

FAMILY FORTUNES A GUIDE TO SAVING FOR RETIREMENT

A DISCUSSION MEETING

[Held by the Institute of Actuaries, 22 April 2002]

DISCUSSION TOPICS

1 Financial Institutions are increasingly faced with the problems of persuading individuals to save — saving for retirement is paramount (though repayment of a mortgage is a high priority for some people). Government, too, is concerned with liabilities on the Exchequer as the population ages. Forecasts of a growing elderly population are top of the list on which the Treasury seeks economic solutions.

2 For both the public and private sectors, the paper ‘Family Fortunes, a Guide to Saving for Retirement’, by D. R. Cooper, which is printed directly after this list of discussion topics, is timely, in that it quantifies the amounts which breadwinners must save in order to meet standard of living expectations during their post-employment days. The model developed is a yardstick for individual investment and for the levels of national savings which the Government must encourage in order to maintain prosperity as the population ages.

3 The model can be run on a wide variety of assumptions, and for different sectors of the population. The conclusions from some scenarios appear to contradict some long-held views on pensions and pension provision. A number of interesting discussion points arise:

- (1) Savings over the whole of a person’s working lifetime are generally considered prudent and desirable. However, for some households, attempting to save while the wage earners are young will cause unnecessary hardship and short-term debt. In these cases, savings for pensions should start when the children have left home and the first mortgage has been paid. Should occupational pensions schemes and state schemes be adjusted to accommodate ‘cash rich’ and ‘cash poor’ periods?
- (2) Low wage earners have no financial incentives to save, because their pension entitlements will not exceed state means tested benefits. A rational decision for some people is not to save for retirement under the present system. State encouragement to save, such as tax relief on pension contributions and gross build up on investment earnings, are not sufficient or appropriate for this group. Is some alternative form of state encouragement to save required?

- (3) Neither the state second pension nor stakeholder pensions at the lowest level are sufficient to get many people above the minimum income guarantee. Should the Government rethink its pension policy, and require greater contributions from individuals and employers in return for higher benefits? Are greater and compulsory contributions required from employers for stakeholder pensions?
- (4) Since the main period for saving for retirement is when people are middle aged up to retirement, the financial services industry should sell more protection insurance to young households to protect them from health breakdowns before or during the critical savings period. The sale of a pension policy to young people may not be 'best advice'.
- (5) There has been a trend for males to retire early, when they are in their middle fifties or early sixties, despite the fact that the population is healthier and will live longer. Since there is less time to accumulate savings and to build up pensions, how can people be encouraged to work, earn and save longer? Will raising the state retirement age solve the problem if the majority of people continue to retire well below the age of 65 years?
- (6) The income of people in retirement could be enhanced for those who own their own houses if they could borrow against the value of their property. Unfortunately, there are few effective equity release schemes in the market. Should financial providers be encouraged by the Government to promote these schemes, and should the Government give financial incentives for equity release?
- (7) Apart from defined benefit schemes, the majority of pension provision is made through schemes that accumulate a lump sum, which is turned into an annuity at the retirement date (or, in some cases, at a later date). Should financial providers encourage the use of deferred annuity products with a limited cash option? The deferred annuity approach gives more certainty on the pension level. The uncertainty is limited to the amount of the cash option, and not the pension level as at present. Have providers lost sight of the fact that the priority for pension schemes is the provision of pensions, and not lump sums which may/may not provide an adequate pension?

**FAMILY FORTUNES
A GUIDE TO SAVING FOR RETIREMENT**

BY D. R. COOPER

ABSTRACT

The paper investigates the level and incidence of saving required in order to maintain the standard of living that a household experiences whilst of working age into retirement. In order to do this, a model has been constructed that follows the income and expenditure of a household, allowing for tax and social security, as well as changing family circumstances. The model can be used to explain how a household should save in order to achieve a given standard of living in retirement.

The author concludes that the usual message, to save a fixed proportion of income throughout a working lifetime, is at best not helpful and at worst could lead to a lower standard of living over the household's lifetime. People can and should manage the timing of their saving and borrowing in order to achieve optimum incomes.

KEYWORDS

Saving; Pensions; Financial Planning; Means Test

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1. INTRODUCTION

1.1 The purpose of this paper is to investigate the level and incidence of saving required to maintain the standard of living that a household experiences whilst of working age into retirement. In order to do this, we have constructed a model that follows the income and expenditure of a household, allowing for tax and social security, as well as changes in family circumstances. The model is based on one devised by Hamilton, that considers the position for households in Canada (Hamilton, 2000). The model can be used to explain how a household should save to achieve a given standard of living in retirement.

1.2 The obvious way of saving for retirement is through a pension scheme, which can provide benefits on either a defined benefit or a money purchase basis (sometimes both). All defined benefit schemes and some money purchase schemes are provided by employers, and so members benefit

from a form of involuntary (and indirect) saving on their behalf. A significant difference between the two types is that the former automatically targets a retirement benefit related to pay, whereas the benefit provided by the latter depends on the amount of contribution paid, as well as on investment return and annuity rates. Thus, the former bears a direct relation to the standard of living whilst in work, whereas the latter need not. Regardless of its desirability, there appears to be a trend away from defined benefit pension provision towards money purchase provision. Considering the average contributions paid into money purchase schemes, those currently relying on these schemes to provide retirement income should expect a significant drop in their standard of living once they reach retirement (for example, NAPF, 2000).

1.3 The model can incorporate both types of pension scheme, as well as other, more widely available or more flexible, savings vehicles. The model encompasses investment in housing, personal pension schemes, Individual Savings Accounts (ISAs) and other stock market funds.

1.4 A household's financial circumstances and its ability to save vary according to the number of earners and dependants. Saving will be easier in some periods than in others. Whilst our model demonstrates that households can maintain their standard of living in retirement whilst restricting saving to the 'cash rich' periods, this strategy involves certain risks, not least the expectation that one can always enter the labour market. Indirect saving, for example contributions by employers to occupational pension schemes or governments to social security, which continues when personal saving is difficult, reduces this risk. Households with access to these forms of financial provision might be able to save less than others, and so experience a higher standard of living.

1.5 Dependants affect, not only one's propensity to save, but also the need. If a family with children saved the same amount as a family without children, it might be able to afford a higher standard of living in retirement than the one which it had whilst in work. It does not seem sensible for the members of a family to experience hardship throughout their working lifetime just so that they can be relatively affluent in retirement.

1.6 Financial advisors in the United Kingdom are governed by the Financial Services Authority, which produces guidance as to procedures that must be followed when talking to individuals about their saving needs. This includes taking into account an individual's financial circumstances and his or her attitude to risk. Whilst information on a prospective client's current spending needs and lifestyle is gathered, once a savings package has been 'sold', there is no obligation for the advisor to revisit clients to determine whether it still meets their needs. The model demonstrates that it is unlikely that an optimal savings strategy could be expressed as a fixed percentage of earnings throughout life, although this is a frequently used measure for advice (for example, FSA, 2000). We will also see how sensitive a household's

standard of living is to changes in family or work circumstances, as well as in changing economic circumstances.

1.7 We begin, in the next section, considering patterns of expenditure by age and income. The following section describes the model used. The remaining sections investigate the results that the model produces.

2. FAMILY SPENDING

2.1 Household expenditure varies by age, by income, and by the number of people in the household. As we would expect, expenditure increases with income, both in absolute terms and per capita. In addition, the average number of people in a household tends to increase with income (or vice versa), although there is an exception from the second to third income quintiles, where the head of household was aged less than 30.

2.2 The following observations about spending stand out from the tables in *Family Spending* (ONS, 1999).

2.2.1 At younger ages (less than 50), the largest difference in spending between the lowest and highest quintile is in housing, where the highest quintile spends about five times the amount of the lowest.

2.2.2 At all ages, the largest proportionate difference in spending between income quintiles is on motoring and leisure services. The differences for motoring are most marked for those aged under 30, where the highest income quintile spends 12 times more than the lowest quintile, and, for the 75 and over age group, where the highest quintile spends 23 times as much as the lowest. However, the average spend amongst this latter group is still only half that of the age group 65 to 74. This provides strong evidence that, whilst spending falls as people age, this is due to lower incomes rather than due to less need or desire to spend.

2.2.3 Overall, household expenditure seems to increase about four fold from the lowest to the highest income quintile, whereas median income increases much faster. The increasing gap partly demonstrates the increasing ability of the better off to save, but is largely explained by their greater tax burden.

2.2.4 The average expenditure of those families in the bottom two quintiles of the income distribution, where the head of household is aged less than 65, is greater than the median income. At ages less than 30, the median income in the third quintile is about £13,000 p.a., and it is about 20% higher at the older ages. Thus, expecting groups earning less than this to rely on personal, voluntary, saving for retirement is quite optimistic.

2.3 The immediate indication from *Family Spending* (Table 1.3, ONS, 1999) is that, on average, households are spending no more than 5% of their income on life assurance and pensions, and this proportion does not vary much across the earnings distribution. However, whilst this indicates a low

level of average saving, and thus average income in retirement, it hides more information than it gives. For example, the fact that the amount does not vary by income distribution suggests that some of this ‘saving’ is through employer-sponsored schemes, to which there must be an employer contribution.

2.4 It should be more useful to look at the proportion of income spent on other saving and investment. This indicates that, excluding home ownership, the top decile of the income distribution saves about 3% of income, whilst all other groups save less than 1½%. The greatest saving, as a proportion of income, is on a home. This is about 4% of income, and does not vary much across income groups. Taking into account all spending on housing (including, for example, rent, mortgage interest, rates and repairs), the pattern is very different. Those in the lowest income quintile spend over 40% of their income on housing (about 25%, net of rent rebates and other allowances), whereas those in the highest quintile spend only 15%.

2.5 In summary, it seems that the top three deciles save about 11% of their gross income, the middle four save about 8% and the lowest three save about 4%. Whilst there is some rationale for lower income groups saving a lower proportion of their income (Sinclair, 1998) — apart from a reduced ability to save — the results from the model suggest that 4% is too low. The results presented in Section 5 suggest that even the top deciles are likely to experience a fall in their standard of living in retirement.

