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Financial literacy; Investment choice; Superannuation; Australia

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Framework for Assessing Financial Literacy and Superannuation Investment Choice Decisions

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Abstract

There is a worldwide trend towards rapidly growing defined contribution pension funds in terms of assets and membership, and the choices available to individuals. This has shifted the decision-making responsibility to fund members for managing the investment of their retirement savings. This change has given rise to a phenomenon where most superannuation fund members are responsible for either actively choosing or passively relying on their funds' default investment options. Prior research identifies that deficiencies in financial literacy is one of the causes of inertia in financial decision-making and findings from international and Australian studies show that financial illiteracy is wide-spread. Given the potential significant economic and social consequences of poor financial decision-making in superannuation matters, this paper proposes a framework by which the various demographic, social and contextual factors that influence fund members' financial literacy and its association with investment choice decisions are explored. Enhanced theoretical and empirical understanding of the factors that are associated with active/passive investment choice decisions would enable development of well-targeted financial education programs.

Keywords*:* Financial literacy; Investment choice; Superannuation; Australia

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Introduction

Ageing of populations across the world has led to government reforms in retirement income policies that have increasingly shifted the responsibility to individuals to fund their own retirement (Bonoli & Shinkawa 2005). Decisions about management of retirement savings have also increasingly shifted to individuals with a worldwide trend away from defined benefit (DB) pension funds and towards defined contribution (DC) funds[4]. In Australia, most DB funds in both the public and private sectors are closed to new members (Australian Prudential Regulation Authority (APRA) 2007). This decline in DB funds, along with the introduction of mandatory superannuation contributions, has resulted in rapid growth in both the assets and membership of Australian DC funds.

With most funds offering their members investment choice, the onus is on individuals to make financial decisions throughout their working lives and into retirement. Many of these individuals are involuntary investors who may have no experience or interest in financial investment, yet are faced with decisions about which fund to join, and then selecting investment option(s) to which to direct their superannuation savings. As such, fund members are making complex investment decisions during their working lives that can have far-reaching financial implications on retirement benefits.

Industry data show that the vast majority of individuals are in the default superannuation fund chosen by their employer, and the default investment option chosen by the trustee of the fund they joined (Super Ratings 2006). Until recently, it has generally been assumed that all or most individuals in default investment options do not make an active choice. However, this assumption has been challenged by sectors of the superannuation industry, arguing that it is not the case.[5] Whether fund members passively default into, or actively choose the default investment option remains an empirical question.

Prior research suggests that deficiencies in financial literacy is one of the causes of inertia and suboptimal financial decision-making, with findings from international and Australian studies showing that financial illiteracy is wide-spread. These financial literacy studies are generally based on subjective measures that assess individuals' attitudes and behaviours in relation to general financial matters[6]. Limited research has examined financial literacy in the context of more complex superannuation investment decision-making. Overall, this paper is motivated by the phenomenon of most superannuation fund members either actively choosing or passively defaulting to funds' default investment options, and the significant economic and social consequences of poor financial decision-making in superannuation matters. As such, this paper proposes a framework for examining the factors associated with active investment choices and defaulting behaviour. The framework (presented in Figure 1) encompasses various demographic, social and contextual factors that are proposed to be associated with fund members' financial literacy and their passive/active investment choice decisions.

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[4] In defined contribution superannuation plans (also referred to as accumulation plans), a member's benefit comprises contributions to the plan, plus earnings on those contributions, less tax and expenses. In defined benefit plans, a member's retirement benefit is largely predetermined and calculated with reference to a member's final salary and length of service with the employer-sponsor of the fund.

[5] See the joint ASFA, AIST, IFSA and CSA submission to the Review into the Governance, Efficiency, Structure and Operation of Australia's Superannuation System.

[6] See for example FSA (2006a & 2006b) in the UK, and ANZ (2005, 2008) and FLF (2007) in Australia.

The present review contributes to the growing body of theoretical and empirical research on financial literacy, as well as informing the ongoing review and reform agenda of retirement income policies in both Australia and overseas. Enhanced understanding of the factors that are associated with active/passive investment choice decisions would assist with identifying the education needs of both 'financially-engaged' and 'financially-disengaged' cohorts of fund members. Accordingly, an expected outcome of empirically testing the conceptual model developed in this paper is to contribute to the development of well-targeted education programs and provide recommendations on how superannuation funds could better engage members in investment choice decision-making. The next section of the paper provides some background on the Australian superannuation system. The third and fourth sections present the theoretical model and discuss financial literacy and its association with investment choice. The range of factors that are expected to influence financial literacy and investment choice decisions are then explored, followed by a conclusion.

The Superannuation Choice Environment in Australia

Australia is one of only a few countries that has mandatory superannuation as part of its retirement incomes policy. Since 1992, employers have been required to pay superannuation contributions on behalf of employees earning $450 or more per month under the Superannuation Guarantee (SG) legislation. The contribution rate started at 3% and increased to 9% by 2002[7]. The superannuation industry grew rapidly since the introduction of the mandatory SG scheme, with assets under management growing from $183 billion in 1992 to over $1 trillion in 2009 (APRA 2010).

