All enquiries and any submission for publication
in this Journal should be forwarded to:

The Editor,
Quarterly Journal,
The Institute of Actuaries of Australia,
Level 7, Challis House
4 Martin Place
SYDNEY NSW 2000.

Tel: (02)-233 3466 Fax: (02)-233 3446

David Zaman
02 44 3580

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MODELLING SUPERANNUATION: CASH FLOWS, INFLUENCES AND GAPS IN PERCEPTIONS

Tapen Sinha, Associate Professor, Bond University

Rebecca Benedict, Associate Lecturer, Griffith University

Charles Hollis, Lecturer, Griffith University

Jerry Smith, Associate Lecturer, Griffith University

Introduction

In the 1989/90 Annual Report, the Commissioner of the Australian Taxation Office noted "service makes sense: it costs less to collect revenue if people understand tax laws and comply voluntarily than if they make mistakes or must be forced to comply." (p.1) From July 1, 1992, superannuation has become a tax. It is a service. It is also a product. It has some tangible and some intangible elements. Therefore, the comments of the Commissioner are particularly apt for superannuation.

There have been studies that identified communication between specific groups of players within the superannuation system. For example, Welling (1992) studies the communication from the fund manager to the employees (members). He recognises the need to convey *qualitative* knowledge to the members: "While many funds are providing members with a lot of quantitative information to their members, they will have to provide more qualitative information if they are to comply with the new OSSA regulations which apply from 1 July, 1992. The new OSSA regulations will require explanations, reasons and descriptions of policies, and strategic approaches of the fund, whereas current regulations require data, mainly on individual member benefits." (p. 34) However, there are many other players in the

superannuation game. Nobody has looked at communication issues as parts of an overall communication problem. From a policy design perspective, the government needs to have a holistic view of the entire set of relationships. This paper is the first attempt to do just that.

There are many interested players in superannuation. All of them do not have the same power, information and strategy. Therefore, all of them may not be playing the same game. The larger the divergence in information across the players, the more confusion the players will exhibit. As a consequence, implementation of policy will be that much more difficult for the government. In this paper, we will draw out the common elements between players. This will help us to ensure that in future, rules and regulations of superannuation are properly identified and closely adhered to by all players.

The rest of the paper is organised as follows. First, we identify the main players and their roles in this complex game. Second, we build a conceptual model of superannuation. We identify the gaps between the players' perceptions of current situation. Third, we use results from focus group discussions to classify the main areas of problems of gaps that arise.

Importance of the study

Our research shows (Benedict and Sinha, 1992 and forthcoming) employers find many shortcomings of the existing superannuation system. However, given that the superannuation scheme exists and will not be dismantled, it is important to explore ways to help different parties, especially small business, manage the complexities of superannuation, meet compliance requirements, survive the extra burden of cost and grow.

When we look at employers as interested parties in the superannuation game, we will focus mainly on small business. The reason is simple. Big businesses have their in-house accountants and finance departments to deal with complex communication with the government. To deal with such problems, they have their own specialists. However, that is not the case for small business. Therefore, information gaps are more likely to show up for small business.

We explored these issues through several focus groups: one group is comprised of trade and industry association members representing small business, two groups of small business owners, two groups of employees. We also explored these issues through telephone interviews with union representatives and fund affiliated individuals (fund administrators, fund managers, investment advisers). These groups gave us different perspectives on the superannuation related issues.

Focus groups provide the best format for illuminating new issues, new ideas, and fresh insights. Our other related small business superannuation research has been conducted using telephone survey methods (Sinha and Benedict, 1993). The telephone survey is not a format that can easily be applied to exploring the problems relating to superannuation compliance. Focus groups produce a rich context in which discussions provide illumination of ways to help. The focus groups provided a forum where group consensus could be clearly seen. Focus group data was produced from an audio recording of all meetings and analysed using text based methods (see below).

For union views and fund management view, we were not able to conduct focus groups due to time, feasibility and budget constraints. Instead, we conducted telephone interviews with a number of them with open ended questions.

Who are the players in the superannuation game?

There are many interested parties in superannuation. We shall identify them and explain their roles in turn:

The Government

The government wants to entrench superannuation as the principal form of retirement funds for future retirees. The impetus for the government comes from simple arithmetic: in Australia, the proportion of population over 60 in 1980 was 13.3%. By the year 2000, this ratio is going to go up to 15.1% and by 2025, it will be 20.7% (Schulz, et. al, 1991). Over a span of fifty years, the proportion of retirees will double (this may, however, be affected by retirement behaviour of the population in the future). At present, more than 70% of retirees are totally dependent on the age pension (Senate Select Committee on Superannuation, First Report, 1992). Therefore, unless something is changed, the burden of tax on the working population to support the future retirees will have to double. Hence, it is easy to understand government's urgency in getting legislation in place to alleviate such a future inevitable rise in burden on the taxpayers. Without government initiative, therefore, there will be no superannuation.