2.6 Average net household income varies by a factor of nine between the lowest and highest income quintiles. However, average household spending, excluding savings and income tax, which is illustrated in Figure 2.1, varies by a factor of less than five (or four if we normalise for numbers in each household). This spending includes, for example, food, fuel, clothing

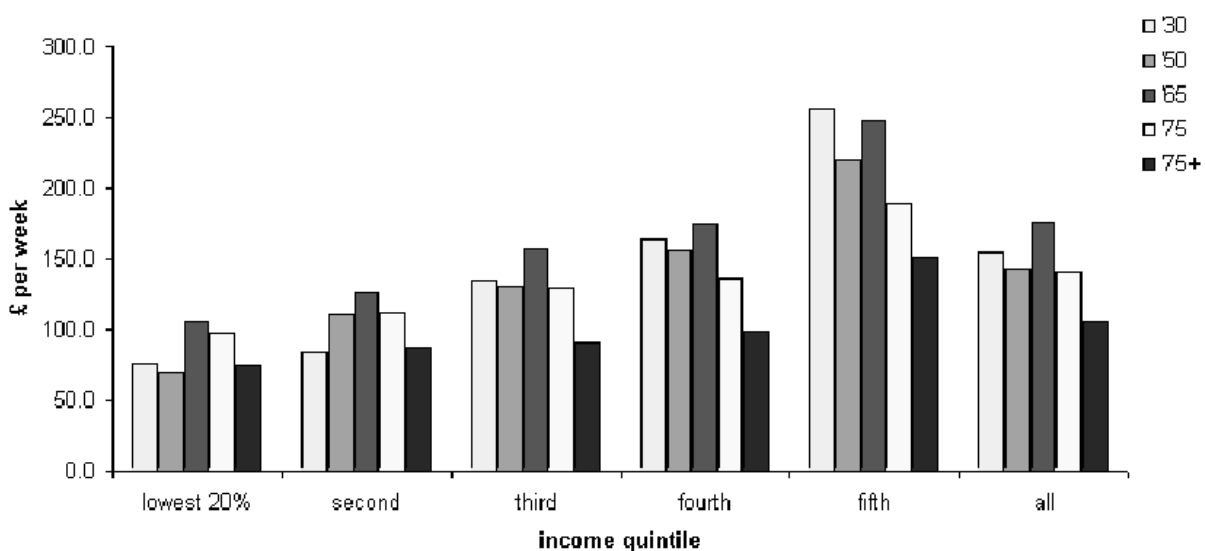


Figure 2.1. Household spending (ONS, 1999)

Table 2.1. Net weekly income of currently retired people who find life financially easy or difficult

	Easy (£p.w.)	Difficult (£p.w.)
All retired	172	115
Men	211	128
Women	137	102
Socio-economic group		
A/B	247	155
C1	189	127
C2	145	115
D	114	106

Source: NatWest, 1999

and entertainment, and thus can be used to determine a ‘standard of living’ for each individual. The model, which is described in the next section, is predicated on the assumption that people want to maintain a proportion of the standard of living that they experienced in work throughout their retirement. The proportion is selected by the model’s user.

2.7 In 1999 a survey announced that the gross income required for a ‘financially contented retirement’ was £193 a week (NatWest, 1999), with retirement being ‘financially difficult’ on an income of £119 per week. The NatWest survey estimated that 25% of working people were saving enough to be comfortable in retirement, but 49% could expect to find themselves with incomes of less than £119 per week. Drawing on Figure 2.1, we would expect these figures to vary across the income scale, as we see in Table 2.1.

2.8 It is not possible to make a direct comparison between the socio-economic groups used to produce Table 2.1 and the income quintiles used for Figure 2.1. However, it does appear that people in retirement are able to spend, on average, less than the amount that they believe would make themselves ‘content’, suggesting that their incomes are less than they would wish.

2.9 This brief description of people’s spending and saving habits will be compared with the results that the model produces in Section 4.

3. THE MODEL

3.1 A deterministic model has been used to project forward the income, expenditure and wealth distributions of a household from a start age to an ‘end age’, which is the assumed age at death. The output, which is discussed in the following sections, is determined by controlling the household’s standard of living, or consumption, throughout its lifetime.

3.2 The household can range from one adult to a couple with up to four children. The household's income can vary, as can the ways in which adults contribute income to the household. The model permits one member of the household to take a break from work, and could be extended to incorporate periods in and out of work, or a changing share of income between adults.

3.3 The household starts with a basic salary and level of debt, controlled by the user. Income will largely come from earnings, but households can also draw down on savings and receive means tested benefits. The model permits 'general' spending (everything except house purchase and other saving), and then allocates everything left over to paying off the initial debt and to the various savings vehicles. The savings considered are home ownership, pensions (including defined benefit and defined contribution occupational schemes and personal pension schemes), ISAs and 'unsheltered' vehicles. After tax, National Insurance, general household spending and contributions to occupational pension schemes (where appropriate), the priority order is:

- (1) mortgage payments;
- (2) payment of the initial debt;
- (3) personal pension savings;
- (4) ISA saving; and
- (5) unsheltered saving.

It is assumed that the maximum amount possible will be put into the relatively tax efficient savings' vehicles. Only any excess cash is invested in 'unsheltered' savings.

3.4 General spending can increase in line with earnings or inflation, if preferred. Spending also increases by the number of people in the household. Thus, each additional adult or child increases expenditure by 70% or 50% respectively. These figures are suggested by the OECD (Hauser, 1997). After retirement, it is possible to permit the level of spending to change relative to the spending immediately prior to retirement.

3.5 The tax calculation takes into account most allowances, and includes adjustments for MIRAS and capital gains, where appropriate. Similarly, the income calculation takes into account child benefit.

3.6 The household's finances are projected forward, past retirement age, to their assumed age at death. Any unsheltered savings are used to offset the mortgage required when a home is purchased, and, in those years when the net income after tax and general spending is less than required to pay the mortgage, the household 'draws down' on its ISAs. The household can also borrow against the value of its house, or, if it is sufficiently wealthy, against its unsheltered savings (this is in lieu of drawing down on those savings).

3.7 Finally, the adults can join either defined benefit or defined contribution occupational pension schemes. The users can fix the age of joining, but, thereafter, they are assumed to remain in the scheme for the rest of their working lives.

3.8 Clearly, such a model relies heavily on a broad range of assumptions, and these are set out in detail in Appendix 1. Two important assumptions are that the tax and pension regimes will remain as at present; that is that allowances and other thresholds will continue to increase in line with price inflation, as they have done for the past 20 years. In due course, even people on less than average earnings will find themselves above the marginal tax threshold, so this practice is probably unsustainable in the long term. It is possible to alter the assumption to permit real growth in tax thresholds.

3.9 Thus, the main source of income before retirement age is salary, but households might also receive some investment return, child benefit, means tested social security and ISA drawdown. After retirement, income sources could include a personal pension, Basic State Pension (BSP), State Second Pension (S2P), protected rights pension (the user has the option to contract the household in or out of the S2P), means tested benefits, ISAs, an occupational pension and investment income. It is assumed that the personal pension scheme and ISA funds are drawn down until an age fixed by the user, at which stage the remaining capital is used to purchase an annuity.

3.10 The key to the model is a single figure, the multiple of a minimum spend that can be maintained throughout life. The minimum spend has been chosen as the level of spending recorded for the lowest income quintile in the ONS survey *Family Spending* (ONS, 1999). The multiple is set assuming that, at death, the household's net assets are equal to a multiple (which could be zero) of the assumed market value of its home. Based on this level of spend, the model produces information showing how the household's sources and uses of income vary with age. It also shows how the level of spending required to maintain the household's standard of living changes over time.

3.11 As an indication of the level of spending that those currently retired expect in order to be 'contented', we can translate Table 2.1 into multiples of the minimum spend. This has been done assuming that all the individuals' net incomes are available for general spending. As we shall see, this might not be the case. The results are shown in Table 3.1.

Table 3.1. Multiple of minimum spend for currently retired people who find life financially easy or difficult

	Easy	Difficult
All retired	2.26	1.51
Men	2.78	1.69
Women	1.80	1.34
Socio-economic group		
A/B	3.26	2.05
C1	2.49	1.67
C2	1.91	1.51
D	1.50	1.40

3.12 According to the NatWest (1999) survey, the ‘average’ retired person needs to achieve a multiple of 2.26 of the minimum spend to feel financially secure in retirement. From the discussion in Section 2, we know that there are significant numbers of the working population that cannot maintain this level of spending, but these results give a broad indication of what working people might aim towards.

3.13 Another interesting conclusion that we can draw from the numbers in Table 3.1 is that those in lower socio-economic groups, who will largely tend to be the less well off, have a very narrow margin between ‘financially difficulty’ and ‘financial contentment’. Those in higher economic groups have a far higher margin, and so have a larger number of outcomes where they can ‘make do’. This presumably provides greater flexibility in saving.

4. ‘STANDARD OF LIVING’

4.1 A common target benefit for occupational pension schemes is 2/3rds of final salary. Most defined benefit pension scheme members could expect to accrue this level of benefit over 40 years. Those with shorter service would receive proportionately less benefit. The implication is that people require less income in retirement than they do whilst in work. It is easy to see how this might arise for those who own their own homes, since mortgage payments would normally be completed before retirement. Similarly, one can assume that most saving for retirement will be completed before retirement occurs. However, other items of expenditure are less flexible. Whilst *Family Spending* (ONS, 1999) does show that general household spending is less for those in retirement than for those of working age, it is clear that this is not always out of choice, but rather through necessity.

4.2 The results presented in this section, therefore, generally assume that spending (per head and net of saving) will continue in retirement at the same level as in work. (See the Appendix for a brief summary of different savings models.) Results presented in Table 4.5.3 show how spending whilst in work could increase if we allow spending in retirement to fall.

4.3 The financial assumptions underlying the results presented in Section 4 are set out in the Appendix. Section 8 investigates how sensitive the results are to some of the assumptions.

4.4 With so many parameters, it is not possible (and would not be helpful) to present all the possible outcomes. Instead, a number of outcomes are presented, so that the effect of the changes in assumptions can be investigated. In all cases, adults enter the household aged 25 and households are assumed to start out with an outstanding debt of £10,000. The consequence of means tested benefits is discussed separately in Section 7.

Table 4.5.1. Couple with two children; 50/50 income split; draw down stops at age 69; no career breaks

Joint income	Retirement age	House purchase	Age at death	Multiple
£30,000	65	At 30 only	89	1.96
			95	1.94
	60	At 30 and 40	89	1.60
		At 30 only	89	1.78
			95	1.77
			95	1.77
£50,000	65	At 30 only	89	3.02
			95	3.00
	60	At 30 and 40	89	2.42
		At 30 only	89	2.74
			95	2.72
			95	2.72

4.5 *Couple with Two Children*

4.5.1 Table 4.5.1 presents the multiple of the minimum spend that a household consisting of a couple with two children would be able to maintain, assuming that its aim is to have the same standard of living throughout life. We have assumed that both adults receive the same income, that they have no breaks from paid employment until they retire, and that their first child is born when the couple reach age 30. Neither adult joins an occupational pension scheme. At retirement they draw down from their savings until age 69, when they purchase an annuity. At death their net assets equal the value of their house.

