# SUSTAINABLE RETIREMENT: A LOOK AT CONSUMER DESIRES

by

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## INTRODUCTION

This paper examines the findings of the research project, '*Retirement Savings: Drivers and Desires*', commissioned by the Investment and Financial Services Association Ltd (IFSA) in 2001. The paper investigates retirement savings decision-making and retirement income product stream choice. This paper presents a quantitative analysis of questionnaire data relating to decision-making and product stream choice and discusses these issues in the context of established research findings about retirement income.

The paper consists of five sections. The first is a brief review of the '*Drivers and Desires*' research project conducted in 2001. An important theme to emerge from the initial project was that participants reported a high level of risk aversion and a strong desire to obtain the publicly funded age pension. Based on the findings of the initial project, the remaining sections of this paper focuses on consumer preferences, particularly relating to risk aversion and demand for the age pension.

The second section focuses on a specific issue emanating from the initial project, specifically the market for annuities. In this context, the public annuity, the age pension, is considered in relation to privately provided annuities. The third section considers retirement income streams in terms of risks to investors. This section also considers various strategies to limit and/or mitigate such risks. The fourth section carries out a quantitative analysis of consumer preferences toward the identified risks in previous sections, and specifically considers various trade-offs in the decision-making process. The fifth section outlines various policy alternatives and issues for future consideration. The remainder of the paper is organised as follows:

- Findings of '*Drivers and Desires*';
- The Private Annuities Market;
- Retirement Risks;
- Empirical Analysis; and,
- Policy Considerations.

## 2. FINDINGS OF '*DRIVERS AND DESIRES*'

A central finding of the 2001 '*Drivers and Desires*' project was that retirees left the workforce at the early age (relative to the standard retiring age for men of 65), while pre-retirees also planned an early exit from the workforce. The actual or desired retirement age was 59-60 years. This result was consistent with overall labour market experience in the OECD economies where the age of retirement has been drifting downwards over recent decades [Kihli, Martin, Guillemard and Gustern, 1991]. In Australia, it has been estimated that, in 1995, the average age of transition from the workforce to inactivity in Australia was 61.8 years of age [Blondal and Scarpetta, 1999].

Retirees were found to have relatively low capital accumulation compared with the capital sum required to provide a retirement income with a replacement rate of 60 per cent of pre-retirement income. Respondents showed a strong preference for a lump sum on retirement, were highly averse to risk, held strong preferences for interest-based retirement income streams and for low return retirement income products.

Another defining characteristic of the study was the preferences of respondents for access to social security benefits, access to capital (and the ability to withdraw that capital), low risk investments and taxation advantages associated with retirement incomes. Respondents held a number of strong aversions to characteristics of retirement income products. Specifically, participants were particularly averse to those products with little or no residual value, no possibility of withdrawal of capital and no age pension benefits.

Respondents generally had a strong bequest motive, with around two-thirds wishing to leave some assets in their estates, while 13 per cent wished to leave a large proportion of assets in their estate (although there was evidence that the bequest motive can be satisfied by leaving the family house to heirs).

Pre-retiree respondents reported difficulty in accumulating large retirement benefits as a result of a number of factors including, other commitments which reduced the ability to save, a poor

ability to save, a failure to think long term, satisfying more immediate goals, a lack of disposable income and the occurrence of life events which disrupted savings plans (among the more common were ill-health and the impact of earlier than planned retirement).

The paper finds that the core drivers of retirement savings included participants actively looking forward to retirement, encouragement by employers, the existence of a favourable superannuation scheme, fear of ill-health and early retirement, an inheritance (which exposed the lack of other savings) and children leaving home. For female respondents, the analysis suggested that divorce or death of a spouse was an important driver for retirement savings. A summary of the research findings is shown below:

*Priorities*

- Access to social security benefits
- Access to capital (withdrawal)
- Low risk investments
    - Taxation advantages

*Product aversions*

- No residual value
- No possibility of withdrawal of capital
    - No pension benefits

*Preferences*

- Early retirement age preferred: 55-60 years
- Relatively low capital accumulation
- Underlying issue of financing 5 years before age pension
- Preference for lump sum
- Highly averse to risk and strong preference for interest-based retirement income streams
    - Strong preference for low return retirement income products

*Barriers to Savings*

- Other commitments
- Poor ability to save

- Failure to think long term
- More immediate goals
- Lack of disposable income
- Life events: ill-health, earlier retirement

*Drivers of Savings*

- Look forward to retirement
- Encouraged by employer
- Favourable super scheme
- Fear of ill-health, early retirement
- For women: divorce or death of spouse or partner
- Sudden inheritance exposes lack of other savings
- Children leaving home

