

How Financial Literacy Impacts on KiwiSaver Decisions?

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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How Financial Literacy Impacts on KiwiSaver Decisions?

Abstract

In this study, I examine the impact of financial literacy on not only general retirement awareness but also on concrete KiwiSaver decisions. An internet-based survey was undertaken to recruit a sample of 167 adults from staff at the Auckland University of Technology. The empirical results show that more financially literate respondents are not necessarily more likely to prepare for retirement. However, there is a positive impact of financial literacy on KiwiSaver decision in terms of fee awareness, scheme allocation, contribution rates and fund risks. In particular, more financial literate people will consider fees charged by scheme providers, choose their own KiwiSaver scheme, prefer higher contribution rates and invest in risky funds. As a result, they are more likely to make decisions that provide greater potential KiwiSaver returns to their retirement. However, there is concern about member's abilities on controlling the risks in the pursuit of high returns and investing in funds that have levels of risk and expected returns that are considered appropriate for their ages. Moreover, respondents with higher financial literacy are more likely to seek superior information and make better informed KiwiSaver decisions.

1. Introduction

Virtually every study examining levels of financial knowledge has concluded significant portions of the population lack adequate financial literacy, including New Zealand (OECD, 2005). Of concern, those with low literacy are more prone to making financial mistakes such as not planning for retirement (Lusardi and Mitchell, 2006; Hilgert et al., 2003), borrow excessively (Stango and Zinman, 2007), and underestimating the power of compounding interest (Lusardi and Tufano, 2008). The ultimate consequence of these mistakes is that those with low literacy wind up with less wealth and fewer resources to fund their retirement (Lusardi and Mitchell, 2007a; Bernheim et al., 2001; Bernheim and Garrett, 2003).

Compounding the issue of low literacy and its consequences for wealth accumulation, risk and responsibility in retirement plans have increasingly shifted from employers to workers through greater use of defined contribution (DC) retirement schemes (Benartzi and Thaler, 2001). DC plans set employer and employee contributions, but do not guarantee the income paid during retirement. Rather, the level of retirement income depends heavily on the returns earned from investing contributions into financial assets, usually based on the employees chooses. As a result, the level of retirement income is uncertain and depends heavily on employees making wise investing decisions. In particular, employees need to accept enough risk to earn capital gains and benefit from compounding, without under diversifying or taking excessive risks at inappropriate times, such as close to retirement. Given the complexity of the decisions, many have expressed concern about the quality of the decisions being made by the participants (Bernheim, 1995; Mitchell and Zeldes, 1996).

KiwiSaver represents a form of DC plan. Started in 2007, KiwiSaver is the result of a government initiative to improve individual savings and to boost individual assets available for retirement. KiwiSaver has also been linked to concerns regarding the upcoming baby boomer generations' retirement and the significant pressure this will place on the New Zealand Superannuation scheme, currently available to all people of retirement age. To make the most of KiwiSaver, participants are required to make several financial decisions, which while appearing deceptively easy, have significant consequences and require considerable understanding of core financial concepts. Specifically, once people have decided to join or at least not to opt out, participants need to decide upon their level of contributions, currently set at either 2%, 4% or 8% of income for those employed (the 2% was increased in April 2013 to 3%). A sound decision requires people to consider the potential amount they will have at retirement, requiring knowledge of compounding interest, time value of money calculations, an ability to estimate their likely future income levels and the sum they will need in their retirement. Second, participants need to decide upon a fund manager who will invest their contributions. Those opting not to choose are placed with one of five default conservative investment funds¹. Evidence suggests a large number of participants are currently with default providers (IRD, 2012). A recent survey has also shown that less than 20% consider performance and less than 15% consider fees when choosing a provider, despite these factors having a considerable impact on the returns earned from a KiwiSaver fund (Colmar Brunton, 2010). Third, participants have to select a

¹ There were originally six default providers, however two have subsequently consolidated.

type of fund. Scheme providers can run a number of funds (typically up to five) offering different asset allocations resulting in varying levels of risk and return. While more exposure to growth assets increases risk, for younger participants who have longer investment horizons, it also significantly increases returns and so the eventual level of assets. Concerns have been expressed however that participants are investing in predominantly conservative funds, when they should be taking more risk, and as a result will have shortfalls come retirement. This is particularly problematic for default funds, which are required to be conservative. As a result KiwiSaver participants, in making the best investment decisions, require sound financial knowledge, yet surveys and anecdotal evidence from KiwiSaver suggest this is not the case, particular for the least knowledgeable (Colmar Brunton, 2010).

Furthermore, effective decisions making about KiwiSaver can have positive flow-on effects for the economy as a whole. First, by enhancing informed decisions on KiwiSaver, New Zealanders will be able to build up more financial assets making them more financially independent in retirement, and easing the burden on the public purse. Second, KiwiSaver may prompt people to improve their financial literacy. KiwiSaver requires a higher degree of understanding than some other commonly used financial services. Therefore, the engagement with KiwiSaver may result in members increasing their knowledge and understanding around important financial concepts and terminology, and help them make sound and informed retirement decisions. Further, KiwiSaver may also increase the amount of accessible information in the marketplace about saving and investing. Third, KiwiSaver will help lift economic performance. If people save more, we will no longer need to borrow so much from overseas to finance consumption and business expansion at home. It is therefore important, particularly in terms of improving the scheme going forward, to understand how KiwiSaver decisions are being influenced by the level of financial literacy of the decision-makers.

The purpose of this research is to examine the role of financial literacy on KiwiSaver decisions and the information people rely on to make them. First, I will seek to examine whether New Zealanders are well equipped to make KiwiSaver decisions. Second, I will examine the impact of financial literacy on the criteria and information used for KiwiSaver decisions. Third, it is also possible that financial literacy is not just influencing the decisions around KiwiSaver, but also around the information sources relied upon to make decisions (van Rooij et al., 2007). Given the uncertainties involved with financial decision making, investors have an incentive to acquire financial information to make the best decision possible. However, the quality of information sources are not equal (Bluethgen et al, 2008). Prior research has shown that more financially literate people rely more on professional advice, while those with poor knowledge rely on informal sources of information, such as family, friends and acquaintances (Lusardi and Mitchell, 2006; van Rooij et al., 2007). The varying preference of investment information, and the sources used, likely has a considerable influence on the decisions made, and the quality of those decisions. Understanding the information sources used will allow policy makers the opportunity to provide information via sources that will assist those with the greatest need in making sound decisions.

2. Literature Review

2.1 The definition of financial literacy

As yet no consistent definition has been developed for the term financial literacy, different researchers have defined it differently. Definitions have included “one’s understanding and knowledge of financial concepts (Fox et al, 2005), “the ability to make informed judgments and to take effective decisions regarding the use and management of money” (Noctor et al., 1992), and “measuring how well an individual can understand and use personal finance-related information” (Huston, 2010). For the purpose of this study, financial literacy is defined as “the necessary numerical skills and understanding of basic economic concepts required to comprehend finance-related information and to support educated saving and retirement decisions”.

2.2 Empirical evidence of financial literacy

The literature has documented a consistently low level of financial literacy within populations (Lusardi and Mitchell, 2006; and Hilgert and Hogarth, 2002). Much of the empirical evidence on financial literacy comes from the United States, where Bernheim (1995, 1998) was one of the first to show that most Americans lack basic financial knowledge and numeracy. Subsequently, several other surveys covering the U.S. or specific sub-groups have also documented low levels of financial knowledge. For example, the lack of financial knowledge has been confirmed in the general population by Hilgert and Hogarth (2002). They analysed data from the 2001 Survey of Consumers, in which respondents were given financial literacy questions covering knowledge about credit, saving patterns, mortgages, and general financial management. Most respondents earned a failing score, documenting widespread illiteracy among the population. Data from five surveys conducted by the Jump\$tart Coalition for Personal Financial Literacy spanning from 1997 to 2008 show that only a small minority of high school students score above a passing grade in financial literacy. Students fare poorly on credit management and personal finance questions and know little about stocks, bonds, and other investment vehicles. Low scores are not only pervasive among high school students but have changed little over time (Mandell, 2008). These findings are confirmed by the National Council of Economic Education (NCEE), which periodically surveys high school students and working-age adults to measure financial and economic knowledge. NCEE’s results show that adults earned an average score of C. The high school population fares even worse with most receiving failing marks.

While the above studies focus on data from the US, surveys from other countries show very similar results. A scan of global financial literacy statistics from the Organization for Economic Co-operation and Development (OECD) in late 2005 shows huge gaps in the financial knowledge and skills of individuals around the world. An international study from the OECD was published analysing and discussing financial literacy surveys and research across 12 OECD countries. Although the surveys differed in target audience, approach to measuring financial literacy, and survey methodology, there are a number of similarities in the results. One result common to all the surveys is the low level of financial understanding among respondents. A Japanese consumer finance survey showed that 71% of adult respondents knew little about equity and bond investments and more than 50% lacked any

knowledge of financial products (OECD, 2005). A Korean youth survey conducted by the Jump\$tart coalition in 2000 showed that young Koreans fared no better than their American counterparts when tested on economics and financial knowledge, with most receiving a failing grade (OECD, 2005). Surveys conducted by the Australian and the New Zealand Banking Corporation (ANZ A.C.Nelson, 2005; ANZ 2008) and Mercer (2006) found that a large number of Australians had a low level of adult financial literacy and a low awareness of superannuation issues. Miles (2004) showed that UK borrowers display a weak understanding of mortgages and interest rates. The UK Financial Services Authority also concluded that younger people, those in low social classes, and those with low incomes were the least sophisticated financial consumers. A Canadian survey found that respondents considered choosing the right investments to be more stressful than going to the dentist (OECD, 2005). Christelis et al. (2005) documented that respondents in several European nations scored low on financial numeracy and literacy scales. The OECD's study conclude that financial understanding is low among consumers across OECD countries, especially among the less educated, minorities, and those at the lower end of the income distribution (OECD, 2005).

Furthermore, respondents often feel they know more about financial matters than is actually the case (OECD, 2005). Respondents in the US, UK and Australia feel confident in their knowledge of financial issues even though they display only a limited understanding of basic financial knowledge (OECD, 2005). 65% of American students state that they are very certain about their ability to manage their own finances. However, their scores are not much higher than those of their less confident peers. Most Australia respondents who state they are financially literate failed when tested to apply their financial knowledge to solve a particular problem, demonstrating a lack of financial understanding. These findings suggest that respondents are unable to judge accurately how capable they are to manage their money. If individuals do not realise the deficiency of their financial knowledge and information, they will not be in a position to seek information to improve their financial decisions.

Another notable finding is that respondents feel financial information is difficult to find and understand (OECD, 2005). A Japanese survey finds that respondents feel frustrated about the difficulty on finding easy-to-understand information on financial products. When asked about the financial information provided by various organisation and companies, 39% of respondents say they have not seen much information and 29% found the content of the information difficult and hard to follow (OECD, 2005). A British survey finds that consumers do not actively seek out financial information. The information they do receive is acquired by luck or chance or hazard, for example, by picking up a pamphlet at a bank or having a chance talk with a bank employee. It also finds that consumers' perceived complexity of financial products is one reason given for not going ahead with a purchase (OECD, 2005).

However, those surveys which report information on financial knowledge among the whole population rarely provide information on personal economic performance on retirement planning. Individuals save for retirement both privately and through state and employer-sponsored pensions. To work out how much to save for retirement, individuals must know their expected dates of retirement, expected lifespan after retirement, and superannuation and pension entitlements. They must then calculate, given the expected rate of return on savings, how much to save to maintain a certain standard of

living in retirement. This planning process requires knowledge of superannuation plan characteristics, as well as the ability to perform computation involving compound interest and periodic accumulation.

Many studies examine the relationship between financial literacy and retirement saving in more specific contexts. In particular, several studies reveal that many people do not know the main features of their superannuation entitlements. Bernheim (1998) finds in the Social Security Retirement History Survey (RHS) that employees nearing retirement could not provide accurate estimates of the Social Security benefits they would receive. In addition, over half of respondents were unable to form an expectation and provide any estimate. Mitchell (1988) examined worker knowledge of pension provisions and showed that a significant percentage of employees were unable to identify key features of their companies' retirement schemes, including retirement ages and how much their benefits would rise if they delayed retirement. Those who answered correctly were most likely to be white, have a higher income and level of education, and have greater seniority within their firm (Mitchell, 1988). Gustman and Steinmeier (2005) support these earlier findings in the 1992 cohort of the Health and Retirement Survey (HRS). A majority of those surveyed were unable to accurately report their Social Security or pension entitlements.

Even if individuals had information about their superannuation and pension entitlements, many would have trouble performing the calculations necessary to plan for retirement. Significantly, many are unable to correctly answer questions requiring a basic financial understanding. Several studies suggest that many people lack the financial knowledge and computational ability to make informed financial decisions. Lusardi and Mitchell (2006) have designed a special module on financial literacy for the 2004 Health and Retirement Study (HRS) concerning interest rates, inflation, and risk diversification. Results from this survey module reveal an alarmingly low level of financial literacy among older individuals. Only 50% of respondents in the sample were able to correctly answer simple questions about interest rates and inflation, and only one-third of respondents got all three questions correct (Lusardi and Mitchell, 2006). These results are surprising not only because the literacy questions were simple, but also because their sample was composed of respondents who are 50 or older who should, as a result of experience, be more financially literate. Lusardi and Mitchell (2007a) have also examined numeracy and financial literacy among a younger segment of the population, the Early Baby Boomers, who were 51 to 56 years old in 2004. This segment of the population is particularly useful to study as respondents in this age group should be close to the peak of their wealth accumulation, and should have dealt with many financial decisions already (Lusardi and Mitchell, 2007a). Again, numeracy is found to be low among respondents and the large majority did not have a good grasp of the power of interest compounding. These are concerning findings, especially considering that these respondents have already made many financial decisions during their lifetimes. Lusardi and Mitchell (2007b) report that even in the Rand American Life Panel (ALP), a sample of educated and high-earning middle-aged adults, over a quarter of respondents could not accurately answer the more difficult HRS compound interest question.

2.3 Determinants of Financial literacy

Financial illiteracy is not only widespread, but it is also varies by demographic factors. Many studies on the determinants of financial literacy have been done for developed countries, while Cole et al. (2008) focuses on the determinants of financial literacy in developing countries, mainly in India and Indonesia. These empirical studies show that a number of demographic elements are important determinants of financial literacy. Among factors that were found significant in various studies are age, gender, education, occupation, wealth, area of residence, ethnicity and religion.

Age

Age has been found to be a significant factor in explaining financial literacy. Worthinton (2004) finds that people aged 50-60 are likely to have low financial literacy in Australia. Lusardi and Mitchell (2006) report that in the US, Baby-Boomers (those aged 51-56 in 2004) are the least financially literate. As can be seen, financial literacy declines rapidly with age. Furthermore, it is noteworthy that age has a non-linear effect on the level of financial literacy. In particular, financial knowledge follows an inverted U-shaped pattern, being lowest for the young and the older groups, but peaks in the middle of the life cycle (Lusardi and Mitchell, 2011). Almenberg and Säve-Söderbergh (2011) observe that the highest levels of literacy are displayed by those of 35-50 and those older than 65 were found to perform the worst in Sweden. The pattern is consistent with knowledge increasing with experience and decaying at older ages. This is an important finding, since people must make numerous financial decisions in the late stage of their life (Lusardi and Mitchell, 2007a).

