Private Pensions in the UK: Coverage, Contributions and Consequences

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Nicholas Richard Kirby

Department of Social Policy
London School of Economics and Political Science

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ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

Abstract

Private pensions play a greater role in the UK than in other European countries, and recent reforms proposed by the Labour government envisage an even greater role for them in the future. Although low earners are still to have their retirement income provided for through the state, middle and higher earners are to provide the bulk of their retirement income through private pensions. This framework assumes that people are well-informed rational consumers who will choose to re-allocate their consumption over time, yet there has been little research effort to analyse current patterns of private pension accumulation in the UK. This thesis aims to bridge this gap by using the Family Resources Survey 1994-95 to analyse this voluntary behaviour. This is done with reference to five themes: coverage, adequacy, compulsion, rationality, and asset accumulation.

The major part of the thesis uses both cross-tabulations and more sophisticated regression-based tools to analyse the constituent parts of pension accumulation. Private pension coverage is analysed for both occupational and personal pensions. The proportion making additional contributions and the amounts paid are also examined. The thesis also covers the employee contributions paid as a result of scheme membership. Pensions are not the sole means by which a stream of income can be built up and so the level of financial assets held is examined. In all cases the differences between various groups within the population are highlighted.

The last part of the thesis draws together the disparate elements of pension accumulation to see what this behaviour might produce in terms of outcomes, using a simple stylised model. It also evaluates the research itself and possible future directions. Finally, the implications of the pension behaviour highlighted in this thesis for current government policy are considered.

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Introduction

There are potentially many ways for individuals to maintain their way of life in their later years. They can keep working, or seek support from other family members in an extended family arrangement. However, in the Western world, and increasingly in developing countries, financial means, and especially pensions, form the basis of support in old age. Pension provision affects all of us, whether through taxes or contributions in the build-up phase, or payments that we receive in later life. The decisions we take now, whether personally as individuals or collectively through government or employers will not only affect our living standards, but those of others in the decades to come.

Pensions are an important issue now but it can be expected that they will become even more important in the future. This is due in part to demography, where there are two major factors at work. The first is increased life expectancy which in turn means an increase in the expected time that will be spent in retirement if the retirement age remains at the present level. The second factor is the declining birth rate which when coupled with the increase in life expectancy means that the population is ageing. There is a third, non-demographic factor at work. The current trend towards early retirement also means that workers have a shorter time in which to accrue pension rights, though this trend may be reversed in future as a response to the two demographic effects.

The consequences of these factors are that there will be proportionately less workers to pensioners in the future. This has led to the notions of a "demographic timebomb" and a "pensions crisis" in which the working population will be overwhelmed by the claims emanating from the pensioner population. This view has been championed by the World Bank in the influential book "Averting the Old Age Crisis"(James 1994). It makes the broad assertion that: "Today, as the world's population ages, old age security systems are in trouble worldwide.... And formal programs are beset by escalating costs that require high tax rates and deter private sector growth- while failing to protect the old" (p1). It puts forward a generic blueprint of pension provision that envisages a cutback in pay-as-you-go state programmes and an increased role for the private sector, citing Chile as its model. This generic blueprint takes little account of local circumstances.

It is important though that we should not panic. It is true that all countries are facing demographic problems to a greater or lesser degree, and all will have to make choices about contributions to, and benefits from their state pension systems. However,

in the UK we have not followed the European route of a high-level earnings-related state-run pay-as-you-go pension system. Instead we face a policy environment where although total spending is rising, state provision to each individual has been decreasing for the past twenty years. The basic state pension, the bedrock of retirement income, has been indexed to prices since 1980, while the State Earnings-Related Pension Scheme (SERPS) was cut back in 1986 and 1995. This means that state provision in the UK is not as vulnerable as other countries to changes in demography. However, the gradual decrease in the level of state provision means that the importance of private provision is rising.

Pension policy in the United Kingdom is based on the Beveridge (1942) principle that it is the role of the state to provide a national minimum, and that anything beyond this is to be provided by individual action. As a result, the private provision that people make is extremely important in avoiding a meagre old-age. The UK pension environment is more complicated than in most comparable countries in that there are different forms of private provision, which tend to attract different levels of contribution. Occupational pensions are the major form of private provision, but these have been supplemented by personal pensions since the 1986 Social Security Act. If this were not complex enough, a new form of private pension- "stakeholder pensions" will be launched from April 2001.

There is absolutely no consensus about the future of pension provision. Some writers, notably Townsend and Walker (1995) favour a re-building of state provision to provide a higher level of income in retirement. A greater number of protagonists favour a re-casting of state provision with a much greater role for the private sector and funded pensions. This approach manifests itself in two types of scheme. The first involves keeping a "basic pension" or similar scheme, but supplementing this with private provision for all but low earners, the Blair government's new proposals being a prime example. The second type involves a full transition to funded pensions, but maintaining elements of redistribution. Johnson and Falkingham's Unified Funded Pension Scheme (1993) is the best example of this type. Other proposals involve a transfer to fully-funded schemes with no redistribution, through the use of personal retirement accounts. The Conservative Party's proposals announced just before the 1997 General Election can be placed in this category. Lurking behind all reform proposals are assumptions about the level of contributions, whether these are to public or private schemes, and to what extent voluntary contributions can or should play a part.

In this complex environment, with many ideas for reform being put forward, it is very important to examine current behaviour in all forms of private pensions. This entails examining current pension coverage, but also analysing the contributions that are being made. Private pension coverage has been looked at in a very broad sense, with a concentration on overall coverage, or a comparison between coverage levels for men and women. However this does not provide a real understanding of the area. In order to do this, it is necessary to delve deeper by analysing coverage with respect to a number of parameters, and to compare patterns between occupational and personal pension coverage.

The issue of pension contributions is an under-researched, though vital area for analysis in pension policy given the UK pension environment. Pension contributions can be paid automatically as a result of scheme membership, as is usually the case with occupational pension schemes. They can also be made on a voluntary basis. There has been little analysis of these voluntary contributions in terms of which groups in society are most likely to make them, and how much is being paid. If policy is to be based on the Beveridge model, voluntary contributions will become a more important area in the future as people seek an income above a basic minimum.

This thesis seeks to bridge these gaps by analysing the provision that people are making for their old age. This will be done with reference to five major themes of coverage, adequacy, compulsion/ voluntarism, rationality and other asset accumulation. The common thread running through these themes is that they shed light on whether the current system is actually working. The importance of private pension coverage and adequacy is clear enough, though it must be remembered that we have little idea of what the world will be like in forty years, which makes it difficult to make definitive statements. Examination of rationality in the pensions marketplace allows us to question the quality of the decisions that are being made, while analysis of financial asset accumulation tells us whether people are saving for retirement using non-pension sources. All of these themes lead back to the issue of compulsion. If the conclusion is reached that private pension coverage and contributions are not sufficient and other assets are not filling the gap, or that the public is not capable of fending for itself in a complex market, then the subject of higher compulsory pension contributions must be addressed. There can never be a definitive answer about whether the compulsory element in pension contributions should be increased, as it requires a value judgement about whether individual preferences over saving for retirement should be overridden.

As we shall see, there is no clear consensus on whether and to what extent, people should be forced to make compulsory pension provision.

The data source to be used in this thesis is the Family Resources Survey 1994/5. This is a relatively new dataset designed to complement and extend the Family Expenditure Survey. The Family Resources Survey is used because it provides much new information on the disparate elements of pension accumulation. This includes the percentage paying, and the amount of additional contributions, as well as private pension coverage. Its major strength is the large sample size, which facilitates statistical analysis. The statistical analysis uses cross-tables as well as more specialised regression-based tools to provide a more in-depth analysis of pension accumulation behaviour.

The pensions issue generates a great deal of heat, but sometimes not much light. This thesis aims to shed some light on the subject by analysing what people are doing at the moment. Empirical analysis should be the foundation for reform proposals, rather than an afterthought. In order to know in which direction to go, it is helpful to know where you are.

Chapter One: Pension Policy and Behaviour in the UK

Introduction

As a foundation for one's own research in pensions, it is important to analyse current and past material. There has been a vast amount written on the subject of pensions. In pulling the most important of this research together, we can begin to understand the current policy environment, its underlying assumptions and from this begin to see the areas which need further exploration.

The plan of this chapter is as follows. Section A summarises perspectives on the function, economic rationale and macroeconomic effects of pensions. Section B shifts the focus to the UK pension system. It examines the underlying assumptions, the institutional framework both private and public, and its distributional consequences. Section C details the current material position of UK pensioners, both in terms of income and assets. Section D focuses on private pension behaviour in the UK over recent years, summarising trends, contribution levels and questions the quality of some decisions made. Section E highlights this by focusing on information and attitudes; it examines the adequacy of information that people have about the UK pension system. It also analyses attitudinal data on the adequacy of expected pension levels and willingness to pay extra contributions. Section F reviews the many recent pension proposals, searching for their underlying assumptions and examining how they tackle the issues raised in earlier sections.

Section A: Function, Economic Rationale and Effects of Pensions

Introduction

For an individual, the function of a pension is to redistribute consumption over time. Individuals contributing to a pension scheme will consume less than they produce during their working years in order to consume when no longer working. An individual can only transfer consumption over time in two ways, current production can be stored (which is impractical) or a claim to future production can be acquired (Barr 1993). This can be done by one of two methods, "funded" or "pay as you go" schemes. In a funded

scheme, pension contributions are invested in a variety of capital assets. When the individual retires, the accumulated fund is usually converted into a stream of income. Funded pensions are therefore paid from the return on capital (Disney 1996). Pay-as-you-go (PAYG) schemes are contractarian in nature, with those at work transferring goods produced to retirees. PAYG schemes are paid via a tax on labour. PAYG and funding are different methods of achieving the same end; in both cases pensions are paid out of future output.

PAYG schemes are usually run by the state, based on the fact that the state has no need to build up a fund in anticipation of future claims, but can tax the working population. Most private schemes operate on a funded basis. Two particular forms of funded scheme should be distinguished. In Defined Benefit (DB) schemes, benefits are determined by some formula based on salary (often final salary), and length of service. Others operate on a Defined Contribution (DC) basis, with the accrued pension being determined by the amount of contributions paid into a fund and the investment return that it earns.

Role of Pensions

Ghilarducci (1992) sets out three major paradigms for the development of private pensions. Firstly there is the neo-classical perspective. This places individuals at centre stage; neo-classicists look to individual workers, and their desires as the initiators of pension contracts. Firms provide pensions rather than fire superannuated workers to maintain a good reputation; they also provide pensions for technical reasons. As workers learn on the job they gather firm-specific skills and become more valuable over time. Firms therefore have an incentive to provide DB pensions that increase with a worker's length of service. There is also the "shirking effect"; the possibility of losing one's pension as well as one's job increases the disincentive to shirk (Lazear 1980).

Occupational pensions have further advantages from a neo-classical perspective. Vesting rules, which specify the length of service before a worker gains title to any pension benefits, reduce labour turnover (Wise 1986). Benefit provisions can also allow the firm to use early retirement to facilitate workforce reductions and rationalisations (Casey1993). According to Patterson (1988) this is the most common though often unstated reason for firms to operate pension schemes.

It is clear that the neo-classical perspective can explain DB pensions but at first sight it struggles with DC pensions which do not increase with length of service. However, both DC occupational and personal pensions can be seen as fitting in with workers' desires for greater individual control over lifetime consumption. Personal pensions in particular, "free" workers from control by the firm. That firms gain little from personal pensions is illustrated by the fact that employees' personal pensions are less likely to gain a contribution from the employer, as shall be seen later.

The Marxist perspective states that employer objectives in industrial relations are to lower labour costs and maintain control over production. Pensions can serve in this process by fostering paternalism. They also serve to divide the workforce by pitting older workers against younger workers. These workers may resent their contributions to another group. The existence of private pensions also blunts support for expanding social security and creates a habitual way of dividing the two classes (Stevens 1988). This approach does seem to struggle with DC pensions as they imply less control over production. However DC pensions are compatible if they reduce labour costs through lower employer contribution rates.

The institutionalist perspective situates pensions within an evolutionary process. Some institutionalists follow a "feudalist" model (Ross 1958). A feudalistic system describes a combination of relationships and motives among employers, workers and the community. Employers have an entrenched relationship with the community and have many responsibilities, one of which is to maintain productivity and profitability over a long time. As we shall see later, there is a drift towards DC pensions, both occupational and personal. This could perhaps be incorporated in an institutionalist framework, as employees are less tied to a single employer or community. The other view is that employers are less entrenched within a community and feel less responsibility towards their workforce.

Economic Efficiency

For economic efficiency, the efficient output of any good is the quantity which maximises the excess of benefits over costs. The invisible hand theorem states that a market allocation will be efficient if and only if the standard assumptions of perfect competition, the absence of market failures and perfect information all hold (Barr1993). If an outcome is efficient, it cannot be improved from the individual perspective. To

relate this to pensions, in a perfectly competitive marketplace with no market failures, the decision of a perfectly informed individual as to how much pension provision to make is optimal. Any government intervention serves to decrease personal welfare. Given that this is the case, it is important to analyse why governments do interfere in the individual's pension decision.

The first argument in favour of government intervention is that individuals are not perfectly informed. To choose an appropriate pension scheme, a worker would have to evaluate such issues as lifetime consumption needs, inflation probabilities facing the economy as a whole and the expected returns from alternate plans, including the likelihood that the scheme would be financially viable in the future (James 1996). Barr notes that the efficiency advantages of perfect competition are contingent on perfect information but believes that information could be acquired through a broker. We shall see later, that this is not a trouble-free solution. James (1996) suggests that governments can improve the flow of information by imposing disclosure requirements and running education campaigns. Paternalistic involvement to mandate certain actions and limit choice can be justified if one believes that many people will be unable to digest and utilise the information available.

Intervention can also be justified if people are myopic, having a short-term preference structure and thus not giving adequate consideration to future needs. Le Grand (1995) uses Parfit's (1984) argument that a future self is a "separate" person who is affected directly by present decisions in the market. A government could justify over-riding present individuals' preferences on the democratic grounds that future selves have as much right to be represented as present selves.

Another argument for intervention is the need to overcome market failure based on the free-rider problem. If individuals know that society will not allow them to die of starvation due to failure to make provision for their old age, they may not be inclined to save voluntarily, which in turn imposes costs on others. It is important to note that state intervention to overcome free-riding does not automatically mean a compulsory state scheme, individuals could be forced to invest in private schemes.

There are clear economic arguments for individuals to be forced to make some provision for their retirement. The next question is to ask how much provision they should be forced to make. Jupp (1998) makes the important point that the myopia argument is often linked to concerns that the short-sighted will be a burden on others, but that these arguments are distinct and lead to different sorts of compulsion. As he says:

> It might be good for someone for someone earning £50,000 per year to have a pension of £33,000 because it allows them to maintain a similar lifestyle, but this individual would not be a *burden* to the rest of us if they only managed a pension of £20,000. (p6)

In other words, there is a difference between compelling the individual to achieve a minimum level of pension which prevents them from being a burden to others, and compelling them to achieve a level of pension directly linked to their working income. The former can be justified directly by economic theory, the latter requires a knowledge of individual preferences that is impossible to achieve. Paternalistic intervention mandating individuals to save for a level of pension above a minimum can lead to inefficient outcomes where individuals are "over-annuitised", forced to transfer more consumption over time than they would wish. On the other hand, it could provide the level of pension which Parfit's "future selves" would wish if they were given a choice.

Macroeconomic Effects

Two major issues predominate when looking at the macroeconomic effects of pensions: the effect of PAYG on savings and output growth, and the effects of pensions on labour supply.

It is often regarded as self-evident that savings and therefore economic growth will be higher with funding than under PAYG; to quote Taverne (1995), "Further advantages of privately funded schemes are their effect on labour costs, savings and investment and the liquidity of capital markets"(p17). It is important to qualify this; savings could only be higher in the build-up phase since in the long-run steady-state there would be no difference between the two methods of funding. Even if the savings rate is higher in the build-up phase under funding, there is no guarantee that this will automatically boost economic growth (Barr 1993).

Opinion is extremely divided as to whether funding does cause savings to be higher in the build-up phase. Feldstein (1974) argued that PAYG financing reduces savings. He used a lifecycle model to conclude that the PAYG US pension system had reduced savings by 50% and the capital stock by 38%. Barro (1974,1978) criticises Feldstein's use of a lifecycle model where an increase in PAYG benefits must in theory

reduce savings. He demonstrated that if the lifecycle model is extended with altruistic bequests, savings might not be affected at all.

Analysis of the empirical evidence does not clarify the position. Feldstein's original empirical work was criticised; additional variables tended to destroy the significance of the savings result (Barr 1993) and it was later discovered that his data contained a programming error which affected the result (Leimer and Lesnoy 1982). When Leimer and Lemoy used Feldstein's data but with more accurate definition of social security wealth they found that his results were very sensitive to even small changes in the starting year (MacKenzie et al 1997). A later survey (Leimer and Richardson 1992) suggests that over half of savings reductions attributable to social security are actually efficiency gains, as pensions satisfy a need that imperfect annuity markets cannot.

Magnussen (1994) has carried out a survey of the many completed studies. Time series analyses of the type originally carried out by Feldstein are increasingly not proving a link between PAYG pensions and a drop in the level of saving. Magnussen finds that results are dependant on econometric specification, the estimation period and how data are constructed. Cross-country analyses usually analyse data from several countries over a period of at least five years. Studies carried out by Feldstein (1977,1980) find a link, while all the other studies do not. Cross-sectional analyses usually investigate the association between accumulated assets and measures of social security wealth, income from work and other variables for an appropriate group. These studies have proved more likely to find an association, but their concentration on specific age groups reveal less evidence of aggregate behaviour. Aaron (1982) has concluded that a person determined to find a respected theoretical argument to support a preconception will find one, and that the open mind faces a bewildering diversity of answers. This is perhaps the only sensible conclusion to draw from analysis of this area.

The question of how pensions affect aggregate labour supply is equally problematic. It is important to differentiate between effects on hours worked during working life, and the decision concerning at what age to retire. The effect of social insurance contributions is to create a gap between gross and net money wages. If workers discount future benefits entirely, then social insurance contributions have the same effect as income tax. At the other extreme, if benefits are actuarially related to contributions, and correspond with individual preferences, pension contributions (like any insurance contribution) should have little effect on labour supply (Barr 1998).

The impact of future pension benefits is harder to analyse as they can be affected by legislation and individual decision-making about the probability of receiving these benefits. As a result, modelling the effect of pensions on labour supply is complex. Some studies conclude that pensions reduce labour supply (Diamond and Hausmann 1984) while others argue that pensions have little or no effect (Hamermesh 1984). Much of the confusion can be explained by differences in model specification (Barr1993). Thompson (1998) states that it is difficult to know what to make of the debate over the impact of pensions on labour supply because of the failure to address the issue of what the effect is supposed to be. To criticise pension programmes on the grounds that they may cause people to retire earlier than they would have done otherwise is pointless, as that is why they were created. Barr (1998) points out that if pensions, whether public or private, induce retirement at too early an age the solution is simply to raise the retirement age.

Section B: The UK Pension System: Structure and Effects

The Pension system in the UK – pre 1997

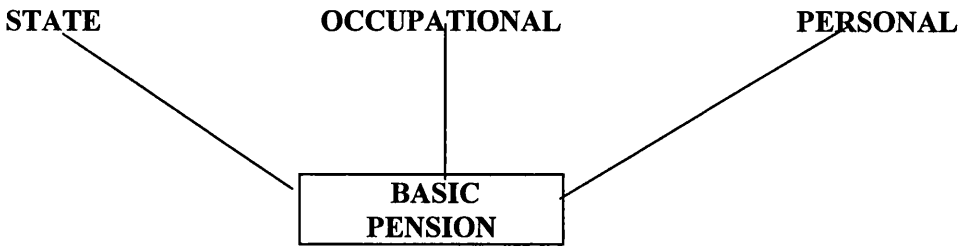
In order to understand the structure of the UK pension system, it is necessary to recognise the value system behind it. Beveridge (1942) set out the role of the state as providing a minimum living standard in retirement through compulsory social insurance. (the basic pension). He envisaged second-pension provision as being completely voluntary, but:

> direct encouragement of voluntary insurance or saving to meet abnormal needs or to maintain standards of comfort above subsistence level is an essential part of the plan for Social Security proposed in this report. (paragraph 239)

The pension system has moved beyond Beveridge in that there is a compulsory element to the second-tier of pension provision. The second-tier may consist of the State Earnings-Related Pension Scheme (SERPS), or of an occupational pension which is contracted-out of SERPS, or a contracted-out personal pension plan. If the individual is not a member of a private pension, whether occupational or personal, then s/he is

automatically a member of SERPS. At any point in time the individual (in theory at least) has a choice of second pension provision (see Figure 1).

Figure 1.1: UK pension system pre-1997



Source: Atkinson 1994

As we can see, the first tier of the UK system is the contributory basic pension. To receive full benefit, pensioners should have paid National Insurance Contributions (NICs) for around nine-tenths of their working life. The severity of this test is reduced by a number of provisions, most notably for those out of the labour market to care for children or sick relatives. The basic pension is thus constructed on paternalist lines, with the state ensuring that all qualifying individuals have at least this income level for their retirement years whether or not they would have chosen to allocate consumption in this way.

A large number of pensioners also receive some form of means-tested benefit. 1.8 million were in receipt of income support in August 1996, reflecting the relative levels of the basic pension and the state's means-tested minimum income, (for a single person aged under 75, the latter is worth 12% more than the former) (Pension Provision Group 1998). In addition to this, 1.9 million pensioner households are receiving housing benefit (Pension Provision Group 1998). Since 1980 the basic pension has been indexed to prices. As the rate of average earnings growth has exceeded the growth of prices the value of the basic pension has fallen. If average earnings grow by 2% per year, the value of the basic pension will fall to 7.5% of average male earnings by 2030 (Hills 1993).