## 3. THE PRIVATE ANNUITIES MARKET

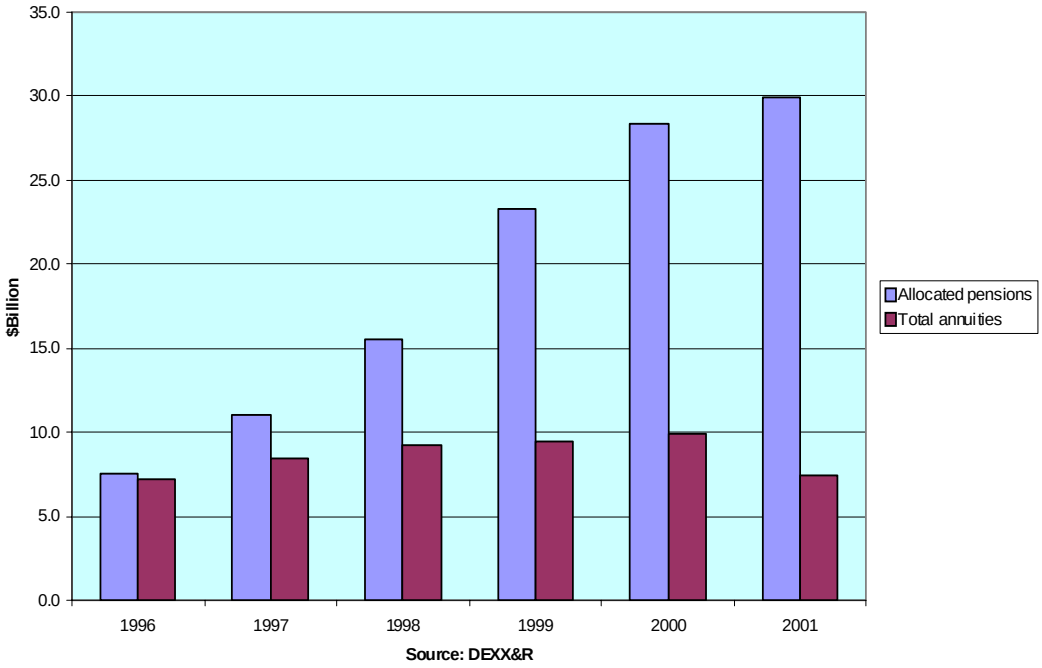
Annuities are an income stream purchased for an initial capital sum; immediate annuities are paid immediately on purchase. Annuities may take the form of a life annuity, where the annual income stream is paid for the life of the annuitant, or term annuities paid for a specified number of years. Typically, life offices and other financial service providers pay annuities.

Figure 1 illustrates the performance of this market for the period 1996 through 2001. In this context, we argue that the private annuities market has reflected a number of the major themes to emerge from the '*Drivers and Desires*' project, particularly as they relate to respondent preferences and aversions.

The total of private immediate annuities, life and term, is low and has declined in the more recent year in which data is available. This matches respondents' aversion to retirement income products that do not leave a residual available for bequests. Allocated pensions are provided through a superannuation fund; the amount paid each year must be within the range of a sum calculated by the application of maximum and minimum pension valuation factors. The

portfolio backing of the allocated pension may be held in a range of assets, not just fixed interest, satiating the investors desire for flexibility of the asset allocation decision.

**Figure 1:** Private Annuities Marker, Australia, 1996-2001.




Allocated pensions, which offer taxation advantages and the possibility of a residual sum, are more popular and appear to be increasing in relative importance. Allocated pensions not only offer retirees greater control over the allocation of the portfolio supporting the pension, they provide some flexibility regarding the timing and size of pension. Allocated pensions accord with retirees stated preferences, this congruence being the catalyst for remarkable growth over the observed period.

In this context it is important to note that the two products shown in the chart, allocated pensions and immediate annuities face competition from the Government provided annuities. The age pension bill is of the order of in excess of $16 billion in 2002.

It is also important to acknowledge that the Government has eased progressively the eligibility conditions and requirements for the age pension. Moreover, financial planners and taxation

advisers have developed techniques to allow retirees to restructure their financial affairs to meet these conditions. It is our view that private providers of annuities face strong competition from the government provided retirement income stream.

**Table 2:** Eligibility for Maximum Public Pension

| Retiree | Maximum Pension until September 19, 2002 | Maximum income to still receive age pension | Maximum assets to receive age pension |
|---|---|---|---|
| Single, home owner, no children | $10, 966.80 | $2912.00 | $141,000.00 |
| Couple, home owners, no children | $18,309.20 | $5,200.00 | $200,500.00 |

**Table 3:** Cost of Private Pension Equal to the Maximum Public Pension

| Retiree | Current Life expectancy as term | Life expectancy less eight years |
|---|---|---|
| Single, home owner, no children | $115,576 | $135,041 |
| Couple, home owners, no children | $192, 430 | $224,837 |

*Assumptions: (a) Growth pension calculations based on illustrations in IFSA Submission to Senate Select Committee on Superannuation June 2002; (b) Retirees is assumed to be 65 years old; and, (c) Couple purchase of growth pension calculated on male aged 65 years.*

A couple retiring with the mean capital sum of $234,000 (as reported in '*Drivers and Desires*') could purchase a growth pension equal to the age pension for $224,837 leaving assets of $9,163.

