OFFICE OF FAIR TRADING

Report of the Director General's Inquiry into Pensions

Volume Two

Research undertaken by the OFT for the Pensions Inquiry:

✦ Consumer Survey
✦ Structured Interview Process
✦ The Potential for Minimising Consumer Detriment in Pensions
✦ International Comparisons

July 1997

APPENDIX C

The Potential for Minimising Consumer Detriment in Pensions

July 1997

The Potential for Minimising Consumer Detriment in Pensions

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1 Consumer detriment

1 In *Consumer Detriment Under Conditions of Imperfect Information* (OFT Research Paper, London Economics, forthcoming), three sets of information are identified:

a **Actual beliefs** (A), the information the consumer has about a product and its alternatives when making a purchase.

b Rational beliefs (R), the information the consumer has about a product and its alternatives after carrying out a rational search of available products.

c True distribution (T), the actual state of the world, including all relevant information on the product and its alternatives.

2 In theory, consumer detriment represents any avoidable difference between u^T, consumer utility taking advantage of true beliefs, and u^A, utility achieved with actual beliefs,. Two elements of consumer detriment can, however, be distinguished:

a **u^R - u^A.** The difference between utility under rational beliefs, u^R , and utility under actual beliefs, u^A. This can arise from misleading information provided by the suppliers, systematic exploitation of shortcomings in the way consumers evaluate information and delays in consumers receiving and assimilating information. This element is referred to as the ***rational information shortfall.***

b **u^T - u^R.** The difference between utility under true beliefs, u^T, and utility under rational beliefs, u^R. It implies the existence of alternative institutional arrangements under which the difference between T and R would be smaller. This element is therefore referred to as the ***institutional shortfall***.

All the utilities above are net of the cost of acquiring the relevant information.

2 Consumer detriment inherent in defined benefit pensions

3 In Chapter 4 the main consumer problem associated with defined benefit (DB) pensions

was identified as the loss of pension rights by early leavers. These losses are inherent in defined benefit pensions and cannot be avoided by any action open to the individual consumer. There is therefore no ***rational information shortfall***. The losses could, however, be avoided if a suitable defined contribution (DC) pension were available which was itself free from significant consumer detriment. The consumer detriment in defined benefit pensions therefore corresponds to an ***institutional shortfall*** problem.

3 Consumer detriment inherent in existing defined contribution pensions

4 Personal pensions are credence goods, meaning that any advice provided at the time of purchase cannot be evaluated effectively due to the length of time to the maturity of the product, when comparisons can be made. Thus, the speed and effectiveness of learning through the experience is severely limited. Furthermore, the information provided by the suppliers, via the key features documents and in other ways, is complex, and for even those consumers that understand this information, the quality is unobservable. This distracts consumers from the other key element in the information provided, that on the level of expenses. These consumer detriments correspond to a ***rational information shortfall***, and were aggravated by misselling in the late 1980s and early 1990s, when high pressure sales tactics were used to mislead consumers at a time when the product was relatively new and it was particularly difficult for the majority of consumers to understand it.

5 The principal consumer detriment arising with existing personal pension products is, nevertheless, an inherent and endemic ***institutional shortfall***. As argued below, the information provided on past investment performance provides little information on the level of future returns that is, it is largely noise. Yet, for most products, the consumer cannot get information on the two things which really should matter, the actual level of expenses and the level of investment risk, without advice from a tied agent or an independent financial adviser. This consumer detriment corresponds to an ***institutional shortfall problem***, where the largely hidden characteristics of many of the presently available products make them unsuitable for their intended purpose.

6 Since consumers need financial advice (via the secondary market for advice) to

understand existing products, a potential secondary ***institutional shortfall*** relating to the information about advisers also arises. Advisers, when carrying out a search on personal pension products, may not, themselves, have full information on all the available products, and thus may provide limited information, after this search, to the consumer. The consumer is generally not in a position to assess the competence of the adviser or to judge the value of the advice. These potential problems may be overcome by regulation of the advisers, both in terms of their conduct and their level of competence and training. This regulation is, however, itself costly and, to the extent that the availability of an alternative product could render it unnecessary, it also represents a form of consumer detriment. The high cost of acquiring the relevant information reduces the amount of information which it is rational for the consumer to acquire. At its limit, the cost of information becomes so high that a random choice of products becomes rational.