Gender

Empirical evidence also suggests that gender predicts financial literacy. Many studies demonstrate that men are more likely to perform better than women on financial literacy questions (Lusardi and Mitchell, 2008; Mandell, 2008; Cole et al., 2008). Lusardi and Mitchell (2008) show that women are not only less likely to answer the questions correctly, but they are more likely to state they do not know the answers, compared to men. By contrast, there are no gender differences in financial knowledge in Russia and East Germany, since both women and men are equally financial illiterate (Lusardi and Mitchell, 2011). However, in most cases, women show less financial knowledge than men. Almenberg and Säve-Söderbergh (2011) explain large gender differences among Swedish individuals by the fact that women in Sweden seldom make economic decisions in the household. Goldsmith and Goldsmith (1997) suggest that women score worse than men because in general they are less interested in the topics of investment and personal finance and, consequently, use financial services less often. Thus it seems that women have more difficulty catching up with economic and financial market development, than do men.

Education

Financial literacy also differs widely across education groups. Many studies report that those who finished university degrees are more likely to be financially literate (Lusardi and Mitchell, 2006, 2008; Guiso and Jappelli, 2005). In addition, Mandell (2008) discovered that children of university graduates

score better on numerical tests. Moreover, a few researches show that there is a correlation between financial literacy and study major (Lusardi and Mitchell, 2007b; Almenberg and S  ve-S  derbergh, 2011; Alessie et al., 2008). Empirical results suggest that people who completed economics or business degree tend to be more financially knowledgeable. Lusardi and Mitchell (2007b) showed that those who studied economics in high school, college, or at higher levels were much more likely to display higher levels of financial literacy later in life.

Occupation

Many studies find that occupation is also a determinant of financial literacy. Worthington (2004) observes that among Australians, professionals, executives, business or farm owners display the highest level of financial literacy, while unemployed and non-working perform the worst, which is in line with findings of Almenberg and S  ve-S  derbergh (2011) for Sweden and Monticone (2010) for Italy. Therefore, financial literacy is also higher among those who are working, and in some countries among the self-employed, compared to those who do not work. This difference may in part result from financial education programs offered in the workplace; it could also be the effect of learning from colleagues or skills acquired on the job.

Wealth

Wealth also has a positive impact on financial literacy since the pursuit of financial knowledge may be motivated by the need to manage one's own wealth. This proposition was introduced in the theoretical frameworks of Delavande et al. (2008) and Peress (2004). These models are also supported by various empirical findings that financial literacy increases with wealth (Bernheim, 1998; Guiso and Jappelli, 2008; Worthington, 2004; Lusardi and Mitchell, 2008). People with higher levels of income and savings are more likely to be sophisticated financial consumers with greater knowledge and skills. On the other hand, there is some evidence that financial literacy is a critical factor in wealth accumulation (Guiso and Jappelli, 2008; Lusardi and Mitchell, 2007; Lusardi and Tufano, 2009; Alessie et al., 2007, 2008). However, it should not be taken as a causal relationship running from literacy to wealth, because the incentives to learn about finance are directly related to the level of resources. This leads to endogeneity issues. Monticone (2009) shows that wealth predicts financial literacy, however, the effect is minor and only households with a substantial amount of wealth are motivated to gain more knowledge.

Ethnicity and Religion

Some studies evaluate whether ethnic background impacts financial knowledge in a population. Lusardi and Mitchell (2006) find that Whites and Asians are more likely to be financially literate compared to African Americans in the US. Worthington (2004) reports that people from non-English speaking background in Australia are less likely to be financially knowledgeable. There are also notable differences in financial knowledge among people with different religious beliefs; in the Netherlands, those of other religion (which includes Muslims and other smaller religious groups) are less likely to be financially knowledgeable (Lusardi and Mitchell, 2011).

2.4 Financial literacy in New Zealand

In New Zealand there has been a growing awareness of the importance and value of financial literacy in an environment of weak financial regulation, financial product diversity and economic recession. However, relatively few surveys of financial literacy have been carried out in New Zealand. The ANZ-Retirement Commission Financial Knowledge Survey 2006 provides the first measure of New Zealanders' level of financial literacy and set a benchmark to measure future knowledge trends. This was a nationally representative survey, with face to face interviews of 856 adult New Zealanders. A Financial Knowledge Framework was developed for this survey, in order to describe and define the abilities, understanding and awareness that people would demonstrate at different levels of financial knowledge, from a basic to an advanced level. Questions centred upon five areas: mathematical and standard literacy, financial understanding, financial competence, financial planning and consumer rights. From these areas a scoring system was developed and people were classified as either having a low, medium or high level of financial knowledge. An additional series of advanced questions were asked of those who had money to invest. These questions were not used in the calculation of financial literacy scores, but were scored separately, as it was felt financial knowledge reflected each person's circumstances and experiences, and that people should not be disadvantaged by having to answer questions about products and services they might never use or need.

The 2006 Financial Knowledge survey in New Zealand concluded that, overall, New Zealanders have a reasonable level of financial knowledge. Most New Zealanders have a reasonable understanding of personal finances but many still do not know basic facts about everyday financial matters. New Zealanders generally feel positive about how well they manage their money with 83% stating that they are confident about managing their financial affair and over 50% of respondents saying that they save regularly.

Nevertheless, New Zealanders are ill-equipped to make financial decision. The above-mentioned positive findings are tempered by the following; some basic financial terms were not well understood and knowledge of concepts such as mortgages, compound interest and investments was weak. For example, 25% of people with home loans did not know that increasing the frequency of repayments from monthly to fortnightly reduced the amount of interest they would pay over the life of the loan, all else being held equal. When tested on their understanding of compound interest, only 53% correctly identified that they would earn more interest on a one-year term deposit when the interest was paid back quarterly into the term deposit, rather than paid at the end of the term. Only 30% identified that a range of shares would make more money than fixed interest investments and savings accounts over 18 years. 20% thought they could reduce risk by investing only in property. Only 8% of the respondents reply that they have financial goals. There was some confusions over New Zealand superannuation, as a significant number of respondent believe that it is income and/or asset test.

There was a strong correlation between financial knowledge and demographics, with some significant exceptions. Some people on high incomes achieved low scores and vice versa. 15% of those with a net wealth of more than \$300,000 had a low level of personal financial knowledge. On the other hand, 8 percent who earned less than \$20,000 were in the high knowledge group. The survey also revealed

some surprising conclusions. 18% of those with tertiary or post graduate education had a low level of personal financial knowledge, while 46% of those with no formal qualifications had a good or high level of personal financial knowledge. Across all topics, knowledge generally increases with age, income, education and also net wealth. Those with lower levels of personal financial knowledge were more likely to be young (18 to 24) or older (75+), people with lower levels of formal education, income and net wealth, and renters rather than homeowners. This finding matches that of other international surveys.

A 2007 poll commissioned by the Reserve Bank of New Zealand supports these weaknesses in the understanding of financial information, the use of credit ratings, and perception of risk in the financial sector. This poll shows that almost 60% of those surveyed expected the government or the Reserve Bank to bail out a failing bank. A further 13% were either uncertain or felt that a bail-out would depend on specific circumstances. When linked to age demographics, this figure rises to 87% of under 30 year olds and falls to 67 percent in the over 60 year olds, indicating that this level of expectation of a bail out would worsen over time. While not a specific measure of financial illiteracy, this high level of expectation, contrary to the stated intentions of the Reserve Bank, indicates a pressing need to educate consumers about the regulation of financial institutions, and specifically to be aware of the fact that they may lose money when depositing in a bank, and therefore be more willing to read and understand financial disclosures and ratings and exercise market discipline.

The poll also reveals that over 80% of those surveyed either are not aware of disclosures, or if aware of them, do not use them for decision making, even after many years of disclosure-based regulation in New Zealand. They believe that the disclosure of more financial information in a more user-friendly format would be helpful when deciding where to put their money. Only 19% of respondents state that they used credit rating to decide where to put their money. But, the use of credit ratings in decisions to place funds increases with the level of knowledge of ratings, from 6% for very little knowledge, to 51% for a lot. Despite the limited use of both credit ratings and financial disclosures (both around the 20% mark), once respondents had heard the definition and an example of a credit rating, almost three quarters of them believed that the credit rating of a financial institution was a very important factor when considering where to put their money. This finding shows that knowledge of a simple metric such as financial disclosure and credit ratings could have a significant influence on the decision process for the placing of funds. In addition, it also reveals that New Zealanders fail to use existing financial information in a manner that would enhance their understanding of financial exposures.

In 2009, the Retirement Commission, with the support of ANZ repeated the survey as a follow-up to the benchmark survey conducted in 2006. The findings are mixed, with some encouraging results. However, there are big worries over the lack of knowledge about compounding interest, shares as higher-growth long-term investments and what to look for in investments.

The results show that there has been an overall improvement in New Zealanders' financial knowledge, with more people having a high level of knowledge. An increase of 10% in the size of the high knowledge group means that 43% of New Zealanders are now scoring highly in respect to

financial knowledge. Of particular interest, the advanced knowledge group, that in 2006 was measured at 15% (1:7 New Zealanders), has increased significantly to 20% (1:5 New Zealanders). Numeracy skills appear to have been a key contributor to improved financial knowledge. In 2009, New Zealanders were found to have significantly improved their numeracy skills in relation to financial services. For example, more people were able to use information from a bank statement to calculate the time required to save a targeted amount of money. There were also significant improvements in understanding information that is contained on bank statements.

Nevertheless, whilst the overall improvements are positive, the lowest knowledge group (measured in 2006 at 9%) has not changed significantly (10% in 2009). Furthermore, there are still worryingly low numbers on compound interest. About 37% (up from 29% in 2006) of respondents correctly answered a question on compound interest in savings accounts, and 58% (up from 53%) correctly answered a question on compound interest in term deposits. With regard to the mortgage knowledge, one in five home owners with a mortgage do not understand under what conditions it is better to have a fixed rate home loan rather than a variable or floating rate. On the other hand, large numbers of people do generally understand risk, return and diversification. Significant changes in knowledge since 2006 appear to reflect a greater uncertainty about the risk of investments, a likely effect of the problems at a number of financial institutions since 2006 and the current recession. When considering investment offers, people now place greater emphasis on fees and security and less emphasis on returns than in 2006, and they are also spreading their investments across a wider range of financial institutions and investment products than they may have in the past. Significantly more people consider a savings account to be most likely to make them the most money in the next 15 to 20 years (although a fixed interest investment remains people's first choice). Only a quarter consider a range of shares would make them the most money. It indicated that while New Zealanders have a basic understanding, generally do not believe the share market is appropriate for them and pick safer investment instruments to deliver the better long term return

The third Financial Knowledge and Behaviour Survey is continued in 2013 to build a picture of change over time. The results indicate that there has been a significant improvement on the understanding of New Zealand Superannuation, with 43% able to identify the correct amount from a list of options. 83% respondents consider lifestyle as a key consideration for their retirement planning, significantly more than in 2009 (up from 75%). This enhancement is particularly strong among young New Zealanders and those in the Low knowledge group, which may signify that KiwiSaver is having the desired effect of encouraging New Zealanders to think about retirement. However there has been a decrease in the proportion of New Zealanders that say people should consider the possible length of retirement. There continues to be a slow but steady increase in New Zealanders' understanding of savings. Since 2005, there has been a significant increase in the proportion of New Zealanders (91%) who can correctly define savings. Knowledge is improving for both those with a savings account and those without one. However, there is a 9% decline in the numerical ability to calculate the time taken to save an additional amount. Compound interest continues to be one of the worst understood elements of financial knowledge. Just 32% of New Zealanders understand the impact of compound interest on a

savings account, with knowledge having fallen across a range of groups, including those in the high financial knowledge group. At the overall level, financial knowledge has not changed dramatically since 2009.

2.5 How is New Zealand's level of financial literacy compare to other countries?

Levels of financial knowledge or literacy as identified by any survey will depend on how the question is asked, and what the environment is. It is also likely that policy affects the way people engage with their personal finances, for example, whether retirement savings plans are compulsory, auto-enrolment or voluntary. Products are used differently in different countries and beliefs and experiences about products can reflect a country's history. Therefore, there is no one standard by which we can say one country is more or less financial literate than another. However, by comparing the answers to a small number of similarly-phrased questions in surveys around the world, a general picture emerges. The evidence is limited because there are few surveys and fewer comparable questions. For the purposes of measuring financial literacy in a cross-country context, three questions that most closely match those used in other studies have been selected from within the extensive questionnaire. The first two questions, on the understanding of inflation and understanding of interest rate (compound interest), are effectively identical to those originally developed for the US Health and Retirement Study. The third question selected is on long-term investment returns.

There is no evidence that New Zealand has significantly worse or better financial knowledge or behaviour than the other comparable countries. New Zealanders understand inflation and compound interest better than other nations. The inflation question is easy for most New Zealanders to answer compared to the respondents from other countries. A high percentage (90%) of the population in New Zealand understands that inflation affects the value of savings and the spending power of savings overtime. As a result, they would need more each year to maintain the same living standards. In terms of knowledge on compound interest, just over 30% of respondents are able to identify that one saver who saves a smaller amount than the other but over a longer period would have more money. However, the results from other countries (18% in the US survey and 28% in the Australia survey) provide some context to say that this is not out of line. However, a lower percentage of the population in New Zealand (30%), compared to the US (56%), believe that shares should outperform fixed interest investments over the long-term. This may not indicate a lack of financial literacy; in fact high proportions of New Zealanders seem to understand the basic concepts of investing. The explanation for the difference in financial understanding can be there are fewer New Zealanders being familiar with capital market investments compared to Americans. The message that 'share investing is good' has been mainstream in the US for many years. But, only 22% of New Zealanders over 18 invest in shares directly, i.e. not through managed funds (Colmar Brunton, 2009). Also, there are other different prevailing investment opportunities. For example, New Zealand's interest rates on term deposits are high compared to other countries. Moreover, shares have under-performed fixed interest over some recent periods. The impact of the recession and the collapse of many financial institutions have changed the public's perception of risk and consequently the response to this question appears to be

affected by the extra volatility in the financial markets. As a result, the public perception may be that fixed interest is likely to provide a better return than equities. This needs to be borne in mind when considering the results. Many of those who got this question 'wrong' could well be financially sophisticated. In addition, while around three quarters of New Zealand respondents answered the interest and inflation questions correctly, less than one quarter answered all three questions correctly.

Furthermore, a recent international comparison suggests that New Zealanders have relatively high financial knowledge. In 2012 the OECD International Network on Financial Education (INFE) published the results of a pilot study comparing financial literacy among adult residents of 14 participating countries. The results indicate that New Zealand's financial knowledge score is significant higher than all fourteen countries that participated in the pilot study. Most New Zealanders can answer the interest paid on a loan, definition of inflation, risk and return questions correctly. Understanding of diversification is a relative strength for New Zealanders, as is our understanding of compound interest. Relative to other countries, understanding of the time value of money is an area of weakness for New Zealanders, which is a similar finding to the prior international comparisons.