When first introduced, the mandatory superannuation system was largely employer-focused with little or no choice available for employees to decide which fund to join or select alternative investment strategies for their savings (Brown, Gallery & Gallery 2002). However, over the past decade, this situation has changed significantly. Legislation amending the SG Act (1992) to allow employees to nominate a preferred superannuation fund for their compulsory employer contributions came into effect from 1 July 2005. The rationale for providing such choice was the expectation that it "will increase competition and efficiency in the superannuation industry, leading to improved returns on superannuation savings and placing downward pressure on fund administration charges" (Senate Select Committee on Superannuation(SSCS) 2002, p.2). The Choice of Fund legislation applies to all employees who are eligible for SG contributions, with the exception of those whose superannuation is paid under state awards, or state industrial agreements, and members of certain public sector funds and defined benefit funds.

While employers are now required to offer employees choice of fund, there are no regulatory requirements for funds to offer investment choice. However, prior to the introduction of the Choice of Fund legislation in 2005, most funds were already offering their members choices from a limited range of investment strategy options (Brown et al. 2002). Investment choice offered by funds typically includes a menu of ready-made options, where the fund sets the asset allocation, and single asset class options which allow members to construct their own asset

[7] A proposal to further increase the SG contribution rate to 12% by 2019 was announced in the 2010/11 federal budget.

allocation. Recent data reveal that nearly 70 percent of superannuation funds now offer their members investment choice (APRA 2010). Thus, the vast majority of DC fund members are faced with the decision of choosing among the various investment options offered by the fund to determine how their superannuation savings should be invested. Superannuation fund members' decision-making in this expanded investment choice environment is the focus of this paper.

Development of the Investment Choice Model

Choice of fund and investment options is based on the assumption that individuals are interested in and able to make informed decisions about their retirement savings. The mandatory superannuation system, on the other hand, assumes that as most individuals do not voluntarily save enough for retirement, compulsory superannuation savings are necessary (Fear & Pace 2008). Adequacy of savings for individuals' retirements is contingent on critical, and often complex, decisions undertaken by fund members throughout their working lives. These decisions require a range of specialist skills and knowledge, including an understanding of the individual's personal financial situation, such as current asset holdings, disposable income and planned retirement age, as well as knowledge about the superannuation funds, including fees and charges (Vidler 2004).

Financial literacy has been shown to impact decision-making in a range of financial situations, including participation in the stock market and pension plans in the US (see, for example, Lusardi & Mitchell 2006; van Rooij, Lusardi & Alessie 2007). Accordingly, as shown in Figure 1, we posit that fund members' level of financial literacy has a direct effect on their investment choice decisions. Additionally, the context of the member's circumstances needs to be considered when predicting investment decisions (Holden & van Derhei 2001; Kempson, Collard & Moore 2005). Therefore, we further posit that demographic factors, risk preferences, investment characteristics, and other contextual factors, which have been found to be associated with financial literacy in prior research (see Agnew & Szykman, 2005; Bailey, Nofsinger & O'Neill 2003; van Rooij et al. 2007), also affect investment choice decisions.

As presented in Figure 1, investment choice decisions can be active or passive, with differing outcomes. Making an active choice involves the initial selection of an investment option, the ongoing monitoring of the selected option, and the need to make subsequent decisions about whether to switch to other investment options (Gallery & Gallery 2005).

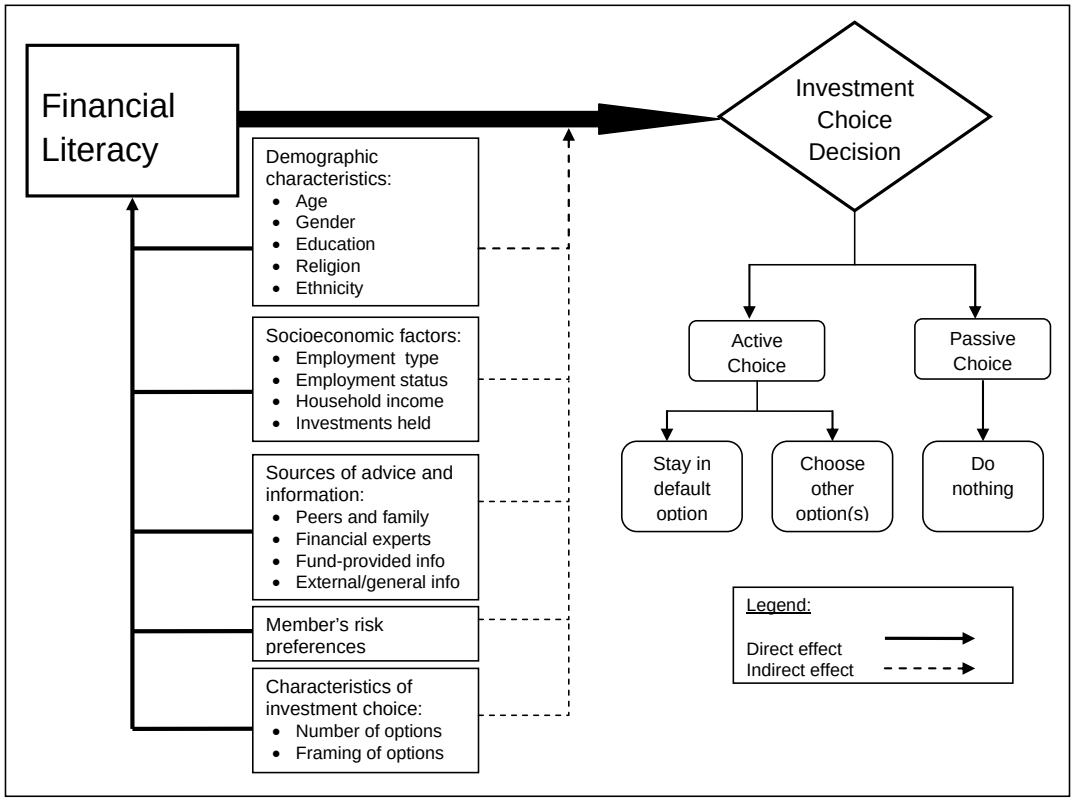
On the other hand, an active choice can also take the form of a conscious decision to stay in the default investment option for those individuals who prefer not to actively participate in the selection and ongoing evaluation process (Brown et al. 2002). Prior studies suggest that a possible reason for members making a conscious decision to stay in the default option is the perception that the default option is an implicit recommendation by fund trustees (Beshears et al. 2007; Choi et al.2003). However, fund members may not be aware that default options vary among superannuation funds in such aspects as asset allocation, performance and their names (Gallery, Gallery & McDougall 2010).