SERPS dates from the 1975 Social Security Pensions Act and was intended to pay a pension of 25% of pensionable earnings in the best 20 years of working life, calculated on earnings paid between the lower earnings limit (LEL) (broadly the basic pension level) and the upper earnings limit (set between 6.5 and 7.5 times the LEL). Estimates by Altmann and Atkinson (1982) show that even under pessimistic

assumptions, the number of pensioners receiving means-tested assistance would have been reduced substantially.

The 1986 Social Security Act scaled down the SERPS accrual formula to 20% of earnings averaged over a lifetime, not the twenty best years. SERPS was reduced further in the 1995 Pensions Act through a complex formula change. This formula change had retrospective application and so damages currently held expectations. Johnson and Falkingham (1993) note that the constantly changing state scheme has made it difficult to formulate coherent expectations.

To avoid duplication of provision, DB occupational schemes have always been permitted to contract-out of SERPS. To do this pre-1995, it was necessary to show that the minimum pension to be paid out, the Guaranteed Minimum Pension (GMP) would at least equal the amount that the same earnings would have produced in SERPS (Brown 1990). This requirement was scrapped in the 1995 Pensions Act; schemes now only have to demonstrate broad equivalence to a "reference scheme" (LRD 1996)

The 1986 Social Security Act allowed DC occupational and personal pension schemes to opt out of SERPS on the basis of a guaranteed minimum level of contributions. This guaranteed minimum contribution was the rebate of NICs from SERPS, called the contracted-out rebate (COR). A reason for the difference in treatment between DB and DC private pensions is that DC pensions are perceived as "riskier". DC pensions have two sources of uncertainty. One source is that capital market risk is borne by the plan holder, the second risk relates to the uncertain state of the annuity market at the time of retirement. As a result there is no guarantee of a specified pension at retirement. However it must be pointed out that there is no guarantee of a specified pension at retirement with DB plans due to risks concerning length of service. As Johnson and Falkingham (1993) correctly state, both routes are lotteries.

The 1995 Pensions Act replaced the flat-rate COR (formerly 4.8%) with age-related rebates. The flat-rate COR was worth more to younger cohorts as their contributions have more time to compound. Age-related rebates were designed to make contracting-out of SERPS attractive throughout the age range. A 9% cap was introduced for personal pensions, but was not expected to affect many people as the SERPS reforms meant that the age-related rebates would not need to be as high. Lower rebates are payable for DC occupational schemes due to their lower administration costs. Roll (1995) notes concern that the government is subsidising higher cost personal pensions.

Although the pension system had moved on from Beveridge, it retained the underlying assumptions. The second-tier has a low level of compulsory provision, and

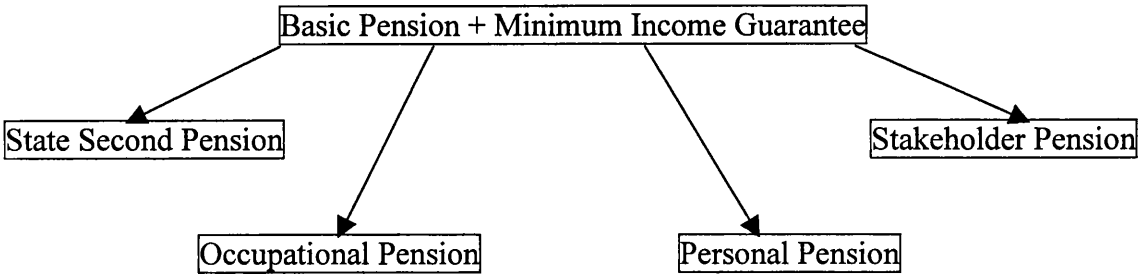
pension contributions above this level, available in occupational and personal schemes (not SERPS), were seen a matter for the individual and the firm concerned.

Partnership in Pensions

In December 1998, the government published its Green Paper on Pensions entitled: "A new contract for welfare: partnership in pensions". It is important to analyse this in some detail because it provides the assumptions that will be analysed in the research that follows.

The Green Paper identified problems with the current system and outlined the proposed reforms, which significantly change the structure of the UK pension system. The new system aims to create a "New Insurance Contract"(DSS 1998b p1) with the public whereby those who can save for their retirement have the responsibility to do so, while the state will provide for those who cannot. The aim appears to be for the state to establish a national minimum, but for the state to only provide this minimum itself to low earners and carers. Those earning above £9000 will reach this minimum through other means. This translates into practice through the following structure.

Figure 1.2: UK Pension system after reform



The first-tier still consists of the basic pension, but is supplemented by a minimum income guarantee at greater than income support levels. The second tier consists of a new "State Second Pension" which replaces SERPS, occupational and personal pensions as before, plus the new choice of a "stakeholder pension".

The next step is to analyse the new structure in more detail, starting with the first tier. The basic pension is to be retained and will remain indexed to prices. This is insufficient to provide an adequate minimum income in retirement and would lead, *ceteris paribus*, to a vast increase in the numbers in receipt of income support. The basic

pension is to be supplemented by a Minimum Income Guarantee (MIG). Rake, Falkingham and Evans (1999) point out that the MIG is in effect a new name for income support, and that to call it a guarantee is misleading, as it requires people to take it up.

There are four potential problems with the MIG: the level of the guarantee, its indexation, making sure that all those eligible claim it, and its effect on incentives. The MIG will be set at £75 for a single person and £116.60 for a couple from April 1999, with increases for older pensioners. It is questionable whether this is sufficient as a minimum income for retirement. As to indexation, the Green Paper states that the MIG: "will be increased year by year as resources allow. Over the long term it is our aim that it should rise in line with earnings so that all pensioners can share in the rising prosperity of the nation"(p34). This does not seem to be a cast iron commitment to yearly earnings indexation. The third difficulty is making sure that all those entitled to claim the MIG do so. The immediate approach being advocated in the Green Paper is to stress that it is an entitlement and also to streamline the claiming process. In the long-term the plan is to make receipt of the MIG "more automatic"(p36). It is not made clear how this is to be done. Schemes that have proposed a MIG like Atkinson's (1994) idea have suggested that this can only be done through compulsory assessment by the Inland Revenue at 65. This would not be popular. The final potential problem with the MIG is the fact that it is means-tested and thus would tend to penalise those with savings and provide a moral hazard to people making pension provision for their retirement. This problem is exacerbated by the fact that the basic pension is indexed to prices, while the MIG is indexed to earnings. This means that year by year, the amount of second pension income needed to bridge the gap between the basic pension and MIG will rise.

However, it is not the government's aim that the poorest will attain the minimum income in retirement through the MIG. Instead, it is intended that the minimum is to be obtained through the State Second Pension (SSP), which is to replace SERPS. SERPS is to be abolished because, as it is earnings-related, it gives least help to those in need. Agulnik (1999) indicates that this criticism misses the point of SERPS, which was to protect individuals' accustomed living standards, not to meet a minimum income objective. The SSP proposals are laid out as follows:

- SSP will accrue at double the value of SERPS on earnings up to £9000 per year (40% over a full working life).
- SSP will treat contributing employees earning between the LEL and £9000 per year as if they are earning £9000 per year.

- The rate on the earnings band £9000 to £18500 would be 10 per cent.
- The rate on the band £18500 to the UEL would be 20 per cent.
- Disabled people and carers (of children up to primary school age or the elderly) will be credited into the SSP as if they had earnings of £9000 per year.

The important question to ask is whether the combination of the basic pension and the SSP will exceed the level of the MIG in retirement. The Green Paper insists that it will. The estimated impact in 2050 is that for someone earning up to £9000 per year, the SSP and basic pension will provide a maximum state pension income of £82 in earnings-equivalent terms, compared to £75 for the MPG (DSS 1998b). An important point to note is that the SSP is calculated on an individual basis, while the MPG is worked out on a household basis. Couples who both earn under £9000 during their whole working life will receive £164 in state pensions compared to £116.60 in the MPG.

These statistics are hotly disputed by Rake et al (1999) who estimate that the combination of SSP and basic pension in 2050 will produce a maximum income equivalent of £76, only £1 above the level of the MIG. Rake et al (ibid) offer the opinion that the SSP is "nothing more than a targeted flat-rate top-up to an inadequate basic pension (p5)". They go on to argue that this is perhaps an over-generous assessment of the new system because, due to the indexation of the basic pension and SSP by prices, the value of these contributory benefits would fall below that of the earnings-linked MIG within five years. Rake et al note that low earners who are in couples are relatively protected against claiming MIG, but argue that for a government to rely on this is a high-risk strategy when faced with rising divorce rates.

A more fundamental problem with the new system is that as a way of avoiding means-testing, it only works for the cohort of pensioners retiring in 2050. For the cohort of pensioners retiring in 2060, the level of the basic pension plus the SSP will already be below that of the MIG (Rake et al 1999). Cohorts of pensioners retiring before 2050 will face the problem that SSP accrual rates will not apply retrospectively (Disney et al 1999a). This means that people retiring until the middle of the 21st century will have part of their secondary state pension accrued at SERPS rates (which offers less to low earners). As a result, the efficacy of the government's proposals for low earners seems extremely questionable.

The government's aim is for middle-income earners to achieve the minimum income through private pensions, though the Green Paper is unclear at times whether

this refers to most people in the band, or all. It is clear at first that middle-income earners will have the choice as to whether to stay in the SSP or not. It is important to note that the SSP will be far more generous than at present. For a worker earning £12000 per year, SSP will accrue at the rate of 3900/12000= 33% of lifetime earnings. Agulnik (1999) points out that the point at which people would start losing from the reduction in rebates on earnings above £9000 a year is £20000 not £18500, so all individuals gain from the new rebate structure.

Occupational and personal pensions are to remain, and are to be supplemented by "stakeholder" pensions. These are intended to allow middle income earners to save for retirement through a secure, flexible and value for money vehicle which promises with a clear and low charging structure, transferability between schemes, and variation of contribution levels without penalty. Stakeholder pensions are especially to be targeted on those middle-income earners without access to an occupational scheme.

The Green Paper does state that when "stakeholder" pensions have established themselves: "we expect the new State Second Pension to become a flat-rate scheme for those on lower earnings, with those on moderate and higher earnings joining a funded pension" (DSS 1998b p40). Disney et al (1999a) consider the transition to this second stage will prove politically difficult, as it creates a large group of people (earning between £9000 and £18500) who will be worse off under SSP Mark Two than SSP Mark One. They also question whether there is a suitable constituency for the Stakeholder pension. Their analysis of British Household Panel Survey data over a four-year period reveals middle-income earners without a private pension tend to have fluctuating earnings. This group may be better off under the SSP than a stakeholder pension unless the government contributes to their pension fund as an alternative to credits for the SSP.

The consequences of the Green Paper, whether intended or not, raise important questions for UK pension policy. The Green Paper almost brings us back to the Beveridgean vision for pension policy. It aims to provide a national minimum to the low paid and carers, whilst anything above this is to be provided through individual action in the private sector. An individual without private provision will at best have a retirement income of slightly above the MIG level, and this will only apply if they are part of a couple. This means that private provision is almost essential if people want to escape a means-tested old age.

Distributional Effects of the UK Pension System

A number of studies have analysed the distributional effects of the UK pension system. A degree of progressivity is built into the state apparatus, via the two-tier formula of a flat-rate pension plus an earnings-related component (Creedy 1982; Creedy and Disney 1985). However most of the distributional effect of the state system is within the lifecycle. Falkingham and Johnson (1995) found that on average, individuals effectively pay for 61% of their pension benefit received.

Distributional effects vary for men and women. When Creedy (1982) analysed the effects of a two-tier system analogous to the UK at that time, he found that the pension-contribution ratio for men was insignificantly progressive. Only the combination of a pure earnings-related contribution and a flat-rate pension unambiguously reduces the inequality of the male income distribution.

SERPS does have a redistributive capacity, from men to women. Hemmings and Kay (1982) found that under the initial formula, women would receive about six times as much benefit per pound of contribution as men. The 1986 and 1995 changes to SERPS lessen this redistribution. Falkingham and Rake (1999) also make the important point that the earnings requirement (the LEL), which operates for the basic pension and SERPS/ SSP, operates against the interests of women. No SSP coverage is offered to those who earn less than the LEL, the vast majority of whom would be women.

There are also intergenerational effects. Disney and Whitehouse (1993) showed that real rates of return from the system were generally negative for younger cohorts (born in 1955 and 1960) and barely positive for older cohorts. As Disney (1996) points out, PAYG schemes tend to redistribute to older generations, swamping any intragenerational redistribution.

Private pensions also have distributional effects. Occupational pension plans (especially those based on final salary) imply a substantial redistribution of income from short to long stayers. This occurs because on leaving, short stayers either receive preserved benefits which will be incompletely indexed to inflation or a refund of their contributions (if they have been a member for under two years). This redistribution may worsen in future due to the relaxation of the indexation rules contained in the 1995 Pensions Act (LRD 1996). Falkingham and Rake (1999) note that inadequate indexation of benefits will have a greater impact on women than men, due to women's greater life expectancy.

DB occupational pensions also tend to negate the progressivity of the state scheme through the use of "integrated formulas". These deduct the workers' expected basic pension income from the firm's pension promise. As the basic pension replaces a higher percentage of income for lower income than higher income workers, the occupational pension in an integrated formula will do precisely the opposite. DB plans integrate state pension benefits into the calculation of benefits in over half of the private-sector plans in the UK (Government Actuary 1991).

DC plans also have distributional effects. As with DB schemes, some DC plans are based on integrated formulas. In addition to this, Ghilarducci (1992) notes the phenomenon of matching employers and employees contributions. To the extent that higher income workers save more, employers contribute more on their behalf. Employers may also tend to contribute more to the pensions of valued employees (who would tend to earn more). Casey (1993) states that where employers were prepared to pay into employees' personal pensions, it was generally to retain valued employees. As we shall see, personal pension members receiving an extra employer contribution are a minority. The structure of personal pension administration charges also works against low-income members, who would also tend to be women. Providers typically levy a mixture of flat-rate and contribution-related, one-off and recurring charges. Thus smaller contributions will attract a higher level of fees due to the greater proportionate impact of flat-rate and one-off charges.

Section C: Incomes and Assets of Pensioners

Income

Distribution

The levels of pensioner incomes, their distribution and composition are all vital determinants of the future policy mix towards pensioners and are a reflection of past policies.

Since 1979, average income has risen more rapidly for pensioners than for the whole population. Consequently, pensioners' position within the whole income distribution has improved. The proportion of pensioners in the poorest quintile of the population fell from 46 per cent in 1979 to 29 per cent in 1990-91(Dilnot et al 1994),

and 20 per cent in 1995/6 (DSS 1997). However pensioners have not pushed far up the income distribution, 53 per cent of pensioners are in the lowest two-fifths of the income distribution for the total population (DSS 1997). This state of affairs is mitigated by the fact that pensioners may need less income to attain a given standard of living due to the absence of children or mortgage payments.

One feature of pensioner incomes is a high degree of inequality. In 1995 the mean net weekly income of pensioner units was £150.30 (in July 1995 prices) after housing costs, an increase of 70% since 1979. The median was just £108.90, an increase of 58% (DSS 1997). These statistics indicate that the pensioner income distribution has become more unequal, as Table 1.1 illustrates.

Table 1.1: The Pensioner Income Distribution 1995/6 at 1995 prices

Quintile	Before Housing Costs		After Housing Costs	
	Median Income (£ per week)	Growth since 1979 (%)	Median Income (£ per week)	Growth since 1979 (%)
1	75.40	38	59.30	29
2	103.70	51	75.80	41
3	131.30	59	108.90	58
4	176.80	61	157.80	69
5	302.40	71	289.60	87

Source: Department of Social Security Pensioners' Income Series 1995/6 (1997)

Since 1979 the top fifth of pensioners have seen their incomes grow by 87 per cent after housing costs, while the income of the bottom fifth has grown by just 29%. This increase in inequality is likely to continue as the distribution of earnings for those in work has become more unequal over time. In 1979, mean income after housing costs was 28% above median income. By 1995/6, this gap had increased to 38%(DSS ibid). Incomes of older pensioners remain lower than the incomes of younger pensioners. Johnson and Stears (1996) find that this can be explained by cohort differences, such as differential access to private pensions. The average income of 75 year olds today is actually *higher* than the average income of 65 year olds ten years ago, due to differential mortality amongst pensioners.

Composition

As well as examining the level of pensioners' incomes, it is also useful to look at its composition to analyse changes over time. The composition of pensioners'[1] incomes in 1981 and 1996/7 are shown in Table 1.2 (in July 1996 prices).

Table 1.2: Composition of Pensioner Incomes[2]

	1981		1996/7	
	Recently[3] retired	Not recently retired	Recently retired	Not recently retired
Mean Gross Income (of which)	£165	£119	£284	£177
Benefit Income	£84	£79	£111	£104
Occupational Pension	£28	£19	£80	£44
Investment Income	£23	£15	£40	£25
Earnings	£28	£6	£51	£4
Other	-	-	£3	-

Source: DSS Pensioners' Incomes Series (1998a)

Table 1.2 shows both that the composition of pensioners' incomes has changed radically over the years, and that there are large differences in the income sources of newly retired and long-retired pensioners. Benefit income has risen between 1981 and 1996/7 despite the freezing in real terms of the basic pension due to receipts of SERPS and an increased number of women claiming the basic pension in their own right. However state pensions have fallen as a share of total income. Investment income has remained fairly constant as a percentage of pensioner incomes over the period, though this belies a sharp spike in the 1990/1 statistics caused by high interest rates (Dilnot et al 1994). The earnings statistics show that earnings are of similar importance to the newly retired, perhaps due to the importance of partners still in work. However for the long-retired group, earnings are a shrinking element of total income.

Occupational pensions have become much more important as an income source for pensioners. For recently retired pensioners in 1996/7, the data shows that occupational pensions make up 28 per cent of mean income. There is wide variation in occupational pension receipt. Pensioners' Incomes Series data for 1995/6 shows that for all pensioner units, the median receipt of occupational pension income is £44 per week, but that the mean is £80 (Pension Provision Group 1998). Thus a good deal of the increase in the average value of occupational pensions is a result of rapid growth in the value of the highest occupational pensions.

[1] Pensioner units

[2] Sub-totals may not equal due to rounding

[3] Single woman aged 60 to 64, single man aged 65 to 69, and couples where the man is aged 65 to 69

Occupational pension receipt is increasingly the signal of a more prosperous old age. In 1979 those pensioners with an occupational pension accounted for much the same proportion of pensioners in the upper income range as those without, with both groups concentrated around similar income levels. By 1989 occupational pensioners' incomes were higher and more widely dispersed (JRF Vol 1 1995). It is clear from the DSS Pensioners' Incomes Series data that occupational pensions have continued to grow in importance as a source of income for pensioners. This trend will continue; the Green Paper's proposals indicate that low earners will receive a minimum income through the state, while middle and higher earners will draw the majority of their retirement income through a private pension. This means that more than ever, it is important to analyse the private pension arrangements that people are making. Titmuss's (1955) "two nation" theory of retirement described a world where those with private pension income had a comfortable retirement, while those without relied on the state-provided minimum. We may be moving towards a more complex position, where quality of life in retirement depends not only on possession of a private pension, but possession of the right type of private pension.

Assets

Data on wealth have not been collected to the same extent as information on incomes. This reflects the greater conceptual problems and more sensitive nature of the issues involved. It is useful to draw a distinction between marketable and non-marketable wealth. The category of marketable wealth includes cash, bank accounts, shares, land and houses. Non-marketable wealth includes more borderline items such as private and state pension rights. The distinguishing feature of non-marketable wealth is that it only conveys the right to income (Royal Commission on the Distribution of Income and Wealth 1977).

Data on marketable wealth has been derived via two major sources, estates of the deceased and sample surveys. With estate data, the wealth of a sample of people dying in a given year is taken to be representative of wealth of the living. These figures are converted into totals for the living by taking account of age-specific mortality rates. Problems with this approach lie in the tiny sample sizes for younger groups and the possibility of inter-vivos transfers that reduce the amount left in estates (Banks et al 1994). With sample surveys there is a trade-off between response rate and coverage. The detailed questioning needed to elicit useful data places strains on the likely

response rate. It has also been found that the richest sections of society are less likely to answer questions on wealth (Atkinson and Micklewright 1983).

Taking these reservations into account, the available data do lead to interesting conclusions. The level of marketable wealth as derived from estate-based data is shown in Table 1.3. Bosanquet and Propper (1991) noted the remarkably similar wealth

Table 1.3: Distribution of Estimated Wealth in the UK 1986/7 (Estate data)

Marketable Wealth (Including housing)	Age Group						
	18-34	35-44	45-54	55-64	65-74	75-84	All
Under £10000	39	16	23	21	20	20	24
£10000-£25000	26	24	20	24	24	24	23
£25001-£40000	18	26	23	21	21	20	20
£40001+	17	34	34	32	36	36	31

Source: Inland Revenue (cited in Bosanquet and Propper 1991)

distribution after thirty-five with no break in the pattern after retirement. This is surprising even in the absence of dissaving in retirement, as rises in real incomes over time suggest that older pensioners would have lower average assets. The outcome may be an artefact of the data. Estate data only covers cases where probate is required, so for a couple this would be when the second partner dies. There may also be longer life expectancies for the wealthiest. OPCS survey data indicates that dissaving is more common than saving for older age groups with inequality tending to be reinforced. The poor with few assets tend to run-down their assets while some of the better-off are able to add to theirs (McKay1992).

The more recent approach has involved the use of sample surveys due to the larger sample sizes that can be obtained for younger groups, though it must be noted that Disney et al (1997) have used retirement survey data to analyse financial asset accumulation by the 55+ age group. Banks and Tanner (1999) find through analysis of Financial Resources Survey data that median financial wealth (excluding housing) tends to rise with age, reaching a plateau from the 50-59 age group onwards (see Table 1.4). Mean wealth rises to a peak in the 60-69 age group and then falls off, however even the oldest age groups have wealth above all younger groups up to 50 years old.

