NORTH-HOLLAND

Financial Services Review 10 (2001) 273–290

FINANCIAL SERVICES REVIEW

Consultation and resource usage in retirement savings decisions: Australian evidence of systematic gender differences

Marilyn Clark-Murphy*, Paul Gerrans[1]

School of Finance and Business Economics, Edith Cowan University, 100 Joondalup Drive, Joondalup 6027, WA, Australia

Received 4 June 2001; received in revised form 23 August 2001; accepted 19 November 2001

Abstract

Australian retirement savings funds are growing rapidly and fund members are assuming greater responsibility for their own savings. Individuals' retirement savings decision processes have not been extensively researched, however, these decisions are significant not only for members but also for employers and government. This paper provides information on retirement savings in Australia and reports on a survey of members of a University superannuation fund who were recently asked to choose between a defined benefit scheme or one of four investment accumulation accounts. We explore gender differences in knowledge of superannuation and those consulted in making the decision. © 2001 Elsevier Science Inc. All rights reserved.

JEL classification: G23; J16; J26

Keywords: Retirement savings; Gender; Defined contribution; Defined benefit; Superannuation; Investor choice

1. Introduction[2]

The effect of recent changes to retirement savings in Australia can be summed up in one word, choice. Choice is increasingly being presented to superannuation fund members at a variety of levels. Choice can mean a once-off decision between a defined benefit fund (DBF) and an investment accumulation account (IAA), a choice of where superannuation contributions are directed or choice as to the asset mix of fund members' portfolios. Legislation

* Corresponding author. Tel.: +61-8-9400-5565; fax: +61-8-9400-5633.

E-mail addresses: m.clarkmurphy@ecu.edu.au (M. Clark-Murphy), p.gerrans@ecu.edu.au (P. Gerrans).

[1] Tel.: +61-8-9400-5605; fax: +61-8-9400-5633.

[2] *A comment on terminology*: Inevitably there are differences between countries in the terminology used to describe various retirement savings options. To assist the reader a short glossary appears at the end of the paper.

PII: S1057-0810(01)00086-5

has been considered by the Australian parliament which would oblige employers to offer employees a choice of the fund to which contributions are directed. This legislation failed due to issues unrelated to choice but may be reintroduced in the future. Since employer contributions to superannuation are compulsory for all full-time and most part-time employees, such legislation would have a significant impact on the entire Australian workforce.

Accompanying this increased choice has been a clear shift in the responsibility for retirement funds from government to the superannuation funds, and finally to the individual in the sense that their decisions will ultimately determine their available retirement savings. Whatever the reasons and justification for this shift, the information that investors rely upon to make their decisions, both in regard to compulsory and voluntary savings, is of considerable interest to individual investors, their employers, the competing superannuation funds and government.

Between 1st July 1998 and 30th June 1999 over 50,000 members of the Superannuation Scheme for Australian Universities (SSAU), were given the choice of remaining with a DBF or changing to one of four IAAs. The choice between a DBF and an IAA was presented as a once only offer to members, an employee's choice could not be changed in the future.

The DBF entitles members to a defined payout, determined by the member's salary and length of membership. The performance of funds managed by SSAU has a minimal impact on the level of benefit once defined, although the scheme must perform at some minimum level to provide the benefit prescribed at any point in time. Better performance by the fund enables an increase in the defined benefit multiple. Under performance, resulting in a shortfall in DBF funds, would normally be made up by the employer.

Under the IAA, each member has an individual account to which contributions are made and returns from their chosen investment option are credited. SSAU members had four investment options to choose from and, once selected, the investment option can be changed in June each year. The performance of the investment directly determines the payout that members receive upon retirement.

The choice to be made by SSAU members had a significant potential impact on their lifestyle in retirement and hence was arguably one of the most important financial decisions they would have faced. Decisions of this type are particularly critical in view of continued concern about the adequacy of future retirement incomes in general (Smith, 1999) and those of women in particular (Yann Campbell Hoare Wheeler, 1999).

In making their choice, SSAU members were presented with a range of information resources. Which resources were used and who people consulted in making their decision is of interest to academics, practitioners, fund members and policy makers and forms the focus of this paper. More specifically, knowledge of any systematic differences within resource usage or those consulted to assist in the decision may assist employers, fund administrators and government to better inform employees for future decisions about retirement savings.

2. The Australian superannuation industry

Superannuation fund members in Australia are being given greater responsibility in the selection of the investment strategy their funds will follow as well as in the choice of fund to which contributions can be directed. Their decision process has however been a neglected

Table 1
Australian superannuation funds

	Number of funds (rank)	Member accounts (×1,000) (rank)	Assets ($ billion) (rank[a])
Corporate	3400 (2)	1504 (4)	78 (3)
Industry	144 (4)	6875 (2)	42 (5)
Public sector	94 (5)	2776 (3)	107 (2)
Retail	292 (3)	11168 (1)	149 (1)
Self-managed	205184 (1)	433 (5)	75 (4)
Annuities, life office reserves	–	–	43
Total	209114	22756	494

Source: Australian Prudential Regulation Authority (2001).
[a] Rank excludes annuities, life office reserves.

area of research even though the adequacy of these decisions is important not only for the members themselves but also for employers and government.

The move to greater choice for superannuation members was an election policy of the Australian federal government in 1996 and was subsequently endorsed by the Wallis inquiry into the Australian Financial System in 1997. The push for greater choice was announced in the 1997/1998 Budget Speech as a means for Australian employees to ''make their saving work harder for them as providers compete to enhance their performance'' (Australian Treasury, 1998, p. 4).