In contrast to a conscious decision to stay in the default option, the outcome of a passive choice is the likelihood of members taking a "do nothing" approach by not making any investment choice, and thus passively defaulting to the default investment portfolio selected by the fund trustee. Previous research in Australia shows that fund members tend to passively adopt the default investment option in DC funds. For example, Bowman (2003) suggests that only ten percent of superannuation fund members with investment choice actually exercise it. Similarly,

in the funds that Gerrans, Clark-Murphy and Speelman (2008) sampled, only between ten and fifteen percent of members exercised investment choice. This evidence is in line with industry research which shows that 82 percent of superannuation fund members are in their funds' default investment option (SuperRatings 2006). Similar findings of default bias are provided in overseas research. In the US plans that Choi et al. (2002) studied, between 48% and 81% of plan assets are invested in the default fund. This evidence is echoed by Cronqvist and Thaler (2004) who document widespread acceptance of the default fund in the Swedish state-wide Premium Pension System. In contrast, 69% of members have made an active investment choice in the UK-based DC pension plan study by Byrne, Blake and Mannion (2009), although the sample members are relatively inactive in terms of making investment switches.

While a substantial proportion of superannuation assets in Australia is held in default investment strategies (APRA 2010; SuperRatings 2006), the distinction between active decisions to stay in the default option versus passive default choice remains unclear. The model developed in this paper aims to identify factors that distinguish active versus passive investment choice decisions.

Figure 1. Financial literacy and investment choice decisions in the superannuation fund context



Financial Literacy and Choice

Prior research suggests that lack of financial literacy is one of the causes of inertia in financial decision-making. As the theoretical model in Figure 1 shows, while a range of demographic, social and contextual factors have a direct effect on financial literacy, these factors also indirectly influence investment choice decisions. This section reviews the prior literature on financial literacy and discusses the limited prior research that examines associations between financial literacy and investment decision in the superannuation/pension context. In the next section we will then discuss the demographic and contextual factors that impact on both financial literacy and the choice decision, as shown in Figure 1.

Financial literacy has a variety of definitions but it is commonly referred to as "the ability to make informed judgements and to take effective decisions regarding the use and management of money" (Schagen & Lines 1996, p.ii). In the United Kingdom, the term 'financial capability' tends to be used, rather than financial literacy. It is reasoned that capability comprises broader concepts than simply knowledge and that financial capability consists of three interrelated elements: knowledge, skills and attitude (FSA 2006 a). The term 'financial literacy' is more commonly used in other jurisdictions, as evident by the establishment of organisations such as the *Jump$tart Coalition for Personal Financial Literacy* in the US and the Financial Literacy Foundation in Australia, but in some instances (such as in Australia) reference to financial literacy is taken to include those broader concepts of financial capability used in the UK. Some researchers view financial literacy as a more general understanding of economics and how household decisions are affected by economic conditions and circumstances (Worthington, 2006), whereas others maintain a more narrowly defined focus on basic money management tools such as budgeting, saving, investing and insurance (Hilgert, Hogarth & Beverly 2003; Mandell 2001).

Financial literacy can also be defined in terms of levels (e.g. attainment) and dimensions (e.g. mathematical, financial). For example, the ANZ *Survey of Adult Financial Literacy in Australia* (2003; 2005; 2008) adopted the revised UK *Adult Financial Capability Framework* (FSA 2006a) and classified financial literacy into four main sections of 'numerical literacy and standard literacy', 'financial understanding', 'financial competency' and 'financial responsibility'; with two broad levels of financial literacy of 'basic requirement' and 'advanced competency'.