Table 1.4: Wealth by Age Band

Age Band	Median Financial Wealth (£)	Mean Financial Wealth (£)
22-29	100	1746
30-39	700	3571

40-49	850	6202
50-59	1750	10657
60-69	1750	13222
70+	1750	8505
All	750	7136

Source: Banks and Tanner (1999)

Even though the richest parts of society are under-represented in the Financial Resources Survey, one important finding from Table 1.4 is the low level of financial wealth, with the median being just £750. The level of inequality is even more striking, with the mean being almost ten times as high as the median.

Pensions have a significant impact on the overall distribution of wealth. We would expect the basic pension to have a significant equalising effect but Banks and Tanner (1999) show that even occupational pensions reduce wealth inequality despite their less than universal coverage. The wealthiest 50 per cent own 93 per cent of all marketable wealth. However when state and occupational pensions are added this falls to 83 per cent (Inland Revenue Statistics 1998).

Analysis of marketable wealth in the UK leads to the obvious question, how does the accumulation of pension assets interact with that of other financial assets? It might be believed that those people without private pension coverage would be more likely to accumulate other forms of financial assets, although the possession of other assets may harm entitlement to means-tested benefits. Banks and Tanner (ibid) have analysed the link between pension status, housing position and levels of financial wealth. They conclude that owner-occupiers and private pension holders have a higher median and mean level of financial wealth. This is an important study, but it must be noted that Banks and Tanner do not differentiate between occupational and personal pension holders. It would be useful to analyse whether holders of all forms of private pension are more likely to accumulate financial assets than non-private pension holders.

Section D: Private Pension Coverage and Contributions: Existing Evidence

Overview

The level of choice in second pension provision is a very recent phenomenon. Before 1988, most firms offering an occupational pension scheme made membership compulsory for eligible employees. Just 8.5% of scheme members were in voluntary

schemes (Government Actuary 1986). Many people suffered from the opposite problem, lack of access to occupational provision. It was common practice for employers to exclude women or specify tighter conditions for their entry (only outlawed in 1978) (Hannah 1986). It remains legal for firms to exclude young workers or insist on a minimum period of service. Prior to the introduction of SERPS in 1978, excluded groups had no access to second-tier provision; since 1988 they have had the further option of joining a personal pension scheme.

The widening of the choices available increases the opportunity for individuals to allocate their consumption over time, whether myopically or optimally. Those formerly in occupational schemes can opt for a personal scheme where they can reduce (or increase) their contributions. Disney and Stears (1996) cite anecdotal evidence that people opting-out of company pension schemes are doing so to avoid paying any positive contribution towards their own retirement. It is not inevitable that an increase in choice leads to individuals being unwilling to undertake pension provision. According to Hannah (1986), the general legal advice earlier this century was that employers could not compel workers to join a pension scheme. Take-up rates varied considerably but were typically around 80% of eligible workers.

Trends in Occupational Pension Coverage and Type

Occupational pension coverage peaked in 1967 at 53% of employees and has tended to fall slightly since then, currently standing at just 46% of employees (Government Actuary 1999). Data from the General Household Survey between 1988 and 1995 shows that occupational pension scheme membership fell from 64% to 58% of the workforce amongst men working full-time. There has been little change amongst women working full-time (up from 54% to 55%), but membership amongst women working part-time has doubled from 12% to 24% (Pension Provision Group 1998). Occupational pension coverage is correlated positively to income and peaks for men and women in the 45-54 age category.

There has been a shift away from DB towards DC coverage. In the UK, only 8% of occupational schemes were DC in 1987. The proportion had doubled since 1988 to around 16% (Pension Law Review Committee 1993). A survey of top executives reported that 80% of schemes introduced since 1988 were either "pure" DC or hybrid DB-DC plans (CBI 1994). There is little evidence of established companies changing their provision from DB to DC (Disney and Stears 1996). In a qualitative study of large

and small firms, Casey (1993) observed some movement towards DC provision, but often as an add-on rather than a substitute.

A CBI survey asked companies whether with the benefit of hindsight they would operate a pension scheme. 83% said they would, but only a minority would operate a DB plan. Looking ahead fifteen years, 19% envisaged operating a "pure" group DC plan and 32% a pure DB scheme with others envisaging hybrids or contributions to personal pensions. Casey noted that firms do not foresee an abandonment of pension provision, but rather a re-casting of how it is constituted.

Various reasons have been given for employers wishing to switch from DB to DC plans such as tighter solvency conditions, the 1986 Social Security Act which allowed DC pensions to "contract-out" of SERPS, and the growing diversity and sophistication of capital market instruments (Brugiavini and Disney 1995). More fundamentally it has been suggested that labour markets have shifted away from archetypal "lifetime" jobs towards greater flexibility (Ghilarducci 1992). In this environment DC plans would be more attractive to employees as pension values are less subject to uncertainty surrounding length of tenure while employers can off-load exposure to capital market risk onto the employee.

This exposure to capital market risk has led to suspicion that DC plan participants are potentially worse off than in equivalent DB plans. However, Disney and Whitehouse (1994) conclude that the majority would be better off in DC plans, a result that echoes US findings (Samwick and Skinner 1993). These models make the key assumption that an equal contribution is invested in either the DB or DC plan. As we shall see, this may not be a realistic assumption.

The slight fall in occupational pension coverage may not be the result of employer pressure, but the result of choices made by employees. Disney and Stears (1996) note that there has been an increased propensity for firms to offer younger men occupational pension membership. Examination of the participation rate (probability of participation given a scheme is offered) demonstrates an 11 percentage point decline in membership amongst the young; while 22% of young men who are covered have opted to leave their employer's scheme. This group's decision to opt for personal pensions has been motivated by choice rather than constraint. It may be a rational response for employees who intend or anticipate early termination of their current job, or consider themselves over-annuitised. It may reflect myopic behaviour.

Personal Pension Behaviour

There are two types of personal pension; the first is appropriate personal pensions (APP) where an employee takes out a personal pension in place of SERPS or a contracted-out occupational pension. The second type, ordinary personal pensions are available to both employees and the self-employed. By 1995/6, 5.4 million people had taken out an APP (DSS 1998b). It is important to note that this includes 1.9 million APP contracts where the DSS pays no contributions because the holder had no earnings on which National Insurance Contributions were payable (Pension Provision Group 1998). When looking at personal pension members as a whole, it is clear from General Household Survey data that men are more likely to be members of a scheme than women (26% compared to 14%), and younger workers are more likely to be members than older workers (OPCS 1996). Personal pension optants tend to be less well-off than those in occupational schemes. Average earnings for men in personal pensions was £10050 per year in 1994/5 while for women the figure was just £6110, less than half average female earnings (TUC 1997).

There is debate as to whether choice or constraint is the primary motive for choosing a personal pension. Both Johnson and Falkingham (1993) and Field and Prior (1996) state that the great majority of those taking out personal pensions appear to be workers with no access to occupational schemes. However Williams and Field (1993) found that 36% of personal pension members in their sample could join an employer's scheme if they wished. This tallies with the Disney and Stears (1996) evidence presented earlier and suggests that while most personal pension optants are constrained, some choice is being exercised.

Disney and Whitehouse (1992) believe that the higher personal pension take-up among younger workers than older workers, (approaching 50% for men aged 22-26), is consistent with a rational economic calculus, as the flat-rate COR is worth more to younger than older workers. They claim this contradicts the assertion that these workers exhibit myopia as to their retirement income. Disney and Whitehouse mapped the marginal increment to SERPS and a personal pension for a man aged 20 in 1988 employed in a white-collar job. Given a real rate of return of 3.5%, this individual would be better-off contracting-out of SERPS until the age of 50. Different parameters apply for women, due to their better return from SERPS. According to Disney and Whitehouse, a woman aged 18 in 1990 should contract back into SERPS at 35. In a later article, Disney et al note the "ageing" of the personal pension membership, but maintain

that the vast majority of switching from SERPS to personal pension plans was a rational response to the differential accrual structures (Disney et al 1999b).

The myopia argument cannot be discredited this easily. Disney and Stears (1996) acknowledge that workers making few or no additional contributions are unlikely to accrue an adequate pension. It must also be remembered that rational decision-making requires information. Casey (1993) found that only one firm of 28 surveyed was planning to contact affected employees about the drop in the COR to 4.8% in 1994.

Disney and Whitehouse (1992) do not consider whether those who have left occupational schemes for personal pension schemes have made a rational decision. However Disney et al (1999b) suggest that some of these people were attracted into personal pensions because contributions were paid automatically by the government without any need for supplementary contributions by the individual. Those who transferred from occupational schemes that required employee contributions to personal schemes which do not, are described as "irrational switches"(p19). It is perhaps just plausible that employees would wish to forego an employer's contribution to their pension in order to avoid making a positive contribution themselves. However if their marginal increment from a personal pension drops below that of the state second tier option and an occupational scheme is available, individuals would be distinctly unwise not to enter it.

Contributions to Occupational and Personal schemes

Existing evidence indicates that total contribution levels are higher for DB than for DC plans. An Association of Contracting Actuaries report examined 468 DC occupational schemes and found an average contribution rate of 8.2% (employer and employee), half the level expected normally in DB schemes (LRD1995). Daykin (1996) found that employee contribution levels peaked at between five and six per cent for private sector DB schemes while the modal DC employee contribution was just the contracted-out rebate. Casey et al (1996) found that the median level of employer contribution in the schemes surveyed was 9.5% of payroll costs, but it varied considerably.

Additional contributions to personal pensions are in addition to the rebate of NICs gained by contracting-out of SERPS. Inland Revenue statistics indicate that the

number of employers paying contributions to their employees' personal pensions has risen sharply from 11 per cent in 1990/91 to 21 per cent in 1994/5 and 32 per cent in 1998/9 (Inland Revenue Statistics 1995, 1999). Casey (1993) sheds light on firms' reluctance to make contributions to employees' personal pensions. Firms view making these contributions as very costly in administrative terms. Personal pensions were also poorly received by employers with a pension scheme. These employers would therefore not encourage employees to take advantage of them.

Inland Revenue Statistics also demonstrate an increase in additional contribution payment by employees. The percentage of employees in a personal pension making additional contributions rose from 40% in 1990/91 to 49% in 1994/95 (Inland Revenue Statistics 1995). Evidence that around half of personal pension holders pay additional contributions does not reveal the whole picture. Disney et al (1999a) analysed British Household Panel Survey data over four years, and found that only 27% of those making additional contributions to a personal pension did so over the whole period. The authors state that personal pensions will represent poor value for people who contribute for a few years only. A Personal Investment Authority survey shows that only 57.2% of policies are being persisted with after four years (PIA 1999).

There has also been some analysis concerning the amount of the additional contributions being paid to personal pensions in the existing literature. Disney et al (1999a) found that as a percentage of earnings, the average contribution rate varied between 4.3% and 5.3% across individuals with different frequencies of contribution. Field and Prior (1996) found that the most popular amount of additional contribution paid was £25-£44 a month with 45% of the sample falling within this band. Interesting as these findings are, both the Disney et al and Field and Prior samples are too small (218 and 73 respectively) to extrapolate to the whole of the population. Using 1991 data, Williams and Field (1993) found that older plan holders (defined as the 35-44 age group) were more likely than younger ones to make additional contributions, but do not investigate differences in propensity to pay additional contributions amongst men and women, or other cleavages in society.

Since 1988 occupational schemes have been obliged by law to accept additional contributions, but there is a scarcity of relevant information on this topic. OPCS Retirement Survey data show that the making of additional contributions was relatively infrequent, only 17% of men and 7% of women aged between 55 and 69 had done so (Bone et al 1992). More recently, a survey of 2104 women showed that 13% were

paying additional contributions and that the proportion increased with age (Field and Prior 1996).

It is reasonable to conclude that additional contributions will become increasingly important. This is due to the growth of DC occupational and personal pensions which may have lower (if any) employer contributions, and the direction of government policy where the state will only provide a minimum level of support in retirement. Existing studies have made no systematic attempt to examine additional contribution payment amongst different groups in the population. Additional research is needed in this area.

Section E: Information and Attitudes

Information

Provision

The British supplementary pension system assumes that individuals are sufficiently well informed to choose between the three options of the state second-tier, occupational and personal pensions. It is therefore important to look at what information is actually available. If an employee is not a member of an occupational or personal pension scheme, then coverage is automatically provided by the state second-tier option. Individuals are not appraised of this fact, neither are they informed of the benefit formula nor their own likely future benefit.

Personal pensions are regulated by the Securities and Investment Board (SIB) and the Personal Investment Authority under the 1986 Financial Services Act (FSA). This gives consumers some protection; investment advertisements must include clear warnings about the volatility or the marketability of products advertised (Patterson 1988). However in 1993, the SIB revealed that a significant number of people in occupational schemes had been advised wrongly to leave. Others were advised to leave SERPS despite the fact that they were too old or poor to make it worthwhile (Johnson 1994). This is due partly to the nature of personal pension selling. All of the pension salespeople interviewed by Carr (1993), stressed the personal nature of any transaction; as one said: "At the end of the day it's you they're buying, to put it in crude terms, we don't sell products, we sell concepts". Carr also reported from these interviews that

people are often so eager to buy a personal pension that they ignored advice given to the contrary. However, these protestations from the industry must be seen in the light of evidence that personal pension policies sold by company representatives are less likely to be persisted with than those sold by Independent Financial Advisers (Personal Investment Authority 1999).

Diffusion of accurate information may be made more difficult by FSA requirements that only qualified people may give advice. Casey (1993) notes the exasperation of employers who consider themselves prevented from advising employees not to leave the company scheme for a personal pension.

Occupational schemes do have to give basic information to new members. An explanatory handbook should be supplied within two months of joining which covers a wide range of matters including contributions, benefits and early leaver rights (LRD 1996). Trustees must also formulate an annual report containing specific information about who runs the scheme, benefit changes in the last year, financial developments and investment details. Commenting on this, Nobles (1993) points out that information is not provided about the administration of the scheme except with regard to security and then only in broad terms. Transmission of information to members is hampered as, under trust law, trustees are not obliged to give reasons for any decisions made (Nobles 1993).

The Government Actuary maintains that emphasis on personal pensions has goaded occupational schemes into more active marketing of their own schemes and thus to a: "heightened awareness of what pension schemes are all about" (Government Actuary 1994a p15). This may be a slight exaggeration of the position. Casey et al (1996) note that of the firms they surveyed, one-third did not directly encourage their employees to join the occupational scheme. In his qualitative study, Hedges (1998) notes that active marketing of occupational schemes is confined to large firms.

The difficulties in obtaining relevant information in occupational schemes can be illustrated by the difficulties in obtaining a simple annual benefit statement (ABS) containing the benefit formula, pensionable pay and likely future pension. Prior to 1995 employers were obliged to produce ABSs only upon request, and even then some employers insisted that this had to be accompanied by advice on the statement provided by an employer representative (Patterson 1988). The 1995 Pensions Act provides for automatic ABSs for those in DC schemes but not DB schemes. Casey et al show that while the vast majority of firms (94%) provide ABSs to employees in DB schemes, coverage is not total.

Public Knowledge

Any discussion relating to decisions taken by people in the pensions marketplace must be based on to the information that they actually have. The most detailed survey of pensions knowledge in the UK was conducted by Williams and Field (1993). The authors compared those contributing to an occupational, personal or SERPS pension across the 16-44 age group.

Levels of understanding are broadly equivalent between personal and occupational pension holders, with SERPS members being much less well informed. When asked if they knew it was possible to contract out of SERPS, 83% of personal pension holders answered yes compared to 80% in occupational schemes and only 51% in SERPS. When asked if they had heard of the government's incentive rebates, only 24% of the SERPS members, 40% in occupational schemes and 57% of those in personal pensions indicated that they had. This low level of knowledge calls into question the public's ability to decide between the pension options available.

Williams and Field found that younger people are less well-informed than their elders. Unfortunately, information levels were not compared between men and women. Carr (1993) has indicated that men are no better informed than women, but that the consequences of a lack of information for men are less severe due to their superior access to occupational provision.

Public ignorance extends into a lack of knowledge of the features of particular schemes. Even those confident enough to answer often gave incorrect replies.40% of SERPS members and 39% of personal pension holders erroneously believed that part of a SERPS entitlement could be taken as a tax-free lump sum. Carr notes that if men move from occupational schemes with good dependent provision into personal pensions, the consequences of ignorance of scheme features could rebound on women. Ghilarducci (1992) demonstrates that workers in occupational schemes suffer from "cognitive dissonance" and tend to over-value future pension entitlements through an over-estimation of eventual service, or a distortion of information that stems from the plan itself, with women being more likely to over-value their benefit than men.

Williams and Field also examined the perceived advantages and disadvantages of the three pension types. The main perceived advantages for SERPS lay in it being seen as an easy option, organised by others where the individual is saved from worry. The main disadvantages centre on a lack of choice: of contribution level, of retirement

date and the form in which the benefit can be taken. The fact that employers make contributions was by far the most frequently nominated advantage for occupational schemes (over 50% of those in occupational and personal schemes gave it). Lack of choice over contribution level was the most often cited disadvantage, indicating perhaps that some members considered themselves over-annuitised. This line of argument is supported by the most important perceived advantage of personal pensions being the choice of how much or little to contribute (cited by over half of those in occupational and personal schemes). However, one of the main disadvantages mentioned was that employers did not contribute.

Hedges (1998) also analysed the perceived advantages and disadvantages of state, personal and occupational schemes. His findings bear out those of Williams and Field. State Pensions are seen as safe, hassle-free and fairer for low earners, but inflexible and probably giving a low return. Personal pensions were seen as providing choice and a good return for higher earners, but were also associated with risk, a lack of information and more hassle. Occupational pensions seemed to occupy an intermediate position, being seen as secure and simple yet also associated with the apparent good returns of personal pensions. It is worth pointing out that even after the mis-selling of personal pensions in the late 80s and early 90s, they are still associated with high returns. Analysis of public knowledge and perceived advantages and disadvantages of pension scheme types certainly brings into question the public's ability to make rational decisions in the pensions marketplace. This raises the question of whether the increase in choice proposed by the government in the Green Paper will lead to people making decisions that will optimise their pension position.

Attitudes

Personal Responsibility

Attitudes to pension schemes may be shaped by the respondent's perception of who is responsible for ensuring an adequate retirement income. Responsibility could conceivably lie with the state, the individual, employers, or a combination of these. Hancock, Jarvis and Mueller's (1995) analysis of British Social Attitude Survey (BSAS) data found that a very small majority of men (51%) and a slightly larger majority of women (57%) believe that the government should be mainly responsible.

However the option "mainly individuals" was not included in the BSAS data, being subsumed into the "other" category. Williams and Field found that 42% thought responsibility should lie mainly with individuals compared to 32% who believed it should lie mainly with government.

A state role in retirement provision does not preclude a role for individuals. Hancock et al found that three-quarters of respondents believe that the government should encourage individuals to provide something for their own retirement instead of just relying on the state pension, around 15% disagreed. In response to the same question, Williams and Field found that 80% agreed or agreed strongly and 10% disagreed, with SERPS members being less in favour than those in other forms of provision. Qualitative exploration of this finding suggested that it was the fear that the state pension would be run down, rather than an acceptance of personal responsibility which underpinned people's acceptance of the need to plan for their own retirement (Williams et al 1999).

A related question to this concerns when individuals should begin retirement planning. Williams and Field found that three-quarters of respondents thought people should begin making provision for retirement by the age of 30, with younger respondents being generally more likely to recommend early planning. It is of course simple to make these statements in response to an attitudinal question, but it is uncertain how far these statements are turned into action. In his qualitative study, Hedges (1998) indicates that thinking seriously about pensions at an early age still seems exceptional with most people giving minimal consideration until they get to an age where the prospect of retirement seems less remote.

Adequacy of Expected Pension

Any consideration of attitudes to pension provision must take into account people's opinion of pension levels. Each year the BSAS asks retired people whether the "present state pension is on the low side, reasonable, or on the high side". Between 1983 and 1989, the proportion stating that the state pension was "very low" leapt from 25% to 51%. Between 1989 and 1991, this fell to 40% (Askham, Hancock and Hills 1995). In contrast, Hedges (1998) found that most people considered the basic pension to be far too low and favoured increasing it by at least £20 per week.

Hancock et al (1995) have attempted to measure respondents' views on what constitutes an adequate pension level as a stepping-stone to understanding how people

arrive at decisions about pension contribution levels. Respondents were classified according to their current pension arrangements and gross personal income. They were then asked to consider a pension level that someone in a situation similar to theirs might expect if they retired at the age of 65, and were then asked if they thought this pension level would be adequate for them. These results are displayed in Table 1.5.

Table 1.5: Views on adequacy of "expected" pension by "expected" pension level

Expected Pension Level	Adequacy of expected pension		All	
	Adequate	Inadequate	%	Sample Size
Up to £3000	11	89	100	600
£3001-£5000	18	82	100	155
£5001-£6400	33	67	100	147
£6401-£9500	38	62	100	163
£9501-£12700	49	51	100	117
£12701+	78	22	101	86

Source: Hancock et al (1995)

A pension level of up to £3000 was regarded as inadequate by 89% of those with expected pensions of this amount. It is only when pension levels exceed £12701 that a majority of those facing this pension level, consider it adequate. Women are more likely than men to think any given level is adequate, controlling for differences in current income, marital status and age. People with low present incomes are more likely to consider any specific pension level adequate than those with high incomes, implying that income maintenance is seen as important.

Additional Contributions

Given people's views on the adequacy of retirement income, the logical follow-up is to ask whether they are willing to pay more to avoid an inadequate pension. According to Walker's (1993) analysis of Eurobarometer survey data only 29% of those retired people surveyed would not have paid additional contributions to boost their pension, suggesting support for the myopia hypothesis. However there may not be corresponding support for government action to increase the level of total pension contributions. Hedges (1998) indicates that his sample felt that there should be compulsion for the first tier of state provision, but that there was a lack of consensus beyond this. In their qualitative study, Thomas, Pettigrew and Tovey (1999) specifically explored the issue of compulsion to second-tier pensions and found a lack of consensus, both about the principle of compulsion, and at the level it should apply. Two broad groups emerged, those who believed that under no circumstances should individuals be

compelled to save any more, and those who were prepared to countenance the idea under certain circumstances only. An important aspect of the latter group's thinking was that compulsory contributions should only be made to an individual "pot" of money that is sufficiently differentiated from other state pensions.