However, the government did not want to run superannuation in a centrally administered single fund. Sinha (1992) discusses reasons why we would not expect the system to move in that direction in the future. Essentially, government did not want to be involved in fund management for three reasons: (1) It did not see it fit to be involved in the market for capital for allocation of resources as it does not have adequate expertise. In fact, the management of government's own (funded) superannuation scheme has been contracted out. (2) It did not want to underwrite risks in investment. Any investment is risky. Some funds will suffer capital losses.

Government did not want to underwrite such losses. (3) It did not want to create a new portfolio similar to the Department of Social Security that handles the present age pension scheme and expand the role of the government in the economy.

It set up requirements in the form of Superannuation Guarantee Bills (1992) and expected private sector to come up with the provision of superannuation. As a consequence, other interested parties emerged as providers (of superannuation).

Insurance Companies

A natural group of businesses who have become the front runner in the share of superannuation is the insurance industry. Insurance companies saw superannuation as a natural extension of general financial planning. In the past, many insurance products were sold as a part of future security in retirement. In particular, annuities were part and parcel of insurance company offerings. Superannuation came as a compulsory annuity scheme (compulsion came from government). Thus, insurance companies have emerged as the main providers of superannuation products.

Banks

Superannuation is a vehicle for savings. Therefore, we might expect the banks to be important players in this arena. However, this has not happened in Australia. There are many reasons, not the least of which is that banks have to play by a different and more stringent set of rules than insurance companies to be depositories of superannuation funds. Recently, we have seen signs that banks might be allowed to offer passbook style superannuation account. These accounts will not be quite like passbook accounts, deposits will be allowed but no withdrawal until retirement. There has been a great deal of controversy over the nature of superannuation as a product and whether banks have the same set of opportunities as the insurance

companies (the so-called "level playing field" issue is extensively discussed in FitzGerald and Harper, 1992)).

Unions

If we look at the relevant developments of superannuation in the past ten years, we see a concerted effort by organised labour movements (mainly through the influence of ACTU in the Labor Party) to bring in universal superannuation in Australia. The ACTU had a clear incentive to take initiative in superannuation. In the 1980s, a downward trend in union membership was becoming very clear in all major western countries. It was happening in Australia too. To stem this decline, ACTU followed some specific strategies. One such strategy was to push for superannuation. If control of super came to (centralised) unions, the unions would be able to have control over a very large source of power (Sampson, 1990)

Employers

The basic elements of superannuation are very simple. It is a tax imposed on the employers to pay the employees. We can also think of it as a wage rise that employers are forced to pay to the employees. In fact, the ACTU portrayed super as a "trade-off" for wage increases. In that sense, it is a *deferred* wage increase to the employees. For the employer, the impact is an immediate rise in operating costs.

The coercion element of superannuation makes it a tax. It is interesting to note that the government has avoided calling it explicitly a tax. Instead, the Commonwealth Government has called it a "levy" at first, and then later amended it to "charge". Since the employers are ultimately responsible for this charge, they form another interested party in this game. Although the employees are the final beneficiaries of the superannuation game, it is the employers who need to initiate compliance with the Australian Taxation Office and the Insurance and Superannuation Commission.

Future retirees

The employees (or the future retirees) are the ultimate beneficiary of the game. Therefore, they play a role as an interested party. As a lobby group, future retirees played a very small role in shaping superannuation policy. However, ultimately, future retirees will spell the failure or success of the system.

ACTU emphasised the coverage of part time, casual workers of superannuation. But, as the present system allows for collection of super as an immediate benefit (rather than waiting until retirement) for any amount under $500, there have been numerous instances where the employees collected the money and quit their jobs boosting their immediate cash flow but defeating the main purpose of the SGC of the nest egg for future retirement. In this sense, the future retirees, by the ability to access the funds before retirement, can have an enormous influence on the system.

Fund managers

Another group of individuals in this game is the group of fund managers, fund administrators and investment advisers. They can influence the directional of flow of funds. They operate under restrictions from the government (rules and regulations on investment, reporting income, reporting to clients), controls from insurance companies (as most of them are related to or subsidiaries of insurance companies) and others in the field.

A model of superannuation of cash flows and influences

The cash flows

To see group interplay clearly, we set out a conceptual model of cash flows (Figure 1a).