Similarly, in a financial literacy study of Dutch households, van Rooij et al. (2007) designed two modules of questions to measure basic financial literacy and more advanced financial knowledge. The basic financial literacy measures responses relating to the working of inflation and interest rates, and more advanced financial knowledge questions assess respondents' understanding of financial market instruments. The authors performed factor analysis on the modules of the survey questions to construct two financial literacy indices relating to basic and advanced financial knowledge. In their US study, Lusardi and Mitchell (2007) draw on the van Rooij et al's (2007) model to test basic financial literacy and what they term as "sophisticated financial literacy". In both studies the 'advanced' and 'sophisticated' measures of financial literacy focus exclusively on knowledge and understanding of investment products and stock markets.

In an exploratory study in the UK, Atkinson et al. (2006) suggest that financial capability could be conceived as encompassing four different domains of 'managing money', 'planning ahead', 'choosing products' and 'staying informed'. The researchers used factor analysis to derive factor scores, and subsequently used cluster analysis to identify groups with similar factor scores across the four capability scores (Atkinson et al. 2006).

A recent Australian study focuses on financial literacy relevant to investment decision-making in the context of superannuation funds through objective tests of both basic and advanced financial knowledge and understanding (Gallery et al. 2011). The researchers conducted factor analysis and developed three domains of financial literacy, namely, general financial matters, such as understanding compounding interest; general investment matters, such as understanding the importance of diversification; and specific investment matters, such as the understanding of the relative risks and returns of investment options (Gallery et al. 2011).

Financial literacy has wide-reaching implications for household savings and investment behaviour. Bernheim (1997) identifies that in households which lack basic financial knowledge, saving behaviours are dominated by basic rules of thumb. In more recent work, Bernheim and Garrett (2003) show that those individuals who are exposed to financial education in high school or in the workplace save more than individuals who are not exposed to such education. Similarly, Lusardi and Mitchell (2006; 2007) show that those who display low financial literacy are less likely to plan for retirement and as a result accumulate much less wealth.

Empirical research on financial literacy is largely confined to broad population surveys aimed at measuring very basic financial literacy, such as using and managing money. Further, financial literacy research to date is predominately based on subjective measures of survey respondents' self-assessment of ability, understanding, attitudes and behaviour with respect to financial products and issues surrounding financial control. The findings of Gallery et al. (2009) suggest that individuals tend to self-rate their financial abilities higher than their actual capabilities using objective tests of financial literacy. There is little research on objective measures of financial literacy or associations between such objective measures and investment decisions, with a few exceptions such as the work by Lusardi and Mitchell (2007), van Rooij et al. (2007) and Gallery et al. (2011).

Further, research on financial literacy and pension financial decisions to date have been mainly conducted in the UK and US (e.g., Agnew & Szykman 2004; Kempson et al. 2005; Lusardi & Mitchell 2006; 2007). There are institutional differences in retirement savings policies and the structures of the relevant pension/superannuation systems between these countries and Australia. As stated above, Australia's mandatory superannuation regime means that virtually all employees have superannuation savings and these investors are involuntary investors who may have no experience or interest in financial investment. In contrast, participation in retirement pension funds in the US, such as the 401(k) pension plans, is voluntary. Those who participate in retirement plans are free to choose whether to participate and determine how much to contribute to their pension plans. Given this important difference in retirement savings institutional arrangements, this research addresses a gap in the literature by examining financial literacy and investment decision-making in the unique setting of the Australian superannuation system.

Factors Affecting Financial Literacy and Investment Decisions

As shown in Figure 1, an array of factors directly and indirectly impact on an individual's financial literacy and financial decisions. Therefore, the context of the individual's circumstances as well as the individual's financial capability need to be considered when predicting investment decisions (Holden & van Derhei 2001; Kempson et al. 2005). Demographic factors, socioeconomic factors, risk preferences, investment characteristics, and other contextual factors have been found to be associated with financial literacy and investment

decisions in prior research. In this section we discuss the various factors that influence financial literacy and their association with superannuation investment choice decisions.

Demographic Characteristics

Prior research has consistently found the demographic factors of gender, age and education are associated with financial literacy and investment decisions (see Agnew & Szykman 2005; Bailey et al. 2003; Lusardi & Mitchell 2007; van Rooij et al. 2007). Additionally, there is emerging evidence in the behavioural literature that religion and ethnicity may influence financial literacy and financial decisions (see Gerrans et al. 2009; Khan 2010; Renneboog & Spaenjers 2009; Sabri & MacDonald 2010) These factors comprise the first group of characteristics included in our model (see Figure 1).

Prior research findings are mixed with respect to the relationship between individuals' gender and financial literacy, as well as with financial decisions. What is more certain is that females typically have longer life expectancy than males and often have interrupted careers (Bateman et al. 2001). These factors would suggest the need for females to save more than males during their working lives (Byrne et al. 2009).