The assets of the Australian superannuation industry now total $495 billion invested in just under 200,000 separate funds. Table 1 presents summary statistics by fund type. These statistics provide a profile of the superannuation industry in Australia. The largest number of funds, the smallest number of accounts and the fourth largest amount of assets are represented by self-managed funds. These funds have less than five members, each member is a trustee and there is a business or family relationship between the members. The third largest number of funds, the largest number of accounts and the largest amount of assets are held in retail funds. These funds are open to any eligible contributor. Industry funds were established to accept contributions resulting from the superannuation guarantee charge introduced in 1992 which prescribed minimum contributions to be made by employers on behalf of employees. Some of these funds now have public offer status allowing them to receive contributions from outside their industry (Clare & Connor, 1999, p. 4). Corporate funds, which are funds established by a single employer, are the second largest fund type by number of funds, by assets they rank third and by accounts they rank fourth. Public sector funds are provided for employees of all levels of government. They account for the smallest number of funds and their number is continuing to decline, however, in terms of assets they are the second largest fund type. Estimates of the unfunded component of the public sector funds have been put at $70 billion for the federal government alone (Clare & Connor, 1999, p. 4). If fully-funded this would make them easily the largest group by assets.

Prior to the pending obligation on employers to offer a choice of funds to which contributions are directed, the funds themselves have been increasing the choices on offer to their members by offering a range of alternative investment strategy options. The most recent

Table 2
Benefit structures

	Number of funds	Members (×1,000)	Assets ($ billion)[a]
Accumulation[b]	2832	19231	207
Defined benefit fund	484	320	20
Hybrid	482	2772	150
Total	3797	22323	377

Source: Australian Prudential Regulation Authority (2001).
[a] Excludes annuities and life office reserves.
[b] Excludes self-managed funds.

figures on the level of choice offered by funds are for 1996–1997 from the Insurance and Superannuation Commission (1998). The following summary is taken from their findings.

A large disparity exists among fund types with 57% of retail funds and only 11% of non-retail funds offering choice. Collectively 14% of self-managed funds offer some choice. Smaller funds (by assets) are less likely to offer choice, as the increased administrative cost provides for a higher disincentive relative to larger funds. Newer funds are also more likely to offer choice relative to older funds whose systems were established prior to choice becoming an issue. Whilst the proportion of total funds offering choice is relatively low, 51% of accounts have access to investment choice. Perhaps the most significant of the reported statistics is that 74% of voluntary contributions are being made to funds offering choice (Insurance and Superannuation Commission, 1998). This underscores why choice is being made increasingly available.

If increased choice characterizes the trend in the offerings of funds, then IAAs characterize the trend in the chosen benefit structure, although ''the death of defined benefit schemes in Australia has been somewhat exaggerated'' (Clare & Connor, 1999b, p. 14). Whilst IAAs clearly have the major share of assets when compared with pure DBFs, it was only in 1998 that the assets of IAAs exceeded funds with some DBF component. Table 2 identifies the current mixture of IAA only, DBF only and hybrid funds. Based on the value of funds' assets, a greater proportion of public sector schemes are DBF only (9%) or have some DBF component (87%) compared to 6% of private sector funds which are DBF only and 21% which have some DBF component (Australian Prudential Regulation Authority, 2001). Further if the unfunded liabilities of public sector funds were included the DBFs would account for a much larger proportion of total assets (Clare & Connor, 1999b).

3. The literature on superannuation choice

The study of managed funds, of which superannuation can be distinguished as a distinct taxation category with unique access and preservation requirements, has attracted a growing academic interest befitting its significance both at an individual and macroeconomic level. The finance literature relating to Australian managed funds has focused on measurement of risk and return performance (Bird, Chin, & McCrae, 1983) the possible persistence in performance (Vos, Brown, & Christie, 1995) and the consequence of fund performance in

terms of the flow of investor funds (Sawicki, 1997). However, the decision making process of individuals when investing in managed funds remains largely unexplored.

There are an increasing number of studies into pension choice. Gustman and Steinmeier (1992) examined the trend away from defined benefit plans (DBPs) to defined contribution plans (DCP), which are equivalent to the IAA, through examination of pension plan records. They challenge the view that cost factors, due to increased regulation, are the primary reason for the trend to accumulation accounts. They argue that this trend is due more to an employment mix shift towards companies who have historically had lower proportions of DBPs due to industry, size and union links. A recent industry survey by the Australian Superannuation Funds Association (Clare & Connor, 1999a) confirms that the trend from DBF to IAA is also prominent in Australia although they do not offer an opinion on the reasons for this.

More recently Clark and Pitts (1999) have examined the pension plan choice of employees at North Carolina State University using administrative records for details of choice and demographics, and an anonymous survey of staff to examine the decision process. They suggest a range of potential variables that may influence preference for a DBP or DCP. Their results support a significant positive non-linear relationship between age and choice of the DBP using probit estimation. They also find support for a trend towards DCP over time and a tendency for staff who were more likely to leave the pension scheme to choose the DBP.

Dulebohn, Murray, & Sun (2000) conducted a study of members of a U.S. government pension plan that explored the factors influencing the choice between a DBF and an IAA. Findings indicate the primary predictors of choice are preferences for plan features. Attitudinal factors are identified as the determinants of these preferences and risk is found to be a significant predictor in its own right. Those choosing an IAA are found to value the opportunity of choosing between investment options and of controlling the spread of funds between those options. The authors suggest members should be offered a choice among plan features rather than simply a DBF or an IAA.

Weisbenner (1999) found that employees in funds which allow the member some investment choice were more likely to hold shares outside their pension plan than those in funds without investment choice. This suggests that choice may have a role to play in financial education.