4.5.2 From these results we can draw some broad conclusions:

- The households are not exposed to much mortality risk, since annuity risk is passed to an insurer at age 69.
- Retiring at age 60 reduces the household's standard of living by about 10%.
- Purchasing a new home at age 40 reduces the household's standard of living by about 25%, but creates a larger inheritance.
- The average gross household income of those in the top income quintile is £55,000 (ONS, 1999). These households typically spend over four times the 'minimum spend' per individual member. The results of our calculations suggest that families in this household and income category are saving less than they need to maintain their standard of living in retirement.
- Comparing these results against the proposed levels of spending from Table 3.1, the household with a joint income of £30,000 cannot maintain the level of spending required for contentment, measured amongst all socio-economic groups. However, it falls comfortably into the level for the C1 group.

- The household with a joint income of £50,000 can meet the overall target, but undershoots the target for socio-economic group A/B. However, it does not undershoot by so much that it will find life financially difficult.

4.5.3 We can investigate how sensitive the results are to some of the household's general characteristics. The results for households with only one member of the couple in paid employment, for households where spending falls in retirement, and for households where one member of the couple takes a career break are given in Tables 4.5.2 to 4.5.4. In each case the household purchases one house at age 30, and reaches age 89.

4.5.4 Comparing the results in Tables 4.5.1 and 4.5.2, we can see, for example, that the household with two incomes of £25,000 and a retirement age of 65 has a standard of living 14% higher than the household where the joint income of £50,000 is received by only one adult. This arises because the former household gets the benefit of two single persons' tax allowances and has a smaller proportion of income taxed at 40% (although a higher proportion will incur National Insurance contributions). However, the former household would presumably incur additional childcare costs relative to the latter household, and these have not been built into the model.

4.5.5 The data presented in *Family Spending* suggest that a household with an income of around £50,000 would be spending about four times

Table 4.5.2. Couple with two children; results where income is paid to one member of couple; assuming one house purchase at age 30

Joint income	Split	Retirement age	Multiple
£15,000	100%/0%	65	0.97
		60	0.88
£30,000	100%/0%	65	1.75
		60	1.58
£50,000	100%/0%	65	2.62
		60	2.38

Table 4.5.3. Couple with two children; results where expenditure falls at retirement; assuming 50/50 income split and one house purchase at age 30

Joint income	Retirement age	Fall in expenditure	Multiple
£50,000	65	0%	3.02
		10%	3.10
		25%	3.23
		50%	3.48

Table 4.5.4. Couple with two children; results where one parent takes a ten-year break from paid employment; assuming 50/50 income split, one house purchase at age 30 and retirement at age 65

Joint income	Length of break	Multiple
£30,000	10 years	1.62
£50,000	10 years	2.51

the minimum spend, but also saving too little to maintain that lifestyle in retirement. This appears to be borne out by the results of our calculations.

4.5.6 Although it is becoming increasingly common for both partners to work, even with young children, the calculations have been repeated to consider the consequences of a working parent taking a break from employment after the birth of the first child.

4.5.7 Comparing these figures with those in Table 4.5.1, we see that the effect of a ten-year break is to reduce lifetime spending by about 15%. Alternatively, considering the results in Table 4.5.2, we see that returning to work can increase living standards considerably.

4.6 *Occupational Pension Scheme*

4.6.1 The majority of employees have access to an occupational pension scheme at some point in their careers. This is a source of additional saving, since employers have to contribute to occupational schemes, effectively by deferring the employee's pay. The results in Table 4.5.1 can be reproduced assuming membership of an occupational scheme, and some of these are presented in Table 4.6.1.

Table 4.6.1. Couple with two children; results where one spouse joins an occupational pension scheme; assuming 50/50 income split and one house purchase at age 30; both spouses still contribute to personal pension

Joint income	Scheme	Retirement age	Multiple
£30,000	DB	65	2.09
		60	1.88
	DC	65	1.99
		60	1.82
£50,000	DB	65	3.24
		60	2.92
	DC	65	3.10
		60	2.82

4.6.2 The calculations used to produce this table assume that the individual joins at age 25 and remains a member until retirement age. This is not entirely realistic, particularly for the defined benefit scheme, since it ignores the effect of job changes.

4.6.3 Both the defined benefit (DB) and defined contribution (DC) schemes are assumed to have a 5% member contribution. The defined benefit scheme has 1/60ths accrual and the defined contribution scheme has a 5% employer contribution. Neither scheme is assumed to contract out. Comparing the results with those in Table 4.5.1, we see that the effect of the defined benefit scheme is to increase general spending by between 6% and 7%. The defined contribution scheme does not increase the spending level of the household quite so much (approximately 2%), but this will vary according to the underlying assumptions. These answers seem reasonable, since the pension schemes provide between 30% and 50% of income at retirement.

4.6.4 Although the schemes do not appear to have much affect on consumption, by this measure, they do have a significant affect on the pattern of saving and replacement rates for the household. This is shown in Section 6.

4.7 *Household with No Children*

4.7.1 Results similar to those in Section 4.5 can be presented for households with no children.

Table 4.7.1. Household with no children; assuming 50/50 income split and one house purchase at age 30

Joint income	Household status	Retirement age	Multiple
£30,000	Couple	65	2.29
		60	2.09
	Single	65	3.57
		60	3.24
£50,000	Couple	65	3.59
		60	3.26
	Single	65	5.35
		60	4.84
£15,000	Single	65	1.91
		60	1.74

4.7.2 Comparing these results with those in the previous sections, we see that, as most parents realise, having children reduces one's standard of living.

4.7.3 It is also interesting to compare the outcome for the couple with an income of £30,000 with the single household with an income of £15,000. The former household benefits from greater tax allowances whilst in work, which enables a higher standard of living.

4.8 *Different Order of Investments*

4.8.1 Each household's standard of living will vary according to how well its savings perform. Section 8 considers the results if investment returns are different from those expected for this section. However, the return on savings also depends on the investment media chosen. In this section we consider the effect of different priority orders on savings on a household's standard of living.

4.8.2 The results in Section 5 assume that personal pension scheme saving takes precedence over ISA saving, and that no attempt is made to pay off the mortgage early. We will consider what might happen when paying off the capital outstanding under the mortgage is given priority over investing in an ISA.

4.8.3 *Pay Off Mortgage*

4.8.3.1 Savings for house purchase and in an ISA have some similar characteristics: they are both made from net income; and they can both be realised without incurring capital gains tax (assuming that the house is the main home). The main differences are:

- *Flexibility.* ISAs are liquid, whereas property is illiquid. However, in this model we have assumed that the household can borrow against its equity in the house. This provides liquidity, although, because of the cost of borrowing, it is less cost efficient than drawing down on an ISA.
- *Return.* ISAs are invested in mixed bond and equity portfolios that are subject to an expense deduction. House purchase, therefore, gives a higher rate of return, particularly since it reduces the cost of the outstanding mortgage.

4.8.3.2 For most of the households that we are considering, altering the investment order has very little effect on the level of consumption. Any benefit depends, firstly, on the extent to which the household has free cash to put towards the mortgage, and, secondly, on the cost of borrowing relative to the return from investment. Most of the households have very little spare cash, and rely on borrowing in retirement. Although, in isolation, paying off the mortgage early seems optimal, as a consequence the households make less investment. As a result, they need to borrow more in retirement, so the cost of the mortgage is just deferred.

4.8.4 *Give Priority to ISAs over Personal Pension Schemes*

4.8.4.1 Personal pension schemes and ISA savings have quite different characteristics (Cook & Johnson, 2000):

- Personal pension scheme saving is made out of gross pay, whereas ISA saving is made from net pay.
- Disinvestment from an ISA is flexible, and does not incur tax. On the other hand, personal pension scheme investments only become available when the policyholder retires. At retirement, 25% of the fund may be taken as a tax free lump sum, but the remainder must be taken as income that is taxed at the policyholder's marginal rate. So, for example, households that pay tax at the higher rate whilst in work, but at the lower rate whilst in retirement, are likely to get a better return from personal pension scheme saving.
- There are maximum contributions that can be made to both forms of saving. For an ISA the amount is fixed (currently £7,000 p.a.), whereas, for a personal pension scheme, the amount is a percentage of pay (up to a cap).
- It is not possible to borrow against personal pension scheme savings.

4.8.4.2 The return available from each type of investment will depend on the underlying assets. The model assumes that they are similarly invested, so that the only difference in return arises because dividends received by an ISA have a tax credit of 10% until 2004, so should provide a marginally higher yield.

4.8.4.3 Because ISA and personal pension scheme savings are treated so similarly by the model, altering the order does not have much effect on a household's standard of living. The crucial difference appears to be the flexibility afforded by ISA savings, which can be drawn down when income is low relative to expenditure. If most of a household's savings have been directed toward a personal pension scheme, then the household would have to borrow instead, and this is relatively more expensive.

5. DISTRIBUTION OF INCOME AND EXPENDITURE

5.1 It is interesting to consider the way in which expenditure changes with age. The model produces output that shows how the distribution of expenditure between consumption and saving varies with household age and family status. For example, a single person has relatively stable expenditure over time, although it is slightly larger whilst in work, because of the mortgage (we have assumed a 25-year term, capital repayment mortgage). However, families with children have cash rich and cash poor periods, and so need to target when they save more carefully. This is illustrated in Figures 5.1 and 5.2.

5.2 The drop in general spending at age 30 for the single person is due to the assumed move from rented to owned accommodation. For the purpose of this paper we have assumed that the rent is fixed, whereas the value of the house purchase, and therefore the cost of the mortgage, depends on salary.