Alternatively the couple could spend $24,337 in ways that would not affect eligibility for age pension and receive an equivalent income stream, which has further advantages, and retain $200,500 in assets. This is, of course, is the best possible case for a couple.

We conclude that retirees act as rational, self-seeking, economic agents in structuring their financial affairs in order to obtain the age pension and that, as currently, the implementation of the public age pension contains substantial disincentives to save.

Turning to international evidence, the annuities market in the United States (US) is very small [Friedman and Warshawsky, 1990]. Less than 5 per cent of US retirees own annuities and most of these are females. The reasons for this are the bequest motive, adverse selection, the incidence of defined benefit pensions (provided under employee sponsored pension plans) and the role of Government annuities provided under the US Social Security program.

The adverse selection problem arises in the US because annuities appeal to those whose life expectancy is greater than average and the existence of asymmetric information under which the purchasers have private information leading them to believe that their life expectancy is greater. Providers of annuities cannot readily access this information and base their calculation of the annuity value on the subset of the population who purchase annuities.

As we have noted, the private annuities market in Australia faces competition from the government annuity as Australians have a strong preference for the age pension. This is based on a belief, however erroneous, that their taxes paid during their working life have paid for their pension.

The information from the '*Drivers and Desires*' project revealed that some 85 per cent of retirees receive a pension and that the age pension is the principal source of income for more than 75 per cent of retirees. Moreover, it is possible, in the current system, for retirees to '*buy*' an age pension by engaging in financial transactions to restructure assets and income to meet existing eligibility tests.

As we will see later, the age pension has many qualities which retirees desire and it provides protection against risks in retirement income. Hence, private providers of retirement incomes have very effective competition from perhaps an initially unexpected source, the Government.

## 4. RETIREMENT RISKS

Retirees face a number of risks in retirement, particularly relating to retirement income streams. We briefly discuss five (5) identified retirement risks (as well as a discussion of other general risks) by way of background to the quantitative analysis undertaken in the next section [Doyle and Piggott, 1999 and Drew and Stanford, 2002]. The retirement risks considered in this study include:

1) Income flow risk;
2) Investment risk;
3) Longevity Risk;
4) Inflation Risk;
5) Default Risk; and,
6) Other Risks.

*Income flow risk*

Income flow risk or nominal replacement rate risk is the proportion of retirement income to pre-retirement income or expenditure; the appropriate replacement rate may be as high as 60 per cent of gross pre-retirement income [IFSA 2002].

The risk is that retirement savings will not generate an income equal to desired replacement rate and retirees will have lower living standard during retirement. This is a very real risk as the '*Drivers and Desires*' project illuminates the existence of a retirement gap for the Australian setting.

US data suggests only 52 per cent of households adequately prepared for retirement on optimistic assumptions and only 42 per cent on pessimistic assumptions. Researchers have noted that the '*median American on verge of retirement has accumulated too little wealth to support a comfortable retirement*' [Yuh 1998] and that '*baby boomers need to triple their savings rate*' [Bernheim 1996].

*Investment risk*

During retirement, community living standards will rise (on average, over the longer run, Australian living standards rise by approximately 1.5 per cent a year).

The concept of investment risk, or the economic replacement rate, considers the risk that retirees, who have an adequate nominal replacement rate, may nevertheless experience a declining standard of living by community standards in retirement.

The solutions to this risk are either a higher nominal replacement rate or achieving earnings during retirement which reflect increased community living standards. This requires an underlying portfolio of growth assets supporting the retirement income stream.

*Longevity Risk*

Longevity risk is that retiree will outlive capital and retirement income (which increases the economic replacement risk so that relative living standard declines). The solution requires a lifetime pension, later retirement, reduction in early retirement benefits, and an increase in normal retiring age, voluntary delayed retirement or anti-age discrimination policies [Kilbom, 1999].

*Inflation Risk*

The real return to a portfolio is reduced by inflation; therefore, the risk to the investor is that continuing inflation undermines retirement income. A number of solutions to the problem include the inclusion of growth assets in the portfolio, a bias toward inflation-indexed assets (particularly inflation linked bonds), and from a macroeconomic perspective, the importance of the government maintaining a low inflation environment.

*Default Risk*

Default risk is the risk that the institutions paying retirement incomes will default on these repayments. This risk would, in current circumstances, not be regarded as significant in

Australia as major providers are substantial and subject to prudential regulation policies. Solutions would include more stringent prudential policies and increased government regulation or insurance as in US with defined benefit plans.