Hancock et al attempted to test to what extent their sample would be willing to pay to increase their pension level. They showed their sample a range of weekly amounts by which they might increase their pension contribution together with estimates of the increases in annual pension each would yield. The choices were tailored to each respondent's age income and current pension arrangements. They found that 38% of those who thought their expected pension level would be definitely inadequate would not or could not pay additional contributions. Conversely, 57% of those who regarded their pension level as definitely adequate would pay something extra. In general those with most need to pay additional pension contributions seem least likely to do so. To quote Hancock et al:

> Some thirty per cent of those considering a pension of up to £5000 a year would not pay anything despite regarding it as inadequate, and 28% of them would choose to pay an extra contribution of no more than £2.50 a week. (p26)

As a percentage of gross personal income, the additional contributions people would pay are small. Over half of those who would make higher contributions would pay less than 3% of their income and three-quarters under 5%. These additional contributions would raise the average pension level by 9%. As Hancock et al point out, responses to this type of attitudinal question must be treated with caution; that respondents say they are willing and able to pay more to obtain a higher pension is no guarantee that they will. It is interesting to note that almost a quarter of those who would not choose to pay anything to increase their pensions would be prepared to pay something to retire early. This indicates that the constraints on additional contributions are not fixed and immutable.

Hancock et al's exercise is based on individual pension entitlement. This has been defended by Davies and Ward (1992) on the grounds that people (especially women) can only rely on their own entitlement due to marital instability and uncertainties about the distribution of household income. The introduction of pension splitting on divorce in the 1995 Pensions Act may weaken this argument in future as the pension status of a spouse might be expected to enter an individual's decision calculus.

However Hancock et al found that women with low expected pensions were more inclined than men to pay additional pension contributions.

Hancock et al also found that younger age groups were found to be more likely to pay some additional contribution than older people. This conflicts with Hedges's (1998) evidence that the attitudinal barriers to saving for retirement are greatest for the young. There are countervailing tendencies at work here, pension contributions for the young have a greater length of time to compound and increase the level of pension, but older age groups are closer to retirement so the incentive to boost pension entitlement may be greater. It must also be remembered that there is a "pensions trap" whereby accumulation of pension assets may affect entitlement to means-tested benefits. According to Walker, Hardman and Hutton (1988) there is in fact little net gain from private pension income until it reaches some £50 per week. The data on pensioners' incomes related earlier indicates that a large number of pensioners may be affected by this trap. As a result, older age groups may be accumulating other forms of asset. Hancock et al concentrate solely on retirement income through pensions, ignoring the role of other assets.

Section F: Reform Proposals

Pension Proposals: Structure and Level of Benefit

Over recent years there have been many pension schemes put forward, encompassing a wide range of aims, methods, assumptions and consequences. It must be remembered that most of these schemes were conceived as a response to the pre-1997 model, not the changes brought about by the current government. Nevertheless, it is important to examine these proposals as they highlight the range of options available. I have attempted to group the proposals thematically, which sheds more light than simply grouping them according to their structure.

Firstly there are those schemes that would attempt to re-build the current system. These schemes place a heavy emphasis on the efficacy and sustainability of state provision and treat the private sector with suspicion. Townsend and Walker (1995) provide the archetypal re-build scheme. Their scheme would up-grade the basic pension by 10 per cent and loosen its contribution conditions. It would also restore SERPS to its original formula. Atkinson's (1994) Minimum Pension Guarantee (MPG) proposals can

also be put into the re-build category. The MPG would bring total state pension and any occupational or personal pension up to £80 per week. He would make membership of a DB plan mandatory (to avoid moral hazard) Finally, SERPS would be restored to its original formula to provide serious competition to private pensions. Johnson (1994), while not presenting a "whole" scheme, had the idea of transforming SERPS into a system which allows low or no earners to build up entitlements more quickly than they do at present.

A more substantial number of schemes envisage a "re-casting" of state provision. This can be for a variety of motives ranging from controlling cost to avoiding the indignity of means-testing. Re-cast schemes envisage a much more important role for the private sector and funded pensions. However they are not intended to be laissez-faire systems. These schemes often envisage major changes in the regulations governing pensions; they also often have redistributional objectives.

There are two basic re-cast structures. One model involves a DB state first-tier and a DC private second-tier of the type laid down by James (1996). British examples of this include the Retirement Income Inquiry (1996) proposals. The first tier comprises an "assured pension" of the basic pension plus an income-related addition, financed from general taxation. The second tier would consist of compulsory private provision, and to that end, SERPS would be abolished. Consumers would retain the option of occupational and personal schemes. There would also be a funded National Pension Scheme. This proposal is very close to Field's (1996) proposals which would retain the Basic Pension (indexed to prices), abolish SERPS and have private DC contributions for all those earning above £100 per week. Savers would be free to use private companies or mutually-aided bodies as vehicles for their savings. There would also be a National Savings Pension Scheme, a simple vehicle linked to either the Gilts markets or the FTSE 100 index.

The Liberal Democrat proposals (1993) operate along very similar lines. They would abolish the contributory principle and have a higher basic pension than at present with two elements, a basic payment and an income-related supplement for those in greatest need. SERPS would again be abolished but there would be an automatic entitlement to have an employer pay a minimum of 5 per cent into an occupational or personal pension on an individual's behalf. Davies' (1993) pension proposals can also be slotted into the re-cast category. He would improve the basic pension, with phased increases over a five-year period. He would also keep SERPS, restoring the cutbacks from the 1986 Social Security Act (except the best 20 years rule), but would give it a

structure analogous to a funded scheme by investing contributions in a new class of bonds. It is this element that makes his scheme a "re-cast" instead of a "re-build". Davies would also set up DC "industry schemes" to provide a more effective alternative to personal pensions for the low paid. These schemes are explicitly not meant to be a substitute for final salary schemes.

This first type of "re-cast" model has in effect been the one adopted by the government in its reform of the UK pension system. The basic pension has been kept and supplemented by a MIG at above the previous income support level. There have been two major changes to the second tier, both of which identify the proposals as "re-casting" state provision. The first change is the replacement of SERPS by the SSP, which is intended to give higher pensions to lower earners and carers. As we have seen, there is the secondary aim of avoiding the need for means-testing, though this may not be achieved in practice. The second change to the second-tier is the introduction of "stakeholder pensions", which bear some resemblance to Davies's "industry schemes" in providing a low-cost alternative to personal pensions for middle-income earners.

A second re-cast model involves a transition to private sector provision and fully funded pensions. Johnson and Falkingham (1993) criticise all parts of the current system, favouring a Unified Funded Pension Scheme(UFPS). Every individual would build up a personal retirement fund over adult life with tax-financed transfers going to groups with low or no income. The aim would be a retirement income of 50 per cent of previous salary for wage earners, and 33 per cent of average earnings for other groups. Jupp (1998) suggests a target minimum income of 40 per cent of expected average male earnings, one quarter of which would be guaranteed by government, leaving individuals to fund the rest through individual DC accounts. Owen and Field (1993) also base their scheme on universal DC private pensions. The basic pension would be replaced when the private sector had established universally adequate pensions, with the state again paying contributions for disadvantaged groups (an estimated £7bn per year). Owen and Field (ibid) would operate a high Guaranteed Minimum Pension; the cost of which they assume would become less expensive over time.

Some proposals would convert to a fully funded basis with no intra scheme redistribution and minimal regulation. Notable "laissez-faire" schemes include Morgan (1984) and Butler and Pirie (1983). In these schemes all individuals would set up personal retirement accounts (PRAs). Individuals would even have some latitude to decide the riskiness of investments. The sole restriction on contributions would be the requirement to invest enough to avoid destitution. The pre-election proposals by the

Conservative Party (1997) can also be placed in this category. Those entering the labour market would be required to set-up PRAs with the rebate of NICs for the basic pension. SERPS would be abolished and the other compulsory provision would be the individual's age-related rebate.

A final type of scheme can be defined as "reductionist". The representative of this is Dilnot and Johnson (1992). This proposal questions the role of the basic pension given that not all pensioners are poor and most have private pension income. It suggests the under-indexation of the basic pension to free-up resources via an extension of means testing.

All of the schemes put forward express dissatisfaction with the pre-reform UK pension system. The "re-build" and re-cast" schemes agree that the current system provides inadequate pensions, but differ on how to rectify this. Adoption of a re-cast system leads to an increase in the importance of private pension coverage.

Compulsory Contribution Levels

The level of contribution detailed in each scheme stems from its view of the desirability of extra compulsory provision. Schemes that would increase it cite the inadequacy of the current situation, that whether the claims on future output are being built up via PAYG or funding, not enough is being set aside for old age (IPPR Commission on Social Justice 1994). After examining contributions made currently, both Davies (1993) and Field (1996) conclude that only those in DB occupational schemes, contributing an average of 16 per cent of gross pay, are in a safe position. Schemes which do not call for extra compulsory provision would either operate at roughly the same level as now (Dilnot and Johnson 1992), or would allow individuals full choice over the level of contributions made with the single reservation that enough is saved to avoid destitution (Morgan 1984).

Proposals that seek to re-vitalise the current system (Townsend and Walker 1995; Johnson 1994; Atkinson 1994) would draw the revenue needed from general taxation. Schemes that propose to operate on a DC basis do indicate their contribution rates. These are set out in Table 1.6.

Table 1.6: Compulsory Contribution Rates in Pension Proposals

Scheme	Compulsory Contribution (Employer + Employee
Davies (1993)	8-12%
Johnson and Falkingham (1993)	18%
Owen and Field (1993)	10%

Field (1995, 1996)	16%
Retirement income Inquiry (1996)	16%
Jupp (1998)	11% (All employee)

These compulsory contributions are not all directly comparable, as some are for first-tier schemes and some are for second-tier schemes. It is clear however that these contributions are far higher than the existing compulsory elements in the system. These schemes are intervening paternalistically to ensure that a greater amount of current income is set aside for retirement. It was pointed out earlier that there is a difference between compelling people to achieve a pension income such that they will not be a burden to others in retirement and compelling them to achieve a level of pension directly linked to their working income. The motivation behind these compulsory contributions varies between the pension proposals.

The majority of schemes (Davies (1993), Owen and Field (1993), Field (1995, 1996), Retirement Income Inquiry (1996)) seek more or less explicitly to compel individuals to have a level of income in retirement that is linked directly to their income in work. Atkinson (1994) does not specify the contribution rate for his compulsory DB schemes, but there is the implicit assumption that they are comparable to present schemes (around 16 per cent), and are thus intended to replace a high proportion of the individual's wage whilst working. Johnson and Falkingham (1993) seem to have a mixture of motivations; wage earners are intended to build up a fund of which will replace 50% of waged income, which should be seen as the salary replacement motive. Non-wage earners are intended to build up a pension fund that equals 33% of average earnings, which can be seen as securing an income which will avoid means-testing in retirement. The Jupp (1998) scheme suggests compulsion to the extent that individuals do not become a burden on others through setting a target. When this target is reached, the need to make compulsory pension contributions ceases also. The idea that individuals should not be compelled to accumulate pension provision when they will not be a burden to others was the rationale behind the government's refusal to increase the level of compulsory pension contributions (DSS 1998b).

Both the Retirement Income Inquiry and Field include a gradual contribution rise in their plans. The initial compulsory contribution would start low (at the former COR) and rise slowly to the new goal. Field insists that there is a "groundswell" in favour of compulsory second pension provision, but the timetable to increase contributions seems very flexible, indicating concerns about the acceptability of the change. Field insists that compulsory contributions cannot be equated with tax increases

as they represent:" the same pounds in people's pockets, but at the time in their lives when they need them most"(1996,p53). However compulsory contributions do decide when people can spend these pounds, so this interference with individual time preference horizons cannot therefore be guaranteed to be popular. The fact that the government proposals opposed additional compulsion indicates that they at least had doubts about its political acceptability.

All of the compulsory pension proposals concentrate solely on income adequacy. Morgan (1984) points out that pension contributions are only one way to secure an income for retirement. Hannah (1986) suggests that as a result of asset transfers from deceased parents, non-pension incomes are likely to rise, therefore the real needs of income replacement will be less than is predicted.

Information and Regulation

The information issue has been noted in many pension proposals and commentaries. It is recognised that consumers need clear and comparable information (Retirement Income Inquiry 1996), that personal pensions especially are intricate (Social Security Advisory Committee 1994), and that information on the right sort of scheme is inadequately provided for those making a choice (Johnson 1994). Information has even been cited in political proposals, the need to bring about a: "radical improvement in the quality and accessibility of information on pensions, both in general and in the information people are given about their own pension position"(p86), was a prominent element of the government Green Paper on pensions (DSS 1998b).

Some proposals go beyond general lip-service and present specific proposals to improve information provision. Owen and Field (1993) suggest that a "standard card" with the fees of the private pension provider would boost comparability. The introduction of twice-yearly benefit statements for all in "industry" schemes is included in Davies' proposals (1993). Mandatory automatic benefit statements are also included in Johnson and Falkingham's scheme. The Retirement Income Inquiry makes the sound point that in providing information, overload must be avoided.

Butler and Pirie (1983) provide a more radical insight. Their personal retirement account scheme envisages individuals becoming better informed with the accounts being a: "prime source of discussion"(p23). They assume that state action has diminished the incentive for individuals to exercise responsible choice, a view shared by Morgan (1984) and Littlewood (1998). The lessening of state action in pensions would

therefore lead individuals to become better informed. This is semi-related to Field's (1996) idea for decentralised "social collectivism" with a new wave of mutual-aid societies with a high level of member involvement at the forefront of pension provision.

A decentralised system put into operation in Chile relies on a high level of consumer information. Statements to contributors are made three times a year discussing the accumulated balance, rate of return and recent contributions (James and Vittas 1996). There is also costless entry and exit to schemes. This high level of information provision is accompanied by detailed regulation. Fund providers are limited to providing one fund, and investment rules restrict the placement of contributors' money. Dispersion in returns across providers is reduced through the regulation of maximum and minimum returns.

In his plan, Field (1995,1996) does not envisage sweeping new regulations along Chilean lines. The only real change from the existing system would be a merging of the current regulators. After analysing Chile and the UK, Disney (1996) suggests that careful regulation and adequate information is needed for decentralised plans to be a feasible alternative to current arrangements. Butler and Pirie (1983) claim that the sophisticated investment markets and expertise available in the UK make excessive intervention unnecessary.

Davies (1993) favours an extension of occupational scheme regulation with an Occupational Pensions Act that would go far beyond the 1995 provisions, for example giving a majority to employee trustees in all schemes. Nobles (1992) goes even further, proposing that the UK copy Spanish legislation giving employers only two powers, the right to introduce a scheme and the right to cease contributions. This would leave control of pension schemes firmly with employees. Johnson and Falkingham (1993) favour doing away with "archaic"(p8) trust law. However Nobles reminds us that the central concept of a fiduciary is sound, and would have to be included in any framework of regulatory law.

This all indicates that the areas of information and regulation have achieved a far greater prominence in recent years. This can be seen as an inevitable reaction to the increasingly important role of private pensions. If people are to be expected to make decisions in the pensions marketplace, then there is a need for sound regulation and digestible information, especially in schemes which expect individuals to choose between competing private providers.

Distributional Issues

Every pension proposal will have a distributional impact, between richer and poorer groups, between men and women and between generations. This section will examine these distributional effects and their likely acceptability.

Davies (1993) insists that any workable scheme must have an element of redistribution from rich to poor, as groups with low pay and/or gaps in working history could not otherwise build up a sufficient pension. James (1996) accepts this, adopting a low-level redistributive first tier to her plan, specifically for the purpose of poverty avoidance. Atkinson's (1994) MPG proposals do not have this sole aim but would redistribute towards poorer groups. An MPG of £80 per week would increase the income of the bottom fifth by a third, and the top fifth by only 4 per cent. Schemes that promote redistribution have to answer questions about sustainability. James (1996) notes that there is little, if any, redistribution to low income groups in existing state schemes and suggests that this was necessary to win the political support of high-income groups. Given that the first tier of her own scheme is explicitly redistributive, its sustainability must therefore be questionable.

Field (1996) puts forward the belief that: "hypothecated redistribution is possible within carefully defined parameters"(p17), as part of a scheme that the majority of the electorate supports for clear reasons of self-interest. In hypothecated redistribution schemes, contributions are credited for some groups who cannot pay their own. In Owen and Field (1993) the four main categories would be: full and part-time carers, parents caring for young children, the disabled and the unemployed (based on their previous earnings). Similarly, Johnson and Falkingham (1993) propose capital top-ups for the unemployed, the disabled, carers (of all types) and the sick. The redistributive elements of these schemes could be challenged by the self-interested majority, for example the payment of contributions to the unemployed could be seen as an indirect subsidy. In the Field (1996) proposal, contributions to the unemployed were left out, while parents caring for children would only be brought in at an undefined second stage.

A more fundamental problem may lie in changing attitudes. A DEMOS report (Wilkinson 1994) indicated that previous core values of society like security and well-being were being replaced by risk, excitement and escapism. Field (1996) cites this to "prove" that old-style redistribution will not work in the modern world, but this evidence also suggests that hypothecated redistribution may not be acceptable either.

As we have already seen, proposals to regrade SERPS to its initial formula (Atkinson 1994, Townsend and Walker 1995) will not redistribute between rich and poor but between men and women. Any movement towards pensions based purely on contributions will work to the benefit of men. Even in a system based purely on contributions, distributional issues do crop up due to differential male and female life expectancies. Men can attain a higher pension annuity from providers, for the same level of contribution. Under Johnson and Falkingham's UFPS, pooled annuity rates would be enforced keeping some degree of male-female redistribution.

There is also the issue of generational equity. Moves towards a purely funded strategy (Morgan (1984), Butler and Pirie (1983), Johnson and Falkingham (1993), Conservative Party (1997)) involve one generation paying twice, once for its own pension, and once for the last generation under the previous system. Johnson and Falkingham attempt to surmount this problem via a "transition tax", which spreads the burden between the generations; other proposals ignore the issue. In a similar vein, Field (1996) proposes a bond issue to spread the costs stemming from his planned closure of SERPS.

Pension proposals also tackle the distributional issues raised by private pensions, most notably the inequalities in final salary schemes. It has been noted that it is impossible to be more kind to early leavers without being less generous to stayers (Centre for Policy Studies 1983). Chappell (1988) proposed allowing those in occupational schemes to transfer 95 per cent of their accumulated pension wealth per year into a segregated fund. Johnson and Falkingham provide a simpler solution to the problem by proposing the abolition of final salary schemes.

This section shows that every pension proposal will have an equity impact, whether intended or not. The new Labour government's proposals tread a careful balancing act, with the increased role for the private sector countered by the introduction of the SSP, which (in theory) provides a better outcome for women and carers. The fact that the SSP may be of limited use in keeping low earners above the MIG level is a reminder that careful analysis of how pension proposals affect all groups is essential in order to evaluate their overall impact.

Conclusion

This chapter has provided a broad survey of issues surrounding pensions and the contemporary UK policy environment. Section A has outlined the rationale behind

pension provision, and assesses the level of compulsory provision that can be justified by economic theory, and that which could be rationalised through other arguments. Section B has showed us that the state is re-casting itself as a provider of a minimum income in retirement for low earners only, expecting private provision to cover all of those earning more than £9000 per year in the long-term. It has also highlighted the fact that there has not been institutional stability in UK pension policy so it would be unwise to assume that even this type of policy regime is likely to last. Section C has highlighted the inequality in the pensioner income distribution, and the increasing importance of private provision. Section D examines current trends in private pension coverage and contributions, for both occupational and personal pensions. It notes the growing role of DC pensions which may attract a lower level of employer and employee contributions. Section E analyses the information and attitudes that people have towards pensions in the UK. It would be fair to conclude that the public is not well informed about pensions. They "accept" the need to make more individual provision, but do not really want the state to withdraw from pension provision. This reluctant attitude may not serve them well if government policy continues on current lines. Section F summarises the various proposals for reform, and shows that the issues of coverage, adequacy, information, equity and compulsion emerge as the salient parameters in the formation of any pension system put forward as a replacement.

If we accept that state provision of pensions will play a diminishing role in the UK then it is vitally important to analyse private provision being made by people for their retirement, whether in the form of pensions or otherwise. This has been done in Section D, and the assets section of Section C. The existing data provides a foundation, but does not reveal enough information about the provision that various groups within society are making for their retirement, through the different elements of pension and other asset accumulation. This is the purpose of this thesis.

Chapter Two-Research Questions and Methodology

Introduction

The previous chapter has provided detail on current pension policy in the UK and the issues that surround it. The next stage is to outline the research proposal. This will include the major questions to be answered, but will also include sub-questions that will be tackled in the thesis. The research proposal will also outline how the material will be organised into the results chapters. The second half of the chapter will look at the methodological issues connected with the thesis. This will include the choice of dataset, details of the sample and a discussion of the reliability of the data.

Research Proposal

Introduction

The overall aim of this thesis is to look at the private pension provision that people are making voluntarily for their old age and assess the likely consequences of this behaviour in terms of five important themes: coverage, adequacy, compulsion/voluntarism, rationality and lifetime incomes/ asset accumulation. Here each of these is discussed in more detail.

Coverage is clearly a vital issue. Any analysis of pension behaviour in the UK must be based on a firm understanding of pension coverage. As we have seen, second tier pension coverage in the UK can be private, in the form of an occupational or personal pension. However, if an individual does not have either occupational or personal pension coverage, then by definition they are currently a member of SERPS and will be a member of the SSP after the abolition of SERPS in 2001. The coverage issue is operationalised in the following way. Given that there are effectively three forms of private pension available (DB and DC occupational schemes, and personal pensions), it is useful to analyse which groups in society are members of each type of private pension. This should provide insight as to how the risks of a low retirement income, other things being equal, are distributed within society. The notion of coverage goes beyond current membership of an occupational pension scheme. An individual

may not be a member of an occupational pension scheme at present, but may be in receipt of some private pension income when they retire. Explaining who is covered in what type of scheme is the first purpose of this research.