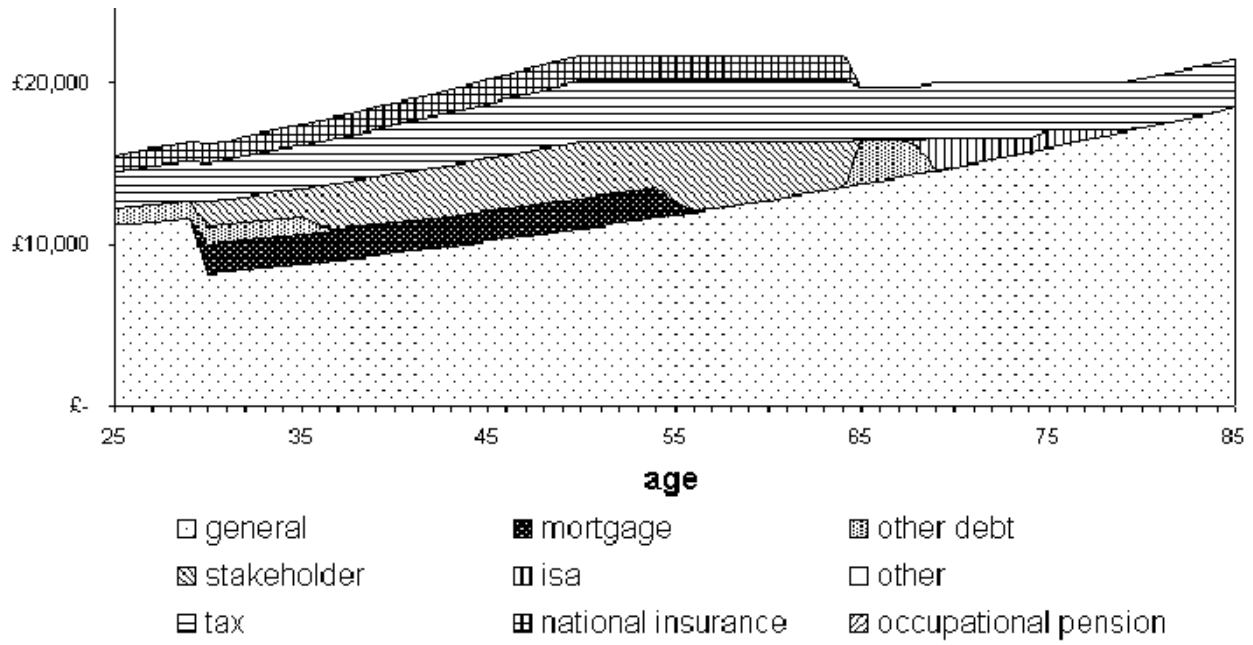


Figure 5.1. Household expenditure for a single person with a starting salary of £15,000

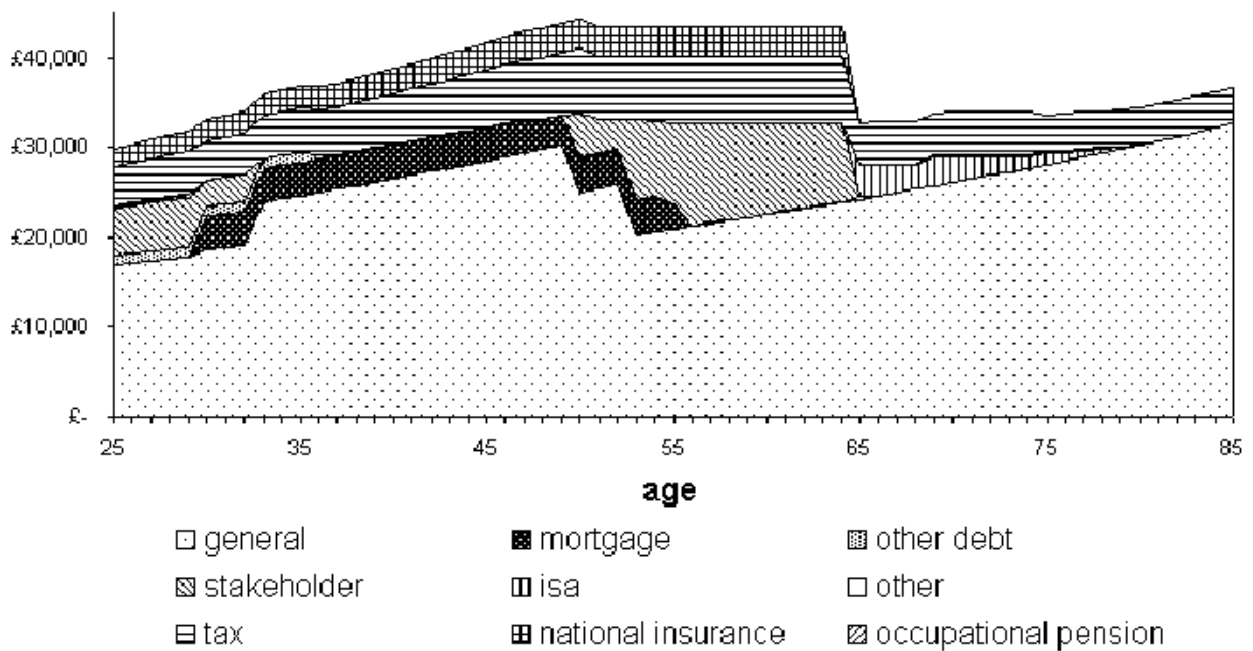


Figure 5.2. Household expenditure for a couple with two children and starting income of £30,000

5.3 Comparing the two figures, we see that planning for retirement is more straightforward if your family status does not change. Figure 5.1 shows how single people are able to save a stable proportion of their income throughout their working lives. The savings vehicles shown are largely housing and a personal pension scheme, because the individual has relatively low earnings. Someone with higher earnings would have greater opportunity to save, and so could take advantage of other types of saving.

5.4 Figure 5.2 illustrates how households with changing family circumstances can have long periods when saving is not possible. This is a deliberate consequence of the way in which the model is set up, since it assumes that the household wants to maintain its level of consumption. However, it illustrates that savings need not be constant throughout ones working life in order to maintain ones standard of living in retirement.

5.5 We can also see that both of these households manage to continue saving during the first part of their retirement. The single household first pays off the debt that helped finance consumption whilst of working age, and then saves to an ISA. As they get older, both households need to borrow against the value of their homes and their ISA savings to maintain their standards of living in real (with respect to earnings) terms.

5.6 The model also produces output that shows how sources of income change on reaching retirement. Figures 5.3 and 5.4 show the income distribution for couples with a starting household income of £50,000, shared equally between the two partners. Between ages 50 and 65 household incomes are not expected to grow faster than the rate of inflation. This assumption can be varied, but the rate of increase in earnings does tend to decline after about age 50. The income received after age 69 is also level, since at that age

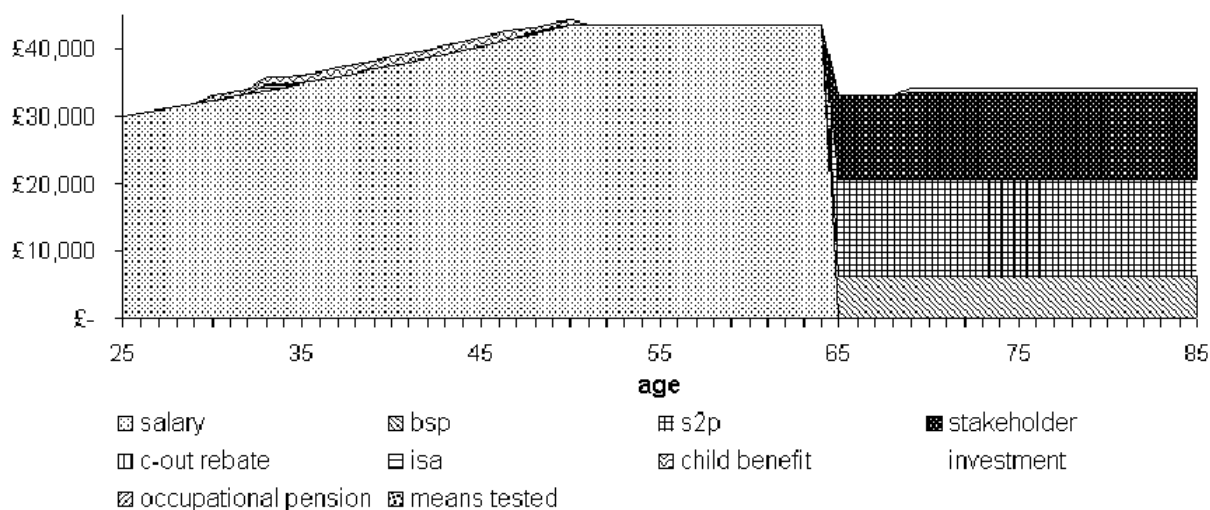


Figure 5.3. Household income distribution for a family with two children and starting income of £30,000

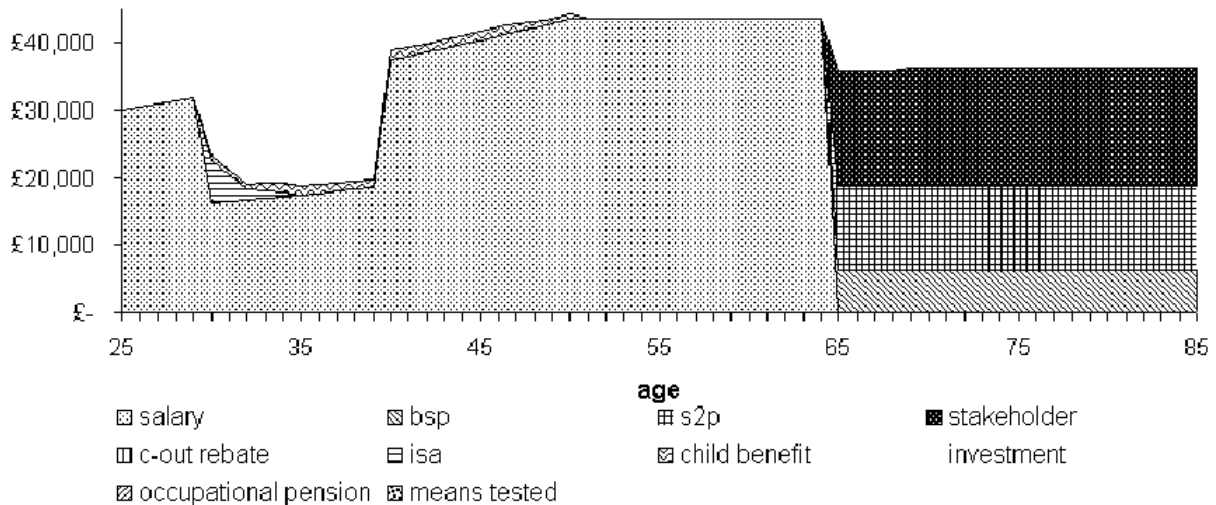


Figure 5.4. Household income for a family with two children where one parent takes a break for 10 years

the household stops drawing down on its ISA and personal pension savings, and purchases annuities linked to the RPI. It is partly to balance RPI linked income and wage linked expenditure that the households used for Charts 5.1 and 5.2 have to borrow in retirement.

5.7 Figure 5.3 would only change slightly if the household had no children. There would be no child benefit and no need to draw down on the ISA before retirement, and the level of income in retirement would be greater. Figure 5.4 shows how the income distribution of the household used for Figure 5.3 would change if one member took a 10-year break.

5.8 In both cases there is a single house purchase at age 30, and neither member of the couple joins an occupational pension scheme:

- Note how the ISA is used by the second couple to cover expenditure whilst one partner is taking a break from employment. When the ISA is exhausted, the model assumes that they are able to defer mortgage payments until their level of income recovers.
- Note also that, whilst the sources of income in retirement are similar in both cases, the level of income is, of course, lower for the household where one member has a career break. Because ISA savings were needed during the career break, they are not available at retirement. This is a useful illustration of the benefit of saving in ISAs rather than in personal pension schemes, since the latter do not afford this flexibility.