*Other Risks*

We consider two other general risks associated with retirement income streams. First, contingent expenditure risk is the risk that the retiree will incur unplanned expenditures in the future. The major candidate is health care expenditure, which can be expected to increase as a result of new health technology, increasing use of medical services, consumer demand and expectations [IFSA 2001]. Solutions include a higher initial replacement rate, pre-paid health care, for example, Medical Savings account in the US [Query, 2000]. Second, annuity price risk highlights that the prices of annuities will vary with changes in the rate of interest. The annuity price risk is risk that retiree has to buy annuity at peak price so that retirement income is reduced so that there is the risk of retiring at the '*wrong time*'.

Prior to undertaking the empirical analysis in the following section, we provide a stylised view of how various retirement income streams deal with the various identified risks.

**Table 4:** Risk and Retirement Income Streams

| Income Stream | Income Flow | Investment Risk | Longevity Risk | Inflation Risk | Default Risk | Contingent Risk | Annuity Price Risk |
|---|---|---|---|---|---|---|---|
| Annuity | X | X | ✓✓ | Can have inflation-proof factor included | Depends on provider | X | X |
| Allocated Pension | ✓ | ✓ | X | ✓ | Depends on provider | X | ✓✓ |
| Growth Pension | ✓✓ | ✓ | X | ✓ | Depends on provider | X | ✓✓ |
| Age Pension | ✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ With associated benefits | ✓✓ |

## 5. EMPIRICAL STUDY

*Data Collection*

A sample population of 600 individuals participated in this study. The total sample was comprised of 400 participants who were categorised by the researchers as pre-retirees and 200 participants who were categorised by the researchers as retirees.

The pre-retiree group consisted of those individuals who identified as the main income earner in the household, were aged 45 years or over and who were currently engaged in paid employment for more than 25 hours per week. The retiree group consisted of those individuals who identified as the former main income earner of the household, were aged 55 years or over and had either fully or partially retired from the workforce in the past five years. A selected range of the sample population's demographic characteristics is presented in Tables 5 and 6.

In summary, the pre-retiree group was comprised of 66.5% male and 33.5% female respondents. The retired group was comprised of 64.2% male and 35.5% female respondents. The modal age of the pre-retiree group was 52 years of age with a range of 45 to 73 years of age compared to a modal age of 62 years of age for the retired group with a range of 55 to 84 years of age. The majority of respondents in both the pre-retiree and retiree groups were married (pre-retirees: 66.3% and retirees: 68.5%) and identified as owners of their primary place of residence (pre-retirees: 54.0% and retirees: 84.5%).

*Measures and Procedure*

Data was collected via questionnaires developed by Chant Link and Associates for IFSA. Questionnaires were administered to participants via the telephone. The questionnaire was developed as a component of a larger research project, '*Retirement Savings - Desires and Drivers*', being undertaken by IFSA in 2001.

**Table 5:** Summary Statistics for the Pre-Retiree Group

| PRE-RETIREES (N = 400) | |
|---|---|
| *1. Personal Circumstances* | *%* |
| A couple without dependent children at home | 42.3 |
| Single without dependent children at home | 22.5 |
| A couple with dependent children at home | 29.5 |
| A single parent with dependent children at home | 5.8 |
| *2. Accommodation description* | |
| Fully owned | 54.0 |
| Paying off a mortgage | 34.0 |
| Rented | 10.5 |
| Living in someone else's house but not paying rent | 1.5 |
| *3.Employee Status* | |
| Self Employed | 21.5 |
| Full time permanent employee (work 30+ hrs/week) | 66.3 |
| Full time casual employee (work 30+ hrs/week) | 3.0 |
| Part time permanent employee (work < 30 hrs/week | 6.3 |
| Part time casual employee (work < 30 hrs/week) | 1.8 |
| Other | 1.3 |
| *4.Marital Status* | |
| Married | 66.3 |
| Permanently living with a partner | 5.0 |
| Single | 11.0 |
| Divorced or separated | 14.5 |
| Widowed | 3.3 |
| *5.Household Income* | |
| Less than $20,000 per year | 2.8 |
| $20,000 to $30,999 | 10.5 |
| $31,000 to $40,999 | 13.5 |
| $41,000 to $50,999 | 12.0 |
| $51,000 to $60,999 | 13.5 |
| $61,000 to $70,999 | 10.5 |
| $71,000 to $80,999 | 10.5 |
| $81,000 to $90,999 | 4.5 |
| $91,000 to $100,999 | 4.0 |
| $101,000 plus | 13.8 |
| Refused | 4.8 |
| *6.Gender* | |
| Male | 66.5 |
| Female | 33.5 |

