirements.
- 3. There are a large number of Approved Training Courses listed on the ASIC website. For illustrative purposes, the Approved Training Course offered by the Financial Planning Association of Australia Ltd has been selected. This course is structured as an eight unit Diploma of Financial Services (Financial Planning). ASIC has assessed this course as providing specialist knowledge in the area of derivatives, financial planning, generic knowledge, life insurance, managed investments, securities, skills, and superannuation.
- Based on the content of this Approved Training Course, it is possible to summarise the key themes that an adviser would be expected to incorporate into investment choice advice given to a DCP member.

# 5.2 Financial Advice For A DCP Member Regarding Investment Choice - The Key Themes From An Approved Training Course

These key themes are as follows:

- Individuals need to take an active interest in their planning for retirement to ensure that they
  will have sufficient funds for their retirement. The conceptual relationships which underpin
  this planning process are set out in what is known as a Landscape Model. This model is
  essentially a simplified version of the life-cycle permanent income hypothesis (Ando &
  Modigliani, 1963; Modigliani & Brumberg, 1954)
- 2. Any investment choice will involve a risk-return tradeoff in the sense that low return assets (e.g., fixed interest) will have low volatility in their returns while high return assets (e.g., shares) will have high volatility. In the case of investing retirement savings (which typically involves a long time horizon), there should be a heavy weighting towards growth (i.e., high risk/high return) assets such as shares (domestic and international), since historically shares have generated the highest returns over longer periods of time.
- 3. Even in those situations where an individual has a short time to retirement, a heavy weighting to growth assets is still likely to be recommended. This is because the life expectancy of 80 years plus for retirees creates an extended investment horizon from the point of retirement. Growth assets are likely to be the most suitable investment in this situation.
- Attempts to try and "time the market", or "pick a winner", or "chase returns" should be avoided. Typically, the best way to maximize returns for the least risk is to hold a diversified portfolio over a long period of time
- 5. The qualification to this emphasis on growth assets is that it will be limited by the ability of the individual to tolerate risk. One way of measuring a client's attitude to risk is through "risk profiling". A financial planner has a duty to understand a client's ability to tolerate risk.
- 6. Many Australians:
  - Have a low level of understanding of financial management, and hence a low tolerance to risk.

- Will typically be too conservative, giving up higher returns in an unsupported fear of losing their money if they invest in growth assets.
- Will tend, more specifically, to avoid investing in shares partly due to their lack of understanding of shares as well as the anxiety that they are likely to suffer from the negative returns which inevitably will occur in some years as a result of the volatility of returns on shares.
- May consequently experience a gap between the level of risks that they are willing to take and the funds which they want to have at the time of their retirement.

As a result, the advisor should expect, at times, to play an active role in educating and informing the DCP member to accept higher levels of risk in order to achieve his/her financial goals. This is likely to be a gradual process achieved over a period of time.

These key themes in the training of financial advisers lead to a series of hypotheses on the impact that financial advisers will have on the investment choice decisions of DCP members. The individual hypotheses and the associated research design are set out in Section 6.

## 5.3 A summary of the theoretical relationships

Section 5.2 lists the key themes present in the training of financial advisers that relate to investment choice of plan members. From the point of view of the theoretical framework that underpins this research, it is possible to summarize these key themes in terms of the two models of retirement saving decision making. Put simply, the typical client is characterized in the training materials as conforming to a behavioral model (Section 4.2). In contrast, financial advisers are largely trained to understand the life-cycle permanent income hypothesis (Section 4.1), give advice to their clients based on this model, and educate and inform their clients to accept and implement their advice. Overall, the process is one of moving client decision-making away from that described by the behavioral model and towards that described by the life cycle

permanent income hypothesis. This process is set out diagrammatically in Figure 1. Also included in the figure are the means (viz., financial education and plan design) that other researchers have investigated to achieve the same movement.



Figure 1 Theoretical framework for the proposed research

# 6. Materials and Methods

# 6.1 Background Information On Data

An industry partner will provide the data used for this research. In broad terms, the data will be split into two sets (see Appendix 8.4). The first set will contain detailed member information organized by plan for a total of nine plans. The second set will contain detailed plan information for a large number of plans. In terms of Australian research on investment choice by members of DCP's, this appears to be a unique data set because of the comprehensive nature of the

information that it contains on a large number of members (data set number 1) and plans (data set number 2).