5.9 To sustain its level of consumption, as well as relying on the ISA during the career break, this household has to borrow and defer paying off the mortgage. It only pays off its mortgage by age 75, and still has a small amount of debt at age 89, although it can meet the debt out of its ‘inheritance’. Figure 5.5 shows its expenditure distribution.

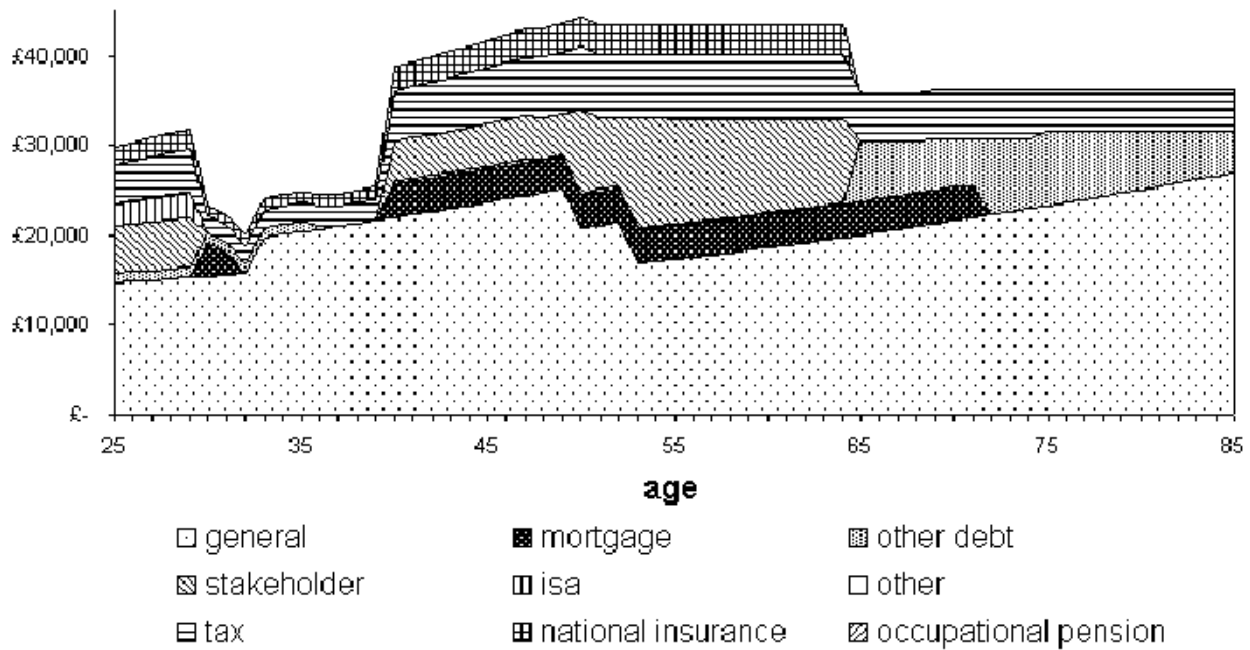


Figure 5.5. Household expenditure for a family with two children where one parent takes a break for 10 years

6. SAVING AND REPLACEMENT RATES

6.1 Traditionally, when planning for retirement, people are advised to maintain a certain level of saving throughout their working lifetime. The income at retirement that the saving produces is often illustrated as a 'replacement ratio', or percentage of salary immediately prior to retirement. Standard advice has been for individuals to aim for a 'replacement ratio' of 2/3rds at retirement.

6.2 Figures 5.1 and 5.2 show the various forms of saving included in the model, with other items of expenditure. However, it is useful to investigate saving in isolation. We will look at the level and timing of the savings necessary to maintain the model's imposed standard of living throughout retirement, and the replacement ratio that this level of saving produces. We should be able to see whether the standard rules of thumb are based on reality.

6.3 Figures 6.1 to 6.4 show the savings' rates and replacement ratios at each age for households with a starting income of £15,000p.a. and £50,000p.a., under various possible scenarios. In each case the household comprises a couple with two children. The higher lines denote the replacement ratio and the lower lines denote the level of saving.

6.4 The 'replacement ratio' prior to retirement is the total income in the year expressed as a percentage of salary. It demonstrates the extent to which the household has had to draw down on its savings during its working