**Table 6:** Summary Statistics for the Retiree Group

| RETIREES (N = 200) | |
|---|---|
| *1. Personal Circumstances* | *%* |
| A couple without dependent children at home | 65.0 |
| Single without dependent children at home | 28.0 |
| A couple with dependent children at home | 5.5 |
| A single parent with dependent children at home | 1.0 |
| Other | 0.5 |
| *2. Accommodation description* | |
| Fully owned | 84.5 |
| Paying off a mortgage | 4.5 |
| Rented | 10.5 |
| Living in someone else's house but not paying rent | 0.5 |
| *3.Employee Status* | |
| Self Employed | 20.5 |
| Full time permanent employee (work 30+ hrs/week) | 66.0 |
| Full time casual employee (work 30+ hrs/week) | 2.0 |
| Part time permanent employee (work < 30 hrs/week | 7.5 |
| Part time casual employee (work < 30 hrs/week) | 3.0 |
| Other | 1.0 |
| *4.Marital Status* | |
| Married | 68.0 |
| Permanently living with a partner | 2.0 |
| Single | 6.5 |
| Divorced or separated | 14.0 |
| Widowed | 9.0 |
| *5.Household Income* | |
| Less than $20,000 per year | 37.0 |
| $20,000 to $30,999 | 26.0 |
| $31,000 to $40,999 | 10.5 |
| $41,000 to $50,999 | 7.0 |
| $51,000 to $60,999 | 3.5 |
| $61,000 to $70,999 | 2.5 |
| $71,000 to $80,999 | 0.5 |
| $81,000 to $90,999 | 1.0 |
| $91,000 to $100,999 | 0.5 |
| $101,000 plus | 4.0 |
| Refused | 7.5 |
| *6.Gender* | |
| Male | 59.5 |
| Female | 40.5 |

This study focuses on the data collected in two major sections of the questionnaire (see Appendix 1). The first section that is examined sought to measure attitudes towards retirement savings. Secondly, an examination of the appeal of retirement income product attributes is undertaken.

Attitudes towards retirement savings were assessed based on the responses of participants to six statements. Responses were scored using a 10-point likert type scale with higher scores representing greater agreement with the statement. Respondents rated twelve statements in relation to the relative appeal of retirement income product attributes. The rating scale used by respondents was identical to that described above.

For the purposes of this study pre-retirees and retirees were divided into a number of subsamples based on their preferences across five risk based categories. These categories included income flow risk, investment risk, longevity risk, inflation risk and default risk. The subsamples were constructed based on a series of responses given by participants to five key questions (see Appendix 2) which reflected the five risk based categories discussed previously.A 10-point likert type scale as described earlier was used by respondents to rate each of the five questions. Respondents who rated a question with a score of 0 to 4 were categorised as low preference and respondents who rated a question with a score of 5 to 10 were categorised as having a high preference to particular risk categories.

*Analysis*

Logistic regression analysis is used in this study. Logistic regression addresses the issue of prediction of group membership based on a set of continuous variables [Tabachnick & Fidell, 1996].

Specifically, direct logistic regression will be performed given that no hypotheses have been made regarding the importance or order in which predictors should enter the analysis. Direct logistic regression applies to research designs in which simultaneous entry of all predictors into the equation is required [Tabachnick & Fidell, 1996].

Logistic regression analysis was used in this study to investigate which factors reliably predict group membership of the five risk based categories described earlier (income flow risk, investment risk, longevity risk, inflation risk and default risk). This study results in the identification of those attitudes towards retirement savings and retirement income product attributes that are most important in the prediction of the above categories. Separate analyses were performed for pre-retirees and retirees. Analysis was performed using SPSS LOGISTIC Version 10.0.

*Income Flow Risk*

For pre-retirees a test of the full model with 18 predictor variables against the constant-only model was statistically reliable, $\chi^2(19, N=396) = 46.53$, $p<0.01$, indicating that the predictors, as a set, reliably distinguished between participants who were categorised as having a low versus high preference for income flow certainty.

Based on the Wald criterion, Attitude 2, $z = 3.76$, $p<.05$ reliably predicted income flow preference for pre-retirees. Table 7 presents the regression coefficients, Wald statistics and odds ratios for the statistically significant predictor.

**Table 7:** Significant Predictors of Income Flow Risk for Pre-Retirees

| Predictor | Regression Coefficient | Wald Statistic | Odds Ratio |
|---|---|---|---|
| Attitude 2 | 0.17 | 3.76 | 1.18 |

Pre-retiree respondents who had a high preference for a guaranteed level of payment each week or month more strongly agreed with the statement that their living expenses don't leave room for saving. As income flow risk relates to the timing and control of cash flows in retirement, the results suggest that pre-retirees with a low marginal propensity to save demand retirement income products that facilitate certainty of cash flows to facilitate consumption in retirement years.

For retirees a test of the full model against the constant-only model was not statistically reliable, $\chi^2(19, N=191) = 19.05, p>0.10$, indicating that the predictors, as a set, did not reliably distinguish between participants based on their risk preference.