2.6 New Zealand's Pension System

With regard to financial planning for retirement, New Zealand is in a somewhat different situation from many other countries because of the structure of its public pension system. New Zealand pays a universal, flat-rate pension to people aged 65 and over irrespective of their assets, income or employment status. The state pension, known as New Zealand Superannuation, is funded on a pay-as-you-go basis out of general taxation. It provides a level of income that generally minimises poverty among older people (Ministry of Social Development, 2010). The level of New Zealand Superannuation equates to 33% - 43% of the national average after-tax ordinary-time weekly wage. As such, it represents a foreseeable, basic, indexed annuity on which people are able, without penalty, to layer additional earnings, investment income and assets.

This unusual pension structure has implications for the long-term savings strategies of New Zealanders. First, the longevity insurance and income protection provided by the basic annuity reduces the necessity for private long-term saving, particularly among lower income groups. It may also elicit a somewhat higher degree of risk-taking with investments among higher income groups. Second, extended time in paid employment beyond age 65 is not penalised and this opens up a greater range of earning, saving and decumulation options. These factors might suggest that financial literacy need play only a minor role in retirement planning, since the cost of "mistakes" is cushioned by the universal public pension.

However, doubts have been raised about the long-term fiscal sustainability of New Zealand Superannuation with the approaching retirement of the baby boomer generation. Although New Zealand Superannuation currently is funded by general revenues, as the population ages this program will need an additional source of funding to meet benefit payment projections (Matthews, 2012). In addition, with increasing life expectancy, people's savings and pensions will have to provide support over a longer period than ever before. Also, while New Zealand Superannuation may be

adequate as a complete income replacement for some lower-income earners, higher earners may need to make adequate additional private provision to meet their future aspirations. However, less than 30% of the active labour force had purchased supplementary retirement plans either through their employers or directly from an insurer or other financial services company by the end of 2005 (ANZ, 2005). That means that economic well-being in retirement may be substantially different for future cohorts of retirees, compared with current retirees. Moreover, in March 2007, Finance Minister Michael Cullen stated that New Zealanders have one of the lowest household savings rates among the developed countries. Cullen (2007) cited the New Zealand Reserve Bank estimates of current household savings rate at negative 17.5 percent. A March 2007 New Zealand Treasury study concluded that about 20 percent of the population aged 45–64 needs to save more for retirement, including about 9 percent of individuals and 13 percent of couples aged 55–65 (Hosking 2007). More recently, Matthews (2012) established guidelines for modest and comfortable retirement lifestyles and reported that New Zealand Superannuation alone is not sufficient to support an adequate standard of living.

For those reasons, in 2007, New Zealand government introduced KiwiSaver, a type of subsidised, defined contribution retirement savings plan offered by private-sector providers. It was created to encourage New Zealanders to save more for retirement, to supplement the New Zealand Superannuation benefit and to help increase an individual's retirement income. KiwiSaver is a defined contribution plans in which both the employer and employee agrees to contribute a fixed amount to the employee's pension fund while the employee is employed. The income that the employee receives during retirement depends upon how much money the plan accumulates and the returns made by investing those contributions into a portfolio of an individual's choosing. Effectively, individuals have three decisions to make having decided not to opt out of KiwiSaver; the contribution rate, the fund manager and the type of fund. First, individuals can select to contribute either 2%², 4% or 8%. This decision will have a significant impact on the amount available at retirement, with a 2% contribution without additional savings potentially leaving many with insufficient resources in their retirement. Second, the choice of fund manager should be impacted by factors like the performance of the fund manager and the fees being charged. Third, in order to grow and have the plan generate sufficient income to provide retirement income, the money put aside for retirement during an employee's working years must be invested in income producing assets. This usually includes investing in things like stocks, bonds, real estate, etc. Many of the fund providers run more than one fund with varying allocations in assets resulting in different risk profiles. With approximately 40 different providers to choose from and around 180 different funds it is, therefore, necessary for employees to not only understand discount rates, the difference between nominal and real amounts, but also collect information on risk, fee structures and fund performance measures. KiwiSaver is acting as a catalyst in the escalation of financial literacy initiatives in New Zealand. Despite the advantages of KiwiSaver in retirement planning, many have expressed concern about the quality of the decisions being made by the participants, especially given the widespread lack of financial

²The 2% was increased in April 2013 to 3%.

knowledge (Clement, 2013). For instance, 23% of participants were allocated to conservative funds by default. Still more are in conservative funds at a young age when they should be taking more risk in return for growth (Clement, 2013).

2.7. The Importance of Financial Literacy in Retirement Planning

Many studies find a relationship between financial education efforts and personal financial behaviours. But they often take it as given that there is a casual chain from knowledge to behaviour. Bernheim (1995, 1998) is the first to point out the investment behaviour of households with low financial literacy is dominated by crude rules of thumb. Bernheim et al. (2001) and Bernheim and Garrett (2003) show that people who were exposed to financial education in high school or in the workplace save more. Hilgert et al. (2003) confirm positive and significant correlation between financial knowledge and behaviour in the area of cash-flow management, credit management, savings and investment. Stango and Zinman (2007) show that those who are not able to correctly calculate interest rates out of a stream of payments end up borrowing more and accumulating lower amounts of wealth. Others show that the less financially literate were unlikely to invest in stocks (van Rooij et al., 2007; Christelis et al., 2008) and tend to select mutual funds with higher fees (Hastings and Tejeda-Ashton, 2008). Lusardi and Tufano (2008) found that those who severely underestimate the power of interest compounding were more likely to experience difficulty with debt.

But the above studies do not provide conclusive evidence that the financial education leads to sound investment decisions. Although there is a clear correlation between knowledge and behaviour in personal finance, behavioural differences may be the causal factor. Fortunately, some studies strongly suggest that the causal chain proceeds from financial literacy to retirement planning and income. Lusardi and Mitchell (2006) establish positive correlations among knowledge, planning, and wealth using the three-question financial literacy module in the 2004 HRS. These relationships persist after controlling for a broad range of economic and demographic characteristics available from the survey. A correct response to each financial literacy question significantly increases the probability of having successfully calculated how much to save for retirement. Correct responses also predict higher net worth in the lowest two quartiles of household wealth, but the relationships are less significant among the wealthier. After confirming that planning predicts wealth, Lusardi and Mitchell (2007a) test for reverse causality using instrumental variable techniques. In particular, they regress a dummy variable for having planned for retirement on economic and demographic characteristics and on the previous year's regional change in housing prices. The last variable is thought to be a valid instrument for household wealth. The effect of the wealth instrument on planning is not significant, which suggests that individuals are not more likely to plan for retirement because they are wealthier. Therefore, it suggests that planning for retirement affects wealth and not vice versa. Lusardi and Mitchell's (2007b) analysis of the Rand ALP confirms their findings in the HRS. To eliminate endogeneity, they used information on a person's past financial literacy, before entering the job market, as an instrument for financial literacy. It is found that after instrumenting for retirement planning, planning behaviour still predicts financial literacy. Thus there is evidence that literacy affects

planning. However, there are several papers demonstrate that previous experience influences financial literacy (Dvarok and Hanley, 2010; Frijns et al., 2013).

As can be seen from above, financial literacy is an important predictor of retirement planning and other important financial decisions. The OECD (2005) emphasises the importance of financial literacy in assisting individuals to save adequately for their retirement income. Research indicates that as an individual's financial knowledge increases so will their ability to better plan and save for their retirement (Lusardi & Mitchell, 2005).

3. Hypotheses

In the last thirty years, risk and responsibility for retirement planning has increasingly shifted from employers to workers (Benartzi and Thaler, 2001). For instance, the United States and the United Kingdom have witnessed a major shift towards Defined Contribution (DC) retirement plans at the expense of Defined Benefit (DB) plans (Benartzi and Thaler, 2001). A DC system has the advantage of creating the possibility for individually tailored pension plans. However, individuals may not benefit from the autonomy because of a lack of financial sophistication (Lusardi and Mitchell, 2006), self control problems, and psychological biases (Benartzi and Thaler, 2001). Many DC pension funds in the US have expressed doubts about the quality of the investment choices made by their participants (Benartzi and Thaler, 2001; Mitchell and Zeldes, 1996). Not only pension decisions but also many other financial decisions have become more complex due to financial innovations and an increasing supply of complex products. There is considerable evidence that financial literacy has an impact on savings, apart from low income and trust in financial institutions. Lusardi and Mitchell (2006, 2008), Alessie et al. (2008) and Banks and Oldfield (2007) show that a lack of financial knowledge translates into a lack of retirement planning and saving. Jappelli and Padula (2013) have analysed a cross-section data on 39 countries and discovered that those who are more financially knowledgeable are more likely to save. Therefore, a large number of empirical studies have been done on the factors that determine the level financial literacy. Among factors that were found significant in various studies are age, gender, level of education, major of studies, occupation, ethnical background and wealth. My first hypothesis is in line with previous findings as below:

Hypothesis 1: Financial literacy is associated with demographic factors such as age, gender, ethnicity, education, employment status, income, accommodation status, etc.

Another determinant of financial literacy can be past financial experience. People are compelled to deal with more complex financial decisions every day. As a result of the greater exposure to financial matters, individuals may gain financial knowledge through their engagement with various financial products. Numerous studies suggest that financial experience has a positive impact on financial literacy since the acquisition of financial knowledge may be motivated by the need to manage own portfolios. vanRooy et al. (2007) show that many families that stay away from the stock market have little knowledge of stocks, the functioning of the stock market, and asset pricing. Hastings and Tejada-Ashton (2008) suggest that low financial literacy households tend to select mutual funds with higher fees. The lack of financial literacy may result in costly borrowing and high debt load (Lusardi and Tufano, 2009; Moore, 2003; Stango and Zinman, 2009; Campbell, 2006). As there is a clear correlation between financial knowledge and behaviour, the effect of past financial experience should not be under-estimated in retirement planning.

Hypothesis 2: Previous financial experience will influence financial literacy.

Next, I will look at how the degree of financial literacy affects the preparedness and willingness to undertake retirement planning. The literature documents that financial sophistication boosts retirement planning behaviour, thereby providing an important mechanism for wealth accumulation (Ameriks et al., 2003; Lusardi and Mitchell, 2007a). Planning is a complex task requiring advanced cognitive skills and financial understanding. One needs to collect and process information from different sources on current and future income and expenditures and calculate savings needs based upon alternative scenarios. Thus, it is obvious that financial literacy should be related to planning capabilities. Indeed, Lusardi and Mitchell (2007b) report convincing evidence of financial sophistication fostering thinking about retirement. In another study, Lusardi and Mitchell (2008) document a positive relation between simple measures of financial knowledge and more specific measures of retirement planning related to the calculation of savings needs.

H3: High financial literacy results in high interest in retirement planning.

Furthermore, I also look at the impact of financial literacy on retirement decisions in the context of KiwiSaver schemes. In order to grow and have KiwiSaver schemes generate sufficient income to provide retirement income, the money put aside for retirement during an employee's working years must be invested in income producing assets. This usually includes investing in things like stocks, bonds, real estate, etc. Many of the fund managers run more than one fund with varying allocations in assets resulting in different risk profiles. With approximately 40 different providers to choose from and around 180 different funds it is, therefore, necessary for employees to not only understand discount rates, the difference between nominal and real amounts, but also collect information on risk, fee structures and fund performance measures. As a result, financial literacy plays a crucial role in selection of preferred KiwiSaver portfolios. Despite the advantages of KiwiSaver in retirement planning, many have expressed concern about the quality of the decisions being made by the participants, especially given the widespread lack of financial knowledge.

H4: Financial literacy has an impact on KiwiSaver decisions such as contribution rate and fund type.

Last, Investors have strong incentives to acquire financial information. Better informed investors are able to make better decisions and improve portfolio performance when trading against less informed investors (Bluethgen et al., 2008). Financial advice plays an important role in helping non-professional investors to make their portfolio decisions. However, given that the quality of various information sources is not equal (Bluethgen et al., 2008), the degree of financial literacy is also important for allowing individual investors to recognise and distinguish between financial advice sources (van Rooij et al., 2007). The inability to judge the quality of different information may be even more harmful than having a low knowledge of basic financial principles. Empirical evidence shows that a high proportion of respondents with low basic literacy tend to rely on informal sources of information, such as family, friends and acquaintances. However, this proportion sharply decreases when we move to higher levels of financial literacy. More financially literate individuals are more likely to prefer professionals to informal sources (Lusardi and Mitchell, 2006; van Rooij et al., 2007). Since the information learned

determines which assets are invested in, understanding the process of information acquisition is central to understanding retirement and KiwiSaver decisions.

H5: Financial literacy has an impact on the choice of information sources used for KiwiSaver decisions.

4. Data and Methodology

To study the relationship between financial knowledge and retirement preparation, I administered an internet-based survey to a sample of adults recruited from staff at the Auckland University of Technology. The recruitment of respondents was done by invitation to all university employees through advertisements placed in internal communications emailed to staff and via leaflets distributed in the internal mail system. A sample of university staff has a greater level of education in general, and therefore should represent a sample that has higher financial literacy compared to the general public. However, this will tend to present a best case scenario when compared with the general public. Data was collected on the demographics of respondents (age, sex, marital status, ethnicity, income, etc), their financial literacy, retirement planning, KiwiSaver decisions, information selections and risk attitude.

The survey consists of 64 questions (See Appendix A) covering demographics, financial literacy, retirement planning, KiwiSaver decisions, information selections and risk attitude. Specifically, two sets of questions are used to assess financial literacy. In 2004, Lusardi and Mitchell developed three questions to measure financial literacy for the US Health and Retirement Survey (HRS). The questions related to knowledge of compound interest, inflation, and time discounting. An extended module on financial literacy consisting of five questions on basic financial literacy and eleven questions on advanced financial literacy was included in the household survey of the Dutch National Bank (van Rooij, et al., 2007) and in the American Life Panel (Lusardi and Mitchell, 2007a, 2009). The questions employed to measure financial literacy in this study are previously used in the US HRS and the Dutch National Bank Survey.

I explore respondents' financial literacy levels at two levels, first with 5 questions on basic financial literacy, and second with 7 questions on more sophisticated financial literacy concepts (see Appendix B). These questions are pre-tested and validated in prior financial literacy studies (Lusardi and Mitchell, 2007a, 2009; van Rooij, et al., 2007). The basic financial literacy measures are designed to cover fundamental concepts, expressed in everyday settings, such as simple calculation of interest rates, compound interest, time discounting and the effect of inflation. The second set of questions seeks to measure more advanced financial knowledge. The advanced financial index assesses respondents on topics including familiarity with financial assets, risk and return, diversification, the function of stock markets and the relationship between bond prices and interest rates. Moreover, I use the set of all twelve financial literacy questions to evaluate the overall financial knowledge of individuals by constructing a total financial literacy index. Based on the results of the financial literacy questions, I construct indices of financial literacy by counting the number of questions correctly answered ("don't know" and "prefer not to say" are categorised as wrong answers). Respondents with higher scores represent those with relatively more knowledge. Based on the index scores individuals are grouped into three categories, from "low" financial literacy to "high" financial literacy. Levels of basic financial knowledge are classified into three levels: low (score of 0-1), moderate (score of 2-3), and high (score of 4-5). Levels of advanced financial knowledge are classified into three levels: low (score of 0-2), moderate (score of 3-4), and high (score of 5-7). Levels of total knowledge are

classified into three levels: low (score of 0-4), moderate (score of 5-8), and high (score of 9-12). These groups will be used to test the five hypotheses.