#### **6.1 Target Population:**

There will be a number of different samples used in testing the hypotheses. The detail of the main sample is outlined in the sections that follow. This is a sample that will involve the members of nine different plans.

#### 6.11 The group to whom results will be generalised

An attempt will be made to make generalizations about the impact of financial advisers on the investment choice decisions of members of retail DCP's in Australia as well as non-retail DCP's in Australia. It may be possible to make some qualified generalizations about the investment choice decisions of DCP members in countries other than Australia, although this is likely to be limited by the peculiarities (Bateman et al., 2001) of the Australian retirement saving system.

# 6.12 Reasons for not constructing a random sample

To the author's knowledge, no other Australian research has been conducted using data collected from retail DCP's. This has more than likely been due to the difficulties associated with gaining the agreement of an industry partner to provide data. These difficulties probably reflect concerns of member privacy and commercial confidentiality that any prospective industry partner is likely to have.

Conducting a random sample of retail DCP members in Australia would be extremely difficult since it would involve arranging access to a large number of different plans involving different industry partners. Research conducted overseas has typically not involved a random sample of all DCP members. Rather, it has involved a relatively small collection of companies (e.g., Choi

et al., 2001a) or an industry plan which agreed to participate in the research (e.g., Clark, Harper, & Pitts, 1997).

#### 6.13 The sample that will be used and the rationale for that sample

The main sample, referred to in Section 6.1, will involve members of the DCP product marketed by the industry partner, who are in plans with assets between \$1m and \$10m, and whose plans commenced during 1996/1997.

The overall reason for this sample structure is that it should provide a group of plans that have been exposed to a relatively common set of influences. One factor that will vary between them is whether or not a financial adviser is attached. This then becomes the basis for the tests of the hypotheses.

More detailed reasons for the sample structure are as follows.

1. "Members of the DCP product marketed by the industry partner."

The reason for choosing members of this product is self-evident, given that the industry partner is providing the data. An advantage of having a single industry partner is that it facilitates comparisons between members of different plans given that there is a standardized set of investment alternatives offered to all members of all plans.

- "who are in plans with assets between \$1m and \$10m"
   From an administrative point of view, plans with assets between \$1m and \$10m receive a common level of service. This particularly relates to the frequency and quality of financial education.
- 3. "whose plan commenced during 1996 or 1997."

One advantage of having funds that commenced during this time is that it will provide at least seven years of data to analyse (viz., 1997 - 2003). Also, it will provide data on member investment choice over a time period when equity returns were initially strongly positive,

then strongly negative, and then positive again. It should also mean that those plans that commenced at roughly the same time will contain members who have been exposed over time to similar educational materials provided by the industry partner (e.g., website information, annual reports, and educational seminars).

#### 6.14 The structure of this sample

There are nine plans in this sample. Four of them have a financial adviser attached. The number of members in each plan ranges from approximately 40 to 800.

#### 6.2 Instruments or Materials or Apparatus or Equipment:

Computing hardware and software are the main equipment required for this research. All the required hardware and software is currently in the possession of the researcher.

The proposed research is structured around the data to be provided by the industry partner. There are no plans to conduct any tests, questionnaires or interviews.

# 6.3 **Procedure:**

A link has been established with an industry partner who markets a corporate DCP product. The industry partner has agreed to provide data for the purposes of this PhD research. A pilot study, approved by ECU's Committee for the Conduct of Ethical Research, has been undertaken with the industry partner to identify logistical issues associated with the extraction, management and analysis of data. As a result of the pilot study, the proposed sequence for collecting data is as follows.

 An employee of the industry partner will write a query of the industry partner's database using Structured Query Language.

- Data from this query will be provided to the researcher in the form of sheets in a Microsoft Excel workbook.
- 3. The Excel data will then be moved into a database program (Microsoft Access).
- 4. Queries will be written of the database to extract the data required for the test of each hypothesis.
- 5. The extracted data will then be moved into LIMDEP (an econometrics package) for analysis.

Under the terms of a signed confidentiality agreement between the researcher and the industry partner, all data will be provided in a de-identified form.

# 6.4 Data Analysis:

Much of the data analysis will involve panel data techniques. Background information on these techniques, which form a rapidly growing field in econometrics, is provided in Appendix 8.3.

The variables specified in the equations that follow reflect the literature survey on determinants of investment choice covered in Section 4.4 of this research proposal. It may be that some of the variables listed will be shown, through this proposed research, to be correlated with each other (e.g., occupational code and p.a. income). This could lead to changes in the specification of explanatory variables relative to what follows.