Most prior studies have found large differences in basic literacy between genders such that females display much lower basic knowledge than males (ANZ 2008; Lusardi & Mitchell, 2006; 2007; van Rooij et al. 2007). In contrast, Wagland and Taylor (2009) did not find gender to be a significant variable impacting the level of financial literacy among a sample of business degree students in an Australian university. However, prior research consistently shows that gender differences are more apparent when considering advanced literacy, with a large percentage of females displaying relatively low levels of literacy relative to male counterparts (ANZ 2008; Gallery et al. 2011; Lusardi & Mitchell 2007; van Rooij et al. 2007). In regard to risk and investment decisions, a study of portfolio choice and trading in a large 401(k) plan by Agnew, Balduzzi and Sunden (2003) found that males are more likely to make equity investments and that their asset allocations tend to be more extreme, with very high or very low allocations to equities, and with very limited movement in allocations. Several studies also suggest gender differences in terms of risk aversion in general, and in retirement investments in particular. The majority of these studies, conducted overseas, found that females show greater risk aversion in the allocation of funds to pension assets (Bajtelsmit et al. 1999; Bernasek & Shwiff 2001). This finding is also supported by Australian evidence (Gerrans & Clark-Murphy 2004; Quinlivan 1997) which found that females are more risk-averse than males when investing in financial assets. However, this finding is challenged by Schubert et al's (1999) study which found that females are not more risk-averse than males when financial decisions are put in context. A more recent study using an extensive Australian managed fund database by Brown, da Silva Rosa and McNaughton (2006), suggested that males are more risk averse than females. However, in relation to superannuation fund members' investment decisions, Watson and McNaughton (2007) found that women tend to choose lower risk investment options than their male counterparts.

Age is also commonly found to be associated with financial literacy. For instance, van Rooij et al. (2007) found the profile of basic literacy to be negatively skewed with regards to age. Advanced literacy is low among the young, is highest among middle-age respondents (particularly 40 to 60), and declines slightly at an advanced age of 61 or over. Similar findings are reported in the Australian context with the youngest (18-24 years) and the oldest (70 years or

over) age groups displaying the lowest financial literacy scores (ANZ 2008). In contrast, for their sample of superannuation fund members, Gallery et al. (2011) found a significantly positive association between age and all three of their measures of financial literacy, suggesting older persons are more financially capable of making informed superannuation investment decisions.

Level of education is also consistently found to be associated with both basic and advanced financial literacy in the Dutch study (van Rooij et al. 2007). In the *ANZ Survey* (2008), controlling for age, education attainment is also found to be associated with the financial literacy score. Similarly, education is positively and significantly associated with all three measures of financial literacy in the Australian study of superannuation fund members, indicating that those members with higher levels of education are the most financially literate (Gallery et al. 2011). However, as van Rooij, Lusardi and Alessie (2007) caution, although education is highly correlated with financial literacy, there is a large proportion of individuals with university degrees who display low levels of more advanced financial knowledge. Thus, more highly educated individuals do not necessarily have the requisite knowledge and skills to make investment decisions. Interestingly, a survey by Lusardi et al. (2009) found that parents' education level was a strong predictor of financial literacy of young adults in the US.

There is emerging evidence in the behavioural literature that demonstrates the influence of religion on economic behaviour. A recent study by Renneboog and Spaenjers (2009) examined differences in economic attitudes and financial decisions between religious and non-religious households. Using Dutch survey data, the researchers find that religious households are more likely to save and that Catholic households invest less frequently in the stock market (Renneboog & Spaenjers 2009). Exploring the relationship between faith and finance, Khan (2010) examined the influence of religious beliefs on individual financial choices. Specifically, the author used a dataset of Pakistani customers to determine the reasons behind the difference in demand for faith-based (Islamic Bank) and conventional bank accounts. The author suggests that the existence of a nonmonetary "faith premium" may explain the growing popularity of religious accounts and the Islamic banking industry.

Research on the relationship between ethnic/racial background and financial literacy has been largely based on overseas studies of school and college students. For example, Chen and Volpe (1998) and Murphy (2005) examined the influence of race on financial literacy and found that racial minority college students (African-American) had lower levels of financial knowledge than White American students. These results are consistent with the findings from other US studies which found that levels of financial literacy are lower among those from racial minority groups (Mandell 2008). Similarly, Morris (2001) investigated the financial literacy levels of secondary students in New Zealand and found that Maori and Pacific Islanders did not perform as well as New Zealanders of European origin. In a study of college students in Malaysia, Sabri et al. (2010) also established that financial literacy is related to ethnicity and that students of Chinese ethnicity are associated with lower levels of financial literacy. In a sample of adult Indigenous Australians living in an urban environment, Gerrans, Clark-Murphy and Truscott (2009) found that the respondents' levels of financial literacy are significantly lower than that in the general population.

Prior research findings are less consistent with respect to the relationship between individuals' ethnic/racial background and financial attitudes and behaviours. Drawing from a sample of college students in a large US university, Joo, Grable and Bagwell (2003) found associations between ethnic background and students' credit card attitudes. In contrast, Sabri and

MacDonald (2010) did not find a significant relationship between race and financial problems among a sample of college students in Malaysia.