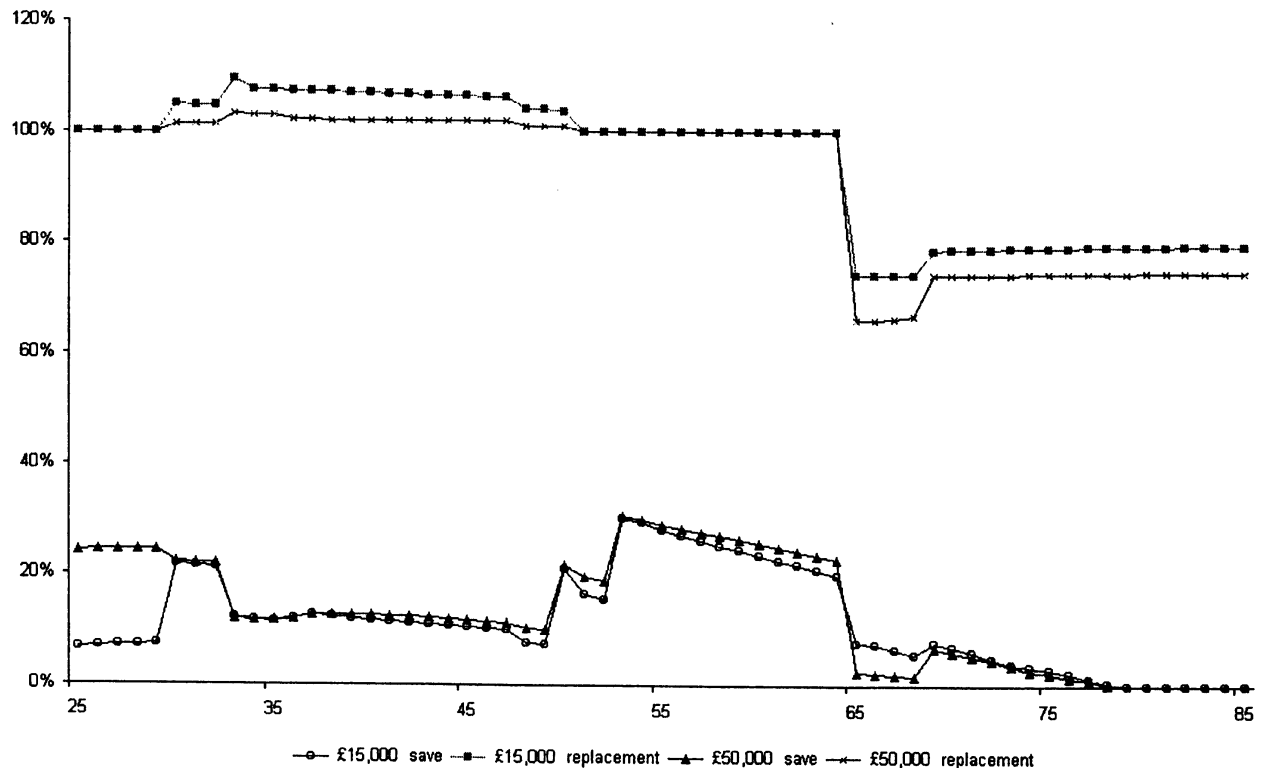


Figure 6.1. Savings and replacement ratios for retirement age 65

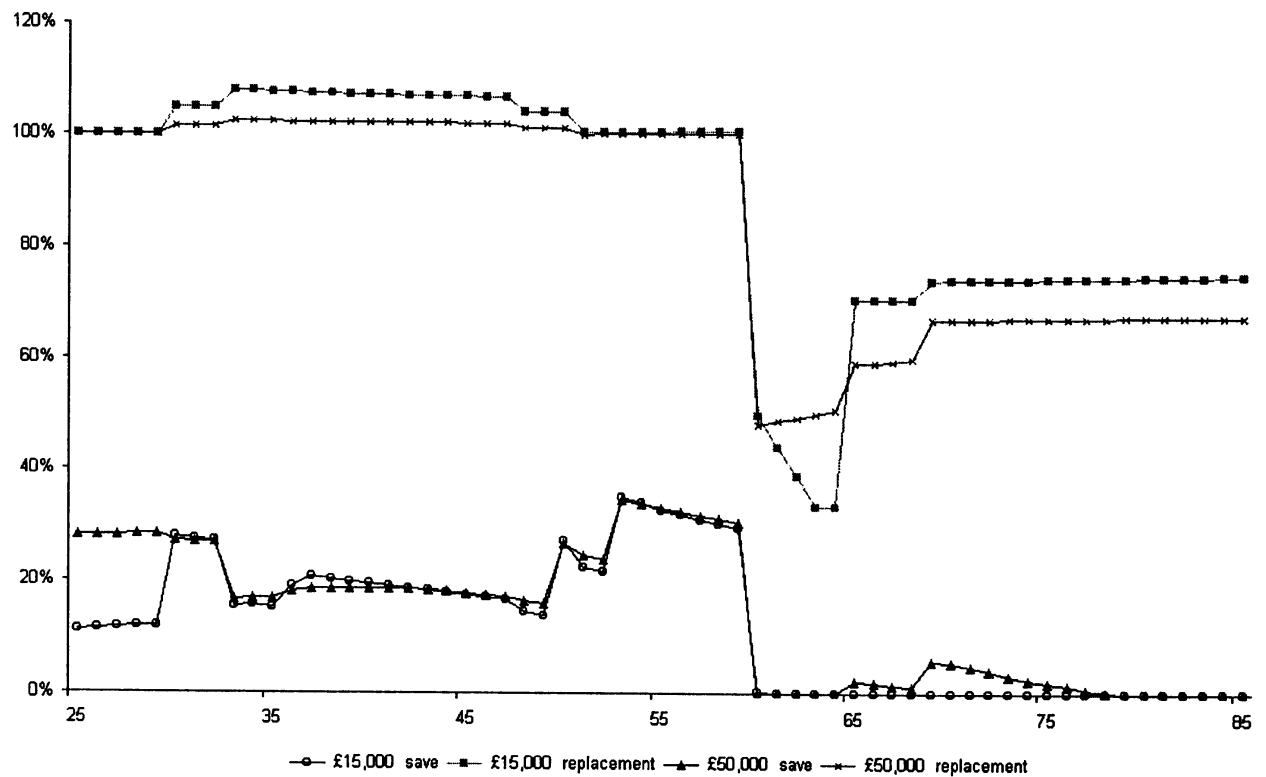


Figure 6.2. Savings and replacement rates for retirement aged 60

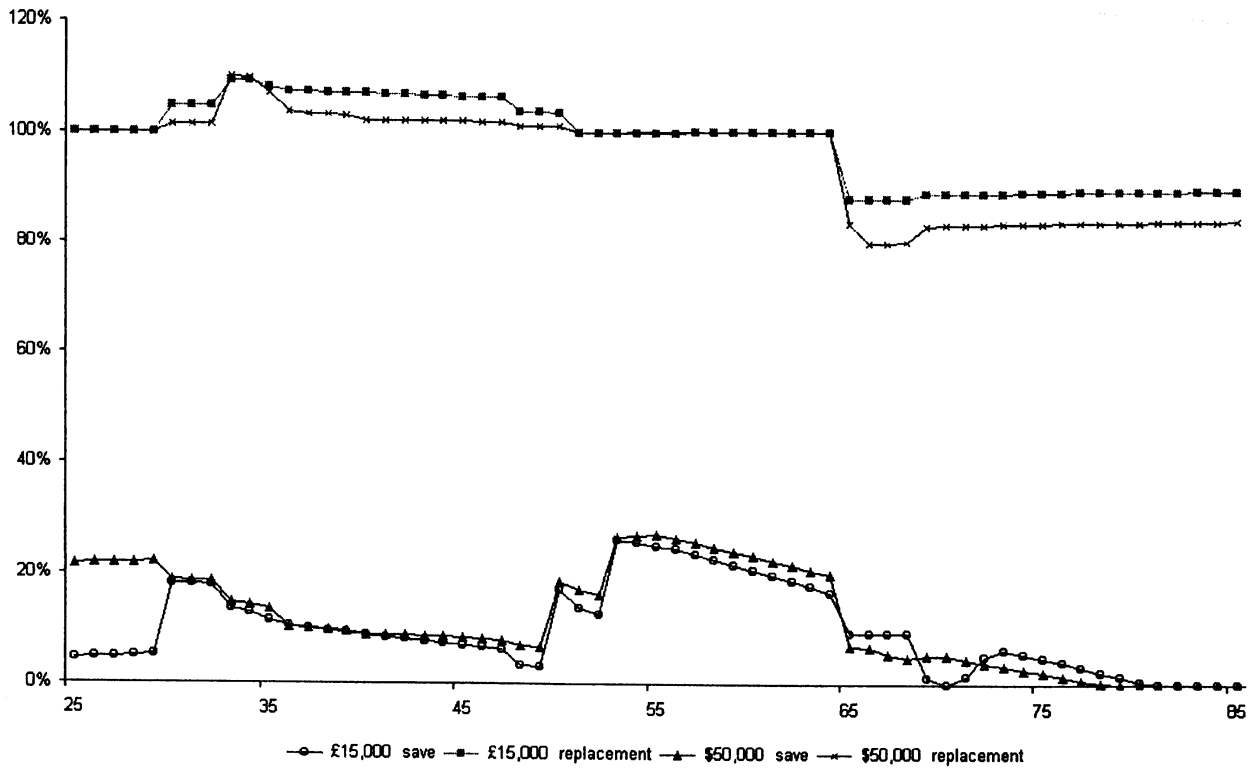


Figure 6.3. Savings and replacement rates for retirement aged 65 and membership of a DB scheme

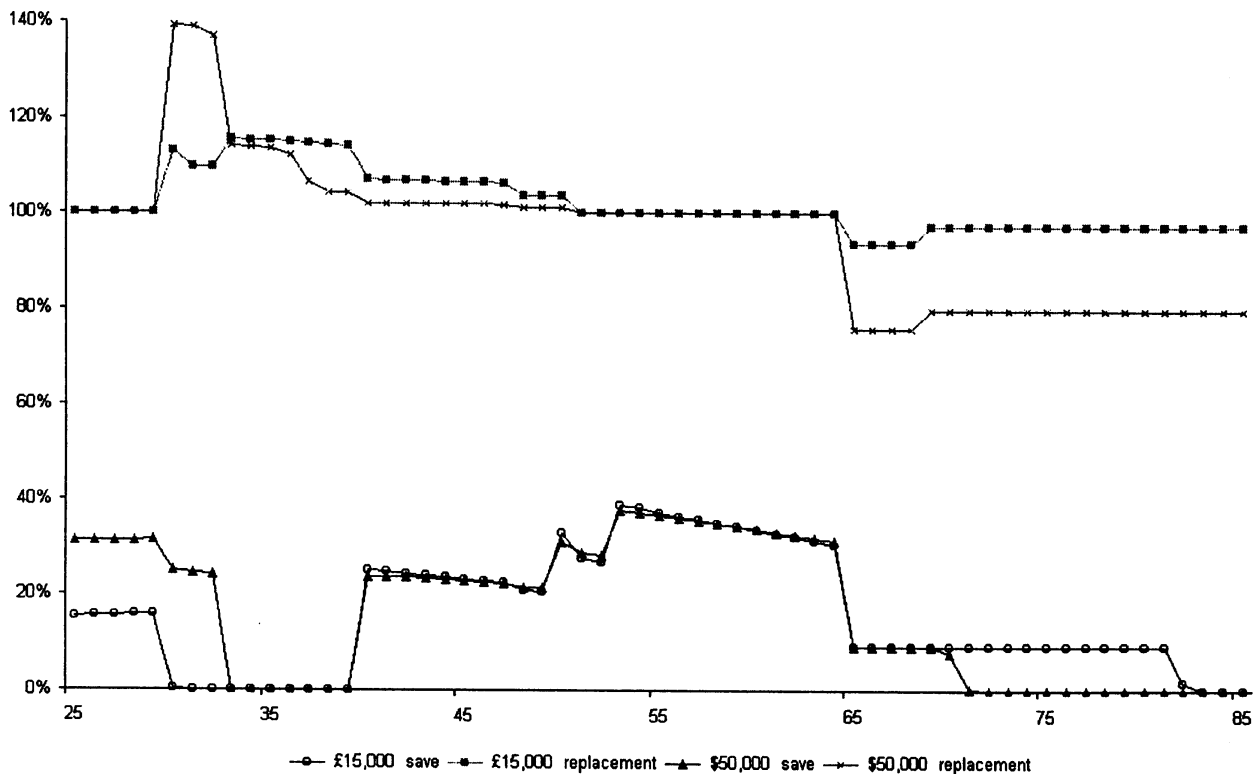


Figure 6.4. Savings and replacement rates for retirement aged 65 where a career break is taken

lifetime in order to maintain its standard of living. The replacement ratio post retirement is calculated as the income in the year expressed as a percentage of salary in the year immediately prior to retirement.

6.5 One, perhaps surprising, point is that household income appears to have remarkably little influence on the pattern or level (as a percentage) of saving. We will investigate this further in the next section, which includes means tested benefits in the analysis. There is a material gap in the first five years, which arises because each household is assumed to rent until they purchase a house aged 30. The model fixes the amount of rent, regardless of income, whereas the cost of the mortgage is proportionate to income.

6.6 As might have been expected, saving is most volatile in the household where one person takes a career break (Figure 6.4). Apart from this case, when sometimes no saving is possible, saving varies between about 15% and 35% of salary, depending on household status at the time.

6.7 Saving is least volatile when individuals have access to an occupational pension scheme (Figure 6.3). This is partly because the scheme imposes a minimum level of saving, but also because the household benefits from the employer's contributions, and so does not have to compensate for those years when savings has been low by increasing savings at other times to the same extent.

6.8 All the figures, but particularly Figure 6.4, demonstrate that the advice, 'save 15% of earnings throughout your working lifetime', might not be most useful. Clearly, guidance is needed as to the effects of reducing, stopping or delaying saving.

6.9 Replacement ratios vary by level of household income; lower income households have higher replacement ratios in all cases. This happens for two reasons:

- The BSP and S2P provide a greater proportion of post-retirement income for those on low incomes (about 23% for household's with combined income of £50,000 and 44% for household's with combined income of £30,000).
- Since the tax system is progressive, those on lower incomes pay a lower percentage of their income in tax, and so, according to the model, have proportionately more left for general spending and saving. It would probably be more sensible if, once spending fell to a certain level, all saving ceased. This is investigated in Section 8.

6.10 The replacement ratios at retirement provided by private saving and state pensions are given in Table 6.1. This table also shows the average savings rate up to retirement age, including the cost of housing.

6.11 The results in Table 6.1 do not take into account the particular circumstances of each individual or the arrangements of the household. In particular, the household where one member takes a career break has a higher replacement ratio than the household that remains in work and

Table 6.1. Replacement ratios and savings rates

Household status	Joint income	Replacement ratio	Average saving
Retire aged 65	£15,000	74.3%	15.9%
	£50,000	66.3%	19.2%
Retire aged 60	£15,000	66.3% (49.8% at 60)	19.2%
	£50,000	59.3% (48.1% at 60)	23.6%
Career break	£15,000	88.1%	13.2%
	£50,000	83.5%	16.8%
DB scheme	£15,000	93.6%	20.3%
	£50,000	75.8%	24.0%

Table 6.2. Replacement ratios — partner 1 in DB scheme

Joint income	Member of household	Replacement ratio
£50,000	Partner 1	111%
	Partner 2	56%

appears to have a lower level of saving. This is because the household has to continue saving in retirement to pay off the debt incurred during the break from work, so that it does not result in a higher standard of living.

6.12 Similarly, it might be necessary for one member of the household to achieve a far higher replacement rate than the other, if the household is to achieve its desired replacement rate. The results presented in Table 6.2 illustrate this point.

6.13 Ignoring the contribution to the occupational pension scheme, both partners have similar savings ratios. (Partner 2 saves marginally less, since it is assumed that all elective tax allowances, apart from the single person's allowance, go to partner 1). However, partner 1's employer's occupational scheme imposes a certain level of forced saving, as well as providing an additional source of saving. Effectively, the employer's saving replaces part of partner 2's saving.

6.14 The model does not allow for family breakdown. If the trends observed in the 1990s continue, it is likely that there will be an increased number of single households, many arising from divorce (Murphy & Wang, 1999). In view of Pension Sharing and other divorce legislation, it might be reasonable to assume that partner 2 has not adopted too much risk by reducing saving (and, therefore, contributing more to general expenditure) in the expectation of benefiting from partner 1's higher replacement ratio. Generally, however, the financial outcomes from divorce are not equitable, and one member (the one who has the main child caring responsibility, usually the woman) ends up being significantly worse off.

6.15 We see from the results in this section that a replacement ratio of 2/3rds, including state benefits, is quite modest, even for higher income

groups. It is probably better for such a target to be placed high, so that it can be undershot without causing extreme difficulty.