*Investment Risk*

For pre-retirees a test of the full model against the constant-only model was statistically reliable, $\chi^2(19, N=395) = 50.73, p<0.01$, indicating that the predictors, as a set, distinguished between participants who preferred to implement a low risk investment strategy compared to a high risk, growth-biased asset allocation in an economically significant manner.

Based on the Wald criterion, Attitude 3, $z = 14.89, p<.01$, Attribute 4, $z = 4.56, p<0.5$ and Attribute 9, $z = 5.15, p<.05$ reliably predicted preferences regarding investment risk.

**Table 8:** Significant Predictors of Investment Risk for Pre-Retirees

| Predictor | Regression Coefficient | Wald Statistic | Odds Ratio |
|---|---|---|---|
| Attitude 3 | 0.20 | 14.89 | 1.22 |
| Attribute 4 | 0.16 | 4.56 | 1.17 |
| Attribute 9 | 0.15 | 5.15 | 1.17 |

Pre-retiree respondents who had a strong preference for low risk investment, more strongly agreed with the statement that building assets and wealth is important to them. This strikes at the heart of the challenge facing product developers for the pre-retirement market - the allusive low risk strategy that provides high returns! As with the international experience, the pre-retirees group appears to be strongly risk averse, with agents not fully appreciating the implications on expected returns (and the subsequent retirement consumption function) of a portfolio allocation with minimal dispersion.

In addition to this attitudinal predictor, pre-retiree respondents preferred retirement income products with tax and social security/age pension advantages. The ability to switch providers with ease was also an important product attribute. This again seems largely incongruent with pre-retirees placing a high importance on wealth creation.

Although perhaps the goal of many pre-retirees is to be self-funded in retirement, the auxiliary benefits (such as concessions on council rates, electricity, telephony, and pharmaceuticals) obtained by virtue of receiving even a part-publicly funded age pension appears to have resulted in pre-retirees actively seeking products that facilitate access to such benefits. This is textbook example of the role of that incentives play in the economy and the way in which self-seeking agents, in this case pre-retirees, respond rationally to such incentives artificially imposed by Government.

For retirees a test of the full model against the constant-only model was also statistically reliable, $\chi^2(19, N=191) = 37.29$, $p<0.05$, indicating that the predictors, as a set, reliably distinguished between participants who were categorised as having high or low risk preferences.

Based on the Wald criterion, Attribute 4, $z = 10.42$, $p<0.1$, Attribute 9, $z = 6.54$, $p<.01$ and Attribute 11 $z = 9.12$, $p<0.1$ reliably predicted risk status.

**Table 9:** Significant Predictors of Investment Risk for Retirees

| Predictor | Regression Coefficient | Wald Statistic | Odds Ratio |
|---|---|---|---|
| Attribute 4 | 0.30 | 10.42 | 1.34 |
| Attribute 9 | 0.19 | 6.54 | 1.21 |
| Attribute 11 | -0.22 | 9.12 | 0.81 |

Perhaps not surprisingly, retirees also preferred retirement income products with tax and social security/age pension advantages. Again, the ability to switch providers with ease was also an important product attribute. An additional significant product attribute for retirees was a negative or inverse relationship between low rates of interest and investment risk.

The result underlines the recurrent theme throughout this study that the notion of a positive linear association between risk and return, the central tenant of modern financial economics, does not appear to be evident in formulation of preferences by agents.

*Longevity risk*

For pre-retirees a test of the full model with 18 predictor variables against the constant-only model was statistically reliable, $\chi^2(19, N=395) = 43.21$, $p<0.01$, indicating that the predictors, as a set, reliably distinguished between participant preferences. Based on the Wald criterion, Attribute 1, $z = 4.53$, $p<.05$ reliably predicted longevity risk status for pre-retirees.

**Table 10:** Significant Predictors of Longevity Risk for Pre-Retirees

| Predictor | Regression Coefficient | Wald Statistic | Odds Ratio |
|---|---|---|---|
| Attribute 1 | 0.34 | 4.53 | 1.41 |

Pre-retiree respondents who had a strong preference for a guaranteed income for life, preferred products where a guaranteed amount was paid over a lifetime, but if the investor died early, no income would be paid to the investor's estate. Unlike the formulation of preferences regarding investment risk, pre-retirees appear to have more fully priced the benefit of mitigating longevity risk, that is, the cost of certainty is foregoing a potential benefit to the estate in the event of prior to reaching life expectancy.

For retirees a test of the full model against the constant-only model was not statistically reliable, $\chi^2(19, N=192) = 13.21$, $p>0.10$, indicating that the predictors, as a set, did not reliably distinguish between participants based on risk preferences.