Socioeconomic Factors

Prior studies have identified a number of socioeconomic factors that are associated with financial literacy and investment decisions, including employment type and status, personal and household income, and other wealth factors, such as investments held (see Al-Tamimi & Bin Kalli 2009; Byrne et al. 2009; Worthington, 2008). These factors comprise the second group of characteristics included in our model, as shown in Figure 1.

There is evidence to suggest that occupation type may be differentially related to financial literacy. For instance, findings from the *ANZ Survey* (2008) and Worthington's (2006; 2008) analysis of the *ANZ Survey* (2003) data suggest that financial literacy scores are typically higher amongst those who are in professional and managerial occupations. A survey of United Arab Emirates investors also supports this notion, finding that individuals who worked in the field of finance/banking or investment displayed higher levels of financial knowledge than those in other occupations (Al-Tamimi & Bin Kalli 2009). Similarly, employment status (employed versus unemployed) has also been identified as a correlate to financial literacy (Beal & Delpachitra 2003; Worthington 2006; 2008). The *ANZ Surveys* (2003; 2005; 2008) have consistently found that unemployed respondents have lower financial literacy scores. In his analysis of the *ANZ Survey* (2003) data, Worthington (2006) suggests that possible reasons for differences in financial knowledge for non-working respondents include lack of exposure to financial transactions and less exposure to work-related literacy education.

In terms of wealth factors, financial literacy scores have been found to be generally associated with household income levels, with higher financial literacy scores for those individuals with higher levels of household income, and lower scores for those on lower incomes (ANZ 2008). These findings are consistent with results from the survey of superannuation fund members conducted by Gallery et al. (2011) who found that wealthier individuals (i.e. those who own a home and have higher household income) had higher levels of financial literacy. They also found that these wealth factors and the additional indicator 'investment in shares' were also positively associated with more advanced investment literacy. Gallery et al. (2011) suggest that these findings of higher levels of financial literacy among members with share investments outside their superannuation may be due to what Banks and Oldfield (2007, p.147) refer to as 'reverse causality'. That is, rather than financial literacy leading to the propensity to invest, the act of investment increases financial literacy as individuals seek to increase their financial literacy in order to understand the investments they hold.

Sources of Information and Advice

Sources of information and advice are also expected to influence investment choice decisions, and are included in our model, as shown in Figure 1. Sources of information and advice that could be potentially used by individuals in their financial decision-making include the superannuation fund's Product Disclosure Statements (PDS), other information available from the superannuation fund, financial information available from other non-fund sources, and

whether the individual consults experts (e.g., an accountant or financial planner) or consults non-experts (e.g., family, colleagues or friends) to assist with financial decision-making.

Findings from research suggest that individuals tend to use multiple sources of information in relation to superannuation or investments. For instance, the results of the *ANZ Survey* (2008) indicate that respondents tended to use multiple channels of information to assist with their financial decision-making. The main sources used are financial newspapers or magazines. Other relatively widely used sources are publications from the finance industry, printed books or other financial publications, publications from government, and finance-related sites on the Internet (ANZ 2008; Gallery et al. 2011).

The *ANZ Survey* results suggest that those with the highest financial literacy are most likely to use financial newspapers or magazines to assist with their financial decision-making. Conversely, those with the lowest financial literacy levels are least likely to use financial newspapers or magazines (ANZ 2008). These results are supported by the Dutch study which found that higher reports of households relying on newspapers, financial magazines, guides and books, and financial information from the internet were related to higher levels of basic financial literacy (van Rooij et al. 2007). In relation to superannuation fund members, Gallery et al. (2011) found that those who use more of the information sources offered by the superannuation fund were found to have higher levels of advanced investment literacy, and those who use more external information sources have higher scores for all measures of financial literacy.

The effects of social interactions on individual behaviour have been modelled, tested and applied to a wide variety of situations (Glaeser & Scheinkman 2003). In psychological terms, social interaction is linked with many theories and potential outcomes (e.g., Allport's (1954) Contact Hypothesis and Homan's (1958) Social Exchange Theory). Social interaction may affect financial decisions as people receive and process information through interacting with others. In a US 401(k) pension plan participation study, Duflo and Saez (2002) found that peer effects influenced retirement savings decisions because many people had not carefully thought through the advantages and disadvantages of particular plans for themselves. Many employees used information from peers when deciding on participation as they may lack their own reasoned information for making sound retirement investment decisions. Moreover, beliefs about social norms will additionally influence employee decisions due to a desire to behave similarly to those in their social group (see Berkowitz 2003).

Duflo and Saez (2002) further illustrated the influence of peer effect on 401(k) pension plan participation by studying the participation rate of a sample of university librarians working in different buildings throughout a campus. The study found a large difference in participation rates as a function of different buildings even though the samples of librarians had the same level of education and earn similar salaries. The authors suggested that the large differences may be attributable, in part, to the social norms of each building that had developed over time.