6.16 The savings levels that are needed to reach the replacement ratios recorded are higher than those observed in *Family Spending* (ONS, 1999). If these are reliable measurements, households are likely to experience a drop in their standard of living at retirement. This might be reasonable for some households, although, as we observed in Section 2, it is likely that pensioner households would prefer higher levels of consumption. However, unless saving levels amongst the lower paid can be improved, they will experience increased poverty in retirement.

7. MEANS TESTING

7.1 The results in the previous sections concentrate on the effects of private savings, including state benefits, only to the extent that they are ‘earned’ by virtue of National Insurance payments. However, certain groups are eligible for means tested benefits. (The means tested benefits included in the model are summarised in the Appendix). Some research has been done on the way in which means testing affects people’s work and savings’ decisions, but most of it is theoretical (for example, Feldstein, 1987; Friedberg, 1999) or qualitative (for example, evidence given by Age Concern to the Select Committee in Social Security, Fifth Report). By incorporating means testing into the model that we have used for this paper, we can see how the expectation of a certain level of means tested benefits will affect the need to save and the ‘standard of living’ of the household.

7.2 Table 7.1 presents these figures for our ‘standard’ household of a couple with two children, assuming that:

- they have a total income of £15,000, split equally between the couple;
- they retire aged 65 and live until age 89; and
- the families that buy a house leave the value of the house as an inheritance.

Table 7.1. Minimum spend and average saving

	Means test?	Multiple	Average saving (%)	
			including house	excluding house
Buy house at 30	No	1.14	11.5 [#] (18.1) [*]	7.4 (11.4)
	Yes	1.34	11.4 (18.1)	6.9 (11.2)
Rent — inheritance	No	0.83	—	20.8 (29.1)
	Yes	0.95	—	26.0 (33.9)
Rent — no inheritance	Yes	1.23	—	9.0 (6.6)

Notes: [#] average saving to age 65

^{*} figure in brackets is saving averaged over lifetime

7.3 Before commenting on the figures in Table 7.1, it is worth noting that, throughout their working lifetimes, these households pay tax and National Insurance. Their entitlement to income support depends largely on their children, although they also receive some in the years immediately preceding retirement.

7.4 Once they reach retirement, their entitlement to the minimum income guarantee (MIG) depends on their income. The household that buys a house receives an increasing proportion of its income (from under 10% to approximately 25% at 85) from the MIG. The proportion of income provided from means tested benefits increases throughout retirement, since:

- state pensions in payment only increase in line with prices;
- we have assumed that annuities bought from private savings will only increase in line with prices; and
- the MIG is increased in line with earnings.

7.5 The household that lives in rented accommodation and wants to leave an inheritance receives virtually none of its retirement income through means tested benefits. To match the inheritance of the family that bought a house, it has saved a high proportion of its income whilst in work, and has to continue to save at an even higher rate throughout retirement. This can be seen by comparing the average rate of saving over the household's lifetime to the average rate up until age 65. In this case the former is higher than the latter, whereas normally saving would fall after retirement. The income generated by its savings exceeds the income test for the MIG, although most of it has to be reinvested.

7.6 The results suggest that receipt of means tested benefits enables higher levels of consumption that can be maintained in retirement partly through increased saving. This is contrary to the received wisdom that means testing reduces the incentive to save (for example, Feldstein, 1987), but consistent with the logic of the model. We have assumed that the household targets a fixed inheritance, and consumption and saving are the only variables that can be modified to achieve this.

7.7 We could, instead, assume that a household wants to maintain a fixed level of consumption, and look at how savings and inheritance must alter to accommodate this. For example, it seems reasonable to assume that no household would permit its consumption to fall below the 'poverty' spend. However, in Table 7.1 we see that, if there are no means tested benefits, the household that rents and wants to leave an inheritance would only be able to sustain consumption at 83% of the poverty spend. If we impose a minimum level of consumption equal to 100% of the poverty spend, then the household will end with a debt equal to about 25% of the value of the house.

7.8 If means tested benefits were introduced, the household could use the additional income to increase consumption, to increase saving, or both. The outcomes from the former two alternatives are shown in Table 7.2.

Table 7.2. Effect of means testing for a household that rents, if consumption and inheritance are prioritised differently

	Priority	Multiple	Average saving		Inheritance
No means test	Inheritance	0.83	20.8% [#]	(29.1%)*	100%
	Consumption	1.00	10.3%	(2.6%)	−26%
Means test	Inheritance	1.00	23.0%	(26.4%)	70%
	Consumption	1.23	8.9%	(6.6%)	0%

Notes: [#] average saving to age 65

* figure in brackets is saving averaged over lifetime

7.9 The actual level of consumption is likely to be between 1 and 1.23 times the poverty spend, and the inheritance and saving will vary accordingly. However, if the household's priority is to maximise consumption (which at low levels of consumption seems reasonable), means tested benefits will not increase the level of saving.

7.10 The figures in Table 7.1 suggest that housing is a good investment, certainly relative to renting and trying to save in addition. This is partly a function of the assumptions made about the growth in the value of property. However, eligibility to some means tested benefits depends on a capital test. Frequently the value of a home will be excluded from the capital test, whereas other savings will not. So, saving elsewhere can make a household that rents ineligible for means tested benefits. On the other hand, home ownership is a very illiquid investment, whereas ISA savings, for example, could be far more flexible. Since we have assumed that households can borrow against their property, this is not an issue that the model addresses.

7.11 Now we will look at the position of different households.

Table 7.3. Minimum spend and average saving

	Housing	Multiple	Average saving (%)	
			including house	excluding house
10-year break	Purchase	1.20 (0.95) [†]	15.9	9.6
	Rent	0.85 (0.65)	—	27.0 [#] (33.7) *
No children	Purchase	1.33 (1.31)	20.2	13.4
Single parent (15 K)	Purchase	1.72 (1.47)	21.9	15.0
Single parent (7.5 K)	Purchase	1.47 (0.83)	36.6	29.9

Notes: [†] figures in brackets ignore means tested benefits

[#] average saving to age 65

* figure in brackets is saving averaged over lifetime

7.12 The standard of living of the household with two children, where one parent takes a ten-year break from paid work after the birth of the first child, is about 12% less than that of the household where both parents work throughout. They also have different income and expenditure patterns. The latter household pays off its mortgage by age 59, having had to accrue extra debt when the second child is born. Once it has paid off this debt (and its initial debt), it does not have to borrow (apart from the mortgage), apart from a small amount each year after age 65. This could be viewed as equity release on the house.

7.13 In contrast, the former household does not pay off its mortgage until its death, having made no payments for the seven years between the birth of the second child and the ‘caring’ partner’s return to work.

7.14 Both households pay tax and National Insurance throughout their working lives, and continue paying tax throughout retirement.

7.15 Turning to income, the household where one parent takes a break receives more means tested benefits during that break than the household where no break is taken, even though the latter household is eligible for child care support. The household that rents also receives housing benefit during this period. Once in retirement, the former household also receives more means tested benefit, although, once the ‘caring’ partner returns to work, it is able to save towards a personal pension.

7.16 The household without children has an easier time, financially. It pays off its initial debt and mortgage within the allotted time, and is able to save from age 30 towards a personal pension. It receives virtually no means tested benefits whilst in work, and only becomes eligible for means tested benefits aged 78. By age 85, about 10% of its income is due to the MIG.

7.17 The single parent with an income of £15,000 has the highest standard of living of those in this section. Whilst in work, the household receives means tested benefits similar to those of the other households with two children, as means testing is based on household income. However, the MIG is lower for a single person than for a couple, and this person’s savings are sufficient to lift the household above the eligibility threshold for the single person’s MIG.

7.18 The household with a single parent and an income of £7,500 receives a significant proportion of its income, at all ages prior to retirement, from means tested benefits. It has to extend the period over which it pays back its initial debt, and it takes an extra two years to pay off its mortgage. At the same time, it is able to save enough so that, in retirement, it can generate sufficient income to be ineligible for the MIG until reaching age 79. However, the ability to save is a function of the model. When awarding a mortgage or permitting borrowing, the model does not exercise credit ratings nor deal with the effects of social exclusion. In its world, payment of the mortgage can be extended and increased borrowing allowed, to the extent that it is secured against the inheritance. In real life, people in lower income

groups will frequently be refused credit, except, perhaps, at exorbitant rates, and will find their homes repossessed if they cannot afford their mortgage payments. Also, to keep comparisons consistent, the house price has been fixed at two times income. In most parts of the U.K. people will struggle to find a house, on which a building society would be prepared to lend, for £15,000.

7.19 The Government's policy has been to target means tested benefits at low income families with children. The results of the model show that, for the households which we have considered, this has been quite effective. The standard of living of the household without children has been increased by 1.5% due to means tested benefits. The other households, with incomes of £15,000 p.a., experience increases of between 17% and 31%. The standard of living of the household with an income of £7,500 is increased by 77%.

8. SENSITIVITY ANALYSIS

8.1 *Investment Returns*

8.1.1 Except for the defined benefit scheme, all the investments are 'money purchase' in type. That is, their value depends on investment markets, and can go up or down. (In theory, the pension from a defined benefits scheme will not change in value solely due to market movements.) A deterministic model does not capture this effect, and so we will investigate the consequences of different investment return assumptions.

8.1.2 Clearly, if we assume, in this section, that investment returns are lower than those which we assumed in the previous sections, the household's standard of living will fall. What is interesting is how sensitive the standard of living is to falls in investment returns. Some of the results of Section 4 are repeated here, assuming that real investment returns are about 2% lower on average (see Appendix). The result of this 'poor' investment return is compared against the 'normal' return assumed in Section 4.

8.1.3 By comparing the two columns of multiples in Table 8.1.1, we can see that the lower investment returns have reduced each household's standard of living by about 6% for those retiring at age 65 and 10% for those retiring at age 60. However, this assumes that the households have had the benefit of foresight and anticipated the poor investment performance by increasing their rates of saving. If they expected the higher rate of investment return they would have saved less, and so their standard of living in retirement would fall further. For example, suppose that the first household in the table had maintained a standard of living of 1.96 times the minimum spend whilst in work and that investment returns had been 'poor' rather than our original expectation. Then, on retirement, its standard of living would have had to fall by approximately 20% (that is, to 1.57 of the minimum spend) if it kept the same target inheritance.

Table 8.1.1. This is as Table 4.5.1, but with lower investment returns

Joint income	Retirement age	House purchase	Age at death	Multiple ('poor')	Multiple ('normal')
£30,000	65	At 30 only	89	1.84	1.96
			95	1.82	1.94
	60	At 30 and 40	89	1.52	1.60
		At 30 only	89	1.64	1.78
			95	1.62	1.77
£50,000	65	At 30 only	89	2.80	3.02
			95	2.76	3.00
	60	At 30 and 40	89	2.27	2.42
		At 30 only	89	2.47	2.74
			95	2.44	2.72

8.1.4 The groups that lose most in these circumstances are the households with no children, since they have been able to save more than those with children. They lose both because their savings grow less than expected and because they produce a lower income. The results in Table 8.1.2 show standards of living falling by over 10% in some cases. Again, this presupposes that they have saved enough to compensate them for lower investment returns. Had they anticipated the higher rates of return, they would experience a further fall in their standard of living in retirement.