4 The potential for minimising consumer detriment in a defined contribution pension

4.1 *Introduction*

7 From an *ex post* perspective, and abstracting from tax, the investment accumulated at the retirement date with a defined contribution pension scheme is:

$$I_n = \sum_{t=0}^{n-1} S_0 c_t \Pi_{i=t}^{n-1} (1+g_i)(1+r_i)(1-x_i)$$

where: S_0 is the consumer’s earnings at time t=0;

c_t is the contribution rate, being the proportion of earnings applied to buy the pension in year t;

g_i is the change in earnings at the start of year;

r_i is the return on investment in year i;

n is the number of years over which the pension contributions are made; and

x_i is change for expenses expressed as a percentage of the funds accumulated.

The present value at year n of the pension acquired, PV(P), is:

$$PV(P) = (1-\alpha_n) \sum_{t=0}^{n-1} S_0 c_t \prod_{i=t}^{n-1} (1+g_i)(1+r_i)(1-x_i)$$

where α_n is the return made by suppliers of annuities that is, it is the measure of the efficiency of the annuity market at time n.

The above relationship can be applied to figures in either nominal or real (that is, inflation adjusted) terms. In this Appendix, figures are assumed to be in real terms.

8 Adapting the above equation *ex ante* perspective[1]:

$$E(PV(P)) = E(\alpha_n) \sum_{t=0}^{n-1} S_0 E(c_t) \prod_{i=t}^{n-1} (1+E(g_i))(1+E(r_i))(1-E(x_i))$$

and

$$E^A(PV(P)) = E^A(\alpha_n) \sum_{t=0}^{n-1} S_0 E^A(c_t) \prod_{i=t}^{n-1} (1+E^A(g_i))(1+E^A(r_i))(1-E^A(x_i))$$

where: $E^A(x)$ is the expected value of a variable x given actual beliefs A; and E(x) is the expected value of a variable x given the true state of the world.

9 Assuming that the present value of the pension at time n represents a complete measure of the consumer's utility, the elements contributing to consumer detriment can now be identified by considering how differences between E(PV(.)) and E^A(PV(.)) are generated. Assuming these differences can be reduced or eliminated, they represent the five causes of consumer detriment:

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[1] We assume, unless indicated otherwise, that the variables transformed into expectations are independent.

Difference	Cause
a $E(r_i) - E^A(r_i)$	Unrealistic expectations about investment returns in relation to the level of investment risk assumed.
b $E(\alpha_n) - E^A(\alpha_n)$	A failure to buy the annuity at the lowest available price.
c $E(x_t) - E^A(x_t)$	Uncertainty over the level of expenses and a failure to incur the lowest available level.
d $E(c_t) - E^A(c_t)$	Unrealistic expectations about the sustainable level of contributions.
e $E(g_i) - E^A(g_i)$	Unrealistic expectations about the continuity and rate of growth in earnings.