The adequacy of private pension provision is obviously of the greatest importance, though it is important first to define what we mean by the term. Adequacy is capable of both an absolute or relative definition with regard to retirement income. An absolute definition of adequacy involves making a flat-rate assessment of retirement needs and defining income as adequate if it exceeds this flat-rate assessment, regardless of the previous income of the individual. A relative definition of adequacy takes heed of the standard of living enjoyed during working life in deciding whether an individual would define a given standard of living during retirement as adequate.

This thesis will define adequacy in the relative sense. This is due partly to the fact that DB occupational pension schemes are based on a relativist conception of adequacy. Each year of membership brings a percentage of pension entitlement based on final salary. The effect of this is that when the individual retires, the pension income is sufficient to give a standard of living related to that attained through employment income. The second reason for viewing adequacy in this way is that people themselves do. Hancock et al (1995) found that those with low present incomes are more likely to see any pension level as adequate than those with high incomes. This implies that income maintenance, the relative definition of adequacy, is seen as important.

It is necessary to separate adequacy and coverage as, although closely related, they are not synonymous. An individual may have private pension coverage, but may not be in an adequate position defined in the relative sense. As we have seen, existing evidence indicates that members of DC occupational schemes have a lower total contribution rate than those in DB schemes, while 68% of personal pension holders receive no contributions from their employers in excess of the contracted-out rebate. Adequacy may be influenced heavily by the type of private pension that an individual has, but it must be remembered that the adequacy of an individual's pension position is not fixed merely by membership of a private pension scheme. It can be improved through the payment of additional pension contributions. It is also important to investigate the two aspects which link adequacy and the payment of additional contributions. Firstly, it is essential to analyse what percentage of groups within society are paying additional contributions, and secondly, to analyse how much is being paid.

Rationality has also been highlighted by Chapter One as an important issue. It has been demonstrated that individuals do not have anything like perfect information

about pensions. It must therefore be questionable as to whether individuals can be relied upon to make rational decisions, namely to respond efficiently to the incentives that they face. However, "irrational" decisions are not always simple to identify, as a decision that harms the eventual pension situation of an individual could have been taken for many reasons. There is also the major factor of time preference rates to consider. These will vary between individuals, and may explain why some are less interested in future income. This must lead us to question whether the theme of rationality, though extremely important, can be taken very far in practical terms. Rationality can however be operationalised in terms of whether an individual is obtaining an inferior deal than that which could be obtained through another form of provision with the same contribution level.

As Chapter One has shown, the issue of compulsion has been raised by a number of authors, all of whom share the assumption that a greater share of current income must be set aside for retirement. Discussion of coverage and adequacy in a relative sense also leads naturally to this question. If one reaches the conclusion that private pension coverage and contribution levels (of all types) are not sufficient to ensure an adequate retirement income for most of the public, then the subject of higher compulsory second pension contributions must be addressed. In a similar vein, the subject of the vehicles necessary to achieve this end must be included. If coverage forms part of the problem, then a forcible extension of private pension provision may be required. This may not be popular with either the potential contributors or the potential providers. This is of course at odds with the current structure of the UK pension system, which relies essentially on the Beveridgean premise of a low basic minimum, with anything extra to be provided by voluntary action from the individual.

The final important theme to cover is lifetime income/ asset accumulation. It must be remembered that pension assets are not the only means by which an individual may invest for retirement. It is possible to distribute income over the life cycle through other means, such as financial or housing assets. It may be that perhaps individuals do not want to invest in pension assets (which are of course not bequeathable), but are investing in other asset forms. There is the alternative viewpoint that the people who pay additional contributions to a private pension will be more likely to invest in other assets. This relates back to the compulsion/voluntarism issue. If individuals are not investing in pension or other asset forms it must be asked whether society should compel them to do so.

Questions

Now that the important themes have been discussed, it is necessary to state in precise detail, the questions that this thesis will answer. It has proved useful to divide the questions to be answered into thematic and empirical questions. Thematic questions are intended to be broad and overarching, tackling the major themes that have been identified. Empirical questions are intended to have a narrower focus, to shed light on a precise area of enquiry, but will obviously have implications in terms of the major themes.

Thematic Questions

1. How is private pension coverage in the UK distributed amongst different groups in the population?
2. Does the current behaviour of private pension members indicate that they will have an adequate income in old age?
3. Is voluntarism sufficient?
4. Does current accumulation behaviour indicate that people are following a rational economic calculus?
5. How does the acquisition of pension assets interact with that of non-pension assets in terms of allocation of lifetime income?

It is useful to focus on the questions in detail to recognise exactly what it is we are trying to achieve by answering each of them. The first question deals with the coverage issue and its consequences. Coverage determines an individual's pension "base", and as we have seen, differing forms of private pension provision may attract differing levels of contribution, both from employers and from the employee through the scheme. It is important to ask who has which form of provision, whether there are some groups who are represented disproportionately in DC occupational or personal pensions. It must also be recognised that this question also includes non-membership of private schemes. In this position the individual is left in SERPS which has been cut back, and will be transferred to the SSP, which is designed for low earners only.

The second question deals explicitly with the issue of adequacy. It aims to analyse all facets of pension accumulation in order to decide whether under current trends, people will have a retirement income which comprises a significant proportion of their pre-retirement earnings. This question also encompasses an examination of the

pension behaviour of different groups within the population. It may be that some groups whether defined by age, sex, income level or other factors, are more likely to achieve an adequate retirement income than others.

The third question is arguably the most important of all. It cannot be answered definitively, because it requires a value judgement as to whether individual choice should be over-ridden in order to secure a relative standard of adequacy for individuals in old age. However, the thesis will seek to give a reasoned assessment based on the current behaviour of private pension members in terms of the percentages paying additional contributions and the amount being paid. This provides evidence as to how people are reacting to their circumstances, if at all.

The fourth question deals with the issue of rationality. It has been noted that rationality is difficult to operationalise, but this should not be allowed to detract from the fundamental importance of the area. It is essential to ascertain to what extent individuals are making efficient decisions. The question is asking whether current accumulation behaviour can be justified given that we do not know individuals' time preference rates. It is not asking whether or not we agree with it.

The final thematic question recognises that fiscal provision for old age can be made in a number of ways and enquires whether and if so, how, people are transferring income across the life cycle. This is important in that it questions the whole notion that pension provision is the primary method for the transfer of income over time, and examines whether people are pursuing alternatives. The examination of other asset forms is, to a certain extent, a means of closing off an obvious line of enquiry. If people are not investing enough in other asset forms to ensure an adequate income in retirement and are not investing in other asset forms, then it will be clear that consumption is not being re-allocated substantially over time.

These are the questions that arise from the examination of the major themes. The next step is to detail the empirical questions that act as the means by which the thematic questions will be answered.

Empirical Questions

1. How does private pension membership vary in relation to age, sex and income?
2. Which groups are more likely to pay additional contributions by age, sex and income?
3. How does the amount of additional contributions paid vary by age, sex and income?
4. How does the payment of scheme contributions vary by age, sex and income?

5. Are these patterns common to both DB and DC occupational schemes, and personal pensions?
6. What pension outcomes would be produced by current behaviour?
7. Is the Dilnot/Disney theory that people follow a rational economic calculus with respect to pensions correct?
8. Are pension contributions and other asset forms complements or substitutes?
9. Does divorce have a negative association on pension accumulation as was suggested in Hancock et al (1995)?
10. Do households with children have a weaker position in terms of pension accumulation than other household types?
11. Are younger age groups more likely to be acquiring pension assets than older groups?
12. Do richer groups have a stronger position in terms of private pension accumulation than less well-off groups in society?

The first four of these questions deal with the building blocks of private pension entitlement, namely coverage and the various forms of contributions. They will enable us to build up a picture of pension accumulation patterns in the UK, to find out to what extent various groups in the population are accumulating pension assets. The next question looks at whether these patterns are consistent across all forms of private pension provision. This is to analyse whether groups found to be disadvantaged in one form of private pension provision have a corresponding advantage in another, or have lower coverage and pay lower contributions in all pension forms. Question six aims to calculate the outcomes of current behaviour. This has implications in terms of the adequacy and compulsion themes, as we will be able to calculate the proportion of the population heading for an adequate retirement income.

Question seven has implications for the major theme of rationality. As Chapter One points out, there is a strand of thought that believes that patterns of personal pension coverage are consistent with a rational economic calculus. The obvious implication of this is that people are capable of making correct decisions in the pensions marketplace without the direction of government. Question seven asks whether these patterns of coverage are still consistent with a rational calculus.

Question eight is the practical embodiment of the lifetime income/ asset accumulation theme. Given that there are other fiscal avenues by which provision for old age can be made, the logical question is to analyse the relationship between

pensions and these other asset forms. If they are complements then we face a situation whereby people can be categorised as either "accumulation-rich" or "accumulation-poor". The second category can then be investigated to identify its members more closely to see if the position is caused by choice or constraint. In the case of the former, the solution to the dichotomy may well involve an increase in the amount that has to be set aside for retirement provision. If they are substitutes, then we have a situation whereby people are compensating for a poor pension position by other means. This makes it difficult to recommend an increase in the level of compulsory pension contributions, as by their actions, individuals are demonstrating that they wish to make provision through other avenues.

The remaining questions deal with the behaviour of specific groups in society. Question nine deals with divorce. In their notional exercise, Hancock et al found that divorced people were less likely to be willing and able to improve their pension position. It is important to analyse how this relates with pension accumulation patterns in reality, especially given that the level of divorce in society is rising. Question ten deals with the issue of households with children. This is partly motivated by an understanding of the nature of all pension schemes. As Chapter One demonstrates, all forms of pension will be paid out of future output. This output will of course be produced by the following generations. It is therefore legitimate to enquire how households with children fare in terms of pension accumulation compared to other household types, given that children may be a private cost, that will produce long-run social benefits.

Question eleven deals with the issue of age. We have seen from Chapter One, that there are countervailing tendencies at work when looking at the relationship between additional contributions and age; the young get a greater marginal benefit per pound of contribution, but older groups may be more interested in retirement. A savings trap effect may also be at work. Question twelve examines pension accumulation with reference to income groups within society. It is perhaps to be expected that better-off groups would have superior DB occupational pension coverage than other groups, but it is important to find out the extent of the difference, and whether it also applies to DC occupational schemes and personal pensions. In this way, analysis of pension accumulation by income group will indicate if DC occupational schemes and personal pensions have opened up private pension coverage to the majority of society, or whether these forms have served to cushion high earners without a DB scheme. Analysis of pension accumulation with respect to income also allows analysis of pension

contributions in a relative as well as an absolute sense. Given that we are looking at adequacy in a relative sense, this will enable us to deduce whether the contributions being made are sufficient to ensure an adequate retirement income for all groups.

Having explained the purpose of the empirical questions, it is useful to show the exact linkage between these and the thematic questions.

Table 2.1: Linkage between thematic and empirical questions

Thematic Question	Associated empirical questions
Does private pension coverage in the UK indicate that the risk of falling into poverty in old age is shared evenly amongst different groups in the population?	• How does private pension membership vary in relation to age, sex and income? • Are these patterns common to both DB and DC occupational schemes, and personal pensions? • Does divorce have a negative association on pension accumulation as was suggested in Hancock et al (1995)? • Do households with children have a weaker position in terms of pension accumulation than other household types? • Are younger age groups more likely to be acquiring pension assets than older groups? • Do richer groups have a stronger position in terms of private pension accumulation than less well-off groups in society?
Does the current behaviour of private pension members indicate that they will have an adequate income in old age?	• Which groups are more likely to pay additional contributions by age, sex and income? • How does the amount of additional contributions paid vary by age, sex and income? • How does the payment of scheme contributions vary by age, sex and income? • Are these patterns common to both DB and DC occupational schemes, and personal pensions? • What pension outcomes would be produced by current behaviour? • Does divorce have a negative association on pension accumulation as was suggested in Hancock et al (1995)? • Do households with children have a weaker position in terms of pension accumulation than other household types? • Are younger age groups more likely to be acquiring pension assets than older groups? • Do richer groups have a stronger position in terms of private pension accumulation than less well-off groups in society?

Should the compulsory contribution to a second pension be set at a higher level?	• What pension outcomes would be produced by current behaviour? • Which groups are more likely to pay additional contributions by age, sex and income? • How does the amount of additional contributions paid vary by age, sex and income? • How does the payment of scheme contributions vary by age, sex and income?
Does current accumulation behaviour indicate that people are following a rational economic calculus?	• Is the Dilnot/Disney theory that people follow a rational economic calculus with respect to pensions correct?
How does the acquisition of pension assets interact with that of non-pension assets in terms of the allocation of lifetime income?	• Are pension assets and other asset forms complements or substitutes?

It is clear from Table 2.1 that there is a great deal of overlap between the major themes. Any question that attempts to analyse the situation of any group encompasses both coverage and adequacy, while any question which examines the overall adequacy of pension contributions can be interpreted as a question about compulsion.

Chapter Structure

Given that we are now aware of the questions that are to be answered, it is useful to look at the chapter structure that will be used to answer them. It is not possible to write the results chapters on a thematic basis, as material could be included under many headings. Instead these chapters will be written in accordance with the first four empirical questions, to build up a picture of the distribution of private pension entitlement in the UK.

Chapter Three deals primarily with the issue of private pension coverage both occupational and personal. This will be looked at with regard to a number of factors to analyse which groups in society have the highest and the lowest coverage. Lack of private pension coverage means that certain groups are more likely to rely on state provision in retirement. Women, part-time employees and renters may fall into this category.

Chapter Four will analyse those people making additional contributions to occupational and personal pensions. This has obvious implications for the adequacy, compulsion/voluntarism, and rationality themes. Chapter One has shown us that the

number of people making additional contributions is known, but their demographic make-up has yet to be investigated fully. Chapter Four will enable us to find out whether results from theory and empirical exercises translate into practice, which will shed light on some of the empirical questions. Are younger age groups more likely to pay extra contributions than older age groups (as theory would state)? Are women more likely to pay additional contributions than men (as Hancock et al (1995) found in their attitudinal exercise)? Are divorced people less likely to pay than the married group?

It was noted in Chapter One that there has been some movement away from DB to DC occupational schemes (Pension Law Review Committee 1993). Trends indicate that these schemes will in all probability become more important in the future, but very little is known about additional contributions to these schemes, and whether these patterns differ from those to other private pension forms. To shed light on this, Chapter Four will compare the payment of additional contributions by those in DC occupational schemes, to that made by DB occupational and personal pension scheme members.

It must be remembered that additional contributions are supplementing those paid through the scheme. Chapter Five investigates the level of scheme contributions, and how this varies for different groups in society. This will continue to build up a picture of the adequacy of private pension arrangements, looking at the amount being paid into both DB and DC occupational schemes, and personal pensions. Chapter Five enables us to investigate the findings from existing sources, that DC schemes have a lower contribution rate than DB schemes.

Chapter Six looks at the amount that is being paid in additional contributions to both occupational and personal schemes. This will again analyse whether there are differences in the accumulation patterns of occupational and personal scheme members, and how behaviour varies amongst the groups stated in empirical questions 9-12. Analysis of the amount paid in additional contributions has implications in terms of compulsion/voluntarism and adequacy. The payment of additional contributions may not be in itself sufficient to guarantee an adequate income in retirement. The amount paid will have a bearing on adequacy. This will in turn have an impact on the argument for compulsion, if it is found that additional contribution payments are generally insufficient.

The previous four chapters analyse accumulation behaviour in terms of pension assets. Chapter Seven will broaden the scope of the investigation to look at the accumulation of non-pension assets. This has two purposes. The first is to indicate the number of people for whom other assets could provide a significant source of retirement

income. The second is to analyse the interaction between the accumulation of pension and other assets. This will attempt to answer the empirical question of whether different asset forms are complements or substitutes, and whether people are in fact transferring income over time.

Having analysed all of this, it will be necessary to draw out some conclusions. Chapter Eight will bring together the results of the other chapters in order to analyse what current pension behaviour might be expected to produce in terms of outcomes. This will enable us to compare the likely consequences for those with different forms of private pension provision. It will also permit analysis of outcomes across cleavages in society. The answers from this chapter will have serious implications in terms of the adequacy and compulsion/voluntarism themes.

This research proposal has identified the important themes identified in Chapter One, specified the questions to be answered, and laid out the chapter structure by which these will be answered. The next step is to look more closely at the methodological issues.

Methodology

Introduction

The previous discussions have given us a range of questions to be answered, concerning the private pension provision and contribution patterns of the UK population. The role of the methodology is to decide how to answer them. A qualitative approach would provide useful data as it could look at the motivational patterns behind people's actions, which in a complicated area like pensions policy could be very important. A quantitative approach cannot provide this detail about individual motivation patterns, but can examine data concerning a far larger number of people. After consideration of the various options, it was decided that it is preferable to use quantitative methods rather than qualitative. This is because the areas being covered by this study are little charted, so it may be considered best to get an overall impression of the situation, and this obviously calls for the quantitative, broad-brush approach. It is of course the case that qualitative analysis can build from these foundations.

Dataset

Once the decision was taken to use a quantitative analysis to find answers to the questions set, then the obvious next move was to consider possible sources of quantitative data. The two options available were either to design a questionnaire that would provide my own data, or to use data that had already been collected. A self-conducted questionnaire would have had the advantage of providing the exact data required in terms of pension and asset accumulation. However, after due consideration it was rejected as an option. This was partly because of the low response rate that this questionnaire would be likely to have. If individuals (or households) are unwilling to respond to official surveys about assets then it is extremely unlikely given the sensitive nature of the data that they would respond to a small-scale exercise. The other major consideration was that a questionnaire would have required an enormous expenditure of time in terms of questionnaire design and distribution, even to obtain a comparatively small sample. Even working on the very optimistic basis of four interviews per day, a sample of even 1000 people would take almost a year to complete.

As it was clear that the thesis would analyse secondary data, the next step was to select an appropriate dataset. All of the major government datasets were examined. The General Household Survey provided good overall data on pensions, but no information on additional contributions to occupational schemes. The British Household Panel Study had the advantage of providing longitudinal data, and information about additional contributions, but there were concerns over sample size. The Family Expenditure Survey had a larger sample size, but asked little about current private pension membership. In the end the dataset selected for use in the thesis was the Family Resources Survey 1994-95 (the latest available in June 1997).

The first and most obvious point to note in discussion of the FRS is that it is a very new dataset. It was designed to extend and complement the Family Expenditure Survey (FES). The FRS was first carried out in 1993, with a smaller range of questions. By the second survey, the sample size was increased greatly, as was the range of questions. The FRS is still developing as a dataset, therefore the early users are likely to encounter most of the teething troubles. Over time, variable definitions and question streams are likely to change, due partly to the experience of early users. The newness of the FRS was the most persuasive argument against using it, but it was considered that the relevance of the questions asked and the large sample size overrode this factor.

The FRS is the data source chosen for this thesis because it contains a large amount of useful (in some cases previously uncollected) information on private pension schemes, including:

- Personal pension, whether additional contributions paid in last twelve months
- Personal pension, whether additional contributions ever paid
- Personal pension, amount of last additional contribution
- Occupational pension, current membership
- Occupational pension, final salary (DB) or amount invested scheme (DC)
- Occupational pension, whether additional contributions are being paid
- Previous employer's pension scheme, whether belonged
- Current employer's pension scheme, whether ever belonged

The FRS also contains interesting material on other relevant areas including asset accumulation. It attempts to collect information on the actual value of holdings rather than just the interest received. This may have the unfortunate side effect of lowering the response rate to below that of studies that just attempt to ascertain income from investments. The questions asked in all relevant areas are detailed in Appendix B.

At this point it is useful to examine the methodology used by the FRS. It uses a stratified clustered random probability sample drawn from the small users Postcode Address File. Interviews are conducted on a face-to-face basis with all adults in the household. The definition of a household used in the FRS is "a single person or group of people living at the same address who either share one meal a day or share the living accommodation". A major strength of the FRS is the large sample size. In 1994-95 26408 households were interviewed, with 47107 adults contained therein. The full co-operation rate from these households was 67%. Full co-operation is defined as when none of the eligible members of the household have refused to answer more than five questions excluding the assets section of the questionnaire. This caveat indicates that the asset data in the FRS is very likely to have been answered by a much lower number, and thus the apparent wealth distribution is likely to be biased downwards for the reasons described in Chapter One. It also confirms the justification for not attempting a small-scale quantitative exercise. To counter some of the problems of non-response and

missing values for key variables, the FRS operates a "hot-decking" system and other forms of manual imputation.[4]

The sample

Once it had been established that the FRS was the most useful dataset, the obvious next step was to gain access to it and plan the sample and variables to be used. Access was gained to the FRS 1994-95 through the ESRC Data Archive at the University of Essex. Obtaining the necessary variables proved more difficult. The chosen medium to deal with the data was online through the Midas system at the University of Manchester. This was chosen as a default option. Obtaining the data through a compact disc would have been preferable, though LSE Information Technology Services were understandably reluctant in September 1998 to allow students to input 100MB CDs onto the network. This problem could have been avoided by having the data on a series of floppy discs, though this seemed highly impractical since it would have restricted the available variables.

The plan was to select the variables online, convert them into an SPSS file format, and transfer the file. Under such circumstances, the preferred sample was all adults, as the file would be transferred in a "ready for use" format. Selection of variables proved difficult. Midas works under a SIR database, within the Unix computer system. As such it was necessary to understand how Unix worked in order to navigate around Midas searching for the variables. This process took around a month. After this, it was necessary to understand how to write the programmes necessary to transfer variables from Midas to the LSE with the appropriate flat file structure. This also took around a month.