Gallery, Gallery, & Brown (2000) conducted a survey on the same population as the present study but limited to academic staff in two faculties across fourteen Australian universities. Their aim was to assess whether formal financial training had an influence on the choice between DBF and IAA. The findings suggest that there is such an influence, with academics in the disciplines of accounting and finance more likely to choose the IAA than those in the physical sciences. The latter consistently rated their financial proficiency lower than the former. Primary reasons for choosing the IAA appeared to be the belief that benefits would be greater and a perception of having some control over the level of benefits. Reasons for remaining with the DBF were security, uncertainty and a desire to avoid risk.

Earlier work on the present data set (Gerrans & Clark-Murphy, 2000) supports the finding (Gallery et al., 2000) that those who considered the decision between DBF and IAA, a difficult one to make and those who had limited knowledge of superannuation were more likely to stay with the DBF. Further analysis of the data is needed to see what steps these

respondents took to increase their knowledge. Gerrans and Clark-Murphy (2000) also found that those with a longer time to retirement were more likely to choose the IAA, however, this group was also over-represented in considering the decision both difficult and unimportant.

4. The literature on gender and investment decisions

Retail investors face a seemingly ever increasing range of financial asset choices for their investment dollar. Gender differences in making these investing decisions have been acknowledged at the practitioner (Longo, 1998) and academic level (Dwyer, Gilkeson, & List, 2000; Elder & Rudolph, 2000; Goldsmith & Goldsmith, 1997; Sunden & Surette, 1998).

Sunden and Surette (1998) use U.S. data obtained from the statistics of income and the 1992 and 1995 surveys of consumer finances conducted by the Federal Reserve Board. They investigate the effect of a range of variables on the probability of choosing a particular IAA asset allocation. Their results indicate that whilst there are gender differences, a combination of gender and marital status is more important. In their survey, single women and married men are less likely to choose mostly stocks. Married men are more likely than single woman to choose mostly bonds. In terms of overall participation in IAA, the survey revealed that women, and in particular married women, are less likely to have any plan.

Goldsmith and Goldsmith (1997) investigate gender differences in perceived and real knowledge of financial investments through a survey of 457 university students. The test of real knowledge comprised of a limited six question financial test. Men report knowing more than women and perform better on the financial test. The authors caution that the results cannot be projected to larger populations.

Findings on attitude to risk and gender have not been uniform. Bajtelsmit, Bernasek, & Jianakopolos (1999) and VanDerhei and Olsen (2000) find that women show greater risk aversion in the allocation of funds to pension assets. This coincides with Australian evidence (Quinlivan, 1997) and suggests that women may be more risk-averse than men when investing in financial assets. Dwyer et al. (2000) find that women are more risk averse when investing in mutual funds but that the level of risk aversion falls with increased financial education. However,Schubert, Brown, Gysler, & Brachinger (1999) find that women are not more risk-averse than men when financial decisions are put in context.

5. The SSAU survey

Membership of SSAU is compulsory for permanent and contract staff, of greater than 2 years term, in Australian tertiary institutions. UniSuper Management Pty Ltd. (UniSuper) is the administrator of SSAU, which in turn is a fully owned subsidiary of UniSuper Ltd., the trustee of SSAU. Members of SSAU are required to contribute 7% of salary and their employer contributes 14%. Prior to July 1998, all members had benefits prescribed under a DBF. Between July 1998 and June 1999, existing members were given the choice of continuing with the DBF or moving to one of four investment strategies in an IAA. Both

plans have a range of benefits including: retirement, resignation, death, disablement and temporary incapacity.

To investigate the decision process of SSAU members, a mail-out questionnaire survey was constructed. The questionnaire contains four sections. The first section examines what decision was made. The second examines the resources used by members in making their decision and potential influences. The third examines the member's assessment of the decision and the decision making process and the final section seeks member demographics.

Survey distribution was administered by UniSuper. A sample of 10,000 members was randomly generated from the more than 48,000 members in the fund. A draft survey was piloted in September 1999 and the final survey was sent in October 1999. A total of 2,407 surveys were returned which represents a very good response rate of over 24%. A total of 2,399 useable surveys were analyzed. The original decision form sent to members by SSAU attracted a 68.4% response rate.

This paper focuses on the second section of the questionnaire, in particular on issues related to respondents' assessment of their own level of knowledge of superannuation matters, their use of information resources and who they chose to consult in making their decision. These issues are considered in the light of various demographic factors and a number of reported attitudes. First, a cross-tabulation analysis of member demographics and reported attitudes against resource usage and people consulted is presented. This identifies over or under representation of various demographic groupings and provides Chi-square tests of expected counts. Secondly, a series of regressions is used to support and further explore identified relationships.

6. Estimation and results

6.1. Choice of fund

Respondents were asked to indicate whether they chose the IAA or the DBF or failed to return the form and hence did not make a selection. Figures provided from SSAU show that overall 31.6% of members did not return the form, by default they were then assigned to the DBF, 33.3% chose to move to an IAA and 35.1% chose to remain with the DBF. This meant that, of those who did make a decision, 49% chose an IAA and 51% the DBF. In the survey sample, 41.1% chose IAA, 45.2% DBF and 13.3% failed to return the form. Those who did not return the form are under represented in the survey sample population but since their only known characteristic is a reluctance to return forms about superannuation this should not surprise us.

Among those choosing the IAA males, those under 45 and those expecting more than 15 years to retirement are over-represented compared to the whole survey sample. Among those choosing the DBF females, those over 45 and those expecting less than 10 years to retirement are over-represented. Results on household income are mixed and the extent of over or under representation is smaller. Chi-square tests indicate that these under and over-representations are significant for age, expected time to retirement and gender but not for household income.