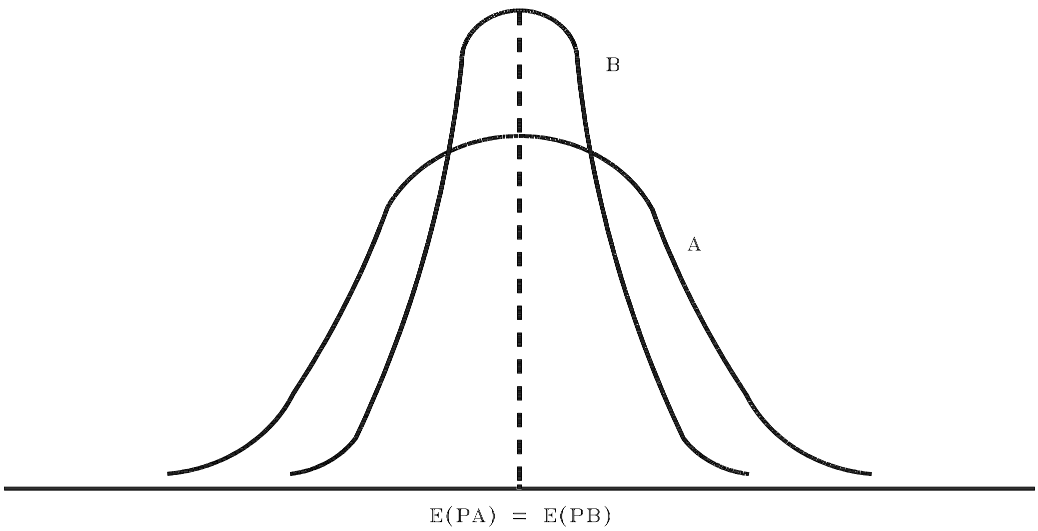
The ways in which these differences can be eliminated are now considered.

4.2 Unrealistic expectations about investment returns in relation to the investment risk assumed

10 It is important to appreciate that risk itself is not necessarily a consumer detriment. The risk associated with the present value of a pension P relates to its *ex ante* probability distribution, a characteristic which is not measured by the mean expected outcome, E(P). Thus two pensions, A and B, may have the same expected outcome, that is E(PA) = E(PB), but, if the range of outcomes for A is more widely distributed than those for B, B is said to be less risky than A and therefore represents better value. This situation can be illustrated by comparing the probability density functions of the two pensions[2], as shown in Figure 1.

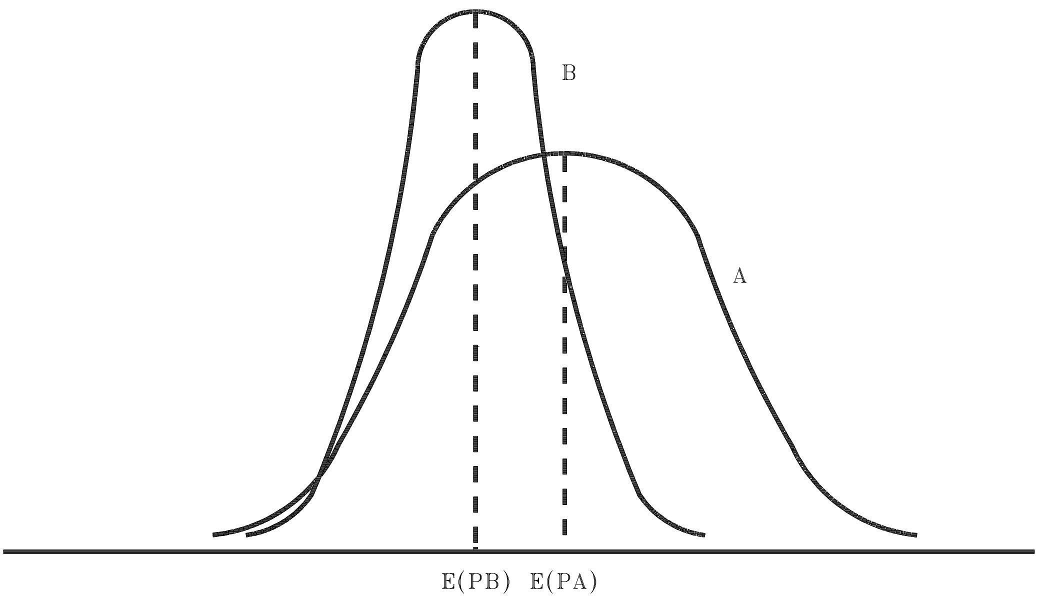
[2] The probability density function is the function in which probability is proportional to the area under the curve.