The process of selecting variables ran concurrently with the attempts to master the Midas system. Documentation received concerning the FRS had included a copy of the questionnaires used. In order to select variables, it was necessary to sift through the questionnaires to find suitable questions and the coding both for the variable itself, and for the answers. This process was complicated by the fact that for many areas, more

[4] The hot-decking process involves looking at the characteristics within a record containing the missing value to be inputed and matching it to another record with similar characteristics for which the variable was not missing (DSS 1996). The known variable was then copied to the missing case. It is unfortunate that a small proportion of results is not based on actual responses from the sample, but it seems preferable to leaving these variables as blank with the resulting confusion over cell sizes.

than one variable could have been used. Once the variables had been identified, it was necessary to work through the online dataset using the variable codes to find the variables and their position in the database so that a program could be written to transfer them to LSE. This process worked for most variables, unfortunately some proved not to be located according to the published variable codes. In these cases, it was necessary to trawl through the database in order to find the variable, and its position.

Once this had been done, several small programs were written in order to test the transfer procedure, to examine the format of the data and to run some initial tests to examine its validity and content. Once confidence in the procedure and the data was established, the data was transferred. It is worthwhile to note that while most of the variables were transferred through one program, the variables concerned with asset accumulation through sources other than pensions were transferred some months later.

The eventual sample size downloaded comprised all 47107 adults. It would obviously have been preferable to use all of this data in order to minimise standard errors, however this proved not to be possible. One of the variables chosen was derived from the question which asked how many jobs an individual had at the time of interview. When the answer was zero or one, the results ran smoothly. If an individual had more than one job, it had unusual effects when viewed in association with the results from other variables. As an example, individuals who appeared not to have an occupational pension scheme were reported as paying additional occupational pension contributions, a clear inconsistency. In the circumstances it seemed best to exclude those with more than one job. This has had the effect of removing 1097 cases from the analysis. Due to the size of the FRS this will not have a great effect on the significance of the results produced, but it is wise to look briefly at the composition of this thousand cases to see which groups are represented disproportionately.

Table 2.2: Composition of those with two or more jobs

Group	Group as % of those with 2+ jobs	Group as a % of employed population
Women	61.2	46.2
Part-time employees	43.3	20.9
Cell Size	1097	25094

It is clear from Table 2.2 that women and part-time employees are over-represented amongst the ranks of those with two or more jobs. This problem cannot be corrected, but it is wise to note that the sample will have a slight bias towards male, full-

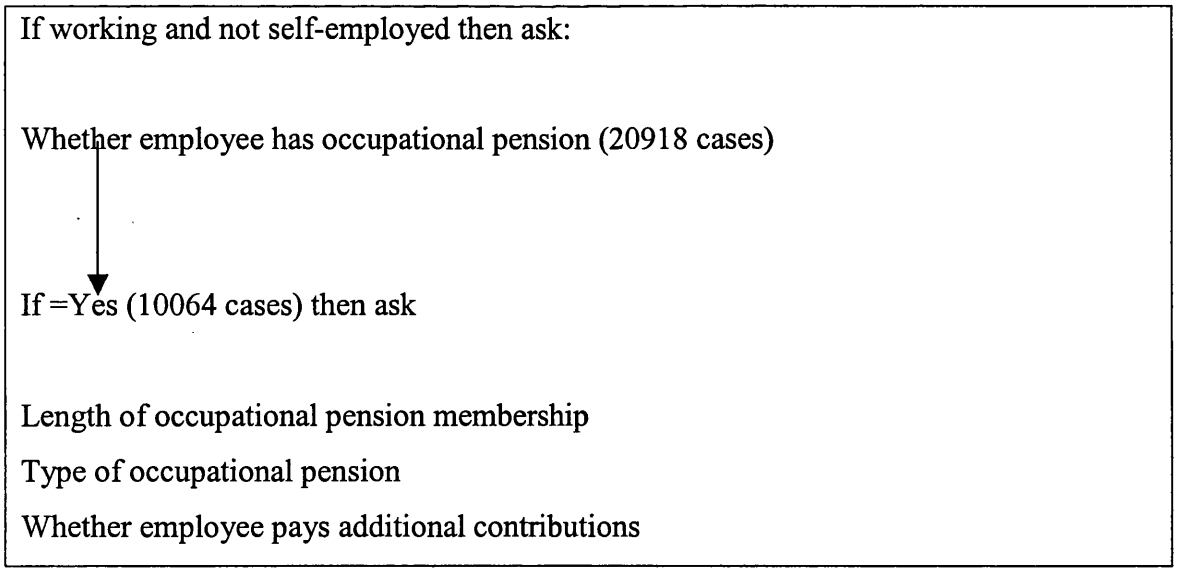
time workers. However it is important to note that due to the size of the FRS, this bias will have little effect on the results.

Of the 46010 adults left in the sample after those with two or more jobs were removed, 23997 are recorded as having paid employment. This is the effective sample for current personal pension membership. For occupational pensions, the numbers are slightly different due to the presence of the self-employed. As the self-employed by definition cannot be current members of an occupational pension scheme, the effective sample for current occupational pension membership is the employed population minus the self-employed, which leaves 20918 people.

A major problem with the FRS lies in which groups get to answer which questions. The FRS uses certain questions as "gateways", positioned at the top of a block of questions. Only those who give the appropriate answers to the gateway questions go on to answer the remaining questions in that particular block. This problem is very relevant for this thesis, since important data is derived from both the pension block, and the employee pay details block, which includes the gross income statistics and the amount paid in pension contributions. As a result, the numbers who get to answer relevant questions vary within the thesis. This can be explained in more detail through flow charts.

Figure 2.1: Derivation of sample in pensions block

<u>Occupational</u>



Personal

If working then ask:

Whether individual has personal pension (23997 cases)

If =Yes (6106 cases) then ask (if not self-employed (excludes 1710 cases))

Whether individual paid additional contributions in the past 12 months (4396 cases)

If =Yes (2136 cases) then ask

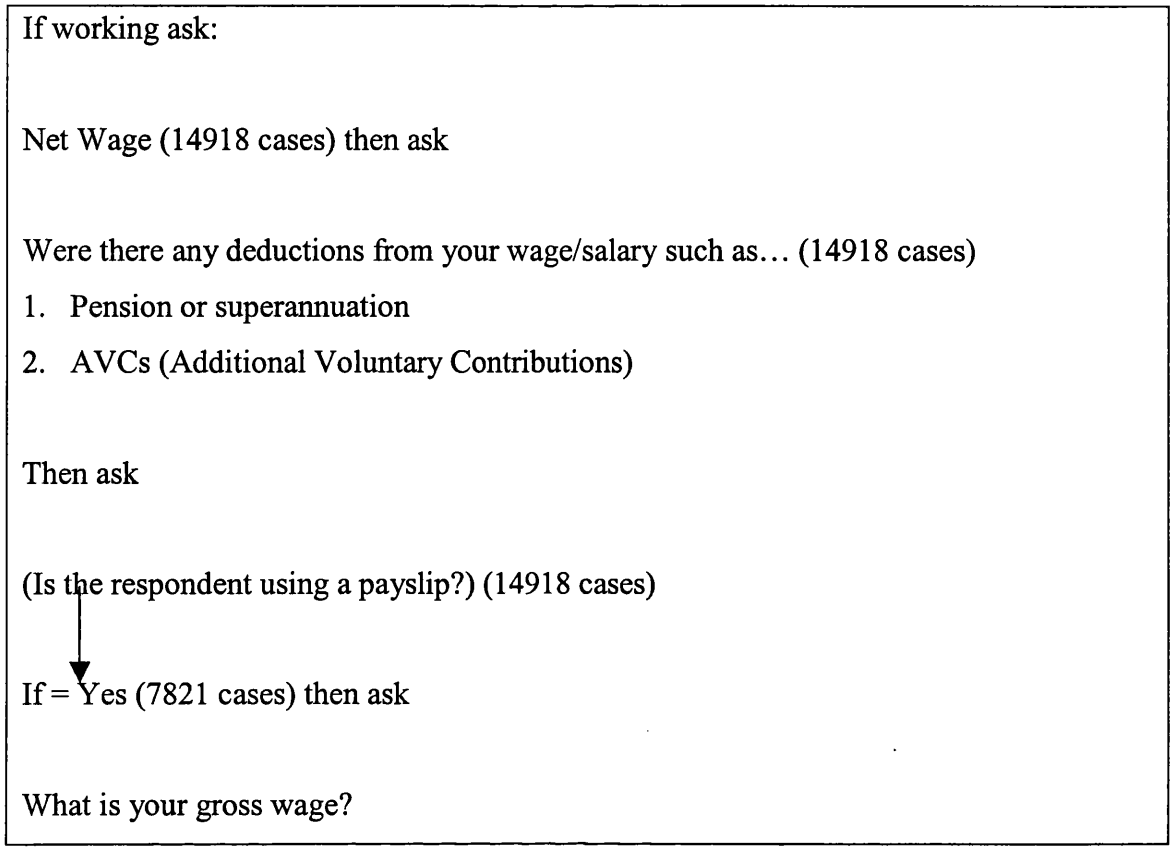
How much additional contribution did you pay?
How long did this cover? (Self-employed also asked these questions)

If =No or don't know (2260 cases), then ask

Have you ever paid any additional contributions to a personal pension?

Fig 2.1 shows that the data from the pensions block is derived in a relatively straightforward manner. To take occupational pensions first, non self-employed workers are asked if they are members of an occupational pension scheme. If they answer in the affirmative, then they will be asked questions about scheme type, length of membership and whether they have paid additional contributions. The derivation of the relevant data for personal pension schemes is slightly more complex. All workers are asked if they are members of a personal pension scheme. Those that answer in the affirmative (minus the self-employed) are asked if they have paid additional contributions in the past twelve months. Those that do are asked about these contributions, while non-additional contribution payers are asked whether they have ever paid additional contributions. The next step is to examine the employee pay details section.

Figure 2.2: Derivation of sample in employee pay details block



There are two major points to note here. The first is the low number with recorded data for net wage. This is lower than the number responding to the questions on occupational or personal pension membership. The second point is that the appropriate income statistic to use with respect to pension contributions is the gross wage. This is because pension contributions are paid out of the gross wage, and may even be a specific percentage of an individual's gross wage. As the gross wage reading is only taken for those individuals who are using a payslip, this has the effect of lowering the effective sample still further.

It is useful to check the difference that this makes to the sample. It might be suspected that as the possession of a payslip is necessary to have a gross wage reading, the characteristics of the sample that have one would differ from those without a payslip. This is investigated in the following table, along with occupational and personal pension coverage.

Table 2.3: Characteristics of groups with and without a payslip

Characteristic	Women	Full-time	Owner-occupier	Occupational scheme coverage	Personal Pension coverage
As a percentage of the group without payslip	29.6	84.8	74.1	48.3	25.3
As a percentage of the group with payslip	25.7	91.1	80.7	59.4	28.5
Significance of χ^2	.00	.00	.00	.00	.00
N	14918	13126	14918	12233	13344

Table 2.3 shows that the groups with and without a payslip have significantly different characteristics. The group that possesses a payslip is significantly more male, more likely to work full-time and more likely to be an owner-occupier than those without a payslip. Table 2.3 also shows that the group with a payslip has significantly greater occupational and personal pension coverage than the group without a payslip. This all implies that the sample for any analysis that involves gross income will be different from those sections where this is not required.

The overall result is that not all of those with an occupational or personal pension scheme have an income record. This means that there will not be a constant common denominator throughout the thesis. Some sections will have a much lower effective cell size than others. This may have an impact on the significance of the results, but it also implies that the sections with a lower cell size are analysing a qualitatively different population.

Methods of data analysis

After obtaining the data, the aim was to analyse it using SPSS. SPSS was chosen as the means of analysis due to its relative simplicity, and because it was possible to transfer a flat file from Midas in SPSS format. The statistical tool used in the data analysis chapters were chi-square and t tests. Chi-square was used in Chapters Three, Four and Seven. It is the appropriate way of testing that two variables are independent. Chapters Five and Six use t tests, the appropriate way of analysing the difference between two means. In interpreting the results, the data analysis chapters use a test significance level of 5%.

In addition to the use of cross-tabulations, this thesis also uses regression-based tools in order to provide a more in-depth analysis of pension accumulation behaviour. Chapters Five and Six use linear regressions to analyse the influences on scheme and

additional contributions to occupational and personal pensions. Chapters Three, Four and Seven use logistic regression. It is similar to linear regression but is suited to situations where the dependent variable is dichotomous, such as whether an individual will be a member of an occupational or personal pension scheme, or if they will pay additional contributions.

Chapters

At this point it is necessary to go through the results chapters in order to highlight the methodological issues in each of them. It is simple to point out the potential methodological failings of a study. It must also be borne in mind that a particular arrangement may have strengths, as well as weaknesses. The most obvious advantage associated with the findings produced by this thesis is the huge sample size. In most cases, we are dealing with thousands rather than hundreds. This must augur well for the reliability of the findings.

Chapter Three deals with the issue of private pension membership, both occupational and personal. It is important to note that on a conceptual level, pension coverage is to be dealt with on an individual level rather than through the household. This can be justified on analytical as well as practical grounds. Due to the increase in the rate of divorce as well as uncertainties as to the distribution of household income, it seems wisest to deal with pension entitlement as an individual matter, while noting that the pension details of a partner might be expected to have an impact on an individual's decision calculus. On practical grounds, the use of households rather than individuals would reduce cell sizes, this does not seem of great importance when the full sample is being accessed, however when dealing with sub-groups a smaller cell size is likely to affect the significance of results.

Chapter Four analyses the percentages paying additional contributions to occupational and personal pension schemes. As such it is simple to deal with in methodological terms. The samples for most of the chapter are all current occupational and personal scheme members respectively. The only deviation from this is where we are dealing with additional contribution payment by income group. For this, the effective sample is occupational or personal scheme members who also have an income record. This has the effect of reducing the sample for income group below that in other parts of the chapter, but there is simply no alternative other than to omit the analysis.

It is clear that the findings of Chapters Three and Four are very reliable. These chapters take in all possible respondents. In Chapter Three, the sample for occupational pension membership is all employees, while for personal pension membership it is all those in employment. For Chapter Four, all those with an occupational or personal pension are asked whether they pay additional contributions, and in the later case whether they have ever done so. Any inaccuracies in the proportions identified must therefore be caused by the sampling methods of the FRS itself.

Chapter Five deals with the amount of contribution being paid by employees into their occupational or personal schemes. When looking at the amount allocated to pension contributions, the relation to income is obviously extremely important. As such, this chapter only deals with those individuals who have an income record. This reduces the effective sample size considerably, but is the only conceivable option if one wishes to analyse the relationships between employee contributions and income.

As we have seen, an unfortunate problem with the FRS is that the data for scheme contributions paid to an employee's occupational or personal pension is not collected through the pension block of the income questionnaire. Instead, it is collected through the employee pay details block as an addendum to payroll data. This has the consequence that not all of those currently members of an occupational or personal pension scheme will have had the opportunity to state how much is paid automatically into the scheme from their wages. As such, the effective sample size is much lower than that of Chapter Three.

We have seen from Table 2.3 that the characteristics of those with a gross wage reading are significantly different from who did not have access to a payslip. The important question to ask is how different those recorded as paying scheme contributions are from the rest of the occupational or personal pension holding population. It is only after analysing this information that we can comment on the reliability of the results from this chapter. This will be done first for occupational pension members.

Table 2.4: Characteristics of occupational pension members as a percentage of sample

Characteristic	As percentage of all Occupational Pension Members (Chapters Three and Four)	As percentage of Occupational pension members recorded as paying scheme contributions (Chapter Five)
Women	39.4	24.2
Full time	90.2	95.3
Owner-occupiers	86.3	84.1

Cell Size	10064	3580

It is clear from Table 2.3 that the effective sample for Chapter Five is far lower than for Chapters Three and Four. This gap can be explained by the flow charts displayed earlier. The result of this is that the characteristics of the populations being tested are very different. Although the percentage of owner-occupiers appears similar, the population recorded as paying scheme contributions appears more full-time and markedly less female than that for all occupational pension members.

As Chapter Five also examines the scheme contributions made by those personal pension members in a group personal pension, it is useful to examine their characteristics as compared to the whole sample of personal pension members. It must be noted that the sample of personal pension members in Chapter Five is far lower than that for occupational pension members. This is due to the low number in a group personal pension, and the need to avoid double-counting those who pay scheme contributions to occupational schemes.

Table 2.5: Characteristics of personal pension members as a percentage of sample

Characteristic	As a percentage of all Personal Pension Members (Chapters Three and Four)	As a percentage of Personal Pension members recorded as paying scheme contributions (Chapter Five)
Women	31.8	11.4
Full time or full time self-employed	88.8	97.8
Owner-occupiers	85.1	93.4
Cell Size	6106	228

Table 2.4 indicates that the patterns identified for occupational pensions are largely repeated with personal pensions. As with occupational pensions, the population recorded as paying scheme contributions appears more full-time and far less female than the generality of personal pension members. However unlike the position with occupational scheme members, personal scheme members paying scheme contributions are more likely to be owner-occupiers than the broader membership.

Given the information that the sample in Chapter Five may well be biased towards male full-time employees, we have to make a decision as to the validity of the material. It is considered that the wisest course is to use the material, whilst noting its deficiencies. The amount of pension contributions being paid to pension schemes in both an absolute and relative sense is an important component of the private pension

provision being made in the UK, to dismiss the material would be to wilfully avoid the insight that it may give us, biased or not. There is also the consideration that the data itself, biased sample or not, is reliable. The individuals concerned will have given information on their gross wage and pension deductions from a payslip. As a result there is little scope for the incorrect responses which would have occurred if payslips were not used.

Chapter Six deals with the amount of additional contribution being paid by employees towards their occupational or personal pension scheme. As before, the importance of the relation to income means that this chapter only deals with those individuals with an income record. However, the structure of the FRS is such that the data on additional contributions to occupational and personal pensions is derived in different ways. The data for additional contributions to occupational pensions is derived from payroll data as in Chapter Five. This means that it is subject to the same biases towards male and full-time employees. However, the amount paid in additional contributions to personal pensions is derived in a much more simple and straightforward way. If an individual states that they pay additional contributions (as in Chapter Four), then the next question concerns the amount of these additional contributions. The result of this is that there is a far larger effective sample size for the additional contributions paid into personal pensions (1120), than the additional contributions being paid into occupational pensions (252).

Chapter Seven deals with the relationship between the accumulation of pension and other asset types. The major difference between this and other chapters is that financial assets are measured at the household level rather than the individual level used for pension assets. It was decided that little could be done to convert this into an individual format, so the chapter would present the data at the household level, while pointing out the potential dangers of this approach.

There is also the issue of effective non-response to questions to consider in Chapter Seven. In order to maximise the response rate for the survey, the FRS allows the respondent to avoid answering the total wealth question with a "Does not wish to say" option. It appears probable that those who give this response are more likely to have a high level of financial wealth. However, this need not be a major problem given that we have always expected the results for asset accumulation to be biased downwards due to the tendency of people to understate their assets. If those with higher total wealth are less likely to respond to the total wealth question, then this may to some extent

"correct" the tendency to under-report wealth. There is also the point that the prevalence of this option can be tracked, which should lead to useful information in its own right.

Chapter Eight analyses what current pension behaviour might be expected to produce in terms of outcomes. This is a comparatively simple matter for DB occupational scheme holders, where it is necessary only to assume an accrual formula and the number of years of scheme membership. Calculation of likely returns from DC pensions whether occupational or personal is more complex and requires many simplifying assumptions, such as that individuals' incomes are constant, that they do not change their pension arrangements, and face a constant real rate of return. The addition of an individual's contracted-out rebate, scheme contributions and an assumed employer contribution can be added together to produce a yearly contribution figure. This can be projected in combination with a rate of return to produce a pension fund, which can be turned into an annuity. As Chapter Eight will draw on pension contributions made through payroll deductions, it is necessary for individuals to have a gross wage record, as with Chapters Five and Six.

Conclusion

The research proposal focuses on the major themes surrounding UK pension provision, and attempts to build the questions that the thesis is to answer from these themes. There are over-arching questions based on these themes, and more practical questions which examine what provision is being made, and which groups in society are making it. The methodology section focuses on how this is to be achieved. It also tells us, as if we needed to be reminded that no methodology is perfect. However the reason for choosing the FRS as the dataset was because it attempted to collect material that had not been collected before in the large government datasets. It is surely better to attempt to analyse this material with its imperfections, rather than to leave it in the hope that later editions of the data set will correct any biases contained therein.

The research plan has now been set up, the next step is to look at the data within the FRS in order to analyse the retirement provision being made in the UK. As the research proposal has indicated, this will start with private pension coverage.

Chapter Three: Private Pension Coverage

Introduction

Chapter Two has highlighted that any analysis of pension behaviour in the UK must be based on a firm understanding of pension coverage. An analysis of private pension coverage will show how the risks of a low retirement income are distributed throughout society and provides the basis to delve further into the adequacy of the different pension arrangements. Chapter Four will follow on to analyse which groups are paying additional contributions to their private pension schemes, while Chapter Five will provide greater detail on the level of contributions being paid to private schemes.

This chapter will be split into two parts. The major part of this chapter will be an overview of private pension status through the use of cross-tables in terms of age, sex, income, household composition, marital, housing and employment status. This is useful as it will detail the social characteristics of private pension members. The analyses available in the summaries of government data sets stop at total membership and analysis by sex and age, which does not encompass the wider social characteristics of the members. It will be interesting to see whether the patterns observed for occupational pensions are duplicated in personal pensions, or whether personal pension coverage goes some way towards restoring the imbalances that occur in occupational pension coverage. With personal pension coverage, it will be worthwhile to analyse coverage with respect to age. Dilnot et al (1994) and Disney and Whitehouse (1992) have posited that personal pension coverage is consistent with a rational economic calculus, with younger members having higher coverage than older members. It will be interesting to see whether this is still the case.