6.2. Knowledge of superannuation

Members were asked to assess their own level of knowledge of superannuation matters at the time the decision was put to them. Four levels were specified: ''none'', ''little'', ''average'' and ''good''. Female respondents are significantly over-represented at the lower levels of ''none'' and ''little'' while males are over-represented in the ''average'' and ''good'' levels. Results of Chi-square tests support the significance of these differences.

Chi-square tests also indicate significant differences in level of knowledge by age. The two younger groups (18–34 and 35–44) are over-represented in the ''none'' and ''little'' levels and under represented in the ''average'' and ''good'' levels. This is reversed for members in the two older age groups (45–54 and 55–64). These results are robust within gender splits and across both academic and non-academic (general) staff types.

To explore these differences, further a multinomial regression of level of knowledge against the demographics and reported attitudes is employed. Age is expected to have a positive relationship with knowledge as the need for information grows closer to retirement. Income has been included with an expectation of a positive relationship due to an increased ability to have an investment portfolio. Staff type has been included to capture any differences between academic and non-academic staff. Marital status has been included as previous work by Clark and Pitts (1999) identifies its influence in retirement planning. More formally this can be expressed by

$$\log\left(\frac{\text{probability}(\text{knowledge}_l)}{\text{probability}(\text{knowledge}_\text{G})}\right) = B_{l0} + B_{l1}\,\text{gender}_1 + B_{l2}\,\text{age}_2 + B_{l3}\,\text{staff}_3 + B_{l4}\,\text{married}_4 + B_{l5}\,\text{income}_5 \quad (1)$$

where knowledge_l represents the three knowledge levels, $\text{knowledge}_\text{G}$ the ''good'' knowledge level and B_l the coefficient for knowledge level l for each independent regressor. The results are contained in Table 3.

A gender effect is present across each lower level of knowledge when compared with the highest (''good'') level of knowledge. Females are significantly more likely than males to consider themselves to have a lower level of knowledge. Age is also a significant demographic with the two youngest groups more likely than the oldest group to indicate a low level of knowledge. This is true for all younger age groups for the little knowledge level but is mixed for the average level. The lowest income group is significantly more likely to suggest a lower knowledge level than the highest income group for each lower knowledge level. General (non-academic) staff members are more likely than academic staff to indicate the two lowest knowledge levels rather than the highest level.

Overall the Chi-square tests and regressions unambiguously support significant differences in self-assessed knowledge level by gender and staff type. Age and income differences are more significant for younger and lower income categories, respectively. In both cases the odds are increased that the knowledge assessment is at one of the lower levels.

The next question then is what resources did members access and, more importantly for this paper, who did members choose to consult in order to assist them in making their decision?

Table 3
Multinomial regression of level of knowledge

Knowledge level—base is good	*B*	S.E.	Wald	d.f.	Significant difference	Exp(*B*)
None						
Intercept	−2.923	0.454	41.528	1	0.000	
Female	1.476	0.208	50.309	1	0.000	4.376
18–34 years	1.508	0.352	18.306	1	0.000	4.518
35–44 years	1.521	0.304	25.016	1	0.000	4.576
45–54 years	0.448	0.297	2.272	1	0.132	1.566
Base > 54 years						
General	0.810	0.219	13.645	1	0.000	2.247
Married	0.007	0.253	0.001	1	0.976	1.008
<$60000 income	1.143	0.300	14.543	1	0.000	3.137
$60000–$100000	0.312	0.247	1.594	1	0.207	1.366
Base > $100000						
Little						
Intercept	−1.337	0.323	17.129	1	0.000	
Female	1.299	0.155	70.282	1	0.000	3.664
18–34 years	1.292	0.264	23.989	1	0.000	3.640
35–44 years	1.496	0.214	48.765	1	0.000	4.462
45–54 years	0.694	0.193	12.925	1	0.000	2.001
Base > 54 years						
General	0.597	0.165	13.055	1	0.000	1.816
Married	−0.052	0.196	0.071	1	0.789	0.949
<$60000 income	1.039	0.227	21.019	1	0.000	2.825
$60000–$100000	0.535	0.175	9.312	1	0.002	1.707
Base > $100000						
Average						
Intercept	0.314	0.295	1.135	1	0.287	
Female	0.562	0.149	14.142	1	0.000	1.754
18–34 years	0.190	0.253	0.565	1	0.452	1.209
35–44 years	0.640	0.194	10.864	1	0.001	1.897
45–54 years	0.145	0.168	0.752	1	0.386	1.156
Base > 54 years						
General	0.268	0.158	2.886	1	0.089	1.308
Married	−0.081	0.190	0.180	1	0.671	0.922
<$60000 income	0.576	0.215	7.213	1	0.007	1.779
$60000–$100000	0.210	0.162	1.668	1	0.197	1.233
Base > $100000						

Final model, 2 log likelihood 832.769, Chi-square 257.750, d.f. (24), *p*-value 0.000, Nagelkerke $R^2 = 0.121$.

6.3. People consulted and resources used

SSAU made a range of materials available to assist members in making their decision. These included a package of information mailed to all members, a website containing much of the same information as well as a modeling program which enabled members to model

Table 4
SSAU resources used in making the decision (%)

Resource	Used % (rank)	Most important used % (rank)
Information pack mailed to members	87.8 (1)	53.0 (1)
Website	32.0 (3)	3.5 (5)
Modeling program on website	24.6 (4)	11.1 (3)
Seminars run by SSAU on campus	47.0 (2)	27.0 (2)
Local SSAU representative	11.3 (5)	4.2 (4)
No SSAU resources used	6.0 (6)	1.0 (6)
Total		100.0

their possible retirement needs and income. Seminars were held at all university campuses across Australia and members also had access to their local SSAU representative. The use that members made of these resources in making their decision is indicated in Table 4. The majority of members made use of the mailed information pack and approximately half attended the seminars presented on campus. The SSAU website was used by one in three and the computer modeling program specifically by one in four.