Figure 1: Probability density functions of two pensions with the same expected outcomes



There can, however, be a reward for bearing some forms of risk. Thus the more risky pension A may have a bigger expected return to compensate. This situation can be illustrated in Figure 2.

Figure 2: Probability density functions of two pensions with different expected outcomes



Whether pension A represents better value depends on whether the risk reward trade-off between the two is optimised. If this is not the case, that is the additional return is insufficient to compensate the consumer for the additional risk, there is a consumer detriment in choosing the wrong product.

11 Investment risk can be divided into two components: *Systematic* [3] and *Unsystematic* [4] risk. Systematic risk is that element in the variability of an expected return that is correlated with the average return of the market as a whole[5]. Unsystematic risk is that element that is not so correlated. Unsystematic risk can be eliminated by holding a diversified portfolio of investments. In consequence, there is no reward for bearing such risk ie, for failing to diversify. Thus consumer detriment arises unless the consumers' pension fund is invested in a well-diversified portfolio whose return is correlated with that of the investment market as a whole.

12 Another unrealistic consumer expectation is that an above-average return can be secured by careful selection of investments or by employing an investment manager with such an ability. As there is much evidence that financial markets are efficient in a semi-strong sense, consumers have no realistic prospect of achieving a better return, when accepting the average level of risk for equities, than the risk-free rate averaging some 3% plus the average risk premium on equities, which, historically, has been around 5%. Consumers' unrealistic expectations of earning much better returns without exposure to correspondingly higher levels of risk are encouraged by advertisements and investment rankings in the financial press which report investment performance over a comparatively short period. Given the high level of uncertainty in the return on shares in a particular year, apparently exceptional performance, even over the longest periods typically quoted[6], can be due to luck, selective choice of the period over which performance is measured, or high exposure to risk. Furthermore, notwithstanding possible disclosure of broad investment strategies, the consumer has little assurance that the level of risk currently

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3 Systematic risk is also referred to in the literature as Market Risk.

4 Unsystematic risk is also referred to in the literature as Unique Risk, Specific Risk and Residual Risk.

5 In theory, the portfolio comprises every available asset. In practice, investment in a broadly based index like the FTA All Share Index is taken as a proxy.

6 Seldom in excess of 10 years and typically much shorter.

adopted is the same as the level previously adopted or the level that may be adopted in the future. Consumer detriment is therefore minimised by securing the equity risk premium at the lowest possible cost through a strategy of passive fund management. The case for passive fund management is described in more detail in Appendix F.

13 The manner in which the consumer is exposed to investment risk can also lead to consumer detriment. The most flexible and efficient (that is, cheapest) way to control the level of exposure is **not** through changing the investments which make up the consumer's pension fund. This is both difficult to achieve with passive fund management and costly in view of the dealing costs that would be incurred. Consumer detriment is therefore minimised if the level of exposure to risk is regulated by investing part of the fund in risk-free investments (that is, index-linked gilts) or by borrowing to increase the size of the equity investment. Assuming there is no borrowing premium, ie funds can be borrowed at the risk-free rate[7], the return on such a fund is

$$r = r_e(1+G) - r_f G$$

where: r_e is the return on equities;

r_f is the risk free return; and

G is the gearing of the fund that is, the ratio of borrowing to the equity investment less borrowing, all values being stated at current market values. Investment in risk-free securities is treated as negative borrowing. G can therefore take values between -100% (when the fund is completely invested in risk free investment) and $+\infty$. For both the individual consumers and collective investment vehicles, fear of bankruptcy imposes an upper limit on gearing, but quite high levels of gearing can nevertheless be sustained[8].

7 This assumption is not critical as the analysis can be adapted to allow for a margin between borrowing and lending. As, however, borrowing by individual consumers would, as we argue in Chapter 6, be accomplished through the medium of a collective investment vehicle and as such a vehicle would generally not have positive gearing overall (because it would pool the interests of many consumers, many without gearing), the assumption that the consumer's borrowing can be undertaken at the risk-free rate could be applied operationally.