It is important to note that the notion of coverage goes beyond current membership of a private pension scheme. Individuals may not be in a private pension scheme at present but may be in receipt of some private pension income when they retire. The overview will examine this phenomenon. It will also compare the memberships of defined contribution occupational schemes with those in defined benefit schemes. This is important given that Chapter One demonstrated that defined contribution (DC) schemes have grown in importance over the past decade compared to defined benefit (DB) schemes. It also showed that these schemes are associated with a

lower level of contribution, both from the employer and employee, a feature which will tested in Chapter Five.

Although cross-tables can indicate which social characteristics are linked with high and low private pension coverage, they can only provide limited information on the linkages between variables. A cross-table can only illustrate the inter-relations between a few variables simultaneously before suffering a loss of clarity. We have seen in Chapter Two that logistic regression analysis will allow us to examine the linkages between many more variables simultaneously. Accordingly, the second part of this Chapter will use this tool to analyse the relationships between variables in more detail for both occupational and personal pension coverage. This should tell us which variables are significant determinants of coverage, and which are merely background noise. This will be followed by some sample cases, to illustrate how greatly the probability of having private pension coverage can be affected by the social characteristics of the individual.

Section A: Pension details and arrangements

Overall Coverage

The first part of the chapter will examine current membership of occupational and personal pension schemes. The obvious first step is to look at how many people are currently members. It is also useful to look at the type of occupational pension scheme that occupational scheme members have by performing a simple breakdown of occupational pension scheme membership. This will indicate whether the trend indicated from other surveys, that DC occupational pensioning is gaining ground, is borne out by the FRS.

Table 3.1: Private pension coverage and type

Pension type	Scheme Membership (%)	% of occupational members with DC scheme	Cell Size
Occupational	48.1	20.1	20918
Personal	25.4	N/A	23997[5]

[5] The cell size is different for occupational and personal pension schemes because the self-employed cannot be members of an occupational pension scheme.

As Table 3.1 shows, 48.1% of the employed population are currently members of an occupational pension scheme. This outcome corresponds with GHS findings. For the same period (1994) occupational pension coverage in the GHS was 48.5% (OPCS 1996). This is consistent with the evidence presented in Chapter 1 of a very gradual decline in occupational pension coverage. As Table 3.1 also shows, the percentage in DC schemes stands at one-fifth, this suggests that the rapid growth identified in Chapter One has continued, increasing from the 16% identified earlier to 20%. Table 3.1 also shows that 25.4% of all those surveyed have a personal pension scheme. This includes the self-employed. This result corresponds with other survey information, for 1994 the GHS reports that 25.7 percent had a personal pension scheme (OPCS 1996). This confirms that as a whole, DC pensioning whether occupational or personal, is becoming more important.

We can go beyond current membership to explore the wider facets of pension coverage. The FRS can be used to test if those asked whether they are currently members of an occupational pension scheme will have accumulated occupational pension rights from another employer. Although it would be possible to mount a wide-ranging analysis of past pension coverage in the same way as current coverage, it would not add greatly to the overall argument and would detract from the importance of the current position. However it is useful to give a summary of the overall position in terms of current and past coverage, as it must be remembered that people may be making choices based on this.

Table 3.2: Current and past occupational pension membership

Membership Status	Percentage of total (%)
Current and past member	14.1
Current member, no previous coverage	34.0
Not current member, past coverage	13.8
Not current member, no previous coverage	38.1
Cell Size	20918

This indicates that 61.9% of the working population have been members of an occupational scheme at some time. However, only 14.1% of the total are in the fortunate position of having current and past occupational provision. Of those who are current members with no previous coverage, some will be in the position of being long-serving members with the same company; some will not be in this position, and will not have

accumulated pension rights from one or more previous employers. Of the total, 13.8% are not current members of a current scheme, but have some past occupational pension rights accumulated. It is for this group that the complex issue within pension policy of indexation to inflation will be particularly important. The largest group (38.1%) consist of those who do not have, and have never been a member of an occupational pension scheme. Almost three-tenths of these are members of personal pension schemes (see appendix B), but the rest are not. This group is almost certain to be wholly reliant on state provision in retirement.

Income

It is useful to analyse private pension coverage by income level. This will enable us to discover whether private pension coverage is more prevalent among better paid groups in the labour market, and if so, whether this relationship holds for both occupational and personal pensions. This can also be used to analyse whether DC occupational pensions are more prevalent amongst lower paid workers, which may have implications for the adequacy of future pensions for this group. As Chapter Two pointed out, information concerning income is derived from a different stream of data than most of the information on pensions. As a result, the cell sizes are smaller, and the results are likely to be biased upwards.

Table 3.3: Private pension coverage by income level and pension type

		Occupational scheme coverage (%)	% of scheme members with DC scheme	Personal scheme coverage (%)
Gross Income Level	£0-99.99	49.5	22.5	29.2
	£100-199.99	47.4	23.1	31.3
	£200-299.99	59.7	18.1	29.4
	£300-399.99	68.4	19.5	28.1
	£400-499.99	81.3	12.5	21.3
	£500+	83.3	14.1	22.2
	Total	59.4	19.0	28.5
	Sig of χ^2	.00	.00	.00
	N	6587	3912	7101

It is clear from Table 3.3 that occupational pension coverage tends to increase with income level. A chi-square test of the relationship between income and occupational pension coverage is significant at the .1% level. Coverage is constant amongst the lowest two income groups at just below 50%, but increases thereafter to

reach 83.3% for the highest income group. The data also shows that groups with high occupational pension coverage tend to have the lowest proportion of DC pension holders. A chi-square test showed that this relationship was also significant at the .1% level. This indicates that lower earners may be at risk of having a lower level of employer contributions to their schemes than higher earners.

Table 3.3 indicates that the relationship between private pension coverage and income level is different for occupational and personal pension holders. The personal pensions data shows that higher income groups tend to have a lower level of personal pension coverage than lower income groups. This was confirmed by a chi-square test at the .1% level. It is difficult to know whether the higher coverage amongst lower earners is the result of choice rather than constraint, but the overall impact is that the two forms of private pension provision are attuned to different markets.

Sex

After analysis by income, private pension coverage can be probed further by splitting it by sex. It is useful to know whether men or women are more advantaged in terms of private pension coverage in the labour market. A sizeable difference would indicate that one sex, (probably women), are more likely to suffer poverty in old age. It will also be fruitful to examine whether personal pension coverage follows a similar pattern to occupational pension coverage.

We must also consider whether the type of occupational pension varies by sex. It is difficult to predict a likely trend for this, as there are countervailing tendencies at work. If DC pensions are associated with a lower level of contribution and are growing fast in the new "flexible" labour market, with new firms opting to set up DC rather than DB schemes, then it might be expected that women would be over-represented in DC schemes, given their weaker position in the labour market. On the other hand, as Chapter One indicated that more men considered themselves "over-annuitised" in DB schemes, they may not have the same incentive to leave DC schemes.

Table 3.4: Private pension coverage by sex and scheme type

		Occupational scheme membership (%)	% of scheme members with DC scheme	Personal Pension Membership (%)
Sex	Male	56.6	20.3	31.8
	Female	39.1	19.7	17.8
	Total	48.1	20.1	25.4
	Sig of χ^2	.00	.43	.00

	N	20918	10060	23997

It is clear from Table 3.4 that men enjoy considerably superior occupational pension coverage than women. The chi-square test of the difference in means of occupational pension coverage was significant at the .1% level. The obvious implication of this is that *ceteris paribus*, women are at a far greater risk of poverty in old age. On a comparative note, the percentages of men and women with occupational pension coverage are only slightly different from the corresponding figures in the GHS (60%[6] and 37.7% respectively). Table 3.4 also demonstrates that men and women are equally likely to have a DC pension. This indicates that any analysis of pension contributions for men and women cannot start with the premise that one group is receiving higher contributions through their scheme than the other.

Table 3.4 shows that as with occupational pensions, personal pension coverage is much more widespread amongst men than women. The chi-square test of the difference in coverage was significant at the .1% level. In relative terms the gap between men and women for personal pension coverage is even larger than the gap in occupational pension coverage, with almost twice as many men as women have a personal pension. With occupational pensions the large difference in coverage could perhaps be explained through access to occupational schemes. However the nature of personal pensions indicates that this cannot be a factor. More men than women have taken the conscious decision to join a personal pension scheme.

Occupational Status

It is useful to measure private pension coverage by employment status. The aim behind this is to see whether there is a noticeable difference between the results for full and part-time workers. A large difference would indicate that part-time workers (mostly women) could be seriously disadvantaged in retirement. It will also be useful to analyse occupational pension type to see whether part-time work is linked with a greater incidence of DC pensions. For analysis of personal pension coverage by occupational status, there is the added factor of the self-employed. This group is not in a position to have occupational pension coverage, and is not included in SERPS. Any personal pension membership is thus entirely voluntary.

[6] Refers to male full-timers only

Table 3.5: Private Pension coverage by employment status and scheme type

		Occupational scheme Coverage (%)	% of members with DC scheme	Personal Pension Coverage (%)
Individual Economic Status	Full Time Self-employed	N/A	N/A	59.1
	Full Time Employed	56.5	20.0	23.9
	Part time Employed or Part Time Self-Employed[7]	18.9	19.6	12.8
	Total[8]	48.5	20.1	25.7
	Significance of χ^2	.00	.76	.00
	N[9]	20401	9891	23476

It is clear that there is a huge difference between the occupational pension coverage of the full-time and part-time employed, with full-time workers being three times as likely to have an occupational pension scheme. The chi-square test for the difference between full and part-time workers is significant (at the .1% level). This indicates that part-time workers are severely disadvantaged in terms of retirement provision.

Table 3.5 also shows that part-timers actually have higher DB coverage than full-timers, although of course the gap is so small as to be insignificant. This follows the trend for analysis of occupational pension type by sex. In both cases, the group with the weaker market position is as likely to have a DB pension. This is especially surprising for part-time workers given the huge gap between their occupational pension coverage compared to full-time workers. This would indicate that DC schemes are not used by employers to target workers in a weaker market position.

It is clear from Table 3.5 that part-time workers are disadvantaged with regard to personal as well as occupational provision. Chi-square tests comparing the difference between the personal pension coverage of full-time employees and the part-time employed or self-employed group were significant at the .1% level. It appears from this data and the previous data on personal pension coverage by sex that the pattern of personal pension coverage so far is very similar to that of occupational pension coverage; with full-time male employees having high levels of coverage whereas part-time or female employees have lower levels of coverage.

[7] Occupational scheme coverage in this category only relates to the part-time employed group.

[8] Table 3.4 omits the "unemployed" and the "not working for any other reason" categories. As a result of this, the coverage level differs from the overall statistic.

[9] As Table 3.4 omits the above categories, the number of cases is lower than the overall statistic.

Another interesting facet of this table is the data for the full-time self-employed. Despite not being compelled to have any second-tier provision at all, over half choose to acquire a personal pension. It is of course unwise to compare the employed and self-employed groups directly, not least because at least some of the self-employed group may see their business as a pension in itself. However this result does imply that, left to their own devices, the majority will acquire some pension provision.

Age

The analysis of private pension coverage by age is the initial step to analysing whether older age groups are more likely to pay pension contributions than younger age groups, even though it is rational for younger age groups to pay more. It is also useful to measure the form of occupational pension coverage by age. Given the growth of DC schemes over recent years, it would be reasonable to expect younger workers (with less occupational coverage) to be over-represented in these schemes.

The introduction to this chapter highlighted the importance of analysing personal pension coverage by age, as it will shed light on the public's continuing reaction to the incentives created by government pension policy. Disney and Whitehouse (1992) and Dilnot et al (1994) found that shortly after the introduction of personal pensions, coverage peaked in the twenties and declined sharply thereafter. They considered that this was consistent with a rational understanding of the incentive structure. Disney and Whitehouse mapped the marginal increment to SERPS and a personal pension for a white-collar male aged 20 in 1988 and found that given a real rate of return of 3.5% this individual would be better-off contracting-out of SERPS until the age of 50. Different parameters apply for women due to their better return from SERPS; according to Disney and Whitehouse, a woman aged 18 in 1990 should contract back in to SERPS at 35. As a result, it is rational that more young people than their elders should opt out of SERPS or not join an occupational scheme in favour of a personal pension plan.

The question is of course whether this pattern of personal pension coverage has been maintained, or whether it was conditioned by temporary factors existing in the first few years of the personal pensions approach. If people are following a rational decision course, it would be expected that there would be a sharp drop in personal pension coverage with increasing age.

Table 3.6: Private pension coverage by age and scheme type

		Occupational scheme membership (%)	Members with DC scheme (%)	Personal Scheme Membership (%)
Age Group	16-20	8.7	33.3	4.0
	21-25	33.0	24.5	20.6
	26-30	46.0	24.0	29.3
	31-35	51.4	19.1	28.7
	36-40	54.9	17.0	26.8
	41-45	58.3	17.5	27.1
	46-50	57.2	17.6	27.6
	51-55	55.2	19.6	26.5
	56-60	50.7	22.8	22.6
	61-65	37.0	29.9	22.8
	66+	5.1	27.3	18.6
	Total	48.1	20.1	25.4
	Sig of χ^2	.00	.00	.00
	N	20918	10060	23997

Looking at personal pension coverage first, whatever the plausibility of Dilnot et al's explanation at the time, the passage of years has not aided it. Analysis of the total picture reveals a largely flat profile of personal pension coverage, with the peak being reached in the late twenties at 29% and a very slow decline thereafter so that in the 61-65 category, coverage is still at 22.8%. There are no slumps at 35 or 50 to signify large numbers quitting a personal pension to return to SERPS. This indicates that the "rational behaviour" observed in the early 90's, is not in evidence now. This is a very important result in itself, but it also raises the question of whether individuals can ever be relied on to make the best decision in a complicated marketplace such as private pensions.

Table 3.6 demonstrates that occupational pension coverage is very low for the youngest age-group, but it rises sharply to reach a peak among "prime-age" workers in the 41-45 age group. This peak occurs at a slightly lower age than in the GHS, where occupational pension coverage peaks for both men and women in the 45-54 age group. However the main message from the table is that occupational pension coverage is relatively stable, especially for those aged between 35 and 55.

Table 3.6 also follows the expected pattern with regard to occupational pension type. Younger workers are more likely to have DC pensions (especially the youngest group), than "prime-age" workers. It is interesting to note that DC coverage reaches its nadir for the 36-40 age group, slightly earlier than would have been forecast. This could be due to the fact that DC coverage was only 3 per cent in 1979 (Government Actuary 1981). The workers entering the labour force then would have been far less likely to join a firm with a DC pension scheme than is the case today. It is also interesting that DC

coverage increases again for older workers, creating a "U-shaped" effect for DC coverage. This could be linked to the declining cell sizes for older workers. These workers could disproportionately be those who have not had the opportunity to retire in a generous early retirement package.

The next step is to analyse private pension coverage by both age and sex. Given the differences in working patterns between men and women, it might be expected that while male occupational pension coverage follows a smooth upward path until middle age, the female pattern would be flatter owing to different career structures. After the last table it is difficult to predict differences in personal pension coverage between men and women. However we know from the rational interpretation that as SERPS is more generous to women than men, women should be re-entering SERPS earlier. Disney and Whitehouse's (1992) analysis indicates that women should be re-entering SERPS at 35, and men at 50. If this is not happening, it will indicate that people are not acting in a rational manner. To maintain clarity in the following table, analysis of the percentages of male and female occupational members with DC pensions has been omitted.

Table 3.7: Private pension coverage by age, sex and scheme type

		Males		Females	
		Occupational scheme coverage (%)	Personal Scheme coverage (%)	Occupational scheme coverage (%)	Personal Scheme coverage (%)
Age Group	16-20	9.2	4.6	16.8	3.5
	21-25	31.9	24.4	34.0	17.0
	26-30	50.3	35.7	41.4	21.6
	31-35	60.0	35.9	41.3	19.4
	36-40	66.6	34.2	42.1	17.6
	41-45	71.5	33.1	45.1	20.3
	46-50	68.9	34.3	45.4	19.9
	51-55	68.1	33.1	42.0	18.5
	56-60	63.0	30.7	38.1	12.2
	61-65	48.1	31.0	19.1	7.2
	66+	(5.9)	23.3	(3.4)	10.3
	Total	56.6	31.8	39.1	17.8
	Sig of χ^2	.00	.00	.00	.00
	N	10767	13086	10151	10911

Brackets denote a cell size of 20 or less

Table 3.7 confirms that a simple rational model cannot explain levels of personal pension coverage. The age-membership profiles for men and women are very similar, with the peak being reached in the late twenties with a slow decline thereafter for men, but with a decline followed by a mini-peak in the forties for women. This latter point is

an important finding given that Disney and Whitehouse showed that these women will be receiving a worse deal that they would get under SERPS. There is no sign whatsoever from the data that men are rushing back to SERPS from the age of 50, or women from the age of 35. It is clear that a rational economic calculus cannot explain personal pension membership.

Table 3.7 also illustrates that the patterns of male and female occupational pension scheme membership are different. Male occupational pension coverage starts at a low level but accelerates smoothly to hit a peak of 71.5% of employees in the 41-45 age group before falling back. In contrast, female occupational pension coverage has a much flatter distribution. It starts at a higher level than male occupational pension coverage, but reaches a consistent plateau at the low to mid-40s percent by the 26-30 age group, which is maintained until the late fifties. This illustrates that from the late twenties onwards, men have much higher occupational pension coverage than women. This can be explained by differences in working patterns.

Marital Status

Another factor that may affect private pension coverage is marital status. A rising divorce rate coupled with low private pension coverage for this group could be the precursor of poverty in old age. Analysis of marital status is also important given Hancock et al's prediction that divorce has a harmful effect on the willingness to pay additional contributions. A low coverage rate could be the precursor to low additional contribution payment. Analysis of marital status can be extended to cover occupational pension type. Low occupational pension coverage may be linked with a higher probability of DC coverage, which would worsen outcomes for the groups affected in old age.

Table 3.8: Private pension coverage by marital status and scheme type

		Occupational scheme coverage (%)	% of members with DC scheme	Personal scheme coverage (%)
Marital Status	Married (spouse in household)	52.4	19.4	27.0
	Living as a couple	45.8	24.6	28.1
	Single/never been married	36.4	20.7	19.3
	Widowed	35.8	21.6	20.3
	Separated	49.0	23.3	21.6

	Divorced	45.5	19.4	27.0
	Total	48.1	20.1	25.4
	Significance of χ^2	.00	.02	.00
	N[10]	20849	10027	23916

Looking at occupational pension coverage first, it could be foreseen that the "single" group has among the lowest coverage, as we have already seen that young people have lower occupational pension coverage than older age groups. Married couples have the highest coverage, almost 7% greater than the figure for divorced people. A chi-square test of the difference between these two groups was significant at the .1% level showing that divorced people have significantly lower occupational pension coverage than the married group.

Table 3.8 demonstrates that for personal pension holders the divorced group has the same level of personal pension coverage as the married group. It also adds relevant information on responses to incentives. It might be expected that single people have comparatively high personal pension coverage, given their low average age, and their lack of dependants. This is the very group in fact that might consider themselves to be "over-annuitised" in occupational schemes. In fact they have the lowest personal pension coverage of all groups, and chi-square tests to the married, co-habiting and divorced groups, show that this gap is significant. This cannot be explained by their age, cohabitees are of a very similar age, have partners (and perhaps children), yet have the highest personal pension coverage. Evidently personal pension coverage cannot be explained by a simple rational model.

Table 3.8 also shows that any link between occupational pension coverage and occupational pension type for marital status is far from perfect. It might be expected that the single and co-habiting groups would have significantly higher DC coverage than married couples owing to their younger average age. This is certainly true for cohabitees but not for the single group. It must also be noted that there is no difference in DC coverage between the married and divorced groups.

The next step is to detail the separate positions for men and women. This is an important distinction to make given that women may be relying explicitly or implicitly on a husband's provision.

[10] Due to the omission of the "Married (spouse not in household)" category, the number of cases is lower than the overall statistic.

Table 3.9: Private pension coverage by marital status, sex and scheme type

		Pension Type			
		Occupational Pension		Personal Pension	
		Male Coverage (%)	Female Coverage (%)	Male Coverage (%)	Female Coverage (%)
Marital Status	Married (spouse in household)	63.7	39.7	34.2	17.7
	Living as a couple	49.6	42.1	33.3	22.4
	Single/ never been married	36.7	35.9	22.8	14.5
	Widowed	54.8	30.0	27.0	17.8
	Separated	60.7	41.4	30.8	15.0
	Divorced	55.7	39.9	34.7	22.1
	Total	56.6	39.1	31.8	17.8
	Significance of χ^2	.00	.00	.00	.00
	N	10738	10111	13048	10868

Looking at occupational pensions first, we can see that the greater coverage of the married group compared to the divorced group is due to the greater coverage amongst married men than divorced men. A chi-square test shows this difference to be significant at the 1% level, while women have the same level of coverage. In fact the main message from Table 3.9 is the different impact of marriage for men and women on occupational pension holding. For the single group, men and women have very similar occupational pension coverage, yet for the married group, men have a 24% lead in coverage over married women. Married men have significantly greater coverage than divorced or co-habiting men, yet women have similar coverage. This indicates that married women are, to an extent, reliant on a husband's pension provision in a way that other groups are not.

In Table 3.8 we saw that there was no difference in overall personal pension coverage between the married and divorced group. When this is broken down by sex, a different story emerges. A chi-square test indicates that divorced women are significantly more likely to have a personal pension than married women (at the 1% level). From examining both occupational and personal pensions we can see that married women have comparatively low pension coverage. It may therefore be that women react to divorce by acquiring private pension provision.

Housing Status

Private pension coverage may also be related to housing status. This is important because it is the first stage in addressing the broad question of whether pension assets and non-pension assets are complements or substitutes. With occupational pensions, it is also useful to analyse occupational scheme type as the results of analysing occupational scheme type by age indicated that prime-age, secure workers had the lowest DC coverage. It will be interesting to uncover whether occupational pension type by housing status follows this pattern, with low DC coverage for home owners, or alternatively follows the results for employment status and sex, where there was no variation of occupational scheme type. We can also analyse personal pension coverage, to analyse whether housing status has a consistent association with all forms of private pension coverage.