Respondents are also asked demographic questions including age, gender, income and education level. Demographic factors are important indicators of the level of financial literacy. Financial illiteracy is more concentrated among particular demographic groups, such as women, the elderly, and those with low education (Lusardi and Mitchell, 2007). As a result, the research will look at how financial literacy is distributed across these demographic groups in the New Zealand context. Furthermore, I collect data on a range of KiwiSaver choices to understand the preparedness and preference of respondents for retirement savings. It also allows me to study the impact of financial literacy on KiwiSaver decisions. Besides financial literacy and demographics factors, information acquisition is central to understanding investment behaviour and portfolio allocation (van Rooij et al., 2007). Therefore, I examine the information sources used to make KiwiSaver decisions by various financial literacy groups.

5. Results

5.1 Demographics

A total of 167 individuals participated in the online survey. Of these people, 165 returned a completed survey questionnaire (hereafter referred to as the respondents or participants). Table 1 presents the demographics of survey respondents. The majority of participants are aged between 30 and 50, accounting for 78.3% of total participants. The sample is not even in terms of gender, with only 39 men returning surveys. As a result, men are under-represented compared to the New Zealand population in the survey sample. In terms of ethnicity, 69.3% of respondents are European while 14.5% are Asian. The remaining respondents are from the Maori and Pacific Island (6.2%) and other (6.0%) ethnic categories. Moreover, the sample is skewed toward more highly educated respondents as almost 95% of participants achieved either a post-secondary degree or diploma (including Honours, Masters and PhD). 80% of respondents are in full-time employment, 13.2% are part-time and 4.2% are students. The annual income is mainly between \$40,000 and \$120,000. 9.8% of participants earned less than \$40,000 annually while 6% earned more than \$120,000 per annum. As can be seen, the sample is dominated by respondents who identify themselves as mature, female, European, educated and in employment.

Table 1.Respondent Profile

<u>Age</u>		
18-29	17	10.3%
30-39	42	25.5%
40-49	45	27.3%
50-59	42	25.5%
60+	19	11.5%
<u>Gender</u>		
Male	39	23.6%
Female	126	76.4%
<u>Ethnicity</u>		
European	115	69.3%
Maori and Pacific Islander	17	6.2%
Asian	24	14.5%
Other	10	6.0%
<u>Education</u>		
Secondary School	8	4.8%
Certificate/Diploma/Bachelor	60	36.4%
Honours/Masters/PhD	97	58.8%
<u>Employment Status</u>		
Employed Full Time	132	80.0%
Employed Part Time	22	13.3%
Not Employed	1	0.6%
Self-Employed	3	1.8%
Student	7	4.2%
<u>Income</u>		
1-20000	9	5.5%
20001-40000	9	5.5%
40001-60000	43	26.1%
60001-80000	40	24.2%
80001-100000	31	18.8%
100001-120000	23	13.9%
120001-150000	8	4.8%
150001+	2	1.2%

Table 2 shows the respondents' experience on a range of financial products, classified into assets and liabilities. As can be seen, KiwiSaver is the most common asset, with 88% having joined the scheme. Traditional saving accounts are the next most common choice (86.8%), following by term deposits (40.1%). But, few respondents have experience with sophisticated financial instruments, such as stocks (20.4%), bonds (6.6%) or other mutual funds (5.4%). Most respondents (84.4%) are covered with car, house or content insurances. But only 66.5% have life and health insurance policies, and just 22.2% have income protection. 52.7% have a family house while 24% possess investment or rental properties. About 8% have an investment property but not a family home.

In terms of liabilities, a high percentage of respondents (90.4%) have credit cards, but only half (49.7%) pay it off in full each month. More than 60% have or have had a mortgage, but less than 30% have experience with hire purchases, personal loans and student loans.

Table 2. Financial Experience

<u>Assets</u>		
Savings	145	86.8%
Term Deposit	67	40.1%
KiwiSaver or Pension Fund	147	88.0%
Car/House/Content Insurance	141	84.4%
Life/Health Insurance	111	66.5%
Income Protection Insurance	37	22.2%
Bonds	11	6.6%
Stock	34	20.4%
Mutual Fund	9	5.4%
Property (Family House)	88	52.7%
Property (Investment/Rental)	40	24.0%
<u>Liabilities</u>		
Credit Card	151	90.4%
Hire Purchase	50	29.9%
Mortgage	103	61.7%
Personal Loan	48	28.7%
Student Loan	48	28.7%

5.2 Financial Literacy

To assess the level of financial literacy, responses to the basic and advanced financial literacy questions are summed to generate financial literacy indices, which range between 0 and 5 for the basic index and 0 and 7 for the advanced index. Summary statistics for answers to the basic financial literacy questions appear in Table 3 and Figure 1. Approximately 75% of respondents could correctly answer the question about inflation. But the percentage of correct responses decreased to 69.46%, 64.67% and 66.47%, when it came to questions on compound interest, time value of money and purchasing power. Compared with the Colmar-Brunton Financial Knowledge and Behaviour Survey 2013, my respondents had a lower performance than the general population on time value of money and outperformed on the compound interest question (70% and 49% of respondents answered correctly in the 2013 survey respectively). The fifth question, on anti-inflation investment, appeared to have caused the most difficulty for respondents, around a third answered correctly, while more than 40% did not know. Moreover, while many respondents answered each individual question correctly, the proportion who could answer all five questions correctly is only around 19.8%. Around 3.6% answer all incorrectly and 4.2% respond do not know any of the questions. Figure 1 shows that the distribution of basic financial literacy is skewed to the left with a mean of 3.2 out of 5 and most respondents answered 3 or 4 correctly.

Table 3. Basic Financial Literacy

	Correct	Incorrect	Do not know
Q1. Compound Interest	69.5	15.6	12.0
Q2. Inflation	74.9	4.2	18.0
Q3. Time Value of Money	64.7	19.2	13.2
Q4. Purchasing Power	66.5	21.6	9.0
Q5. Inflation hedge	34.7	19.2	43.1

Figure 1. The Distribution of Financial Literacy Scores

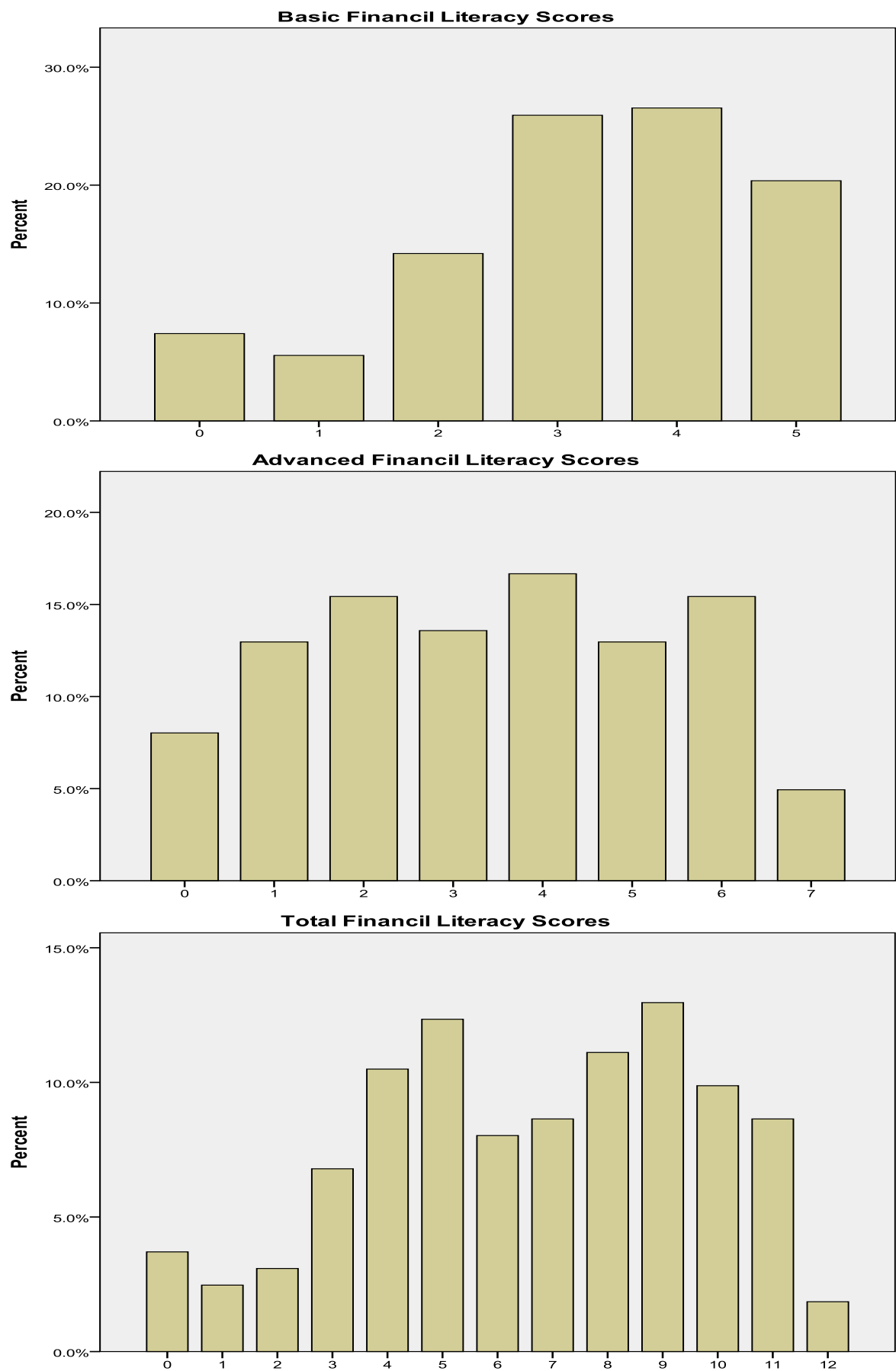


Table 4 reports the responses to the advanced financial literacy questions. The results show that the percentage of correct answers for each question is much lower than for the basic questions. It is not surprising and consistent with previous empirical findings (van Rooij et al., 2007) For example, 78% of respondents in Colmar-Brunton Financial Knowledge and Behaviour Survey 2013 understand the impact of diversifying investments, compared to 75% of my sample. Moreover, the ANZ Retirement Commission Survey 2009 found that less than a third considered shares to be the highest-return asset class, compared to almost 50% in this survey. However, the sample underperforms the general public in some areas. Only a third of respondents understand how mutual funds work and just over 10% could correctly answer the question on bond pricing. Participants also display difficulties with risk and return, and risk diversification. Less than 50% were able to identify the type of investment that makes the most money over a long time period. More than 60% failed to realise that mutual funds provide diversification. In addition, less than 5% were able to answer all of the advanced literacy questions correctly. Not only do a sizable proportion of respondents answer these questions incorrectly, but also many respondents state they do not know the answers to these questions. Figure 1 indicates that the advanced financial literacy score is almost normally distributed with a mean of 3.43, indicating a moderate level of advanced financial literacy. One interesting finding on stock market participation is the fact that 50% of the respondents who answered that stock investment deliver the highest return, less than 20% had themselves invested in the share market. This could suggest behavioural factors causing people to make poor decisions when they know the right thing to do.

Table 4. Advanced Financial Literacy

	Correct	Incorrect	Do not know
Q6. Main function of the stock market	65.9	12.6	18.6
Q7. Knowledge of mutual fund	32.9	3.6	60.5
Q8. Relation between interest rate and bond prices	12.6	38.9	45.5
Q9. What is safer: company stock vs stock mutual fund	32.9	3.6	60.5
Q10. Which is riskier: stocks vs bonds	65.3	5.4	26.4
Q11. Highest return over long period: savings accounts, bonds or stocks	47.9	21.6	27.5
Q12. Risk diversification	75.5	7.2	14.4

Figure 1 also displays the distribution of total financial literacy scores. Overall, out of 12 questions to be answered (and a maximum of 12 points can be gained), the mean number of correct answers for the whole sample was about 6.6 correct answers. Only a tiny fraction of respondents (2%) are able to answer all the questions correctly. 55.7% score between 5 and 9. These are important findings; most life cycle models assume that consumers are well informed and have the skills to make financial decisions which optimize their expected lifetime utility. Instead, the findings in basic, advanced and total financial literacy show that financial literacy should not be taken for granted. These findings echo the results found in US surveys, such as the Health and Retirement Study and the Survey of Consumers (Lusardi and Mitchell, 2007).

Table 5 presents the distribution of basic and advanced financial literacy indices across demographic variables. Both indices suggest that age is positively related to financial literacy, although the basic index is not statistically significant. Older respondents were able to correctly answer a greater number of questions. This is more pronounced in the advanced index. The reason could be that individuals gain new financial knowledge from exposure to various financial decisions as they age. However, other studies show a non-linear relationship where young and old are less knowledgeable. For example, as measured by Lusardi and Mitchell (2007a), financial literacy declines rapidly with age. This non-linearity is not present in my sample. There are also distinct differences in the level of financial literacy between genders. Female respondents display significantly lower basic and advanced financial literacy than males. This is supportive of the findings in Lusardi and Mitchell (2006) and in other literacy surveys (Lusardi and Mitchell, 2007b). Ethnicity is also found to be an important determinant of financial literacy. Individuals with a European background have a significantly higher score on the basic questions than Maori or Pacific Island ethnicities, but not so on the advanced questions. Also, financial literacy rises strongly with education levels. Those with higher educational achievements are more likely to be financially knowledgeable of both basic and advanced concepts. Financial illiteracy is particularly severe among those with low education. However, employment status has no significant impact on the level of financial knowledge (Lusardi, 2006). Both tests also confirm that income levels are also strongly positively correlated with financial literacy. People with higher levels of income are more likely to be more sophisticated financial consumers with greater knowledge and skills (Bernheim, 1998; Guiso and Jappelli, 2008; Worthington, 2004; Lusardi and Mitchell, 2008). Finally, respondents with low levels of financial literacy are most likely to be tenants rather than homeowners. Homeowners are appearing to be more willing to seek out financial knowledge, potentially so as to take control of their mortgages. Therefore, hypothesis 1 is valid as financial literacy is indeed associated with demographic factors such as age, gender, ethnicity, education, employment status, income, accommodation status, etc.