8.1.5 Defined benefit occupational pension schemes are the only private savings that households in the model have access to that are (at least notionally) protected from poor investment returns, but 'public' savings have similar characteristics. State pensions are essentially defined benefit,

Table 8.1.2. This is similar to Table 4.7.1, but with lower investment returns

Joint income	Household status	Retirement age	Multiple ('poor')	Multiple ('normal')
£30,000	Couple	65	2.11	2.29
		60	1.87	2.09
	Single	65	3.27	3.57
		60	2.89	3.24
£50,000	Couple	65	3.24	3.59
		60	2.85	3.26
	Single	65	4.84	5.35
		60	4.30	4.84
£15,000	Single	65	1.80	1.91
		60	1.59	1.74

and so provide a floor below which income cannot fall, thus limiting an investors' 'downside' risk. Similarly, means testing cushions savers, to some extent, from the effect of poor investment returns. For example, allowing for means testing, the standard of living of the single person with an income of £15,000, retiring at age 60, would only fall to 92% rather than 91% of the Table 4.7.1 level. Couples with children on this level of income would only see a fall of 2%, if there were means tested benefits, rather than of 6%, if there were no means tested benefits. However, we have seen, in Section 7, that means tested benefits are only significant at quite low levels of income. It is unlikely that those with earnings greater than average would want to retire with incomes that leave them eligible for the MIG.

8.2 Inheritance

8.2.1 Assuming that households leave the full value of their homes as an inheritance clearly limits their ability to spend whilst in retirement. In this section we repeat some of Table 4.5.1, but allow for different levels of inheritance.

Table 8.2.1. This is similar to Table 4.5.1, but with different inheritance, retirement at age 65 and death at age 89

Joint income	House purchase	Inheritance	Multiple
£30,000	At 30 only	0%	2.21
		50%	2.08
		100%	1.96
	At 30 and 40	0%	2.12
		100%	1.60
£50,000	At 30 only	0%	3.44
		100%	3.02

8.2.2 We see that households which make only one house purchase can increase their standard of living by about 13% if they are able to spend against the value of their home. The household with two purchases can increase its standard of living by about 32%. The difference represents the higher value of the second house, as well as the relatively favourable rate of property growth that the model assumes.

8.2.3 This demonstrates the potential attractiveness of equity release schemes, where they can be devised in a way acceptable to both the consumer and the provider (Le Grys *et al.*, 2001).

8.3 Annuitisation

8.3.1 Given the current interest in income drawdown and forced

annuitisation, it is interesting to see what happens to each household's consumption if it decides not to purchase an annuity, but to continue drawing down on its savings. Because this is a deterministic model, the risks that the household becomes exposed to are limited to the effect of longevity and the different costs involved. Formal income drawdown schemes are relatively expensive, but this model ignores this cost. Effectively, we are just comparing an investment in gilts, with a mortality guarantee, with an investment in a mixed equity/gilt portfolio. We would expect the latter to give a better return for those households that end at an earlier age, and the former to give a better return for those households that are longer lived.

8.3.2 We illustrate the cost by repeating Table 4.5.1, assuming that assets are freely drawn down until death.

Table 8.3.1. This is as Table 4.5.1, but also includes the multiples when draw down only stops at death

Joint income	Retirement age	House purchase	Age at death	Multiple (d/d)	Multiple (d/d stops)
£30,000	65	At 30 only	89	1.97	1.96
			95	1.90	1.94
	60	At 30 and 40	89	1.61	1.60
		At 30 only	89	1.80	1.78
			95	1.74	1.77
			95	1.74	1.77
£50,000	65	At 30 only	89	3.05	3.02
			95	2.93	3.00
	60	At 30 and 40	89	2.43	2.42
		At 30 only	89	2.77	2.74
			95	2.66	2.72
			95	2.66	2.72

8.3.3 The result is exactly as we expected. Households with an end age of 89 are marginally better off if they do not purchase an annuity at 69, whereas those that survive until 95 are worse off. The result reflects the expectation of life inherent in the mortality tables used to calculate the annuity.

9. CONCLUSION

9.1 It is apparent from the output of this model that saving is a moveable feast (or famine), and that both the need and the ability to save depend crucially on household circumstances. It is quite powerful in demonstrating how a household's standard of living is vulnerable to family circumstances and to savings decisions. Figure 5.2 shows how even a

household receiving about twice the median income could experience a long time when it will be unable to save (when it has children). When children eventually leave home, we can also see that it is important that the income no longer needed to support the child is saved, in order to maintain the standard of living in retirement.

9.2 From Section 6, we see that, whilst saving rates can be low, or even zero, at younger ages, once children have left home they should be increased to around 30% of earnings. In many cases it could be necessary to continue saving in retirement. This pattern is not sensitive to income, and savings' rates at each age increase only slowly with household income. However, the model assumes that the adults in the household can continue to find paid employment, and that their earnings maintain their real value until retirement. For many people this is not the case. Households that follow the investment strategy that the model appears to recommend, and then find themselves without paid employment in the years prior to retirement, will be very vulnerable in retirement.

9.3 Although it is not optimal in terms of consumption, a more cautious approach would be to vary one's standard of living and maintain a more stable saving's rate. Although this might lead to some hardship whilst with young children, for example, it could have the advantage of bringing forward saving, thus reducing vulnerability to loss of employment prior to retirement.

9.4 Other sources of information (for example, NatWest, 1999) imply that, whilst wealthier households need a higher weekly pension in order to be 'content' in retirement, there is a large difference in the level of income for contentment or distress. Wealthier households, thus, have a wide margin of error when setting the target for their savings. Households with lower incomes have narrower margins between contentment and distress, so they are more vulnerable to downside risk. Downside risk could arise due to market falls, the increasing cost of annuitisation, or because households underestimate the level of saving required. Section 8 gave some indication of how households might be affected by these events. In the example used for poor investment returns, consumption had to fall by 1/5th.

9.5 The usual target for income in retirement is 2/3rds salary, which the model's output suggests is quite low (see Section 6). Occupational pension schemes cannot provide a replacement rate higher than 2/3rds, so even those with good expectations from their employer's scheme should probably be saving elsewhere.

9.6 The most certain ways currently available to protect against adverse experience are through insurance or through state support. The results in Section 7 showed how means testing could protect the downside risk of lower income households, but also demonstrated that it could have other consequences that were not desirable, such as reducing the incentive to save. 'As of right' benefits, such as the BSP and S2P, also reduce downside risk, but might not have the same effect on saving.

9.7 The value of an insured income stream was demonstrated in Section 8.3. Annuitisation protects against longevity as well as falls in the stock market. However, annuity purchase locks the purchaser into fixed-interest returns, and so limits the opportunity to benefit from potentially better returns elsewhere in the market. Also, for those with impaired life expectancy, a normal annuity would probably not offer value for money.

9.8 There are some groups for whom private saving is not sensible, and it would be wrong for providers or government to encourage these groups to assume that the private sector is sufficient to meet their financial needs. This model can indicate when saving is not possible, or when the rational decision for a household would be to decide not to save for retirement. However, there are other important reasons for saving. For those households where retirement saving is not necessarily a priority, we have seen that it might be better to save in more flexible arrangements, such as ISAs. Although these do not have quite such beneficial tax status, they can add value, because they have fewer constraints.

9.9 The model presented in this paper is not a blueprint for saving success. It only illustrates a desirable savings pattern, given certain criteria, with no assurance that the savings pattern will continue to be desirable if circumstances change. People need to be made aware, continually, of their current and future expected financial circumstances if they are to plan appropriately for retirement. The annual benefit statement proposed by the Government could be a step in this direction (PFAG, 2000). However, information is not necessarily power. A simple benefit statement will not give people the level of understanding needed to plan for the future, and those in lower income households might not be able to adjust their savings in reaction to the information provided.

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APPENDIX

ASSUMPTIONS AND BACKGROUND

Results have been presented for the following combinations of assumptions.

A.1 Household Statistics

Start age	25
Retirement age	60 and 65
Drawdown age	69
Age at death	89 and 95
Household type	Single; couple; couple with two children
Household income	£15,000; £30,000; £50,000
Share	100%, 0% and 50%, 50%
House purchase	Two times income at 30; two times income at 30, and four times income at 40
Rent	£3,600 p.a. (before purchase of first house), increasing in line with inflation
Spending	‘poverty’ spend £3,945, no drop and drop at retirement
Annuity	Index linked

A.2 Economic Assumptions

	Standard basis	‘Poor’ basis
Inflation	0%	0%
Real salary growth	1.5% (in excess of inflation)	1.5% (in excess of inflation)
Dividend yield	2.0%	1.0%
Real dividend growth	3.5%	2.0%
Real bond yield	2.0%	1.5%
Real property growth	3.5%	3.0%
Mortgage interest	1.0% in excess of bond yields	1.0% in excess of bond yields
Investment expenses	1.0%	1.0%
Cost of unsecured borrowing	2.0% in excess of bond yields	2.0% in excess of bond yields

A.3 Tax and State Benefits

A.3.1 These are assumed to be as at the tax year 2000/2001, and increase in line with inflation.

A.3.2 State pension allows for the introduction of the State Second Pension from 2002.

A.3.3 The means tested benefits included are:

- the Working Families Tax Credit;
- Housing Benefit; and
- the Minimum Income Guarantee and Pension Credit.

A.4 *Savings Models*

A.4.1 There are several different reasons why individuals choose to save. Commonly identified models are:

- a lifecycle model, where the desire is to smooth consumption;
- a bequest model, where the desire is to leave an inheritance; and
- a precautionary model, where the desire is to protect against the risk of unlikely events, such as early death.

A.4.2 The model that we use is a combination of the lifecycle model and the bequest model, since the target is to maintain the household's standard of living whilst permitting an inheritance on death. By combining these two, the household, effectively, has savings put aside, should an unexpected event occur.

A.4.3 The risks of following this approach are:

- (1) that the households will not have sufficient precautionary savings; and
- (2) that the household is 'myopic', that is that it underestimates its longevity.

A.4.4 Using insurance can reduce both these risks. For example, using a portion of the 'inheritance' savings to buy insurance can reduce the risk that, on early death, the inheritance will be less than expected. Similarly, the model effectively protects against 'myopia', by assuming that savings are used to purchase an annuity no later than at age 70. If income drawdown were continued indefinitely, however, the household would be exposed to mortality risk.