The use of these resources is explored for gender differences with Chi-square tests used to test for significant differences in gender usage of each available resource. Results show that website usage is significantly different by gender, with males over-represented in accessing the web-based resources. The question of whether this is a gender effect per se or whether other employment demographics are contributory should be examined further as there is a significant under (over) representation of females (males) in higher level general and academic staff positions. Expected counts were generated for resource usage and position level, by gender. While females are under represented in using the website, among general staff this may be accounted for by their over representation in the lower employment levels. In support of this, male general staff in lower employment groups are also found to be under represented in website usage. There is an over representation in usage for higher employment levels for both males and females. There are no such significant differences among employment levels within academic staff.

An analysis of which SSAU resource respondents considered to be the most important is given in Table 4. The information pack sent to members was the most important for the largest number, followed by the seminars presented by SSAU. A Chi-square test of the most important resource by gender indicates a significant difference. Females (males) are under (over) represented in indicating the information pack as the most important resource and over (under) represented in valuing the seminars run on campus most. Insufficient counts prevent Chi-square tests of significant differences amongst general and academic staff levels on which was the most important resource used.

6.4. People consulted

Respondents were asked who they had consulted in making their decision. Table 5 indicates that the largest number consulted work colleagues or their partner. The significance

Table 5
People consulted in decision process (%)

Person(s) consulted	Consulted % (rank)[a]	Most important[b] % (rank)
Nobody consulted	21.1 (3)	
Partner	46.1 (2)	30.8 (2)
Work colleagues	48.9 (1)	31.6 (1)
Family/friends	18.1 (4)	7.5 (5)
Accountant	10.5 (6)	9.0 (4)
Financial planner	15.4 (5)	17.7 (3)
Other	1.0 (7)	1.1 (6)

[a] Multiple answers allowed.
[b] Excludes ''nobody''.

of work colleagues in this type of decision making has also been identified by Duflo and Saez (2000) who surveyed staff in university libraries. Only 26% consulted a professional such as a financial planner or accountant, and it is interesting to note that 21% of respondents did not consult anyone in arriving at their decision.

Each consultation grouping can be examined for gender differences. Statistically significant differences are found for ''nobody'', ''partner'' and ''family and friends''. Males are more likely to have consulted nobody while females are more likely to have consulted their partner and family/friends. Consultation of ''work colleagues'', ''financial planner'' and ''accountant'' are not significantly different by gender. Those consulted are also examined by staff level, for both academic and general staff, but no significant differences emerge.

Respondents were asked to indicate who, of those consulted in making their decision, was the most important. Overall the most important person consulted was ''work colleagues'' and ''partner''. Females are significantly more likely to rate their partner or ''family and friends'' as most important whereas males are significantly more likely to rate ''work colleagues'' or ''financial planner'' as most important. There are no significant differences between employment classification groupings.

To further support and explore the relationships identified in the cross-tabulations for those consulted, the data collected permits a number of separate logistic regressions, which are presented in Table 6. It is expected that the same factors that can explain knowledge levels will in turn influence the likelihood of consulting others or using particular resources. More fundamentally it is expected that knowledge levels are also related to the likelihood of consulting others. Finally, if the member considered the decision difficult it is expected to increase the likelihood of consulting others. More formally this can be expressed for the individual logistic regressions as

$$\log\left(\frac{\text{probability}(\text{consulting}_g)}{\text{probability}(\text{not consulting}_g)}\right) = B_{l0} + B_{l1}\,\text{gender}_1 + B_{l2}\,\text{age}_2 + B_{l3}\,\text{staff}_3 + B_{l4}\,\text{married}_4 + B_{l5}\,\text{income}_5 \quad (2)$$

where g represents the categories able to be consulted.