*Hypothesis* 1 *is a set of hypotheses that relate to "default behavior"; the observed tendency of a proportion of plan members to stay in the default investment option.* 

Hypothesis 1.1 (relates to all plans)

DCP's which have a financial adviser attached will have a relatively smaller percentage of members in the default investment option.

$$H_o: \beta_{102} \ge 0$$
  
 $H_1: \beta_{102} < 0$ 

#### Mathematical model

Since the percentage of members in the default investment option are restricted to be between zero and one, a censored regression model with the following form will be used:

$$Y_{91} = \begin{cases} = \beta_0 + \beta_{61}X_{61} + \beta_{62}X_{62} + \beta_{71}X_{71} + \beta_{72}X_{72} + \beta_{73}X_{73} + \beta_{81}X_{81} + \beta_{10}X_{101} + \beta_{102}X_{102} \\ + \beta_{03}X_{103} + \beta_{104}X_{104} + \beta_{105}X_{105} + \beta_{106}X_{106} + \beta_{108}X_{108} + \beta_{109}X_{109} + \beta_{11}X_{111} + \beta_{112}X_{112} \\ \text{if } 0 < Y_{91} < 1; \end{cases}$$

$$= 0 \text{ if } (\beta_0 + \beta_{61}X_{61} + \beta_{62}X_{62} + \beta_{71}X_{71} + \beta_{72}X_{72} + \beta_{73}X_{73} + \beta_{81}X_{81} + \beta_{10}X_{101} + \beta_{102}X_{102} \\ + \beta_{103}X_{103} + \beta_{104}X_{104} + \beta_{105}X_{105} + \beta_{106}X_{106} + \beta_{108}X_{108} + \beta_{109}X_{109} + \beta_{11}X_{111} + \beta_{112}X_{112}) < 0; \end{cases}$$

$$= 1 \text{ if } (\beta_0 + \beta_{61}X_{61} + \beta_{62}X_{62} + \beta_{71}X_{71} + \beta_{72}X_{72} + \beta_{73}X_{73} + \beta_{81}X_{81} + \beta_{101}X_{101} + \beta_{102}X_{102} \\ + \beta_{103}X_{103} + \beta_{104}X_{104} + \beta_{105}X_{105} + \beta_{106}X_{106} + \beta_{108}X_{108} + \beta_{109}X_{109} + \beta_{11}X_{111} + \beta_{112}X_{112}) < 0; \end{cases}$$

where:

 $Y_{91}$  is the percentage of members in the default investment option;

 $X_{61}$  is the average age of all members;

 $X_{62}$  is the percentage of members who are male;

 $X_{71}$  is the average per annum income of members;

 $X_{72}$  is the percentage of members who are in full-time employment;

 $X_{73}$  is the percentage of members in white collar work;

 $X_{81}$  is the average balance in member accounts;

 $X_{101}$  is the number of years since the employer joined the product;

 $X_{102}$  is "was an adviser attached to the plan in the current period? (no - 0, yes - 1);

 $X_{103}$  is a de-identified ID for the adviser attached to the plan in the current period;

 $X_{104}$  is the level of risk of the default investment;

 $X_{105}$  is percentage of shares in the default investment;

 $X_{106}$  is total account balance for the plan;

 $X_{108}$  is the percentage of members who attended education seminars;  $X_{109}$  is the number of plan committee meetings over the previous 12 months;  $X_{111}$  is the percentage return on the default investment in the current period; and

 $X_{112}$  is "was the return on the default investment negative in the current period".

#### **Regression Framework**

A censored regression model (i.e., a Tobit model) will be used since the dependent variable can only take values between zero and 1.

#### Sample

The proposal is to test this hypothesis using sample number 2 (see Appendix 8.4), which provides information on a large number of different plans. The first test of this hypothesis will involve all plans. Subsequent tests will involve plans grouped according to their default investment option.

# Hypothesis 1.2 (relates to members in a sample of plans)

Members of DCP's which have a financial adviser attached will be less likely to remain in the default investment option.