*Inflation Risk*

For pre-retirees a test of the full model against the constant-only model was statistically reliable, $\chi^2(19, N=396) = 37.00$, $p<0.01$, indicating that the predictors, as a set, reliably distinguished between participant preferences. Using the Wald criterion, Attribute 4, $z = 3.28$, $p<.10$ reliably predicted preference for current or constant retirement incomes for pre-retirees.

**Table 11:** Significant Predictors of Inflation Risk for Pre-Retirees

| Predictor | Regression Coefficient | Wald Statistic | Odds Ratio |
|---|---|---|---|
| Attribute 4 | 0.27 | 3.28 | 1.31 |

Pre-retiree respondents who had a preference for income that was indexed against inflation, preferred retirement income products with some tax advantages and permitted the withdrawal of some capital. This result corroborates the preference of pre-retirees to have at least some access the publicly funded age pension reported earlier.

In addition, the importance of flexibility of capital withdrawal highlights the preference of pre-retirees to undertake larger expenditures (for example, the purchase of a new motor vehicle) in retirement based on inflationary expectations. Product flexibility permitting the agent to time consumption decisions based on expectations of inflation has important implications for not only the household, but the macro-economy as a whole.

The evidence suggests that pre-retirees have a sophisticated conception of inflation-related issues such as real purchasing power and its impact on the consumption function in retirement.

For retirees a test of the full model against the constant-only model was not statistically reliable, $\chi^2(19, N=188) = 22.98, p>0.10$, indicating that the predictors, as a set, did not reliably distinguish between participants based on their risk preference.

*Default Risk*

For both pre-retiree and retirees, a test of the full model against the constant-only model was not statistically reliable, indicating that the predictors, as a set, did not reliably distinguish between participants based on their default risk preference.

We posit that the issue of default risk is an issue which requires further research attention as a matter of priority. How are pre-retiree and retiree preferences affected by perceived default risk? How does the apparent information asymmetry between investor and retirement income product provider affect product choice? Answers to these interesting (and potentially profitable) questions require the development of more sophisticated models to predict group membership.

## 6. RETIREMENT INCOME POLICY

We would suggest that it is both timely and necessary for a re-think of pension policy in Australia. It is our view that there are two conflicting messages coming from the Government: the first is that it is necessary for Australians to provide for their own retirement income through mandatory superannuation contributions; and the second is that the age pension will be administered so that the great majority of retirees will continue to receive the age pension.

The public pension system is paid by the government and is subject to age, residency and means testing. Age pensions are adjusted every March and September in line with movements in the Consumer Price Index (CPI). Additionally, payment rates are indexed in line with wages growth, with the maximum single rate of the Age Pension maintained at 25 per cent of Male Total Average Weekly Earnings (MTAWE).[1] As a result of government initiatives, the value of the age pension has increased markedly in recent years.[2] Furthermore, pensioners receive concessions in health care under the Commonwealth's Pharmaceutical Benefits Scheme and other forms of assistance provided by Commonwealth, State and Local government.[3] The age pension is the major form of income support for retirees, as approximately 54 per cent of individuals of Age Pension age currently receive a full rate pension, another 28 per cent receive a part-rate pension, with only 18 per cent not eligible for the Age Pension.

More restrictive, and hence more politically difficult changes in government policy include a requirement for the compulsory purchase of an annuity-style product from superannuation benefits, as in the United Kingdom (UK), and restrictions on the eligibility of the age pension.

One advantage of the UK requirement that retirees purchase an annuity from retirement savings is that annuities would be based on the life expectancy of the entire population cohort, thus

[1] "*Pensioners are, therefore protected against price increases, and also share in improvements in living standards, as measured by wages*." The Treasury submission to the Senate Superannuation Committee 2002.

[2] The value of the Age Pension in real terms has been boosted in recent years through a number of initiatives, including legislating to link the full rate of pension to 25 per cent of MTAWE. This policy has meant that the value of the Age Pension has grown in real terms by 1.19 per cent per year since 1996 (on average) and is expected to grow by 1 to 1½ per cent a year on average into the future. In addition, as part of the introduction of the new tax system in July 2000, the real value of the pension was increased and the pension income test withdrawal rate reduced (from 50 cents in the dollar to 40 cents in the dollar). The Treasury submission to the Senate Committee on Superannuation 2002.

[3] For instance, concessions on telephony, motor vehicle registrations and residential rates.

avoiding the adverse selection problem discussed previously. Another part of the problem for private providers of annuities is the lack of underlying assets that can be held to match the liability of the product.

Possible new products include the introduction of a '*Variable Annuity*' (under which current year income streams depend on the previous year's earnings from a growth portfolio) and '*Growth Pensions*' (growth pensions are transparent account-based income streams invested in a balanced portfolio; growth pensions are non-commutable with a term equal to life expectancy.) The income stream payable under a growth pension is determined according to some pension valuation factor.[4] However, we note that it is difficult to see the prospects of changing and/or the introduction of products without material changes in government policy.