Table 5. Financial Literacy across Demographics

	Basic Literacy Mean	Financial F	Advanced Literacy Mean	Financial F	Total Literacy Mean	Financial F
Age						
18-29	3.2	1.816	2.5	2.953**	5.7	2.866**
30-39	2.8		2.8		5.6	
40-49	3.3		3.9		7.2	
50-59	3.4		3.7		7.1	
60+	3.7		4.0		7.7	
Gender						
Female	3.0	6.715***	3.1	14.894***	6.2	14.461***
Male	3.7		4.5		8.2	
Ethnicity						
European	3.4	5.633***	3.6	1.649	7.0	3.856**
Maori and Pacific Islander	2.2		2.6		4.8	
Asian	2.7		3.1		5.8	
Other	4.1		4.0		8.1	
Education						
Secondary School	2.8	4.942***	2.8	6.929***	5.5	7.955***
Certificate/Diploma/ Bachelor	2.8		2.8		5.6	
Honours/Masters/PhD	3.5		3.9		7.4	
Employment Status						
Empolyed Full Time	3.3	1.208	3.5	0.469	6.8	0.909
Empolyed Part Time	3.2		3.3		6.5	
Self-employed	3.0		3.0		6.0	
Student	2.1		2.7		4.7	
Income						
1-20000	2.2	2.504**	2.1	5.126***	4.3	4.986***
20001-40000	3.7		3.7		7.3	
40001-60000	2.9		2.7		5.6	
60001-80000	3.0		2.9		5.9	
80001-100000	3.6		4.1		7.8	
100001-120000	3.8		5.0		8.8	
120001-150000	3.3		4.5		7.8	
150001+	4.5		4.5		9.0	
Accommodation Status						
Parental Home	3.6	4.347**	3.4	6.492***	7.0	7.086***
Renting/Flatting	2.7		2.8		5.4	
Own Home (with Mortgage)	3.2		3.3		6.5	
Own Home (without Mortgage)	3.8		4.8		8.7	

Note: I perform a One-Way ANOVA (Analysis of Variance), with each demographic variable was a factor and each financial literacy score was a dependent variable.

Table 6 reports the results of the relationship between financial literacy and experiences. There are significant differences in the level of financial literacy between different products. Respondents with a saving account, term deposits, KiwiSaver, life insurances, stocks, family houses, and mortgages display a higher degree of financial literacy. The experiences with those financial products may enable the acquisition or reinforcement of financial knowledge. On the other hand, the use of hire purchase, personal loan and student loans are associated with a significant decrease in financial literacy. One interesting finding here is the relationship between student loans and financial literacy. This may be attributed to the reason that most student loan borrowers are students who have less practical experience on financial products. The results on debt experiences are quite discouraging, as people who are less financially literate may incur unnecessary liabilities. Therefore, hypothesis 2 is confirmed since past experience on financial products is related to significance differences in financial literacy.

Table 6. Basic Financial Literacy by Financial Engagements

	Basic Literacy		Financial		Advanced Literacy		Financial		Total Literacy		Financial	
	Mean	F			Mean	F			Mean	F		
Assets												
Saving Account	3.3	3.55**			3.6	4.401**			6.8	5.105**		
Term Deposit	3.6	7.158**			4.3	21.181***			7.8	18.742***		
KiwiSaver or Pension Fund	3.3	12.668***			3.7	17.359***			7.0	20.192***		
Car/House/Content Insurance	3.3	2.23			3.5	1.484			6.8	2.288		
Life/Health Insurance	3.4	7.661***			3.8	8.599***			7.2	10.689***		
Income Protection Insurance	3.5	2.315			4.0	3.841*			7.5	4.077**		
Bonds	3.6	0.684			4.2	1.625			7.7	1.523		
Stock	3.7	5.742**			5.2	36.489***			8.9	25.839***		
Mutual Fund	3.2	0.003			4.6	2.971*			7.8	1.344		
Property (Family House)	3.5	7.635***			3.9	11.614***			7.4	12.862***		
Property (Investment/Rental)	3.3	0.298			3.6	0.42			6.9	0.471		
Liabilities												
Credit Card	3.2	0.081			3.5	0.839			6.7	0.547		
Hire Purchase	3.1	0.478			2.7	8.867***			5.8	5.194**		
Mortgage	3.3	1.841			3.7	3.875**			7.0	3.786**		
Personal Loan	3.0	1.565			2.9	4.519**			5.9	3.995**		
Student Loan	2.8	4.432**			2.9	5.304**			5.7	6.389**		

Note: I perform a One-Way ANOVA (Analysis of Variance), with each type of financial engagement was a factor and each financial literacy score was a dependent variable.

5.3 Retirement Planning

This section aims to understand how financial literacy affects retirement planning. To examine this point, the survey included a question on the extent of respondents' retirement planning. Overall, only a small portion of respondents (18.6%) have given a lot of thought to retirement planning. The majority report that they have given some thought (36.5%) or only a little thought (37.1%) to their retirement. 5.4% have given no thought to retirement planning at all. While 18.6% have given a lot of thought, only 11.4% have written financial plans. Those with written plans are more likely to achieve retirement goals (Lusardi and Mitchell, 2007a). Reis (2006) finds that attentive consumers who do plan for retirement accumulate savings. Empirical evidence supports the assertion that planning affects wealth accumulation (Ameriks et al., 2003; Lusardi and Mitchell, 2007a; Bernheim et al., 2001). Similarly, Lusardi and Mitchell (2006, 2007a) and Hilgert et al., (2003) reveal that those who display low literacy are less likely to plan for retirement and as a result accumulate much less wealth. Lusardi and Mitchell (2008) document a positive relation between simple measures of financial knowledge and more specific measures of retirement planning related to the calculation of savings needs.

Table 7 presents tabulations on retirement planning across various demographic factors. As can be seen, there is strong relationship between retirement planning and age. The closer people get to retirement the more likely they are to start considering their retirement needs. This is supportive of the finding of Lusardi and Mitchell (2007a), who report that close to 30% of older households thought a lot about retirement. This finding suggests that formal education on retirement planning should start earlier in people's life to increase awareness at a stage when retirement goals can still be achieved. While there is not much evidence in this dataset that retirement planning is significantly related to gender, ethnicity, education, employment and income, singles and homeowners tend to devote much more thinking to retirement planning. Therefore, extra attention could be given to those groups that are not committed to retirement planning. However, some findings are inconsistent with previous research. For example, a positive relationship was reported between education level and retirement saving in Hogarth (1991) and Joo and Grable (2005), while ethnicity was a significant factor in retirement planning in Yuh and DeVaney (1996).

Table 7. Demographics and Retirement Planning

		Percentage of Retirement Planning			
Age		A lot	A fair amount	A little	Not at all
	18-29	17.65%	5.88%	52.94%	23.53%
	30-39	7.32%	26.83%	56.10%	9.76%
	40-49	11.63%	41.86%	46.51%	0.00%
	50-59	31.71%	51.22%	14.63%	2.44%
	60+	31.58%	47.37%	21.05%	0.00%
Pearson Chi-Square	45.781				
P	0				
Gender					
	Female	20.33%	35.77%	39.02%	4.88%
	Male	15.38%	41.03%	35.90%	7.69%
Pearson Chi-Square	1.096				
P	0.778				
Ethnicity					
	European	17.54%	41.23%	35.96%	5.26%
	Maori and Pacific Islander	35.29%	11.76%	52.94%	0.00%
	Asian	13.64%	45.45%	31.82%	9.09%
	Others	20.00%	20.00%	50.00%	10.00%
Pearson Chi-Square	11.005				
P	0.275				
Education					
	Secondary School	12.50%	50.00%	25.00%	12.50%
	Certificate/Diploma/Bachelor Degree	15.25%	30.51%	47.46%	6.78%
	Postgraduate Degree or Diploma	22.11%	40.00%	33.68%	4.21%
Pearson Chi-Square	5.708				
P	0.474				
Employment Status					
	Full Time	18.60%	38.76%	38.76%	3.88%
	Part Time	13.64%	27.27%	45.45%	13.64%
	Self-Employed	0.00%	66.67%	33.33%	0.00%
	Student	28.57%	42.86%	14.29%	14.29%
Pearson Chi-Square	12.758				
P	0.387				
Income					
	1-20000	22.22%	11.11%	44.44%	22.22%
	20001-40000	11.11%	55.56%	22.22%	11.11%
	40001-60000	11.90%	30.95%	50.00%	7.14%
	60001-80000	15.00%	35.00%	45.00%	5.00%
	80001-100000	30.00%	40.00%	26.67%	3.33%
	100001-120000	22.73%	50.00%	27.27%	0.00%
	120001-150000	37.50%	37.50%	25.00%	0.00%
	150001+	0.00%	50.00%	50.00%	0.00%
Pearson Chi-Square	21.862				
P	0.407				
Accommodation					
	Parental Home	0.00%	0.00%	87.50%	12.50%
	Renting	19.57%	26.09%	41.30%	13.04%
	Own Home (with Mortgage)	16.00%	44.00%	38.67%	1.33%
	Own Home (with Mortgage)	30.30%	48.48%	21.21%	0.00%
Pearson Chi-Square	45.091				
P	0.000***				
Marital Status					
	Single/Never Married	21.62%	21.62%	45.95%	10.81%
	Married/ Civil Union/De Facto Relationship	19.63%	36.45%	40.19%	3.74%
	Separated/Divorced	11.11%	72.22%	11.11%	5.56%
	Widowed	0.00%	100.00%	0.00%	0.00%
Pearson Chi-Square	17.397				
P	0.043**				

Table 8 shows the degree of retirement planning based on the three financial indices. As expected, there is a positive correlation between basic financial literacy and retirement planning. Respondents with high basic financial literacy show significantly greater interest in retirement planning compared to those with low scores at the 10% level. However, there is not much evidence that retirement planning is related to the advanced and total financial literacy index. The proportion of planners in the most literate group does not vary significantly from those with the lowest level of financial understanding. More financially literate respondents are not necessarily more likely to prepare for retirement. As a result, hypothesis 3 is not valid. This finding is different from van Rooij et al. (2007) and Bucher-Koenen and Lusardi (2011) who find that retirement planning is positively correlated with financial literacy.

Table 8. Financial Literacy and Retirement Planning

Basic Financial Literacy		Percentage of Retirement Planning			
		A lot	A fair amount	A little	Not at all
	Low	13	12	15	4
		29.6%	27.2%	34.1%	9.1%
	Moderate	6	15	17	4
		14.3%	35.7%	40.5%	9.5%
	High	12	34	30	1
		15.6%	44.1%	38.9%	1.4%
Pearson Chi-Square	10.696				
P	0.098*				
Advanced Financial Literacy					
	Low	9	18	25	7
		15.3%	30.5%	42.3%	11.9%
	Moderate	10	20	17	2
		20.4%	40.8%	34.7%	4.1%
	High	12	23	20	0
		21.8%	41.8%	36.4%	0.00%
Pearson Chi-Square	9.900				
P	0.129				
Total Financial Literacy					
	Low	8	10	20	5
		18.6%	23.3%	46.5%	11.6%
	Moderate	13	28	21	3
		20.00%	43.1%	32.3%	4.6%
	High	10	23	21	1
		18.2%	41.8%	38.2%	1.8%
Pearson Chi-Square	8.942				
P	0.177				

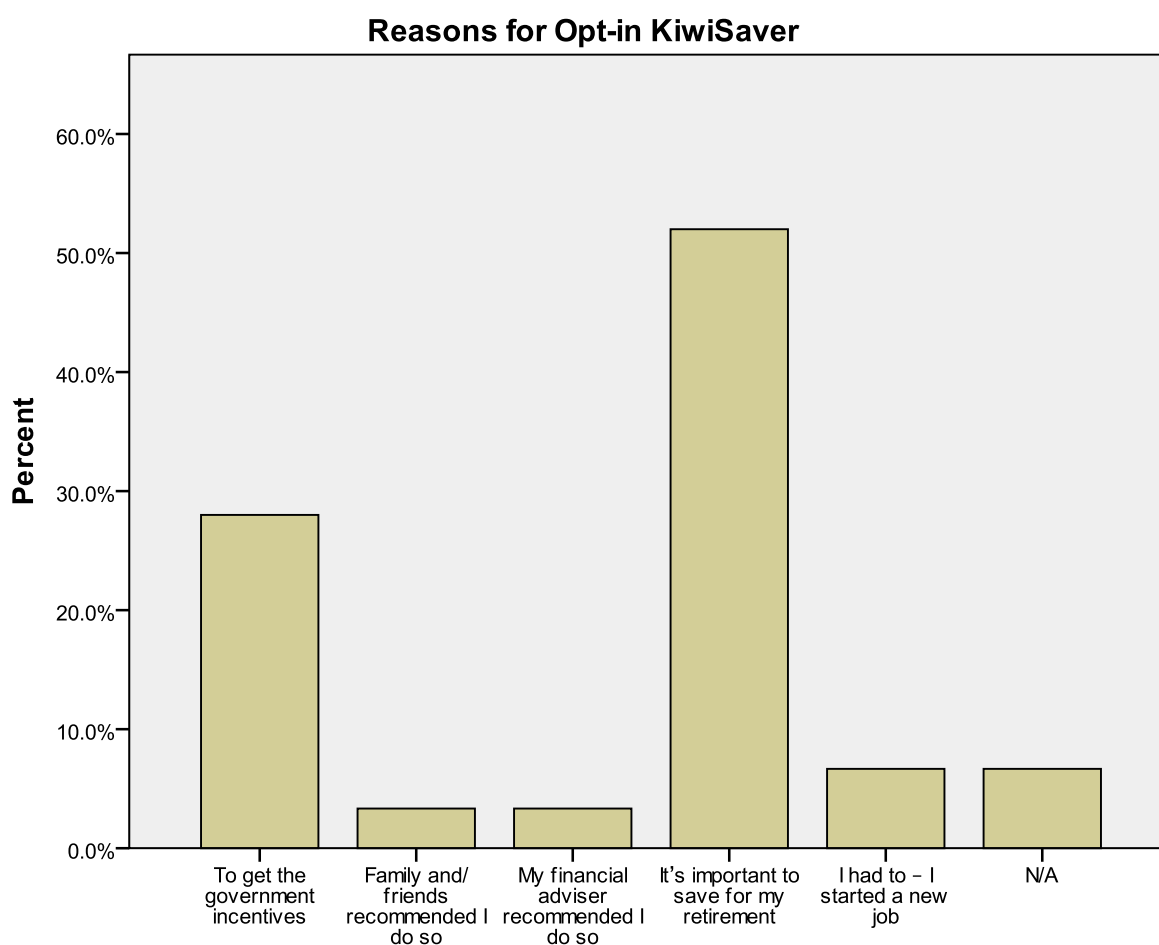
5.4 Financial Literacy and KiwiSaver

This section examines the impacts of financial literacy on actual retirement decisions in the context of KiwiSaver choices. Nearly 90% of respondents are KiwiSaver members. The participation rate is very high in the sample compared to the general public where just over half of New Zealanders aged 18 to 65 have enrolled in KiwiSaver. Figure 2 illustrates that the main reason for respondents to become a KiwiSaver member is to ensure the adequacy of retirement income, which is consistent with the findings of Matthews (2011). Over 50% of respondents recognise that KiwiSaver is a way to encourage saving for retirement. Moreover, government incentives appear to be influential in participant's reason for enrolling in KiwiSaver for almost 30% of participants. The main incentives include the first home subsidy, employer's contributions to match employees' contributions, government tax credit of up to \$520 per annum (previously 1040 per annum) and \$1000 kick-start from the government. Respondents were asked to rate the importance of each benefit from KiwiSaver on a 5 points scale. Table 9 shows that employer contributions and government kick-start payment are found to be the most effective offers in attracting new members. Almost 60% of the respondents reply that the \$1000 kick-start and the contribution from employer are very important, more important or important elements of the KiwiSaver scheme for members. Around 40% of participants think the same about the member tax credit. On the other hand, the first home subsidy was much less important, reflecting the restrictions on access to that benefit to a small proportion of KiwiSaver members, versus the other incentives that are more universally available (Matthews, 2011). Also, the first home subsidy would be less attractive to the majority of my respondents who already have a house.