8 For example, gearing ratios of 300% are not unknown for industrial and commercial companies. The gearing assumed by financial companies such as investment trusts is inevitably significantly lower, but not insignificant. Individual consumers can effectively simulate very high levels of gearing by investing in equity options.

The investment risk of an investment for a single year is measured by σ, the standard deviation of its expected return in that year. With a geared investment, this is equal to:

$$\sigma = \sigma_e (1+G)$$

where σ_e is the standard deviation of the expected return on the equities in that year. σ can therefore be regulated by changing the gearing. Thus, when the fund is completely invested in risk-free securities, G= -1 and $\sigma = 0$, that is, there is no investment risk; and when the fund is highly geared and G becomes very large, so does the investment risk. Thus, by changing the level of gearing, the full range of exposure to investment risk can be effected.

14 As explained above, consumer detriment arises unless the risk-return relationship is optimised. As risk exposure is best determined through the level of gearing, the task is to establish that level of gearing which optimises the risk-return relationship. There are a number of ways in which this might be achieved. Ideally the fact that individual consumers have different risk preferences should be allowed for, but the practicability of this is doubtful. A simple and straightforward approach which could readily be implemented would be to maximise the value of the investment accumulated in the consumer's pension fund within the constraint of a ceiling to the standard deviation of the expected value of the fund finally accumulated. Thus a standard deviation of, say, 5%, would be specified for all consumers by a regulator, and the gearing initially would be applied to the consumer's investment. The reduction in this gearing over the period of the pension plan would then be a function of the standard deviation of the annual returns on equities and the anticipated rates of return. The implications of the particular level of risk chosen could then be explained in general, non-mathematical language to consumers; for example *there is a one in twenty chance that the proceeds of your plan will exceed £x or be less than £y*.

15 With the above approach it is relatively easy to specify the optimal level of gearing. The optimal level of gearing in the final year before the pension matures, that is, in year n-1, $Gopt_{n-1}$, is

$$\sigma_p = \sigma_e\left(1+\phi_{n-1}\right)$$

where: σ_p is the standard deviation acceptable on the pension fund; and

σ_e is the standard deviation on equity returns in a single year.

Assuming investment returns, expressed as 1+r, are both independent from one year to the next and log normally distributed[9], it follows that the optimal level of gearing at the start of any year i is[10]

$$\sigma_p = \frac{\sigma_e}{\sqrt{n-i}}\left(1+\phi_i\right)$$

Rearranging

$$\phi_i = \frac{\sigma_p}{\sigma_e}\sqrt{n-i} - 1$$

16 For the individual contributor to a pension plan, this regime could be operated in the following way. At its simplest the provider has two funds in which contributions are invested, an equities tracker fund and an index-linked gilts fund. Initially, contributions are over-funded in equities. Over the period of the contract, the member's fund is switched into gilts fund so that by the intended retirement date, all of the fund is invested in the index-linked gilts fund. This approach has the added advantage that any risk to the fund value from interest rate changes will be compensated by the offsetting effect on index-linked gilts-based annuities.

4.3 A failure to buy the annuity at the lowest available price

17 Access to the market for annuities will ensure that the annuity is purchased at the keenest possible price. This element in consumer detriment can therefore be eliminated by

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9 Their independence is a result of capital market efficiency. The log normal distribution is, on available evidence, a very good approximation.

10 This follows from the fact that independent variances can be summed. The standard deviation, expressed as the standard deviation of log (1+r) as a percentage of itself, therefore reduces as the square root of the number of years over which the investment accumulates. It is then simply necessary to note that the optimal gearing at time t cannot be effected by any event occurring after time t.

ensuring that the consumer acquires an annuity from this source.

18 A correlation exists between $E(r_i)$ and $E(\alpha_n)$ unless the annuity is index-linked. Consumer detriment is therefore minimised by purchasing an index-linked annuity. This would also contribute to eliminating consumer detriment where the consumer has an inadequate perception of the impact of inflation over the period of their retirement.