There are two possible solutions to such issues, one specific, and the other requiring further research effort to determine applicability. The first is for the government to issue indexed bonds. This would require a substantial modification of government policy, as in recent years the Commonwealth government has been pursuing a debt reduction policy by running budget surpluses and applying the proceeds of assets sales to further reduce the debt.

Perhaps a more comprehensive suggestion for government is to consider the issuance of '*Mortality Bonds*' [Blake and Burrows, 2000]. This suggestion is to assist issuers of annuities to deal with mortality risk and the risk of underestimating mortality improvements. The new type of bond, a mortality bond, (also termed '*Survivor Bonds*') would carry coupons whose value would be determined by the percentage of the population at retirement age on the issue date who are still alive on future coupon dates. The value of the coupons on the mortality bond decline over time, but continue to hold value until the last members of the initial population cohort have died. The Government, through the issue of mortality bonds, would share with the private sector this risk, which may be increased by government action through public health programs.

Suggestions for other changes, which would provide more appealing retirement income streams in light of current consumer preferences, require urgent and immediate research attention. One

[4] PVF = maximum pension valuation factor and = $1-v^n/i$, where n= life expectation factor; v = 1/1+i. One recommended level of i = 0.06 [IFSA, 2001].

possible avenue to examine is the scope for a '*Variable Life Time Annuity*' [Milne and Vent, 1999]. Such an annuity would allow purchasers the opportunity to earn a greater rate of return than through the ordinary life annuity. A variable annuity incorporates an annuity factor based on age and an assumed investment return that would be lower than fixed annuities. The income stream from the variable annuity is adjusted each year for the previous year's return from the underlying portfolio of growth assets. While a variable annuity has the potential to provide for fluctuations in the annual income stream it also has the potential for high payments in later years. The advocates of this proposal state that the principal objective is to provide protection against the increasing cost of living during retirement years. The variable annuity is seen not as a sole source of retirement income, as complete reliance on this income stream would expose the purchaser to volatility. The variable annuity is appropriate only as a part of a package of income streams.

A variation on the variable annuity has been proposed [Milevsky and Power, 2001] with the innovative addition of a life insurance contract to a collection of investment sub-accounts. This would guarantee a minimum death benefit of at least the original investment being returned to the estate of the annuitant, regardless of the performance of the underlying assets. The death benefit would not come free and would see a reduction in the income stream; Milevsky and Power estimate a fair value of 1-10 basis points per annum (although it is important to note that a usual fee is around 115 basis points).

A proposal for combination of an immediate annuity and long term health care has been made [Murtaugh, Spillman and Warshawsky, 2001] following earlier analysis of the lax private insurance protection against the cost of long term health care in the United States [Pauly, 1990]. Pauly noted that only two per cent of nursing home costs were covered by private insurance in 1986 as compared with the fact that 70 per cent of the elderly have purchased '*Medigap*' insurance to cover deductibles and co-payment in the public Medicare policy. Pauly comments that this is coverage against high probability low cost events, rather than coverage against low probability high cost events.

Such proposals require immediate research attention as a matter of priority for the Australian setting. Again, it is important to acknowledge that the viability of any proposal must be considered against the strength of competition from the public annuity alternative.

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## APPENDIXES

*Predictors*

Attitudes toward saving ("Attitudes"

1) I live for today, and don't worry about saving money.
2) My living expenses don't leave room for saving.
3) Building assets and wealth is important to me.
4) Saving or investing to fund my retirement is important for me.
5) I feel confident I will have enough money in retirement to provide a good standard of living.
6) I know at what age I will retire.

Importance of product attributes ("Attribute")

1) Income is a guaranteed amount, paid for life, but if you die early, no further money may be paid to your estate.
2) You can withdraw your capital, but there are lower or no tax advantages.
3) There are tax advantages, but you cannot withdraw any of your capital.
4) There are tax advantages, but you can withdraw some of your capital.
5) You can withdraw all your capital, but there are no age pension benefits.
6) There are social security/age pension advantages, but you cannot withdraw your capital.
7) There are social security/age pension advantages and you can withdraw some of your capital.
8) You can leave money for your estate after you die, but less is available for your own use.
9) You can switch providers easily, get tax and social security/age pension advantages, but you cannot withdraw any of your capital.
10) You get statements showing the account balance, interest earned and payments made, get tax and social security/age pension advantages, but you cannot withdraw any of your capital.
11) Product pays low interest, but has social security/aged pension advantages.
12) Product pays low interest but has tax advantages.

*Preferences*

Income Flow Risk

1) Guaranteed level of payment each week or month.
2) Investment Risk
3) Invests in low risk types of investments only.
4) Longevity Risk
5) Guaranteed level of income for as long as you live.
6) Inflation Risk
7) Income is indexed against inflation.
8) Default Risk
9) Product pays low interest, but has social security and aged pension advantages.

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