Table 9. KiwiSaver Incentives

	1 Not Important	2	3	4	5 Very Important	Average Score
\$1000 Kick-start from the Government	2.67%	2.67%	9.33%	29.33%	56.00%	4.3
Member Tax Credit from the Government	6.12%	12.24%	17.69%	25.17%	38.78%	3.8
Contribution from your employer	2.70%	0.68%	7.43%	30.41%	58.78%	4.4
Saving towards a first home deposit	57.24%	11.03%	8.97%	6.90%	15.86%	2.1

Figure 2. Reasons for Opt-in KiwiSaver



Scheme Allocation and Fee Awareness

Members can choose their own KiwiSaver scheme, or be allocated to a default scheme, by the Inland Revenue Department or by their employers³. 63.3% of KiwiSaver members in the sample have chosen their scheme and the rest have been default allocated by Inland Revenue or allocated to an employer-nominated scheme. This is similar to the Inland Revenue's finding that 65% of KiwiSaver members have chosen their scheme and 35% have been default allocated by Inland Revenue or allocated to an employer-nominated scheme (IRD, 2012). In particular, one of the main considerations when weighing up KiwiSaver funds is to look at the fees providers' charge. Regardless of how your fund performs, the fees will keep coming out each year and over time will impact on total retirement savings. Fees on schemes can vary widely. Members have to pay a range of other expenses including an annual fee, an investment management charge and a proportion of annual balance deducted each year. High fees can have a big impact on savings, and over a period of 10 or 20 years a small difference in the percentage of fees charged can make a large difference in the total savings. Mercers, the KiwiSaver scheme provider, in June 2010 have quoted their own member research as having shown that 86% of members rated competitive fees as an important, or very important, fund feature. This is also a more significant factor since the government stopped paying a fee subsidy. In

³ Employers were able to select a preferred default provider.

this sample, 47.4% respondents claim that they made their choice on the basis of the fees charged by scheme provider at the time of enrolment. 32% compared the fees on their funds with the one on similar schemes. Table 10 below shows that financial literacy does affect members' awareness of fees. There is a relatively strong relationship between fees awareness and all three financial literacy indices. More financially literate people will consider fees because fees are an important determinant of the savings at retirement.

Members who have been automatically enrolled can elect to change schemes at any point during their membership. However, only 17% of respondents enrolled by default had later transferred to a scheme of their choice. Less than 12% were planning to make a change in contribution rates, type of funds, scheme provider or take a contribution holiday as a result of recent volatility in the financial market. This indicates that respondents are not reviewing their KiwiSaver decisions once they are enrolled. Members should review KiwiSaver decisions together with their goals and budget periodically. However, many KiwiSaver investors regard their investment as being 'set and forget' and by doing so, they could be doing themselves a disservice. In particular, when investment time horizon is medium or long term, the choice of a default fund or low risk fund will result in under performance compared to a high risk fund. Also, markets and risk profiles do change and the members may be in an inappropriate fund which could result in investment returns not meeting expectations. In the case that a KiwiSaver investment remains in a single class fund which is overly concentrated, it is more vulnerable to market volatility. Failing to review KiwiSaver decisions could compromise achieving retirement goals. Therefore, more emphasis should be given to the ongoing monitoring and regular review of investments in KiwiSaver.

Table 10. Fees charged at enrolment

Basic Financial Literacy		Fees Charged at enrolment		
		Yes	No	N/A
Low		13	19	12
		29.55%	43.18%	27.27%
Moderate		15	23	4
		35.71%	54.76%	9.52%
High		38	38	38
		50.67%	51.35%	51.35%
Pearson Chi-Square	12.788			
P	0.012**			
Advanced Financial Literacy				
Low		14	32	13
		23.73%	54.24%	22.03%
Moderate		22	21	6
		44.90%	42.86%	12.24%
High		30	20	3
		56.60%	37.74%	5.66%
Pearson Chi-Square	14.997			
P	0.005***			
Total Financial Literacy				
Low		10	21	12
		23.26%	48.84%	27.91%
Moderate		28	31	6
		43.08%	47.69%	9.23%
High		28	21	4
		52.83%	39.62%	7.55%
Pearson Chi-Square	14.528			
P	0.006***			

Contribution Rates

Members contributing to KiwiSaver through deductions from their salary or wages can choose to contribute 2%⁴, 4% or 8% of their gross salary or wage at the time of survey. 39.7% of KiwiSaver members in the sample are currently contributing 2% of their salary or wages to their accounts; 44% of members are contributing 4% and 10.6% are contributing 8%. Furthermore, Table 11 shows that there is a relatively strong relationship between basic financial literacy and contribution rates. Members with better basic financial literacy scores tend to choose higher contribution rates. This could be because they believe higher contribution rates can result in a higher amount of savings at retirement based on simple numerical calculations and the power of compounding interest. On the other hand, advanced financial literacy is not related to contribution rates. More financially literate members might have other investments in their portfolios and therefore their KiwiSaver scheme may be set at such a level as to ensure they get the government tax credits and the employer contribution. The total financial literacy also confirms the significant positive correlation between financial literacy and contribution rates.

⁴ At the time the survey was conducted the minimum contribution was 2% of salary. This was increased on 1 April 2013 to 3%.

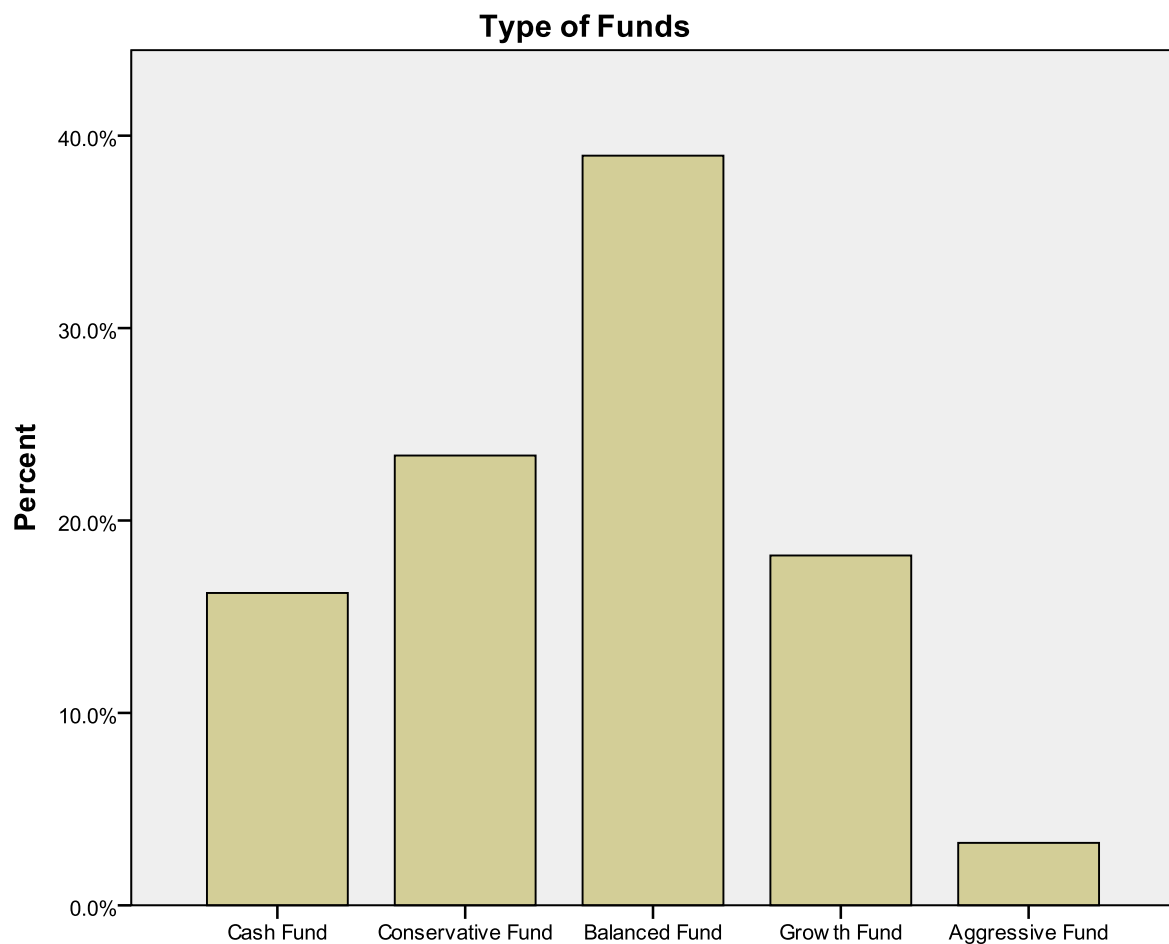
Table 11. Contribution Rates

Basic Financial Literacy			Contribution Rates			
			2%	4%	8%	Do Not Know N/A
	Low		19	11	1	4
			43.18%	25.00%	2.27%	9.09%
	Moderate		10	19	6	1
			24.39%	46.34%	14.63%	2.44%
	High		27	32	8	3
			36.49%	43.24%	10.81%	4.05%
Pearson Square P	Chi-	16.713				
		0.033**				
Advanced Financial Literacy						
	Low		18	20	4	3
			31.58%	35.09%	7.02%	5.26%
	Moderate		21	16	5	3
			43.75%	33.33%	10.42%	6.25%
	High		17	26	6	2
			31.48%	48.15%	11.11%	3.70%
Pearson Square P	Chi-	11.543				
		0.173				
Total Financial Literacy						
	Low		17	11	1	3
			40.48%	26.19%	2.38%	7.14%
	Moderate		25	23	8	2
			39.68%	36.51%	12.70%	3.17%
	High		14	28	6	3
			25.93%	51.85%	11.11%	5.56%
Pearson Square P	Chi-	18.095				
		0.021**				

Type of Funds

Figure 3 depicts the type of funds KiwiSaver members invested in. As can be seen, the most popular type is balanced funds (39%), followed by conservative funds (23.4%). However, 34.4% respondents reply that they did not consider the level of risk they would like to take before selecting the type of funds. For these people, the fund may not be appropriate for their retirement needs and risk levels. Moreover, Table 12 reports the type of fund selected is strongly related to both basic and advanced financial literacy. In general, the higher the financial literacy the more likely members will invest in risky funds within the scheme. This is because more financially literate people display a better understanding of the principle of risk and return, and therefore expect additional returns arising from the increase in risk. Therefore, because of the effect of financial literacy on contribution rate and type of funds, hypothesis 4 is correct.

Figure 3. Type of Funds



However, there is concern about controlling the risks associated with the high returns. In particular, nearly 70% respondents never compare the performance of the fund with other KiwiSaver schemes. The insufficient review of KiwiSaver performance can induce excessive risks from changed market conditions or attitude to investment risk, which eventually lead to a lower expected return and higher volatility. In addition, age is also highly correlated with the type of funds invested in. Young members prefer to choose low risk funds while older members are more likely to pick risky funds. In this case, they both bear inappropriate level risk when taking into account the life expectations. When people are young, they have a reasonably long time until retirement age. They can invest in riskier assets in the hope of receiving higher investment performance, and the good years should more than balance out the bad years. This should change as they approach retirement, when they are better able to accept lower investment performance but take less risk because they have a shorter time until retirement and less time to recover any losses. Overall, when members are young, their savings should be invested mostly in aggressive funds with share and listed property assets. As they get older, their savings move more into conservative funds which consists of cash and fixed interest assets. However, it appears that KiwiSaver members here are not investing in funds that have levels of risk and expected returns that are considered appropriate for their ages.

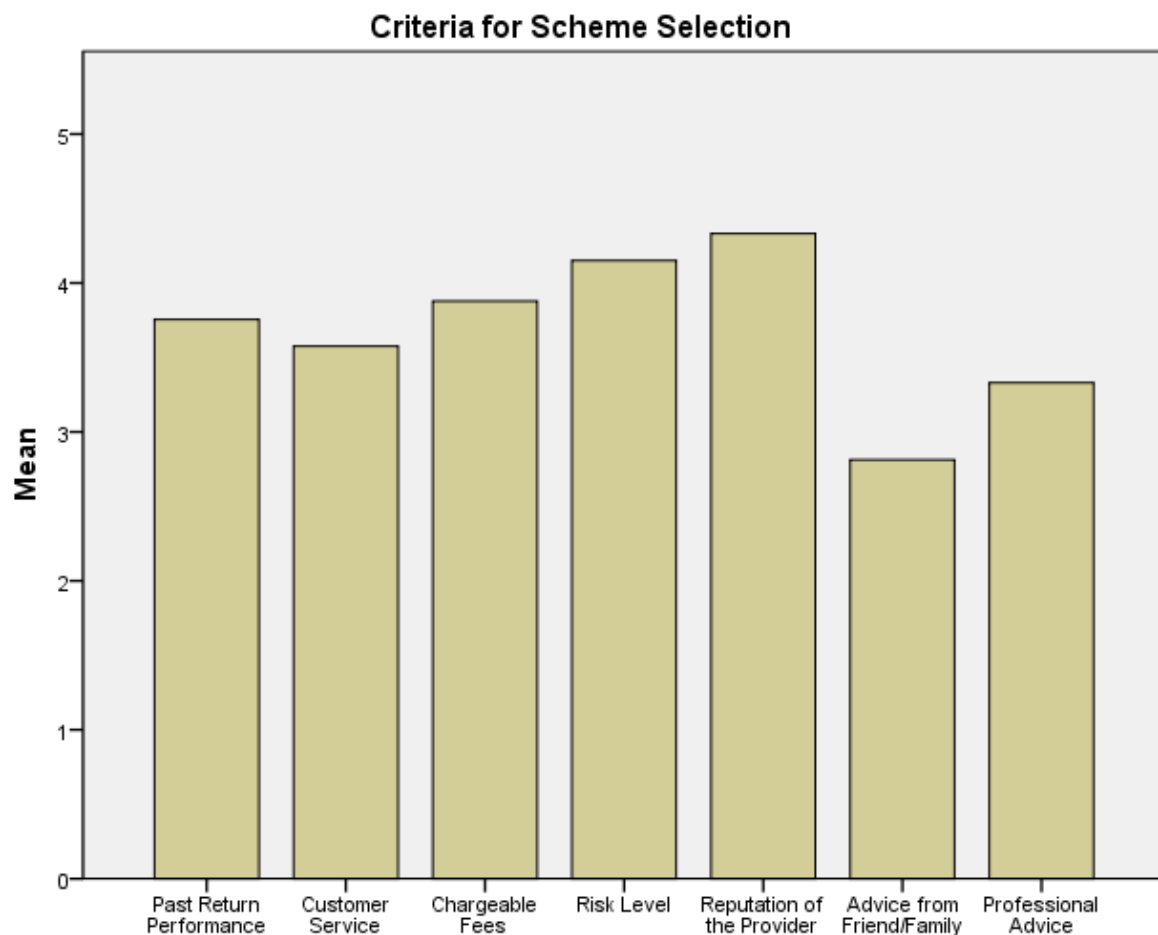
Table 12. Type of Funds

Basic Financial Literacy		Type of Funds				
		Cash	Conservative	Balanced	Growth	Aggressive
Low		13	14	10	3	0
		32.50%	35.00%	25.00%	7.50%	0.00%
Moderate		6	7	19	8	0
		15.00%	17.50%	47.50%	20.00%	0.00%
High		6	15	31	17	5
		8.11%	20.27%	41.89%	22.97%	6.76%
Pearson Chi-Square	24.61					
P	0.002***					
Advanced Financial Literacy						
Low		17	15	19	3	0
		31.48%	27.78%	35.19%	5.56%	0.00%
Moderate		3	13	21	9	2
		6.25%	27.08%	43.75%	18.75%	4.17%
High		5	8	20	16	3
		9.62%	15.38%	38.46%	30.77%	5.77%
Pearson Chi-Square	26.89					
P	0.001***					
Total Financial Literacy						
Low		15	14	9	1	0
		38.46%	35.90%	23.08%	2.56%	0.00%
Moderate		6	13	32	10	2
		9.52%	20.63%	50.79%	15.87%	3.17%
High		4	9	19	17	3
		7.69%	17.31%	36.54%	32.69%	5.77%
Pearson Chi-Square	38.18					
P	0.000***					
Age						
18-29		8	6	3	0	0
		32.00%	17.10%	5.00%	0%	0%
30-39		8	9	12	7	1
		32.00%	25.70%	20.00%	25.90%	20%
40-49		6	15	31	17	5
		24.00%	17.10%	35.00%	29.60%	40.00%
50-59		3	6	19	7	2
		12.00%	17.10%	31.70%	25.90%	40.00%
60+		0	8	5	5	0
		0.00%	22.90%	8.30%	18.50%	0.00%
Pearson Chi-Square	33.444					
P	0.006***					