Age Pension

To see superannuation in the proper context, we need to look at the *other* important element of retirement provision: age pension. The model has one product (in this simple version): age pension (indicated by a circle). At present, 70% of retirees are totally dependent on the age pension. The structure of age pension provides a contrast with superannuation. The age pension has two basic cash flows: the tax future workers will provide. The total is then paid out to future retirees. Government might add a subsidy to the system. The cash flow is simple. It flows from the government to the product.

Superannuation

Superannuation, on the other hand, has a much more complex structure (see Figure 1b). To begin, there are some unambiguous cash flows: one goes from employers to superannuation and another is the future benefits to the future retirees. In this sense, it is somewhat similar to the age pension. However, the age pension operates as a pay-as-you-go system, but superannuation is an accumulation scheme.

For "managing" superannuation, banks, insurance companies and fund managers get cash flows from it. Government is somewhat complicated in the scene. On the surface, government is collecting taxes at the entry level into superannuation (at 15%), it is also collecting taxes on an on going basis (at 15%). And depending on the size of final pay out, it may collect additional taxes. Therefore, we have added a one way arrow from the superannuation pool to the government. However, the matter is not so simple. It has been argued (Brown, forthcoming) that the government is foregoing tax revenue because the tax rate applied to superannuation is lower than that of the marginal income tax rate.

Therefore, in this sense of opportunity cost, the arrow of cash flow should be from the government to the superannuation pool. Interesting feature of the model is that unions do not play any role in the cash flows at all. Unlike banks, insurance companies, they do not directly benefit from the system. However, they do have a great deal of influences on the system.

The influences

We have so far used the term "influence" without defining it. By influence, we mean any effect either financial or political or in general, any specific effect on the decision making process of an entity. In the model of Figure 1c, we have also set out various influence flows.

Government

Government has direct control over the age pension. It exerts control over superannuation funds via tax rules, investment rules and now through SIS (Callaghan, 1993). Since government is implementing the rules of the superannuation game, it has impact on all the other players. For example, in future, it might legislate a higher preservation age and thereby affect future retirees.

Insurance companies and banks

As providers of superannuation, insurance companies and banks have a critical role in shaping the product itself. Thus, these entities influence super directly. There are additional influence of insurance companies and banks through their influence on fund management.

Unions

Unions have a unique role in superannuation: they have many influences but no direct cash flows. Unions have influenced government a great deal in getting the compulsory superannuation (an example of political influence). The ACTU has

greatly influenced many industry funds. In fact, the unions have control over some of the biggest industry funds in the country (Cochrane, 1991b). For example, the building union superfund, in which the ACTU plays a large role as a trustee, has recently topped $1 billion in fund under management. Through it's influence on the Labor Government, it has also influenced the superannuation product in general.

Employers

Employers have influenced fund management too. In many instances, employers actually choose the funds directly. In some other cases, they might jointly make a decision with unions about funds (in terms of management and administration).

Fund Management

The fund managers have run the day to day operations of the actual workings of superannuation, they have ensured cash flows going in the right direction at the right time. There are different roles for fund management. We include administration function, managing function and investment function. However, fund management is subject to influence from many quarters. For example, government can set directed investment (for example, now abolished 30/20 rule set what can be invested in the fixed interest income category). Unions may directly control some of these funds (through their choice of trustees). Employers can do the same. In cases where the future retirees (the ultimate beneficiaries) choose their investment options, they have an influence on fund management. Being subsidiaries of insurance companies and banks in some cases, fund management is influenced by them.

Future retirees

Employees or future retirees too have an influence on the system through their choice of rollover and sometimes choices of allocation of funds.

Players, rules and gaps in perception

To make a policy better, we first need to identify the weak links in the policy. Therefore, we decided to identify the relevant issues for each player in the super game. Generally, within each group it is possible to study problems by means of questionnaires. However, when we have different groups of players with potentially very vast difference in their perceptions of superannuation game, it becomes more difficult to set up a single universal questionnaire that can be applied to all. In Marketing literature, service quality has been studied by Parasuraman, Zeithaml and Berry (1985) using a conceptual model to study gaps between "actual" and "expected" service quality. In the same vein, we introduce a similar concept in the present setting of superannuation as a product. Unlike a tangible product (for example, a car), superannuation has intangible elements. Thus, superannuation is a product with some characteristics of a service.

Consider an example in a three player model that arose from our focus groups. On one hand, government legislates compulsory superannuation. However, it does not involve itself in the delivery of the product. Instead, it "delegates" to other players whom we call the providers. The providers are mainly insurance companies (and banks). The problem in delivery arises because government is a *non-profit* organisation working for the benefits of the future retirees subject to political influence from different interest groups. However, the providers are profit making bodies. Thus, a provider's interpretation of legislations will be tempered by it's own profit motive.