 $H_o: \beta_{42} \ge 0$  $H_1: \beta_{42} < 0$ 

#### **Mathematical Model**

$$\log\left(\frac{Y_{31}}{(1-Y_{31})}\right) = \beta_0 + \beta_{01}X_{01} + \beta_{02}X_{02} + \beta_{05}X_{05} + \beta_{11}X_{11} + \beta_{12}X_{12} + \beta_{13}X_{13} + \beta_{14}X_{14} + \beta_{21}X_{21} + \beta_{22}X_{22} + \beta_{23}X_{23} + \beta_{24}X_{24} + \beta_{42}X_{42} + \beta_{44}X_{44} + \beta_{45}X_{45} + \beta_{51}X_{51}$$
(2)

where,

 $Y_{31}$  is the percentage of members in the default investment option;

 $X_{01}$  is the member's age;

 $X_{02}$  is the member's gender (female – 0, male –1);

 $X_{05}$  is member's marital status (single – 0, married – 1)

 $X_{11}$  is the member's per annum income

 $X_{12}$  is the number of years employment with the current employer

 $X_{13}$  is the member's occupational classification (professional (white collar) – 1, uncertified employee (heavy blue collar) – 9);

 $X_{14}$  is the member's employment status (casual – 0, part time – 1, full time - 2)

 $X_{21}$  is the number of years membership of the plan;

 $X_{22}$  is the balance in the member's account at the last statement date;

 $X_{23}$  is "Did the member make extra contributions to the plan?" (no – 0, yes – 1);

 $X_{24}$  is "Did the member make any rollovers?" (no – 0, yes – 1);

 $X_{42}$  is "Was an adviser attached to the plan in the current period?" (no – 0, yes – 1);

 $X_{44}$  is the level of risk of the default investment (capital guaranteed - 1, through to growth - 5);

 $X_{45}$  is the percentage of shares in the default investment;

 $X_{51}$  is the percentage return on the default investment in the previous period;

#### **Regression Framework**

A logistic regression will be used.

#### Sample

The sample will be the nine plans which have been identified in Section 6.13.

*Hypothesis* 1.3 (relates to a financial adviser who is attached to a number of different plans) The impact of a financial adviser in increasing the percentage of members selecting investment options other than the default option will be constant across different plans to which the same financial adviser is attached.

$$\begin{split} H_{o} &: \beta_{42_{i}}^{1} = \beta_{42_{i}}^{2} = \beta_{42_{i}}^{3} \\ H_{1} &: \beta_{42_{i}}^{1} \neq \beta_{42_{i}}^{2} \neq \beta_{42_{i}}^{3} \end{split}$$

where:

 $\beta_{42_i}^{j}$  refers to slope coefficient 42 for financial adviser i and plan j.

#### Hypothesis 1.4 (relates to different financial advisers)

The impact of a financial adviser in increasing the percentage of members selecting investment options other than the default option will be constant across different financial advisers.

$$H_o: \beta_{42_1}^1 = \beta_{42_2}^2 = \beta_{42_3}^3$$
$$H_1: \beta_{42_1}^1 \neq \beta_{42_2}^2 \neq \beta_{42_3}^3$$

where:

 $\beta_{42_i}^{j}$  refers to slope coefficient 42 for financial adviser i and plan j.

Due to space limitations, no mathematical models will be given for the remaining hypotheses.

#### Hypothesis 2

Members of DCP's which have a financial adviser attached will take relatively higher levels of investment risk.

# Hypothesis 3

Members of DCP's which have a financial adviser attached will invest a larger percentages in shares

### Hypothesis 4

Members of DCP's which have a financial adviser attached will be less likely to reduce their percentage investment in shares in the current period as a result of a negative return on shares in the previous period.

# Hypothesis 5

Members of DCP's which have a financial adviser attached will exhibit relatively less "chasing returns" behavior.

(Note: "chasing returns" behavior is where an investor at the start of a period n will choose the investment which generated the highest return in period (n-1).)

# Hypothesis 6

Members of DCP's which have a financial adviser attached will change their investment allocation relatively less frequently per annum.

# Hypothesis 7

The impact that a financial adviser has on the members in a plan will become more pronounced over time in terms of:

- % members in the default investment option (Hypothesis 7.1)
- level of risk taken by the member (Hypothesis 7.2)
- percentage of investment in shares (Hypothesis 7.3)
- chasing returns behavior (Hypothesis 7.4)

- changes in investment allocation (Hypothesis 7.5)

#### Hypothesis 8

There will be no differences between different financial advisers in terms of the impact that they have on each of the following:

- % of members in the default investment option (Hypothesis 8.1)
- level of risk taken by the member (Hypothesis 8.2)
- percentage of investment in shares (Hypothesis 8.3)
- chasing returns behavior (Hypothesis 8.4)
- changes in investment allocation (Hypothesis 8.5)

#### 6.5 Limitations:

As per discussion in Section 6.11, the ability to generalize the results of this research will be limited by the non-random nature of the sample used to generate the data. To date, nine firms have agreed to participate in the research by providing access to demographic and investment choice data of their members (in a de-identified form). A larger sample of firms would allow more confidence in generalizing the research findings.