Scheme Providers

Figure 4 presents the perceptions on the importance of the criteria used for selecting KiwiSaver scheme providers. In particular, respondents were asked to rate a range of criteria on a 5 point scale with 1 meaning not important and 5 meaning important. In general, reputation of the provider appears to be the most important factor in choose scheme provider. However, the literature widely documents the inability of active fund managers, on average, to earn superior risk-adjusted returns after expenses (Jensen & Meckling, 1967; Gruber, 1996; Carhart, 1997). As a result, KiwiSaver members should not heavily rely on reputation in the past to assess the ability of scheme provider in producing additional returns. The fund risk is listed as the second largest concern, followed by chargeable fees, past return performance and customer service. Advice from friends/family and professional has the least impact on the choice of scheme providers.

Figure 4. Average Scores of Criteria



Furthermore, Table 13 measures the importance of each criterion across different financial literacy groups. Those who display low levels of basic financial literacy pay more attention to informal advice from family and friends and professional advice from financial experts. However, this score sharply decreases when we move to higher levels of basic literacy. Respondents with higher basic financial literacy are much more likely to pay attention to the reputation and risk of scheme providers. As a result, the table shows that financial literacy is strongly connected with financial advice used to make KiwiSaver decisions. In general, the less financially literate are seeking advice from others to overcome their own inadequacy. Many investors use a financial advisor to help them make or improve their portfolio investment decisions (Bluethgen et al., 2008). Financial advisors can have an important role in helping non-professional investors to take their portfolio decisions. They often have a formal education in financial matters, experience in dealing with financial markets and better access to information. Intuitively, it is natural to believe that delegating financial responsibility to professionals will benefit individuals. Many studies try to assess whether advisors have an information advantage with respect to non-professional investors and whether advisors can correct behavioural biases such as the disposition effect, overtrading and under-diversification. Bluethgen et al. (2008) put forward that financial professionals are less likely to hurt their performance by selling winners too soon and holding losers too long, a tendency which has been labelled the disposition effect, than the general public and therefore may help consumers avoid making such mistakes. Fischer and Gerhardt (2007) suggest that financial advisors can be particularly valuable for individuals who lack financial literacy and are prone to cognitive biases. Haslem (2008) suggests that financial advisors can help clients overcome feelings of insecurity, can help validate clients' past decisions, and can serve as a neutral party in spousal disagreements. More recently, Haslem (2010) assesses the relationship between financial advisors and investors in light of the current financial crisis, concluding that advisors can help clients avoid panics and behaving irrationally. Overall, it appears that at least advisors' mistakes are less serious than members' ones, indicating that individual investors turn to financial experts for meaningful advice. For many people KiwiSaver is considered to be their first investment and their decisions will impact on their future financial security. Thus, scheme providers have a responsibility to ensure people are making informed decisions because many people depend on KiwiSaver to fund their retirement.

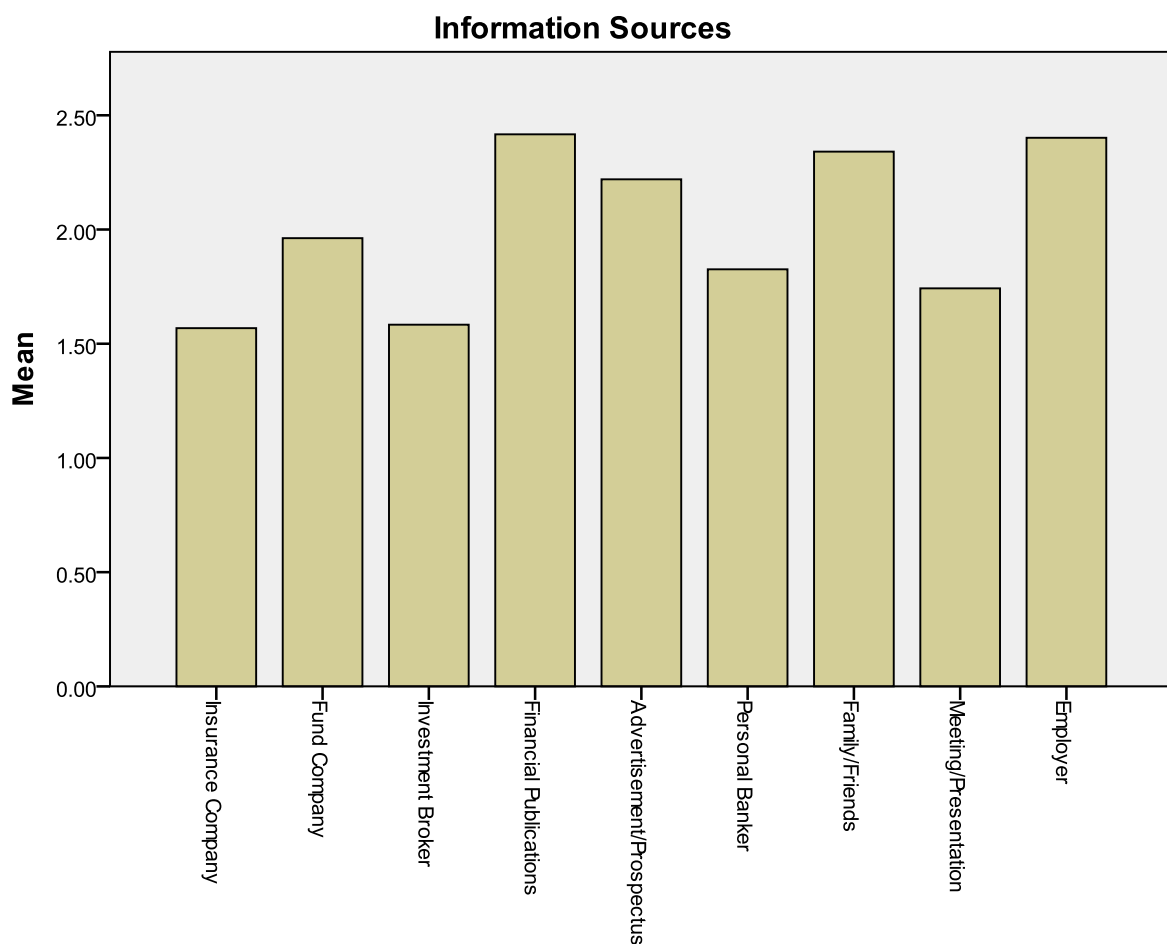
Table 13. Scheme Provider and Financial Literacy

		Basic Literacy Mean	Financial F	Advanced Literacy Mean	Financial F	Total Literacy Mean	Financial F
Past Return Performance	low	3.5	1.349	3.6	0.889	3.5	1.173
	moderate	3.8		3.9		3.8	
	high	3.8		3.7		3.9	
Customer Service	low	3.7	0.377	3.6	0.529	3.8	1.922
	moderate	3.5		3.4		3.4	
	high	3.5		3.6		3.6	
Chargeable Fees	low	3.8	0.188	3.8	1.524	3.7	1.476
	moderate	3.9		3.8		4.0	
	high	3.9		4.1		4.0	
Risk Level	low	4.0	2.593*	4.2	0.128	4.1	0.449
	moderate	4.5		4.1		4.3	
	high	4.1		4.2		4.1	
Reputation of the Provider	low	4.1	3.446**	4.3	0.131	4.2	1.313
	moderate	4.6		4.3		4.4	
	high	4.3		4.4		4.4	
Advice from Friend/Family	low	3.3	3.872**	3.3	8.807***	3.4	5.886***
	moderate	2.8		2.6		2.7	
	high	2.6		2.5		2.6	
Professional Advice	low	3.5	3.318**	3.8	5.805***	3.7	2.133*
	moderate	3.8		3.4		3.4	
	high	3.1		2.9		3.1	

Information Sources

This section examines the sources of information that respondents used to make KiwiSaver decisions. To better understand the use of information by KiwiSaver members, I break down the information sources into a wider range of categories, as shown in Table 14. Respondents are asked to rate the usefulness of those sources in making their KiwiSaver choices. Figure 5 shows that financial publications such as newspapers and magazines are considered to be the most useful source of information. Respondents also report that they rely heavily on, in decreasing order, employer-provided information, family or friends, advertisements or the prospectus in deciding their KiwiSaver choices. As can be seen, individuals are more likely to approach friends and family or printed financial materials to acquire relevant information for KiwiSaver decisions.

Figure 5. Information Sources



To answer whether financial literacy matters in retirement planning in the context of KiwiSaver, I also examine whether financial literacy influences the sources of information individuals consult when making KiwiSaver decisions. Table 14 presents the use of information sources across various financial literacy groups. Although professional advices are broke down into specific sub-groups, family or friend still appears to be the most popular information source in low financial literacy group. The least knowledgeable may face the greatest obstacles in identifying good advice sources; they most often turn to friends and family. Those who display high levels of financial literacy are much less likely to rely on informal sources of information such as family and friends, and much more likely to read financial publications. This confirms that the degree of financial literacy of an individual investor plays a crucial role in investment choices not only directly through the selection of the preferred financial portfolio, but also indirectly through the way people seek advice about financial concepts (van Rooij et al., 2007). Most likely, this leads to an improvement in knowledge for those who already are more literate. Risk management or rates of return are rarely explained in easy-to-understand terms, and the law of interest compounding and the concept of risk diversification are not necessarily best learned on the advice of friends, family, and colleagues. These concepts cannot readily be learned through experience since many financial decisions such as buying a house or entering into retirement are not repeat occurrences. However, relatively little is known about the effects of financial advice and whether it can improve financial decision-making. Therefore, it would be better to take into account the potential acquirers' financial literacy and varying preference to search when distribute retirement advice at different information sources, which allows them to make better informed decisions and improve financial literacy. Also, hypothesis 5 is confirmed with the different directions on information search.

Table 14. Information Sources and Financial Literacy

		Basic Literacy		Financial		Advanced Literacy		Financial		Total Literacy		Financial	
		Mean	F			Mean	F			Mean	F		
Insurance Company	low	1.8	2.656*			1.7	5.973***			2.0	5.170***		
	moderate	1.3				1.8				1.4			
	high	1.5				1.2				1.4			
Fund Company	low	2.1	0.221			2.1	0.174			2.2	0.499		
	moderate	2.0				2.0				2.0			
	high	2.0				2.0				1.9			
Investment Broker	low	1.9	3.200**			1.8	2.390*			1.9	.922		
	moderate	1.3				1.7				1.6			
	high	1.7				1.4				1.6			
Financial Publications	low	2.2	1.442			2.2	1.752			2.4	3.332**		
	moderate	2.4				2.5				2.2			
	high	2.7				2.7				2.9			
Advertisement/Prospectus	low	2.3	0.017			2.3	0.179			2.4	0.429		
	moderate	2.2				2.3				2.2			
	high	2.7				2.2				2.3			
Personal Banker	low	2.3	3.658**			2.1	3.965**			2.4	4.991***		
	moderate	1.9				2.0				1.8			
	high	1.6				1.5				1.5			
Family/Friends	low	2.7	3.008**			2.8	7.166***			2.9	5.589***		
	moderate	2.4				2.3				2.3			
	high	2.1				1.9				2.0			
Meeting/Presentation	low	2.1	2.359*			2.1	2.905*			2.2	3.289**		
	moderate	1.9				1.6				1.7			
	high	1.6				1.6				1.6			
Employer	low	2.5	2.603*			2.6	1.486			2.7	1.781		
	moderate	2.7				2.3				2.2			
	high	2.1				2.2				2.3			

6. Conclusion

In this research, I examine the effect of financial literacy on retirement planning and KiwiSaver decisions. The results suggest that high financial literacy does not necessarily result in a strong commitment in retirement planning. However, financial literacy does influence KiwiSaver decisions. Using the survey data on a sample of 167 AUT staff, I find that there is a positive impact of financial literacy on fee awareness, contribution rates and fund risks. That means that more financially literate members are able to make decisions that provide greater potential returns to their retirement. Moreover, financial literacy affects the choice of financial advisors and information sources for KiwiSaver decision making. More financially literate individuals tend to prefer professionals to informal sources. Therefore, it is more likely for them to access superior information and make better informed KiwiSaver decisions. As can be seen, financial literacy amongst New Zealanders is in need of a drastic improvement in order to counter some of these behaviours. There are too many KiwiSaver members who do not fully understand how KiwiSaver works, do not know who their provider is, do not understand what the appropriate risk level for their situation and personality is, do not review their fund performance and do not understand the investment strategy they've selected or been allocated to. Therefore, greater financial literacy is vital because it can empower KiwiSaver members to make correct and informed decisions about the issues and choices they encounter.