A study on financial literacy and stock market participation by van Rooij et al.(2007) found that while those households with low financial literacy tended to get advice from peers or family, those with higher financial literacy were more likely to rely on professional financial advisers. Those who displayed higher levels of advanced literacy were much less likely to rely on advice from family and friends, and much more likely to consult financial advisers. Similar results were reported in the *ANZ Survey* which found that respondents with the lowest levels of financial literacy were less likely to have consulted an accountant, financial planner or adviser than those with the highest levels of financial literacy (ANZ 2008). In their study of superannuation fund members, Gallery et al. (2011) also found that individuals with higher

levels of financial literacy were more likely to consult experts, such as accountants or financial planners.

Risk Preferences

In understanding individuals' risk attitude, reference is made to the seminal work by Kahneman and Tversky (1979) who stated that people act as if they are risk averse when only gains are involved, but become risk-seeking when they perceive themselves to be facing the possibility of loss. In other words, when the choice is framed in the domain of gains, people respond as if they are risk-averse. When the choice is framed in the domain of losses, people respond as if they are risk-seeking. A 'framing effect' refers to the manner in which a problem or issue is presented to the decision maker when determining their attitude towards risk. Kuhberger, Schulte-Mecklenbeck & Perner (2002) provide a synthesis of the empirical evidence supporting the proposition that the framing of a choice can influence situation-specific risk attitude, depending on whether the problem is framed in a positive or negative way. When a decision involving financial uncertainty is framed in a positive light (e.g. in terms of gains), individuals are less willing to take risks than if exactly the same pay-off situation is presented in terms of potential losses. Positive framing (i.e. gains, winning, opportunity) induces risk aversion, while negative framing (i.e. potential losses, losing or threat) of the same choice with equivalent pay-offs produces risk-seeking attitudes.

Hence a risky investment choice problem may have identical economic pay-offs, but may elicit contradictory responses from an individual depending on how the problem is framed. In describing investors' choice, Kahneman and Tversky (1981) assert that people analyse choices in isolation from other aspects of their financial situations. That is, they appear to establish a separate mental account for each choice, but not necessarily tie these mental accounts together. Moreover, because mental accounts are framed as gains and losses, they need to be defined in terms of a benchmark or reference point.

In the superannuation context, risk attitudes and preferences are inherently represented in decisions made by individual fund members (Brown et al. 2002). There are several risks that members of accumulation funds face, including the possibility that contributions paid on their behalf will be insufficient to fund an adequate retirement benefit (actuarial risk) and investment earnings will not increase their accumulation to a reasonable value at retirement (investment risk: Rice Warner 2006). Making additional voluntary contributions is one of the ways to address actuarial risk. In terms of investment risk, members may decide to make an investment option switch from the menu of investment options offered by their fund or construct their own investment strategy across different asset classes (Gerrans et al. 2008).

Future returns from the range of investment options involve uncertainty and are difficult to predict with precision. When making judgements with uncertainty, it appears that individuals may also be influenced by factors not necessarily relevant to the final outcome. For example, Kahneman and Tversky (1979) describe evidence that people exhibit poor ability when estimating the likelihood of particular events. Instead of using relevant factors which may be too numerous or complex for them to process, individuals may rely on heuristics or "rules of thumb" (such as a reliance on information that is available to memory) that help to reduce the complexity of the task into simpler judgement. To simplify the complexity of assessing investment risks,

fund members may adopt certain heuristics, including prevalence towards default bias, displaying a tendency of extremeness aversion or adopting a "naïve diversification" strategy.

Characteristics of Investment Choice

NUMBER OF INVESTMENT OPTIONS

As mentioned previously, nearly 70 percent of superannuation funds now offer their members investment choice (APRA 2010). However, there is a large disparity between the number of choices on offer from corporate, industry and public sector funds, which average less than 10, and the number on offer from retail funds, which average nearly 180 (APRA 2010).

Literature from the field of consumer research suggests that too many options may not facilitate good or satisfying choices and that choice overload may discourage members from engaging in making informed choices. Iyengar and Lepper (2000) conducted an experiment to investigate the impact of excessive choice. The authors found evidence of a demotivating effect from 'choice overload' in relation to consumer products. This study also demonstrates that consumers not only reduce the amount of processing time when a task becomes overwhelming, but that they may decide to withdraw from the task entirely (Iyengar & Lepper 2000).

Increasing the number of choices has also been shown to be related to changing investment behaviour, including the tendency to not exercise investment choice. For example, in a study of participation rates in US 401(k) pension plans, Sethi-Iyengar, Huberman and Jiang (2004) found that participation rates declined as the number of fund options increased. Having a large number of choices may not only hinder informed decision-making, but it is also costly for members because more investment options usually translate into higher fund expenses (Dunnin 2006). Further, members who are presented with too much choice when they are not capable or willing to assess the options may perceive that the default option is an implicit recommendation by fund trustees and thus default to remain in the default option (Beashears et al. 2007; Choi et al. 2003).

FRAMING OF INVESTMENT OPTIONS

Tversky and Kahneman (1981) first define framing in its broad sense as the frame of reference used by a decision maker when making decisions. The scholars further defined a decision frame as the decision maker's conceptions as to the nature of "the acts, outcomes and contingencies associated with a particular choice" (1981, p. 453). In evaluating the influence of framing on risky decisions, Kuhberger (1998) described framing as a subjective internal process determined by the situation's contextual and individual factors. Indeed, the uniqueness of the individual conceptual schema is emphasized by Evensky (1997) who asserted that decision makers construct their own subjective conceptions about a decision task derived from their own reality, which then forms their own unique frame of reference.