Another possible limitation stems from the data only coming from one industry partner. If data were to be available from two or more industry partners, then this would probably strengthen the research findings.

In addition, the data itself has limitations. For instance, the data supplied provides no information on whether a particular member has met with a financial planner or attended an education seminar. Consequently, only broad links can be made between the attachment of an adviser to a plan and the investment choice decisions of members. If the necessary data were to become available, then this could form a fruitful avenue for extending the proposed research. Another limitation of the data is that it does not provide any direct information on the level of general education, as well as financial education, of each member. It is likely that financial education, in particular, may be an important influence on retirement saving decision making (e.g., Gallery, Gallery, & Brown, 2000) An inability to incorporate data on this variable in the analysis may leave some variability in the dependent variable unexplained.

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## 8. Appendices

Due to space limitations, the contents of Appendices 8.1 - 8.3 have not been included here.

# Appendix 8.1 – An Overview of Government Mandated Arrangements For Retirement Savings in Australia

# Appendix 8.2 The Attachment of a Financial Adviser to a DCP – Australian Arrangements

**Appendix 8.3 Panel Data Techniques** 

# Appendix 8.4 Information Contained in Data Sets One and Two

An industry partner will provide two distinct sets of data for the proposed research. Table 2 contains a description of the first data set. This panel data set (see Appendix 8.3), which contains detailed member information organized by plan, will be collected for nine companies that have agreed to participate in this research. A second panel data set will contain detailed information on individual funds (see Table 3). Under the terms of a signed confidentiality agreement with the industry partner, all data will be provided in a de-identified form.

# Table 2Data Set 1 Containing Detailed Member Information Organised by Plan

Category Code	Broad category of data	Data Collected	Variable Code	Variable
0	Personal information of members	Year of birth.	$X_{01}$	Age
		Gender.	X <sub>02</sub>	Gender (Male - 1, Female - 0)
		Address postcode.	$X_{03}$	State of Australia in which the member resides (NSW - 1, VIC - 2, etc.)
		Number of dependants.	$X_{04}$	Number of dependants
		Marital status.	$X_{05}$	Is the member married? (Married - 1, Single - 0)
1	Employment information of members	Per annum income.	X <sub>11</sub>	Per annum income
		Date of joining the company.	X <sub>12</sub>	Number of years employment with the current employer
		Occupational classification on a scale of 1-9 where 1 is professional (white collar) and 9 is uncertified employee (heavy blue collar).	X <sub>13</sub>	Occupational classification on a scale of 1-9 (professional (white collar) $- 1$ , through to uncertified employee (heavy blue collar) $- 9$ )
		Employment status (full time, part time or casual).	X <sub>14</sub>	Employment status (full time - 1, part time - 2, casual - 3)

2	General plan information of members	Date the member joined the plan.	X <sub>21</sub>	Number of years of membership of the plan
		Balance in superannuation account as at each annual statement date.	X <sub>22</sub>	Balance in the member's account at the last statement date
		Employer contributions and employee contributions through time.	X <sub>23</sub>	Did the member make extra contributions to the plan in the current period? (no - 0, yes - 1)
		Member rollover transfer history.	X <sub>24</sub>	Did the member make any rollovers in the current period? (no - 0, yes - 1)
		Level of insurance.	X <sub>25</sub>	Level of insurance in the current period (insurance cancelled - 0, standard insurance - 1, increased insurance - 2)
3	Asset allocation of members	Superannuation account information as at each 30 June including the account balance	X <sub>31</sub>	Percentage of members in the default investment option at the end of the current period.
		broken down into respective unit balances and unit prices.	X <sub>32</sub>	Percentage of shares in the asset allocation of the account at the end of the current period
			X <sub>33</sub>	Weighted average level of risk in the asset allocation for the account at the end of the current period (measured on a scale of 1 - 5, where capital guaranteed - 1, growth - 5)
		Investment choice decisions over time including the date of each decision.	X <sub>34</sub>	Was an investment choice decision made in the current period? (No - 0, Yes - 1)