Table 6
Logistic regressions of people consulted

	Nobody ($n = 506$)			Work colleagues ($n = 1173$)			Professional ($n = 559$)			Family and friends ($n = 434$)			Partner ($n = 1106$)		
	B	S.E.	Exp(*B*)	*B*	S.E.	Exp(*B*)	*B*	S.E.	Exp(*B*)	*B*	S.E.	Exp(*B*)	*B*	S.E.	Exp(*B*)
Knowledge (base—good)															
None	0.202	0.229	1.224	0.096	0.203	1.100	−1.025*	0.262	0.359	−0.597*	0.288	0.550	−0.075	0.228	0.927
Little	−0.385*	0.173	0.681	0.366*	0.149	1.442	−0.471*	0.170	0.624	−0.086	0.199	0.918	0.325*	0.163	1.385
Average	−0.459*	0.161	0.632	0.346*	0.141	1.413	−0.237	0.156	0.789	0.127	0.189	1.136	0.436*	0.152	1.547
Difficult—yes	−0.490	0.115	0.613	0.513*	0.094	1.670	0.736	0.117	2.088	0.37*	0.126	1.447	0.066	0.106	1.068
Gender—female	−0.438	0.120	0.646	−0.159*	0.097	0.853	0.264*	0.116	1.303	0.144	0.125	1.154	0.604*	0.111	1.829
Age (base > 54)															
18–34	−0.170	0.200	0.843	0.344*	0.166	1.410	−0.736*	0.204	0.479	0.782*	0.209	2.185	0.129	0.192	1.138
35–44	−0.189	0.165	0.828	0.306*	0.137	1.358	−0.621*	0.156	0.537	0.276	0.188	1.318	0.151	0.150	1.163
45–54	−0.069	0.157	0.933	0.278*	0.132	1.320	−0.413*	0.146	0.662	0.078	0.185	1.081	0.007	0.144	1.007
Staff—general	0.218**	0.127	1.243	−0.400*	0.103	0.670	0.33*	0.122	1.392	0.060	0.132	1.062	−0.315*	0.117	0.730
Married—yes	−0.528	0.136	0.590	−0.030	0.117	0.971	−0.129	0.143	0.879	−0.679*	0.141	0.507	2.461*	0.170	11.721
Income (base > $100,000)															
<$60000	0.722	0.184	2.059	−0.149	0.143	0.861	−0.681*	0.170	0.506	0.289	0.194	1.335	−1.062*	0.157	0.346
$60000–$100000	0.499*	0.156	1.647	−0.153	0.117	0.858	−0.358*	0.130	0.699	0.297**	0.165	1.345	−0.446*	0.126	0.640
Constant	−0.621	0.27	0.537	−0.457	0.228	0.633	−0.7	0.261	0.497	−1.819	0.304	0.162	−2.162	0.272	0.115
Nagelkerke R^2	0.07	0.07	0.07	0.04	0.04	0.04	0.083	0.083	0.083	0.064	0.064	0.064			
Model χ^2 (d.f., *p*-value)	96.913	96.913	96.913	70.413	70.413	70.413	119.185	119.185	119.185	83.735	83.735	83.735	542.691	542.691	542.691
	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)	(12, 0.000)
Hosmer–Lemeshow	3.122	3.122	3.122	4.467	4.467	4.467	5.834	5.834	5.834	8.710	8.710	8.710	8.545	8.545	8.545
c-stat (d.f., *p*-value)	(8, 0.926)	(8, 0.926)	(8, 0.926)	(8, 0.813)	(8, 0.813)	(8, 0.813)	(8, 0.666)	(8, 0.666)	(8, 0.666)	(8, 0.367)	(8, 0.367)	(8, 0.367)	(8, 0.382)	(8, 0.382)	(8, 0.382)

* 95% significance level.

** 90% significance level.

6.5. Individual logistic regressions on person type

6.5.1. Consult nobody

Results indicate a significant gender effect. Females (males) are much less (more) likely to consult nobody in making their decision. The odds of consulting nobody decrease (increase) by 60% for females (males). There is no significant difference by age or staff type.

The impact of level of knowledge is unexpected and somewhat mixed. The odds of consulting nobody are reduced for those with either little or average levels of knowledge when compared with a good level of knowledge. By contrast, the odds of consulting nobody are increased if the member assessed themselves as having no knowledge of superannuation. Although this effect is not significant it does indicate that people with the lowest level of knowledge may be embarrassed by this and hence reluctant to seek assistance. On a more intuitive and reassuring note the odds of consulting nobody are decreased for those who considered the decision difficult.

6.5.2. Consult work colleagues

General staff were more likely than academic staff to consult work colleagues. Again the level of knowledge effect is mixed with no significant difference in odds for those reporting no knowledge compared with a good level of knowledge. However, if the member reported little or average knowledge the odds of consulting colleagues are increased when compared with those reporting a good level of knowledge. The younger the age group the more likely it is that they consulted colleagues. The odds are also increased for those who considered the decision difficult.

6.5.3. Consult a professional

Once again we find a significant gender effect with females more likely than males to consult a finance professional such as an accountant or financial planner. Those who considered the decision difficult are also significantly more likely to seek this type of assistance. The odds of consulting a professional are significantly reduced, however, for younger age groups when compared to the oldest age group. The trend towards consulting a professional grows consistently with age. General staff are significantly less likely to consult a professional than academic staff.

The level of knowledge effect is again interesting. The odds of consulting a professional are reduced, the lower the level of knowledge. This effect is significant for all three knowledge levels below good although the significance level is lower for ''average'' than for the two lower levels. It appears that those who already have a reasonable level of knowledge who are more likely to consult a professional, perhaps because those with less knowledge are unaware of what professional assistance is available or where to find it.

6.5.4. Consult family/friends

The odds of consulting family/friends are increased with youth although this is only significant for the youngest age group. The odds are also increased if the decision was considered difficult. The odds are decreased the lower the level of knowledge, although only

the ''no knowledge'' group shows a significant effect. This would appear to bare out the earlier comment that those with the least knowledge are reluctant to ask for help.

If the member is married the odds that they would consult with family/friends are decreased, it should be noted that ''partner'' was offered as a separate item in the questionnaire. There is no significant gender effect in this consultation group.

6.5.5. Consult partner

As would be expect the consultation of one's partner is significantly more likely if the member is married. The only other significant variable is gender and, as with other person types, males are less likely than females to consult.

6.6. Multinomial regressions on most important person consulted

Respondents were asked who they considered the most important of those they consulted. A multinomial logistic regression can be used to examine whether significant differences exist between the preference for consulting a particular person as against a reference person type. The reference person type used is a professional (financial planner or accountant) as this can be considered a more 'official' consultation. The same set of regressors have been included as in equation two and the multinomial regression can be expressed as

$$\log\left(\frac{\text{probability}(\text{consulting}_g)}{\text{probability}(\text{consulting}(\text{professional}))}\right) = B_{l0} + B_{l1}\,\text{gender}_1 + B_{l2}\,\text{age}_2 + B_{l3}\,\text{staff}_3 + B_{l4}\,\text{married}_4 + B_{l5}\,\text{income}_5 \quad (3)$$

Table 7 presents these results with significant differences identified.