Take a simple example. In 1990, Commonwealth Government set specific rules about taxing complying superannuation funds. It expected revenue of about $900 million. However, the funds rearranged their portfolio to reduce the tax burden. At the end of the year, the government was only able to collect $325 million (Cochrane, 1991a).

In the three player scenario, the government, the providers (i.e., the insurance companies and the banks) and the future retirees (the ultimate beneficiaries of superannuation) interact. Figure 2a illustrates the situation.

Given government legislation, and information dissemination about the effects of the legislation, the employees form certain expectations about the nature of the product. However, what they actually get from the providers does not necessarily correspond to their expectations as motives between the government and the providers differ. The resulting difference produces a gap (Figure 2b).

In fact, the gap can be more complicated because of the temporal nature of the problem. The benefits from the SGC that will eventually flow will not come in the near future (as most of the beneficiary with any substantial benefit will not retire for some time yet). Thus, what the employees get *now* is not the actual benefit, but the perception about some future benefits.

For *every* combination of groups of players, we potentially have a problem of a "gap" of some kind. We have identified ten different players. Hence, if we just take two groups at a time, there are potentially 50 different gaps to be studied. If we look at three players at a time, there are 120 different gaps possible!

How to make better policy in superannuation

As a preliminary analysis, we have identified several "gaps" from our data. The technique used here to learn about relationships between entities is what Minzberg (1979) calls direct research. The following is an example of a gap identified:

Employer's perception on government's actions

Employers believe that the government has chosen superannuation as the retirement vehicle for future retirees. They believe that superannuation will replace age pension (but not simply supplement it). They also believe that high superannuation accumulation will impinge on other kinds of benefits received by age pension recipients today. Specifically, they believe, medical subsidy, reduced property tax benefits (i.e., rates) will be withdrawn.

Employer's perceptions on choices of employees

Employees are not given any choice between present and future consumption. Specifically, employees should be given a choice as to they would want to spend the accumulated fund to finance current expenditure or postpone to finance future retirement. They also found there are restrictions in the form of choice of investment of super funds. Specifically, industry funds compel all employees to invest in a particular way. Other investment choice, such as real estate is not available. Casual and part time workers who need to roll their funds over for every change in employment, lose large proportion of their funds in administrative charges. The employers felt that these employees needed a special product such as an industry fund or a passbook type account with low administrative charges where they could deposit all of their super.

Suggested solution

Employers felt that employees were not empowered with the ownership of their funds. To make the employees responsible, the employers wanted to see an additional contribution from employees immediately. They believed that such an action will make the employees take notice and act responsibly towards their funds and make them believe it belonged to the employees as retirement benefits.

Once we have identified all of the important gaps for super as a product, we can use them for policy purposes. We are in the process of identifying other gaps in the system.

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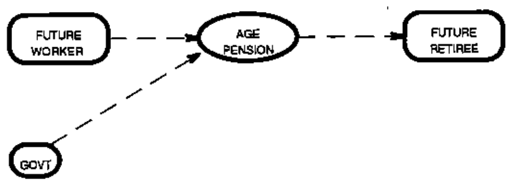