			X <sub>35</sub>	Characteristics of the last investment choice decision made in the current period (no decision made - 0, decision made leading to a reduced percentage allocation to shares - 1, decision made leading to an increased percentage allocation to shares - 2)
		Switching decisions over time including the date of each decision.	X <sub>36</sub>	Was a switching decision made in the current period? (No - 0, Yes - 1)
			X <sub>37</sub>	Characteristics of the last switching decision made in the current period (no decision made - 0, decision made leading to a reduced percentage allocation to shares - 1, decision made leading to an increased percentage allocation to shares - 2)
4	Employer/ plan details	Date the employer joined the product.	X <sub>41</sub>	Number of years since the employer joined the product
		Date of any attachment of an adviser to the plan.	X <sub>42</sub>	Was an adviser attached to the plan in the current period? (no - 0, yes - 1)
		A de-identified number for the adviser(s) attached.	X <sub>43</sub>	De-identified ID for the adviser attached to the plan in the current period (viz. Adviser A - 1, Adviser B - 2, etc.)
		History of the default investment category.	$X_{44}$	Level of risk of the current default investment (measured on a previously mentioned scale of 1 - 5)

			$X_{45}$	Percentage of shares in the current default investment
		Total account balances for the company as at 30 June.	X <sub>46</sub>	Total account balance for the plan in the current period
		Dates annual statements mailed out since joining the plan.	X <sub>47</sub>	Time elapsed between mail out of annual statement and any investment choice or switching decision in the current period
		Dates education seminars conducted since joining the plan.	$X_{48}$	Time elapsed between education seminars and any investment choice or switching decision in the current period
 5	Information on investment alternatives in the plan	Daily unit prices for each of the investment choices.	X <sub>51</sub>	Percentage return on the default investment in the previous period
			X <sub>52</sub>	Was the return on the default investment in the previous period negative? (no - 0, yes - 1)
		Asset allocation (approximate) of each investment alternative in the current period.		
		Date at which each investment alternative was first offered.		

# Table 3Data Set 2 Containing Detailed Plan Information

Category Code	Broad category of data	Data Collected	Variable Code	Variable
6	Characteristics of	Average age.	X <sub>61</sub>	Average age of all members
	members	Proportion of males.	X <sub>62</sub>	Percentage of members who are male
7	Employment information of	Average per annum income.	X <sub>71</sub>	Average per annum income of members.
	members	Percentage of full time employees.	X <sub>72</sub>	Percentage of members who are full-time employees
		Percentage of white collar workers (i.e., occupational categories 1-5).	X <sub>73</sub>	Percentage of members in white collar work (i.e., in occupational codes 1 - 5)
8	General plan information of members	Average balance in members' accounts for each plan.	X <sub>81</sub>	Average balance in member accounts
9	Asset allocation of members		X <sub>91</sub>	Percentage of members in the default investment option.
			X <sub>92</sub>	Percentage of members who made one or more switching decisions in the current period
			X <sub>93</sub>	Percentage of members who made one or more investment choice decisions in the current period
10	Employer/plan detail	s Date the employer joined the plan.	X <sub>101</sub>	Number of years since the employer joined the product
		Date of any attachment of an adviser to the plan.	X <sub>102</sub>	Was an adviser attached to the plan in the current period? (no - 0, yes - 1)
		A de-identified number for the adviser(s) attached.	X <sub>103</sub>	De-identified ID for the adviser attached to the plan in the current period (viz. Adviser A - 1, Adviser B - 2, etc.)

		History of the default investment category.	X <sub>104</sub>	Level of risk of the default investment (on a previously mentioned scale of 1 - 5)
			X <sub>105</sub>	Percentage of shares in the default investment
		Total plan balances for the company as at 30 June.	X <sub>106</sub>	Total account balance for the plan in the current period
		Dates annual statements mailed out since joining the plan.	X <sub>107</sub>	Date annual statements mailed out in the current period
		Numbers of education seminars per annum in each year since joining the plan.	X <sub>108</sub>	Percentage of members who attended education seminars in the current period
		Numbers of plan committee meetings per annum in each year since joining the plan.	X <sub>109</sub>	Numbers of plan committee meetings over the previous 12 months.
11	Information on investment alternatives in the	Investment returns on the default investment as at 30 June.	X <sub>111</sub>	Percentage return on the default investment in the current period
	plan		X <sub>112</sub>	Was the return on the default investment negative in the current period? (no - 0, yes - 1)