There are significant gender differences between all person types consulted compared with a professional. As previously, males are much more likely than females to consult nobody. However, for those who do consult males are more likely to consult work colleagues before their partner and only then a professional. Females on the other hand are more likely to consult their partner and then a professional before consulting work colleagues or family/friends. The importance placed on consultation with a partner is increased if the decision is considered difficult but this does not have an impact on the likelihood of consulting work colleagues or family/friends.

Collectively these results suggest a reluctance to consult professionals even if the decision is considered difficult. This reluctance is also present even if the respondent places themselves in the ''none'' or ''little'' levels of knowledge of superannuation. The odds of considering consultation with a partner or work colleagues most important as against a professional are significantly increased if the member considered themselves to have no knowledge. Level of knowledge is not a significant factor in the importance attached to consultation of family/friends.

The importance of consulting a partner against a professional is not significantly different by income. However, for consulting work colleagues and family and friends the odds are increased for the low and middle income groups, compared to the highest income group.

Staff type only has a significant effect on the importance attached to consultation with work colleagues as against a professional, the odds of identifying work colleagues as being

Table 7
Most influential person consulted multinomial regression

Person consulted (base is professional)	*B*	S.E.	Wald 1 d.f.	Significant difference	Exp(*B*)
Partner					
Intercept	−1.046	0.293	12.760	0.000	
Female	0.607	0.178	11.628	0.001	1.834
Married	2.464	0.335	54.199	0.000	11.756
18–34 years	0.669	0.313	4.575	0.032	1.953
35–44 years	0.551	0.244	5.098	0.024	1.734
45–54 years	0.527	0.232	5.162	0.023	1.694
Over 54 years					
General staff	0.333	0.185	3.232	0.072	1.395
<$60000 income	−0.043	0.254	0.029	0.864	0.958
$60000–$100000	−0.154	0.187	0.675	0.411	0.857
>$100000					
No knowledge	0.803	0.380	4.470	0.034	2.232
Little knowledge	0.354	0.263	1.802	0.179	1.424
Average knowledge	0.353	0.241	2.147	0.143	1.423
Good knowledge					
Not difficult	0.599	0.170	12.371	0.000	1.821
Work colleagues					
Intercept	−1.386	0.309	20.180	0.000	
Female	−0.735	0.173	18.073	0.000	0.480
Married	0.018	0.207	0.007	0.931	1.018
18–34 years	0.705	0.294	5.758	0.016	2.025
35–44 years	0.543	0.235	5.359	0.021	1.722
45–54 years	0.409	0.227	3.245	0.072	1.506
Over 54 years					
General staff	0.442	0.179	6.092	0.014	1.556
<$60 000 income	0.967	0.254	14.480	0.000	2.629
$60000–$100000	0.534	0.204	6.840	0.009	1.705
>$100000					
No knowledge	0.916	0.385	5.654	0.017	2.498
Little knowledge	0.898	0.270	11.079	0.001	2.454
Average knowledge	0.674	0.253	7.077	0.008	1.961
Good knowledge					
Not difficult	0.062	0.170	0.132	0.717	1.064
Family/friends					
Intercept	−3.365	0.587	32.822	0.000	
Female	−0.519	0.264	3.878	0.049	0.595
Married	−0.701	0.294	5.693	0.017	0.496
18–34 years	1.660	0.496	11.213	0.001	5.259
35–44 years	1.195	0.458	6.815	0.009	3.303
45–54 years	0.834	0.457	3.338	0.068	2.303
Over 54 years					
General staff	0.320	0.274	1.369	0.242	1.378
<$6000 income	1.080	0.443	5.954	0.015	2.945
$60000–$100000	0.871	0.388	5.054	0.025	2.390
>$100000					

Table 7 (*Continued*)

Person consulted (base is professional)	*B*	S.E.	Wald 1 d.f.	Significant difference	Exp(*B*)
No knowledge	0.119	0.604	0.039	0.844	1.126
Little knowledge	0.468	0.404	1.340	0.247	1.597
Average knowledge	−0.050	0.397	0.016	0.900	0.951
Good knowledge					
Not difficult	0.138	0.264	0.274	0.600	1.148

Final model, 2 log likelihood 1810.931, Chi-square 334.221, d.f. (36), p-value 0.000, Nagelkerke $R^2 = 0.264$.

most important significantly increase if the member is in the general, rather than academic staff.

7. Conclusion

Pending legislated changes will increase retirement savings choice facing Australian workers. The superannuation industry has consistently expressed the view that any such move must be accompanied by a major education campaign to prepare people for the choices they must make (Dunstan, 1999; Marshall, 1999). The results of this study suggest particular areas which require attention.

If education on these matters is to be used effectively systematic gender differences in who individuals are likely to consult and what resources they are likely to use need to be borne in mind when planning information campaigns. Previous research indicating greater risk aversion in retirement savings decisions for females and demonstrating the resulting financial disadvantage women may face in retirement (Bajtelsmit et al., 1999; Sunden & Surette, 1998; Yann Campbell Hoare Wheeler, 1999) highlights the need for education to be effectively targeted to different consumer groups. Further, the finding that if members assess themselves as having a lower level of superannuation knowledge they are less likely to consult others is somewhat alarming since it indicates that their lack of knowledge may not be adequately addressed.

In summary it seems that many different approaches to education are needed. In particular, information needs to be targeted to assist those with lower levels of knowledge about retirement savings. This group in turn includes a variety of demographics, including women and those in younger age groups. Further research is needed to explore the types of information and educations campaigns most likely to reach these groups. The identification and use of suitably targeted information would potentially benefit both funds and fund members by increasing the proportion of individuals who feel competent to make retirement savings decisions appropriate to their circumstances.

Acknowledgments

The authors would like to thank UniSuper Management Ltd. for their assistance with this research.