The presentation of investment information can have a large impact on the decisions of superannuation fund members. A number of studies in the US illustrate the effect of framing information in terms of risk-return relationship on retirement savings decisions (Benartzi & Thaler 1999; 2002; Huberman & Jiang 2006; Iyengar & Lepper 2000). For instance, Benartzi and Thaler's (1999) study demonstrates that by providing the same information on return

distribution but presenting it in different ways (a short-term focus versus a long-term focus), resulted in very different retirement decisions by the participants.

In the context of superannuation funds in Australia, default options are commonly in the form of a "balanced" investment option (Parliamentary Joint Committee on Corporations and Financial Services (PJCCFS) 2007). But in light of the differences in performance, the risk characteristics across this group vary considerably. Recent data show that 5-year returns to January 2010 of the top 50 default 'balanced' options ranged from 3.3 percent to 7 percent (SelectingSuper 2010). This common terminology illustrates the problem of 'framing effects' in menu design (Gallery et al. 2004). Indeed, the recent findings of Gallery, Gallery and McDougall (2010) indicate that default options are becoming more alike despite being framed as being different in terms of their name and other aspects such as asset allocation and risk descriptions.

In addition to the "labelling" of investment options, the framing effect is also relevant to how those options are displayed. In particular, as the experiment conducted by Iyengar and Lepper (2000) suggests, varying the number of choices may lead decision makers to choose differently, including choosing not to choose. Exploring the framing effect in 401(k) pension plans, Benartzi and Thaler (2002) found that an employee's choice of retirement investment is affected by the other options available – options that were not even selected. In other words, providing a different set of options in a 401(k) pension plan may cause employees to choose completely different investments.

In summary, while investment decisions are by their nature complex and influenced by a range of factors, understanding how investors make superannuation fund investment decisions is essential to ensuring the achievement of adequate retirement incomes for fund members. Characteristics of investment choice, in terms of the number and framing of those choices, have a clear effect on members' perceptions and choices. These perceptions and choices are also influenced by members' financial literacy. Making informed investment decisions requires individuals to have adequate financial knowledge and understanding of various investment products and associated risks.

Conclusion

The underlying assumption in the push for pension investment autonomy is that individuals make optimal investment choices that match their particular risk-return preferences and ultimately maximise their retirement income (Rozinka and Tapia, 2007). Whether individual fund members have the financial capacity to make informed decisions in a complex superannuation system is a concern that has been shared by practitioners and academics alike (Brown et al. 2002; Clare 2007). As highlighted in the preceding discussion, financial literacy studies conducted overseas and in Australia suggest that there is a low level of financial literacy displayed by many individuals.

This research has policy implications for Australian and overseas governments and regulators because although there are institutional differences between the mandatory superannuation system in Australia and the voluntary nature of pension system in countries such as the UK and US, a common overarching theme is the global shift from predominantly defined benefit (DB) plans to defined contribution (DC) plans. The decline of defined benefits and the introduction of mandatory superannuation in the early 1990s led to tremendous growth in the number of members in DC funds and the assets held in those funds. With the growth in coverage

and value of superannuation, government policies and superannuation fund initiatives have increasingly encouraged members to take a more active role in the management of their retirement savings. The expansion of investment choices and the expectation that members choose how their superannuation assets are invested raises the question of whether they have the financial capabilities to make informed choices. Given potential adverse consequences of poor choices, it is imperative to understand the extent of financial capability among superannuation fund members to inform the development of education programs that address specific needs and deficiencies in financial literacy levels.

The preceding review of the literature has identified an array of factors influencing financial literacy, which, in turn, impact on investment choice decision-making. First, members' demographic and socioeconomic factors, such as age, gender, educational attainment, work type and status, household income and investments held, play an important role on financial literacy and, in turn, indirectly affect investment choice decisions. Second, social factors, such as the sources of advice and information, influence individuals' level of financial literacy and investment choice decisions. Third, members' risk preferences and fourth, the characteristics of investment choices, in terms of the number and the framing of investment options, have a clear effect on individuals' perceptions and choices. Figure 1 models the key factors and directions of influence among those factors that ultimately impact on the superannuation investment choice decision.

This paper takes an initial step in proposing a theoretical framework to assess financial literacy and its association with investment choice decisions in the superannuation context. In doing so, this paper contributes to the growing body of literature on financial literacy, and informs the ongoing review and reform agenda of retirement incomes policy in both Australia and overseas. More specifically, the conceptual model developed in this paper provides a cohesive basis for conducting surveys of superannuation fund members to provide empirical evidence that will enhance understanding of the factors that are associated with active/passive investment choice decisions. In turn, such evidence will enable identification of 'financially-engaged' and 'financially-disengaged' cohorts of fund members and inform the development of well-targeted programs that address the specific education needs of the different cohorts.

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