4.4 Uncertainty of the level of expenses and a failure to incur the lowest possible level

19 Consumer detriment can be reduced by reducing the consumer's uncertainty as to the level of expenses to be charged in relation to the value of the pension fund accumulated. This can be achieved by confining expenses to a rate fixed at the time the pension plan is taken out applied to the market value of the investment accumulated. No other fees and charges would be allowed.

20 Removal of supposedly superior investment performance as a marketing tool should ensure that competition takes the form of price competition, that is, suppliers compete to provide a homogenous product with the lowest level of expenses. This would ensure downward pressure on expenses.

21 Obtaining the lowest possible level of expenses crucially depends on securing economies of scale beyond those available in typical person pension products. This points to the need for some form of collective investment vehicle.

4.5 Unrealistic expectations about the level of contributions sustainable

22 Important factors contributing to uncertainty in the future level of contributions are:

a uncertainty about the level of employer's contributions; and

b uncertainty about what the combined (employer and employee) level of contribution should be to secure the desired level of post-retirement income.

23 Defined benefit pensions incorporate a number of features that ensure that the employer makes a substantial contribution on behalf of the employee. These include regulatory and actuarial pressures to maintain the solvency of the fund and ultimate ownership of any pension surplus. Defined contribution schemes lack such a framework. Any switch from a defined benefit scheme to a defined contribution scheme therefore generates a consumer detriment, unless there is some mechanism to counter this removal of incentives and pressure on the employer. Possibilities include:

a Compulsion (see Chapters 5 and 6 for a full discussion of this).

b Tax incentivisation. Under existing tax rules, expenditure, S, incurred by a business on salaries and wages is generally tax deductible, as is any contribution, Sc, to the employee’s pension. Tax paid is therefore reduced by ST, where T is the firm’s marginal rate of tax. An incentive for the employer to contribute to the employee’s pension at a rate in excess of a minimum rate c_{min} can, therefore, be provided by, for example, restricting the tax relief to

$$\beta S\left(MAX[c_{min}, c] - c\right)T$$

where β is a constant between 0 and 1 which determines the strength of the incentive. Such an incentive might be applied at the level of all the firm’s staff other than those in their occupational defined benefit scheme.

The current regime corresponds to β = 0, that is, salaries and wages are 100% tax deductible without reference to the rate of contribution to the employee's pension. If, say, β = 0.5, c_{min} = 10% and T = 33%, a failure to make any contribution to the employee's pension would result in an additional tax charge to the employer equal to 1.65% of the amount paid in salaries.

c A right on the part of employees to require employer’s contributions into a defined benefit occupational scheme to be re-directed to an employee’s own defined contribution scheme. In order not to trigger other forms of consumer detriment, it would, however, be essential that:

i this right could be exercised only on the consumers becoming eligible for a defined benefit pension scheme and should not encourage consumers who are already members of such schemes to leave, thereby precipitating an early-leave loss; and

ii it is not applicable to defined contribution pension schemes that are themselves associated with consumer detriment. In Chapter 6 we argue that this right should be confined to payments into a Designated Personal Pension.

24 Consumer detriment arising from uncertainty over whether the combined (employer and employee) level of contribution is adequate to secure the desired level of post-retirement income could be addressed by publication of authoritative tables showing recommended levels of contribution into a defined contribution pension in which consumer detriment has been minimised in the ways described in this appendix. To avoid noise in this important source of information, the tables should be based on a single set of economic assumptions.

25 Consumer detriment arising from such uncertainty over the sustainable level of contribution would be minimised by adopting the charging structure described above.

4.6 Unrealistic expectations about continuity of employment and rate of growth in earnings

26 Over-confidence about security of employment and future employment prospects could be addressed by better information in this area, but the practicability of such an approach is doubtful. Some amelioration would, however, be achieved by using the charging structure recommended above.