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8. Appendix

Appendix A: Survey Questions

1. **What is your age?**
2. **Which ethnic group do you belong to?**
 - ☐ Female
 - ☐ Male
3. **What is your ethnicity?**
 - ☐ European
 - ☐ Maori
 - ☐ Pacific Islands
 - ☐ Asian
 - ☐ Latin American
 - ☐ African
4. **What is the highest level of education you completed?**
 - ☐ Did Not Complete Secondary School
 - ☐ Secondary School
 - ☐ Certificate/Diploma/Bachelor Degree
 - ☐ Postgraduate Degree or Post graduate diploma (including Honours, Masters and PhD)
5. **If you have a tertiary degree, what is your highest qualification (e.g. Bachelor of Commerce, Master of Arts, etc)? If not applicable, please write "N/A".**
6. **What is your residency status?**
 - ☐ NZ Citizen/Permanent Resident
 - ☐ Work permit
 - ☐ Student Visa
 - ☐ Self-Employed
 - ☐ Other
7. **Which of the following categories best describe your employment status?**
 - ☐ Employed Full Time
 - ☐ Employed Part Time
 - ☐ Not employed, looking for work
 - ☐ Not employed, NOT looking for work
 - ☐ Self-employed
 - ☐ Stay-at-Home
 - ☐ Student
 - ☐ Retired
 - ☐ Disabled, not able to work

- 8. What is your gross annual income from all sources before tax?**
- ☐ Zero income
 - ☐ \$1-\$20,000
 - ☐ \$20,001-\$40,000
 - ☐ \$40,001-\$60,000
 - ☐ \$60,001-\$80,000
 - ☐ \$80,001-\$100,000
 - ☐ \$100,001-\$120,000
 - ☐ \$120,001-\$150,000
 - ☐ \$150,001 or more
- 9. Have any of the firms you worked for offer financial education programs, e.g. retirement seminars?**
- ☐ Yes
 - ☐ No (Please go to question 11)
- 10. If yes, did you attend any financial education programs? If your answer to question 9 is "No", please choose N/A.**
- ☐ Yes
 - ☐ No
- 11. What is your marital status?**
- ☐ Single/ Never Married
 - ☐ Married/ Civil Union/ De Facto Relationship
 - ☐ Separated/ Divorced
 - ☐ Widowed
- 12. How many dependents do you have in your family?**
- 13. Are you the main income earner in your household?**
- ☐ Yes
 - ☐ No
- 14. Are you the primary person who makes financial decisions in your household?**
- ☐ Yes
 - ☐ No
 - ☐ Responsibility is shared
- 15. What type of accommodation are you currently living in?**
- ☐ Parental Home
 - ☐ Renting/Flatting
 - ☐ Housing New Zealand
 - ☐ Own Home (with Mortgage)
 - ☐ Own Home (without Mortgage)

16. Have you ever or do you currently have or own any of the following? (Tick all that apply)

- ☐ Savings Account
- ☐ Term Deposit
- ☐ KiwiSaver or Private Pension Fund
- ☐ Car/House/Contents Insurance Policy
- ☐ Life/Health Insurance Policy
- ☐ Income Protection Insurance Policy
- ☐ Corporate or Government Bond (including Debentures)
- ☐ Stock
- ☐ Mutual Fund
- ☐ Property (family home)
- ☐ Property (investment, rental purpose, etc)

17. Have you ever or do you currently have? (Tick all that apply)

- ☐ Credit Card
- ☐ Hire Purchase Arrangement
- ☐ Mortgage
- ☐ Personal/Bank Loan
- ☐ Student Loan
- ☐ Payday Advance Loan

18. If you do have a credit card, do you pay off the outstanding balance fully each month?

- ☐ Always
- ☐ Usually
- ☐ Sometimes
- ☐ Never

19. Are you expecting to pay off the mortgage or other debts before your retirement?

- ☐ Yes
- ☐ No
- ☐ Do not know

20. To what extent have you thought about your financial planning for your retirement?

- ☐ A lot
- ☐ A fair amount
- ☐ A little
- ☐ Not at all

21. How much do you think you will need to maintain the same standard of living in your retirement? If you do not know the answer, please write "Do not know".

22. Do you have a financial plan that includes written steps for achieving your retirement goals?

- ☐ Yes
- ☐ No

23. Are you enrolled in KiwiSaver?

- ☐ Yes
- ☐ No

24. If your answer is "Yes", what was your reason for joining a KiwiSaver scheme?

- ☐ To get the government incentives
- ☐ Family and/ friends recommended I do so
- ☐ My financial adviser recommended I do so
- ☐ It's important to save for my retirement
- ☐ I had to – I started a new job
- ☐ N/A

25. If your answer to question 27 is "No", what was your reason for opting out of KiwiSaver?

- ☐ I'm too close to retirement for it to be useful
- ☐ I think a future government may get rid of KiwiSaver
- ☐ I think a future government may change the rules again
- ☐ I don't trust others to manage my money
- ☐ I don't understand how KiwiSaver works
- ☐ Retirement is too far away to worry about
- ☐ I have other saving and investments that are adequate for my retirements
- ☐ I can't afford it
- ☐ N/A

26. If you have joined a KiwiSaver scheme, did you

- ☐ Choose the KiwiSaver scheme provider yourself
- ☐ Enrol in the default KiwiSaver scheme provider by Inland Revenue
- ☐ N/A

27. If you enrolled with a default KiwiSaver scheme provider, have you since changed from the default KiwiSaver scheme to one of your choice?

- ☐ Yes
- ☐ No
- ☐ N/A

28. What year did you become a member of KiwiSaver?

29. Please indicate the name of your KiwiSaver scheme provider. If you do not know the answer, or are unsure please write "Do Not Know" in the space provided. If not applicable, please write "N/A".

30. Please indicate your contribution rate.

- ☐ 2%
- ☐ 4%
- ☐ 8%
- ☐ Not a wage or salary earner
- ☐ Do not know
- ☐ Prefer not to answer
- ☐ N/A
- ☐ Other

- 31. On a scale from 1 (of no importance) to 5 (very important), please indicate the importance of the following criteria for selecting your KiwiSaver scheme provider.**

	1 Not Important	2	3	4	5 Very Important
Past return performance					
Customer Service					
Chargeable Fees					
Risk Level					
Reputation of the provider					
Advice from Friends/Family					
Professional Advice					

- 32. Please list any other factors which influenced your choice of KiwiSaver scheme provider (if any)?**
- 33. Did you know the fees charged by your fund manager at the time of enrolment?**
☐ Yes
☐ No
☐ N/A
- 34. Have you compared the fees on your fund with fees on similar KiwiSaver schemes?**
☐ Yes
☐ No
☐ N/A
- 35. Do KiwiSaver schemes with higher management fees produce better returns for investors?**
☐ Yes
☐ Think so
☐ Not Sure
☐ Haven't consider it
- 36. Have you compared the performance of your fund with those of other KiwiSaver schemes?**
☐ Yes
☐ No
☐ N/A
- 37. Is the return of your KiwiSaver fund guaranteed by the government (i.e. you are not taking any risks in making your investment choices in a KiwiSaver scheme and will receive a promised amount from the government after retirement)?**
☐ Yes
☐ No
- 38. How often do you review your KiwiSaver performance/balance?**
☐ Weekly
☐ Fortnightly
☐ Monthly
☐ Two-monthly
☐ Semi-annually
☐ Annually
☐ Never

39. Have you considered how much risk you should take before selecting the type of funds for your KiwiSaver scheme (e.g. assessing your risk attitude through questions to get an indication of the level of risk that might be right for you)?

☐ Yes

☐ No

40. Which of the following benefit(s) attracted you to join KiwiSaver? On a scale from 1 (not important) to 5 (very important), please rate the importance of the following benefits from KiwiSaver.

	1	2	3	4	5
\$1000 kick-start from the Government					
Member Tax Credit from the Government					
Contribution from your employer					
Saving towards a first home deposit					
Other (please specify)					

41. Please tick the type of funds you have invested or would invest in.

Fund type	Description
Cash (low risk)	Bank deposits and other fixed interest investments
Conservative (low to medium risk)	A high proportion in bank deposits and fixed interest investments, and a lower proportion in growth assets such as shares and property
Balanced (medium risk)	A more equal split between higher risk growth assets such as shares and property, and more stable investments including fixed interest and bank deposits
Growth (medium to high risk)	A high proportion of shares and property with a lower level of bank deposits and fixed interest
Aggressive (high risk)	Mainly shares

42. As a result of the recent volatility in financial market, have you made/ are you planning to make any changes to your KiwiSaver?

☐ Yes

☐ No

☐ N/A

43. If your answer to question 46 is "Yes", what changes have you made/will you make to your KiwiSaver account? (Tick all that apply)

☐ Contribution Rate

☐ Take a Contribution Holiday

☐ Type of Fund

☐ Scheme Provider

☐ N/A

44. How useful were each of the following sources of information in making you KiwiSaver decisions.

	Not at all	Little	Some	A lot	Extremely
Advertisement/Prospectus					
Investment Broker					
Family or friends					
Financial publications					
Personal Banker					
Insurance company					
Fund Company					
Employer					
Meeting/presentation					
Other (please specify)					

45. Suppose you had \$100 in a savings account and the interest rate was 20% per year and you never withdraw money or interest payments. After 5 years, how much do you think you would have in the account if you left the money to grow?

- ☐ More than \$200
☐ Exactly \$200
☐ Less than \$200
☐ Do not know

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

- ☐ More than today
☐ Exactly the same
☐ Less than today
☐ Do not know

47. Assume a friend inherits \$10,000 today and his sibling inherits \$10,000 6 months from now. Who is richer because of the inheritance?

- ☐ My friend
☐ His sibling
☐ They are equally
☐ Do not know

48. Which of the following types of investment would best protect the purchasing power of a family's savings in the event of a sudden increase in inflation?

- ☐ 10-year bond issued by a corporation
☐ A certificate of deposit at a bank
☐ A twenty-five year corporate bond
☐ A house financed with a fixed-rate mortgage

49. Suppose that by the end of year 2012, your income has doubled and prices of all goods have doubled too. In 2012, how much will you be able to buy with your income?

- ☐ More than today
☐ The same
☐ Less than today
☐ Do not know

- 50. Which of the following statements is the main function of the stock market?**
- ☐ The stock market helps to predict stock earnings
 - ☐ The stock market results in an increase in the price of stocks
 - ☐ The stock market brings people who want to buy stocks together with those who want to sell stocks
 - ☐ None of the above
 - ☐ Do not know
- 51. Which of the following statements is correct?**
- ☐ Once one invests in a mutual fund, one cannot withdraw the money in the first year
 - ☐ Mutual funds can invest in several assets, for example invest in both stocks and bonds
 - ☐ Mutual funds pay a guaranteed rate of return which depends on their past performance
 - ☐ None of the above
 - ☐ Do not know
- 52. If the Official Cash Rate (OCR) falls, what should happen to bond prices?**
- ☐ Rise
 - ☐ Fall
 - ☐ Stay the same
 - ☐ None of the above
 - ☐ Do not know
- 53. Buying a company stock usually provides a safer return than a stock mutual fund.**
- ☐ True
 - ☐ False
 - ☐ Do not know
- 54. Stocks are normally riskier than bonds.**
- ☐ True
 - ☐ False
 - ☐ Do not know
- 55. Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return?**
- ☐ Savings accounts
 - ☐ Bonds
 - ☐ Stock
 - ☐ Do not know
- 56. When an investor spreads his money among different assets, does the risk of losing money:**
- ☐ Increase
 - ☐ Decrease
 - ☐ Stay the same
 - ☐ Do not know
- 57. On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your understanding of financial markets? _____**
- 58. Just 60 days after you put money into an investment, its price falls 20%. Assuming none of the fundamentals have changed, what would you do?**
- ☐ Sell to avoid further worry and try something else
 - ☐ Do nothing and wait for the investment to come back
 - ☐ Buy more. It was a good investment before; now it's cheap investment, too

59. Now look at the previous question another way. Your investment fell 20%, but it's part of a portfolio being used to meeting investment goals with three different horizons.

What would you do if the goal were 6 months away?

- ☐ Selling
- ☐ Do nothing
- ☐ Buy more

What would you do if the goal were 15 years away?

- ☐ Selling
- ☐ Do nothing
- ☐ Buy more

What would you do if the goal were 30 years away?

- ☐ Selling
- ☐ Do nothing
- ☐ Buy more

60. The price of your retirement investments jumps 25% a month after you buy it. Again, the fundamentals haven't changed. After you finish gloating, what do you do?

- ☐ Sell it and lock in your gains
- ☐ Stay put and hope for more gain
- ☐ Buy more, it could go higher

61. You are investing for retirement, which is 15 years away. Which would you rather do?

- ☐ Invest in a money-market fund or guaranteed investment contract, giving up the possibility of major gains, but virtually assuring the safety of your principal
- ☐ Invest in a 50-50 mix of bond funds and stock funds, in hopes of getting some growth, but also giving yourself some protection in the form of steady income
- ☐ Invest in aggressive growth mutual funds whose value will probably fluctuate significantly during the year, but have the potential for impressive gains over 5 or 10 years

62. You just won a big prize! But which one? It's up to you.

- ☐ \$2000 in cash
- ☐ A 50% chance to win \$5000
- ☐ A 20% chance to win \$15000

63. A good investment opportunity just came along. But you have to borrow money to get in. Would you take out a loan?

- ☐ Definitely not
- ☐ Perhaps
- ☐ Yes

64. Your company is selling stock to its employees. In three years, management plans to take the company public. Until then, you won't be able to sell your shares and you will get no dividends. But your investment could multiply as much as 10 times when the company goes public. How much money would you invest?

- ☐ None
- ☐ Two month's salary
- ☐ Four month's salary

Appendix B: Financial Literacy Questions

Basic Financial Literacy:

1. Suppose you had \$100 in a savings account and the interest rate was 20% per year and you never withdraw money or interest payments. After 5 years, how much do you think you would have in the account if you left the money to grow? (Lusardi & Mitchell)
(i) More than \$200; (ii) Exactly \$200; (iii) Less than \$200; (iv) Do not know.
2. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account? (Lusardi & Mitchell)
(i) More than today; (ii) Exactly the same; (iii) Less than today; (iv) Do not know.
3. Assume a friend inherits \$10,000 today and his sibling inherits \$10,000 6 months from now. Who is richer because of the inheritance? (Lusardi & Mitchell)
(i) My friend; (ii) His sibling; (iii) They are equally rich; (iv) Do not know.
4. Suppose that by the end of year 2012, your income has doubled and prices of all goods have doubled too. In 2012, how much will you be able to buy with your income? (Lusardi & Mitchell)
(i) More than today; (ii) The same; (iii) Less than today; (iv) Do not know;
5. Which of the following types of investment would best protect the purchasing power of a family's savings in the event of a sudden increase in inflation? (New)
(i) 10-year bond issued by a corporation
(ii) A certificate of deposit at a bank
(iii) A twenty-five year corporate bond
(iv) A house financed with a fixed-rate mortgage

Advanced Financial Literacy:

6. Which of the following statements is the main function of the stock market? (van Rooij)
(i) The stock market helps to predict stock earnings;
(ii) The stock market results in an increase in the price of stocks;
(iii) The stock market brings people who want to buy stocks together with those who want to sell stocks;
(iv) None of the above;
(v) Do not know.
7. Which of the following statements is correct? (van Rooij)
(i) Once one invests in a mutual fund, one cannot withdraw the money in the first year
(ii) Mutual funds can invest in several assets, for example invest in both stocks and bonds
(iii) Mutual funds pay a guaranteed rate of return which depends on their past performance
(iv) None of the above
(v) Do not know
8. If the Official Cash Rate (OCR) falls, what should happen to bond prices? (van Rooij)
(i) Rise; (ii) Fall; (iii) Stay the same; (iv) None of the above; (v) Do not know

9. Buying a company stock usually provides a safer return than a stock mutual fund. (van Rooij)
(i) True; (ii) False; (iii) Do not know.
10. Stocks are normally riskier than bonds. (van Rooij)
(i) True; (ii) False; (iii) Do not know.
11. Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return? (van Rooij)
(i) Savings accounts; (ii) Bonds; (iii) Stocks; (iv) Do not know.
12. When an investor spreads his money among different assets, does the risk of losing money (van Rooij):
(i) Increase; (ii) Decrease; (iii) Stay the same; (iv) Do not know.