Figure 1a: Structure of Age Pension

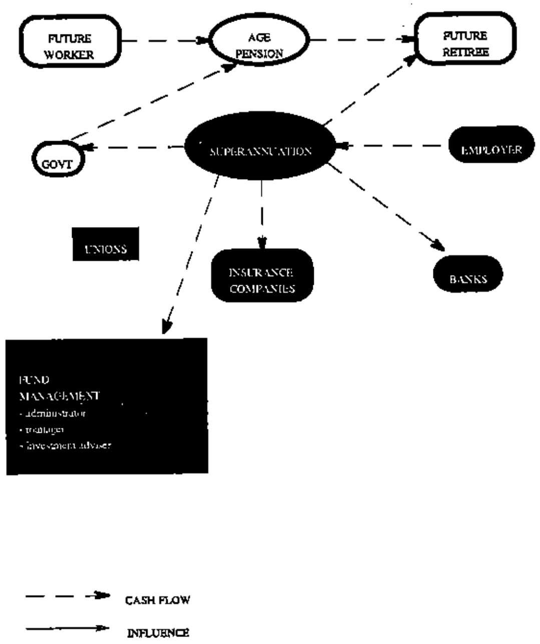

Figure 1b: Cash flows for age pension and superannuation

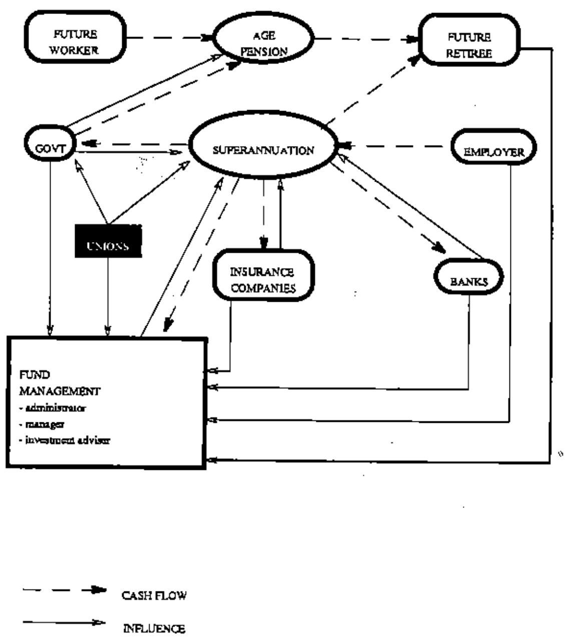

Figure 1c: Cash flows and influences of age pension and superannuation

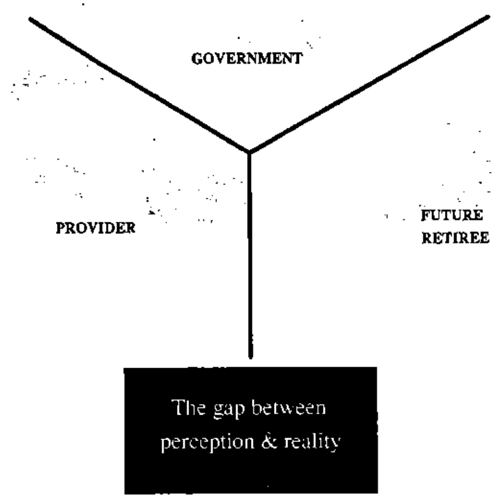

Figure 2a: The main players

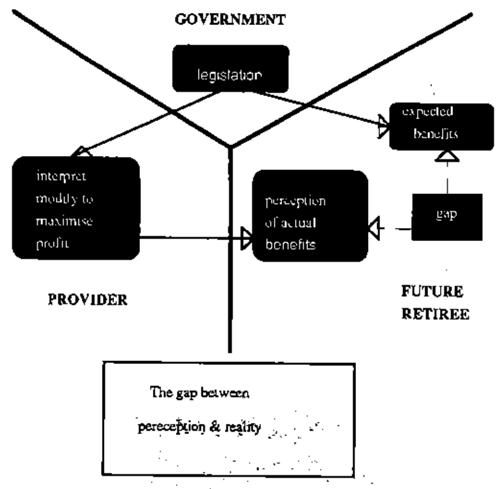

Figure 2b: An example of gaps between perception and reality

Some Remarks on the Valuation of Fixed-Interest Securities.

by Jim Farmer B.Ec., F.I.A.A.

1. Introduction

In their study of compound interest, actuarial students encounter Makeham's formula, a formula for the valuation of fixed interest securities repayable by instalments. This paper presents a variation on Makeham's formula which some students may find easier to understand. This alternative formula may require a few more calculations than Makeham's formula, but this is not a major concern when electronic calculators are available.

2. The Derivation of the Traditional Form of Makeham's Formula

Both the traditional Makeham's formula and the alternative formula can be derived algebraically. However, this paper will confine itself to the derivations by general reasoning, since this approach seems to give a better intuitive feel as to why the formulae work. (If you can reproduce the algebraic proof of Makeham's formula you will find it a simple matter to adjust it to produce the alternative formula.)

The essence of this approach is due to W.M. Makeham (1874), but the notation adopted here has been altered to be more consistent with McCutcheon and Scott (1986).

Define

$N =$ The nominal amount of the loan
$C =$ The amount of redeemed capital.
$K =$ The value of the capital redeemed
$D =$ The coupon rate. (The annual interest per unit nominal.)
$g =$ The coupon rate per unit redeemed capital
$= \dfrac{DN}{C}$
$p =$ The number of coupons paid p.a.
$i =$ The required yield p.a.
$t =$ The tax rate applicable to coupons.

If a bond with annual coupons of amount x is purchased at price C immediately after a coupon is paid and is redeemed at C, then (ignoring tax) the yield obtained will be x/C. (This occurs since we can view the bond as a loan on which we receive interest at the rate x/C each year.)