References

Australian Prudential Regulation Authority (2001). *APRA Superannuation Trends—Marchr Quarter*. Sydney: Australian Prudential regulation Authority. Available: http://www.apra.gov.au.

Australian Treasury (1998). *Budget Speech 1997–1998*. Canberra: AGPS. Available: http://www.agps.gov.au.

Bajtelsmit, V. L., Bernasek, A., & Jianakoplos, N. A. (1999). Gender differences in defined contribution pension decisions. *Financial Services Review*, *8*(1), 1–10.

Bird, R., Chin, H., & McCrae, M. (1983). The performance of Australian Superannuation Funds. *Australian Journal of Management*, *8*, 49–69.

Clare, R., & Connor, D. (1999a). *The superannuation industry in Australia*. Sydney: Australian Superannuation Funds Association Research Centre.

Clare, R., & Connor, D. (1999b). *The superannuation market in Australia*. Sydney: Australian Superannuation Funds Association Research Centre.

Clark, R. L., & Pitts, M. M. (1999). Faculty choice of a pension plan: defined benefit versus defined contribution. *Industrial Relations*, *38*(1), 18–45.

Duflo, E., & Saez, E. (2000). *Participation and investment decisions in a retirement plan: the influence of colleagues' choices*. Cambridge, MA: Massachusetts Institute of Technology (Working Paper 00-07).

Dulebohn, J. H., Murray, B., & Sun, M. (2000). Selection among employer–sponsored pension plans: the role of individual differences. *Personnel Psychology*, *53*, 405–432.

Dunstan, B. (1999). Time to rethink superannuation-choice turkey. *The Australian Financial Review*, November, 35.

Dwyer, P. D., Gilkeson, J. H., & List, J. A. (2000). Gender differences in risk taking: evidence from mutual fund investors. In *Proceedings of the paper presented at the FMA annual meeting*. Seattle.

Elder, H., & Rudolph, P. M. (2000). Are women more risk averse? Some evidence from the HRS. In *Proceedings of the paper presented at the academy of financial services annual meeting*. Seattle.

Gallery, N., Gallery, G., & Brown, K. (2000). Academics' educated choice: no thanks. *Superfunds*, July, 22–26.

Gerrans, P., & Clark-Murphy, M. (2000). Making superannuation investment choices: some preliminary results on member decisions. In *Proceedings of the paper presented at PACAP conference*. Melbourne.

Goldsmith, E., & Goldsmith, R. E. (1997). Gender differences in perceived and real knowledge of financial investments. *Psychological Reports*, *80*(2), 236–238.

Gustman, A. L., & Steinmeier, T. L. (1992). The stampede toward defined contribution pension plans: fact or fiction. *Industrial Relations*, *31*(2), 361–369.

Insurance and Superannuation Commission (1998). Member investment choice—analysis update. *ISC Bulletin*, *3*.

Longo, T. (1998). Women's wish list for advice. *Financial Planning*, October.

Marshall, K. (1999). Super education campaign hits another Senate hurdle. *The Australian Financial Review*, April, 52.

Quinlivan, B. (1997). Women & money: six ways to win. *Personal Investment*, July, 40–51.

Sawicki, J. (1997). Investors' response to the performance of professional fund managers: evidence from the Australian wholesale funds market. Perth, WA: Research Centre in Accounting and Finance, The University of Western Australia (Working Paper Series 97-73).

Schubert, R., Brown, M., Gysler, M., & Brachinger, H. W. (1999). Financial decision-making: are women really more risk averse? *American Economic Review*, *89*(2), 381–385.

Smith, P. (1999). Supersensitive: confronting an age-old problem. *The Australian Financial Review*, December, 33.

Sunden, A. E., & Surette, B. J. (1998). Gender differences in the allocation of assets in retirement savings plans. *American Economic Review*, *88*, 207–210.

VanDerhei, J. L., & Olsen, K. A. (2000). Social security investment accounts: lessons from participant-directed 401(k) data. *Financial Services Review*, *9*(1), 65–78.

Vos, E., Brown, P., & Christie, S. (1995). A test of persistence in the performance of New Zealand and Australian equity mutual funds. *Accounting Research Journal*, *8*, 19–34.

Weisbenner, S. (1999). Do pension plans with participant investment choice teach households to hold more equity? *Social Science Research Network Capital Markets Abstracts: Asset Pricing and Valuation Working Paper Series*, *3*(23). Access date January 15 2001. Available: http://papers.ssrn.com/paper.taf?abstract_id=205035.

Yann Campbell Hoare Wheeler (1999). Women's economic status: ''equal worth'': output 4. Sydney: Australian Commonwealth/State and New Zealand Standing Committee of Advisers for the Status of Women (final report).

Glossary

Definition of key terms

Superannuation: Any savings made during an individuals working life with a view to providing an income during retirement.

Superannuation fund: Any fund to which moneys are contributed by an individual and/or their employer during their working life in order to provide an income during retirement. In the terminology of American funds this would include both 401(k)s and IRAs.

Defined benefit fund or plan: A superannuation fund the ultimate benefits of which are quantified from the start. Benefits generally consist of some multiple of the individual's salary during their final years of work. The terminology is basically the same as that used in U.S.

General staff: All staff of a university who are employed in non-academic roles.

Investment accumulation account: A superannuation fund the ultimate benefits of which are entirely dependant on the value of the member's accumulated assets in the fund at the time of their retirement. The benefit ultimately received is wholly dependant on the performance of the funds' investments over time. In the American literature this type of fund is frequently referred to as a defined contribution plan.

Industry fund: A superannuation fund set up to service workers in a particular industry or trade, for example universities or electricians. The membership of the fund is portable as long as members remain within the industry or trade. Workers generally have some representation on the board or an advisory council of the fund.