Table 3.10: Private Pension coverage by housing status and scheme type

		Occupational scheme coverage (%)	Average Age	Members with DC scheme (%)	Personal pension coverage (%)
Housing Status	Rented from local authority	29.2	38.9	27.0	16.0
	Rented from housing association	28.5	36.8	32.4	17.0
	Rent privately (unfurnished)	38.0	37.4	25.9	30.7
	Rent privately (furnished)	39.2	30.2	21.6	16.7
	Owned with mortgage	53.9	37.6	18.5	27.3
	Owned outright	43.2	46.9	21.0	25.1
	Total	48.1	38.8	20.1	25.4
	Significance of χ^2	.00	/	.00	.00
	N	20918	/	10060	23997

As Table 3.10 demonstrates, occupational pension coverage is far more widespread among owner-occupiers than renters. There seems to be three tiers of coverage. Owner-occupiers (groups 5 and 6) have the greatest coverage followed by private renters (groups 3 and 4), with social renters (groups 1 and 2) having the least. Chi-square tests indicate that the differences in occupational pension coverage between these three groups are all significant at the .1% level. It is important to note that this cannot be explained by age given that mortgagees have the greatest coverage, and their average age lies very close to the mean for the sample. It is perhaps surprising at first glance that mortgagees have greater coverage than those who own outright. This

difference can be explained by differences in the average age of the two groups, as the owned outright group will include many people in their fifties and sixties, who as we have seen, tend to have lower occupational pension coverage.

It is clear that DC pensions are far more prevalent amongst renters than owners. A chi-square test shows that owner-occupiers are less likely to have a DC pension than private renters at the 1% significance level. However, the three-tier idea is not fully substantiated, as the chi-squared test for the difference in DC coverage for social and private renters is not significant at the 5% level. As with total coverage, the likelihood of having a DC pension with respect to housing status cannot be explained by age, but this leaves the more difficult question which is to find out what does explain it. Perhaps the answer lies in the compatibility of pension and non-pension assets, with owner-occupiers locking themselves into some form of "virtuous cycle" of home ownership and DB pensions. It must of course be remembered that group 5 had to be granted a mortgage at some time. Factors influencing this decision must include stable employment, which would be more likely to carry a DB pension scheme.

Personal pension coverage by housing status largely replicates the pattern found for occupational pension coverage. The general picture though still consists of owner-occupiers having more extensive coverage than renters. Chi-square tests show that the difference in coverage between social and private renters is significant, as is the gap between private renters and owner-occupiers, taken as a whole. This supports a model whereby pension and non-pension assets are complements, not substitutes. The major difference is that unfurnished private renters have the most extensive coverage of all. This is not readily explainable, but perhaps indicates that the social renter/ private renter/ owner-occupier model might not be wholly valid.

Household Composition

It is also possible to delineate private pension coverage by household composition. This is useful as the isolation of particular household types pinpoints which groups are likely to fall into poverty in old age. It will also be interesting to see whether households with high occupational pension coverage also tend to have high personal pension coverage. It is also useful to analyse occupational pension type by household composition as there may be some linkage between coverage and pension type.

Table 3.11: Private pension coverage by household composition and scheme type

		Occupational scheme coverage (%)	Members with DC scheme (%)	Personal scheme coverage (%)
Household Type	1. 1 adult, no children over pension age	14.8	20.0	16.6
	2. 1 adult no children under pension age	58.0	17.9	26.5
	3. 2 adults, no children, both over pension age	12.7	33.3	17.6
	4. 2 adults, no children, one over pension age	47.4	21.6	24.5
	5. 2 adults, no children, both under pension age	52.0	21.8	28.3
	6. 3+ adults, no children	38.8	21.0	23.8
	7. 1 adult, 1 child	36.4	19.1	19.1
	8. 1 adult, 2 children	40.6	26.7	17.7
	9. 1 adult, 3+children	(19.6)	20.0	13.0
	10. 2 adults, 1 child	53.9	19.0	27.2
	11. 2 adults, 2 children	53.7	17.3	25.7
	12. 2 adults, 3+ children	45.2	20.0	24.3
	13. 3+ adults, 1 child	38.1	22.9	20.4
	14. 3+ adults, 2 children	34.4	16.8	19.9
	15. 3+ adults, 3+ children	32.6	25.5	20.2
	Total	48.1	20.1	25.4
	Significance of χ^2	.00	.01	.00
	N	20918	10060	23997

Brackets denote a cell size of 20 or less

Despite the length and complexity of this table, key features do emerge. Only four household types have greater occupational pension coverage than the average. These are single and dual adults with no children (groups 2 and 5) and dual adult households with 1 or two children (groups 10 and 11). The highest coverage is achieved for single adults under pension age. It might be predicted that this group has better coverage than households with 3+ adults (types 13-15), but it is not immediately obvious why this group might outscore households with two adults, but no children.

Important lessons can also be taken with regard to occupational pension type. Of the four groups with over 50% occupational coverage (groups 2,5,10 and 11), three had DC coverage lower than the average. The other (group 5) might be expected to have a high incidence of DC pensioning, given that households with two adults and no children are likely to contain young people or empty-nesters, at both ends of the U-shaped relationship between age and DC pensioning. Lone parent households (7-9) do not

appear more likely to have a DC pension, although the low sample size (206 for three groups) makes it difficult to form an opinion.

Turning our attention to personal pension coverage, it is clear from Table 3.11 that groups with high occupational pension coverage also have high personal pension coverage. Groups 2,5,10 and 11 were the only household types to have over 50% occupational pension coverage, they all have greater than average personal pension coverage, and are indeed the only groups to have greater than average personal provision.

Observation of the household types with greater than average coverage suggests that children are generally deleterious to the likelihood of having private pension coverage. The next step is to test whether this is true. For the following table, household types 1,3 and 4 have been excluded to maintain equivalence.

Table 3.12: Private pension coverage by number of children in household

		Occupational scheme coverage (%)	% of members in DC scheme	Personal scheme coverage (%)
Number of children in household	0 (groups 2,5 and 6)	48.8	20.8	26.6
	1 (groups 7,10 and 13)	48.1	19.9	24.7
	2 (groups 8,11 and 14)	51.2	17.6	24.8
	3+ (groups 9,12 and 15)	42.9	20.3	23.5
	Total	48.7	20.0	25.7
	Significance of χ^2	.00	.03	.01
	N	19983	9739	22813

This table indicates that the presence of up to two children does not seem to act as a drag on occupational pension coverage at all. In fact, a chi-square test shows that adults in two child households are significantly more likely to be a member of an occupational pension scheme than an individual in a household without children. However, it is clear that the existence of a third child does harm coverage significantly. Chi-square tests measuring the gap in occupational pension coverage between three-child households and the zero and two child groups, were both significant at the .1% level.

Table 3.12 also shows that occupational pension type varies between household types. Individuals in households with no children were found to be significantly more likely to have a DC pension than households with two children. This might be taken as evidence of an inverse relationship between coverage and the percentage of members

with a DC pension. However, a chi-square test of the difference in pension type between two and three plus child households was found to be insignificant.

In the case of personal pensions, it appears that individuals without children seem more likely to have a personal pension than those with children. A chi-square test performed on Table 3.12 shows that those without children are significantly more likely to have a personal pension than the equivalent groups with children (at the 5% level). This is different from the situation with occupational pensions, where coverage for childless groups was actually less than for the equivalent group with two children. It is however interesting to note that the presence of a third child does not have the pronounced negative effect on personal pension coverage that it did with occupational pensions.

The results from the last section are influenced heavily by the large cell sizes of the two adults with children group. This influence can be removed by analysing private pension coverage in households with children with regard to the number of adults in the household. This will give a clear picture of coverage amongst lone parent households compared to two adults with children households.

Table 3.13: Private pension coverage for households with children

		Occupational pension coverage (%)	Members with DC scheme (%)	Personal Pension Coverage (%)
Number of adults in households with children	1 (groups 7,8 and 9)	36.5	22.3	18.0
	2 (groups 10,11 and 12)	52.4	18.6	26.0
	3+ (groups 13,14 and 15)	36.8	21.8	20.3
	Total	48.7	19.0	24.6
	Significance of χ^2	.00	.06	.00
	N	9068	4411	10420

Table 3.13 indicates that lone parent households are at a great disadvantage in terms of private pension coverage compared to households with two adults and children. For occupational pension coverage, chi-square tests were carried out comparing occupational pension coverage between individuals in dual adult households and those in single and three plus adult households. Both tests were significant at the .1% level. Personal pension coverage for households with children replicates the pattern of occupational pension coverage. Chi-square tests show that two adult with children have significantly higher coverage than other groups at the .1% level. This confirms that lone parent households are at a disadvantage in all forms of private pension coverage.

Analysis of occupational pension type also yields useful inferences. It might be expected from observation of Table 3.13 that dual adult households would be significantly less likely to have a DC pension than the other household types. Chi-square tests indicate that the difference in likelihood of having a DC pension is significant between individuals in two and three plus adult households. However the difference is insignificant for lone and two parent households. It is important to note that this may be an artefact of the data, given the low combined cell size (206) of the one adult with children groups.

Interim Summary

Analysis of private pension membership has yielded results which can be summarised as follows:

- Just under half of the employee population are members of an occupational pension scheme. Roughly one-quarter of the sample has a personal pension.
- Occupational pension coverage increases with income level while personal pension coverage decreases.
- Men are significantly more likely to have an occupational pension than women. This also applies to personal pensions.
- Full-time workers are three times as likely to have an occupational pension than part-time workers. Full-timers are also significantly more likely to have a personal pension than part-timers, though the gap is not as large.
- Occupational pension coverage increases with age until the mid-forties whereupon it declines slowly. Men and women have different age-coverage patterns. Young workers and old workers are more likely to have a DC pension than the middle-aged.
- Personal pension coverage peaks in the late 20s and then declines slowly. Personal pension coverage cannot be explained simply by recourse to a simple rational analysis surrounding government pension policy. The observations of Disney and Whitehouse (1992) seem outdated.
- Married couples are significantly more likely to have occupational pension coverage than the divorced group. Both groups are equally likely to have a DB pension. There is no difference in personal pension coverage between the married and divorced groups.
- The relationship between occupational pension coverage and housing status has a three-tiered effect. Owner-occupiers have higher coverage than private renters who in

turn have higher coverage than social renters. Owner-occupiers have significantly greater personal pension coverage than social renters but not private renters.

- Lone parent households have significantly lower private pension coverage than two-adult households with children. Household types with high occupational pension coverage also have high personal pension coverage.

The picture that emerges is of a situation where occupational pension coverage is largely the preserve of advantaged groups in society. Men have better coverage than women, owner-occupiers have generally better coverage than renters, while coverage for full-timers dwarfs that of part-timers. It is important to remember the consequences of this distribution of pension coverage. Inequalities in working life will be repeated in retirement. Owing to the perverse redistribution of occupational schemes, women, part-timers and tenants will be especially disadvantaged.

Some of these patterns are repeated for personal pension coverage. However it is important to remember that personal pension coverage is skewed towards lower earners. Another major point is that the relationship between age and coverage varies between occupational and personal pensions. For occupational pensions, coverage is higher for older than younger groups in contrast to personal pension coverage which has a fairly even age distribution. This implies that the simple rational model of personal pension coverage, propounded by Disney and Whitehouse (1992) and Dilnot et al (1994), that younger groups have far greater coverage than older groups, does not apply.

Occupational pension type mirrors the situation in occupational pension coverage in some ways but not in others. Owner-occupiers more likely to have a DB pension, as are middle-aged groups compared to the young and higher-earners as opposed to lower-earners. However both women and part-timers are equally likely to have a DB pension as their male and full-time counterparts. This indicates that there is not an overall relationship between occupational pension type and occupational pension coverage.

Section B: Logistic regression analysis

The earlier part of the chapter has analysed occupational and personal pension coverage with respect to a number of factors. However it must be remembered that each individual is a bundle of these characteristics and in analysing the determinants of

private pension coverage it is useful to separate and weigh the importance of the bundle within each person. Chapter Two indicated that the appropriate tool for this purpose is logistic regression. For the purposes of this chapter it is necessary to complete two streams of logistic regressions, one to analyse the determinants of occupational pension coverage and one for the determinants of personal pension coverage. In each case it is necessary to investigate the direction and strength of the factors highlighted earlier in the chapter, but it was recognised that other variables might have a part to play in explaining private pension coverage, and should therefore be included. It should be pointed out that the process of deciding which variables should be included and how they should be coded was not a painless one. After a great deal of experimentation a set of variables was decided upon, the coding for which is set out in Table 3.14.

Table 3.14: Variable coding for logistic regressions

Variable	Coding and explanation
EmpPens2	0=not current occupational pension member 1=current occupational pension member
Perpen2	0=not current personal pension member 1=current personal pension member
Sex	0=Male 1=Female
Part time	0=Full-time employed 1=Part-time employed
Gross Wage	Gross Wage (£ per week): Interval variable
GrossWageSq	$(\text{Gross Wage})^2$
Age	Age at last birthday: Interval variable
Couple Status	0=Married or co-habiting 1=Single, divorced, separated or widowed
Social Renter	0=Not social renter 1=Social Renter
Private Renter	0=Not private renter 1=Private renter
NChildH	Number of children in household. 0=none 1=one 2=two 3+=three or more
BigFam	0= zero, one or two children in household 1= three or more children in household
CTBand A	0= All other bands 1= Council Tax Band A
CTBand B	0= All other bands 1= Council Tax Band B
CTBand C	0= All other bands 1= Council Tax band C
CTBand E	0= All other bands 1= Council Tax band E

CTBand F	0= All other bands 1= Council Tax Band F
CTBand G	0= All other bands 1= Council Tax Band G
CTBand H	0= All other bands 1= Council tax band H
Shares	0= no share-based investments 1= has share-based investments

Table 3.14 shows that most of the variables are derived from categories used earlier in this chapter. The exceptions are the variables which deal with council tax band and share-holding asset status. Council tax band is an important factor as it estimates the value of the property that the individual lives in, and so can be used to separate any property value effect on behaviour from the issue of ownership. The "shares" variable asks whether or not the case has share-based investments. This variable is investigated extensively in Chapter Seven, but is included here because of its relevance concerning whether those people collecting pension assets are likely to be collecting other forms of financial asset. On a methodological point, it should be noted this variable is collected by the benefit unit and not on an individual basis like the rest of the variables used in this chapter.

Although the rest of variables are linked to the categories used earlier in the chapter, it should be noted that housing status, gross wage and the effect of children are not operationalised in a familiar way. The housing status variable has been replaced by two dummies, "social renter" and "private renter". This is because it cannot be used directly in a logistic regression due to the fact that it is an ordinal independent variable with more than two categories. The use of two dummy variables leaves the remaining category, owner-occupiers, as the reference category. In the same way, council tax band has been utilised as seven dummies leaving the eighth category, Band D, as the reference category. Gross wage is represented by two variables. The first of these "Gross Wage" is a straightforward interval variable. The second variable "GrWageSq" is the square of gross wage. It has been included to allow investigation of any non-linearities associated with rising income. With the effect of children, the straightforward "NchildH" variable has been retained, but a second variable, "Bigfam", has been included when looking at occupational pension coverage. This is because it was found that there seemed to be a slight upward effect on occupational pension coverage for the first two children, but a major downward effect on coverage with the third child. The "Bigfam" variable is designed to analyse the effect of large families.

Now that the variable codes have been set up it is useful to provide guidance as to their interpretation. We have seen from Chapter Two that the coefficient "B" can be interpreted as the effect of a unit of x (the independent variable) in adding to the log odds of y (the dependent variable). To use an example, the coefficient of the sex variable expresses the effect of moving from the male to the female (adding one to the variable code) in terms of its effect on the dependent variable. In the following cases the dependent variable will either be Emppens2 or PerPen2. So "B" measures the effect of moving from the male to the female on the probability that the subject is currently a member of a private pension scheme. If "B" is positive then it indicates that women are more likely to be members of private pension schemes (though the effect may or may not be significant), if "B" is negative then the reverse is true. In order to calculate the effect on the odds it is necessary to take the anti-log of B, this is expressed in the final column of the following tables.

At this point we can proceed to analyse current occupational pension coverage.

Table 3.15: Logistic regression: occupational pension coverage

Variable	B	S.E	Significance	R	Effect on Odds
Social Renter	-.65	.10	.00	-.07	.53
Private Renter	-.30	.11	.01	-.03	.74
NchildH	.26	.04	.00	.07	1.29
Bigfam	-.55	.16	.00	-.03	.58
Age	.03	.00	.00	.10	1.03
Couple Status	.03	.08	.68	.00	1.03
Sex	-.16	.08	.04	-.02	.85
Part time	-1.85	.13	.00	-.16	.16
Gross Wage	.00	.00	.00	.13	1.00
GrWageSq	-8.2E -07	1.4E -07	.00	-.06	1.00
Shares	.62	.07	.00	.09	1.87
CTBand A	-.30	.10	.00	-.03	.74
CTBand B	-.23	.09	.01	-.02	.79
CTBand C	-.15	.09	.10	-.01	.86
CTBand E	.21	.12	.09	.01	1.23
CTBand F	.27	.18	.12	.01	1.31
CTBand G	-.21	.21	.30	.00	.81
CTBand H	-.99	.61	.11	-.01	.37
Constant	-1.22	.16	.00	/	/

Cases = 6143

These results indicate that the conclusions from the first part of the chapter, that occupational pensions were the preserve of privileged groups in society, are borne out largely by the logistic regression technique. It is clear from the data that men have better

occupational pension coverage than women, as the odds that a women will have an occupational pension are 85% of those of a man. In a similar vein, full-timers have better coverage than part-timers, the odds ratio indicating that part-timers are only 16% as likely to have an occupational pension as full-timers. It is important to remember that logistic regressions compute odds based on identifiable data. They cannot account directly for constraints on individual behaviour. One constraint involving occupational pensions is that you have to be in a position to join. It is likely that women and part-timers have less opportunity to join occupational pensions than male full-time employees.

The results indicate that an improved financial position is associated with a greater chance of having an occupational pension. The level of gross income is associated positively with the odds of having an occupational pension. However the square of gross wage has a negative association with occupational pension coverage. This indicates that while the odds of having an occupational pension increase with income, they do so at a less than proportional rate. The presence of share-based investments is also linked positively with the odds of having an occupational pension. Those with share-based investments are 87% more likely to be current members than those without.

Housing position also appears to be important. The significant results for the "Social Renter" and "Private Renter" variables indicates that owner-occupiers are more likely to have occupational pension coverage than social and private renters. Council tax band dummies A and B are significant, indicating that these groups have a lower likelihood of occupational scheme membership than the reference category. This indicates that command over housing resources is an important factor along with ownership.

Elsewhere, the results concerning the effect of children show the value of incorporating a separate variable to measure the effect of large families. The "NchildH" variable shows that the effect of children in general is positive, with these households being significantly more likely to have occupational pension coverage. However the effect of the third child (as shown by the "Bigfam" variable) is clearly negative. The other results show a positive effect for age with each additional year improving the odds of having an occupational pension by *3%*. Couple status is found to be insignificant.

This first logistic regression has provided much greater detail on the linkages between variables, showing which variables appear to be important determinants of occupational pension coverage, and which are not. We can explore those variables

which appear to be important in more detail by performing a second logistic regression in which those variables which appear to have no explanatory power, as shown by an "r" rating of .00 are omitted. Therefore in the following regression, the "Couple Status" variable has been omitted, along with council tax band dummy G.

Table 3.16: Logistic regression: occupational pension coverage (variables with no explanatory power removed)

Variable	B	S.E	Significance	R	Effect on Odds
Social Renter	-.64	.10	.00	-.07	.53
Private Renter	-.29	.11	.01	-.03	.75
NchildH	.25	.04	.00	.07	1.29
BigFam	-.54	.16	.00	-.03	.58
Age	.03	.00	.00	.10	1.03
Sex	-.15	.07	.03	-.02	.86
Part Time	-1.85	.13	.00	-.16	.16
Gross Wage	.00	.00	.00	.13	1.00
GrWageSq	-8.3E -07	1.4E –07	.00	-.06	1.00
Shares	.62	.07	.00	.09	1.86
CTBand A	-.27	.10	.01	-.03	.76
CTBand B	-.20	.09	.02	-.02	.82
CTBand C	-.13	.09	.14	-.00	.88
CTBand E	.23	.12	.05	.01	1.26
CTBand F	.31	.17	.08	.01	1.36
CTBand H	-.97	.61	.11	-.01	.38
Constant	-1.23	.16	.00	/	/

Cases = 6163

Table 3.16 confirms the lessons gleaned from the previous equation, none of the variables have changed sign, and they are all still significant. The omission of the couple status variable has had virtually no effect on the strength of positive and negative associations as described by the effect on odds. The only change is that the significance level of the "Sex" variable has improved from .04 to .02

Table 3.16 confirms that the three variables which have the greatest explanatory power in analysing occupational pension coverage, as evinced by the highest "r" values are age, income level and employment status. The direction of these imply that older, higher earning full-timers are the most likely to have occupational pension coverage. This indicates that as seen elsewhere in this chapter, occupational pension coverage is linked with an advantaged position in society.

At this point we can move to analyse the influences on personal pension coverage. It will be useful to analyse to what the extent the results for occupational

pensions apply to personal pensions. Unlike the logistic regression for occupational pension coverage, the variables "Bigfam" and "GrWageSq" have been omitted from this analysis. We have already seen from Table 3.12 that the third child did not have a major effect on personal pension coverage. After testing versions of the logistic regression with the variable and without it, it was found that the "fit" of the data was improved by omitting "Bigfam".

Table 3.17: Logistic regression: personal pension coverage

Variable	B	S.E	Significance	R	Effect on Odds
Social Renter	-.31	.10	.00	-.03	.74
Private Renter	-.13	.11	.23	.00	.88
NchildH	-.02	.02	.35	.00	.99
Age	-.01	.00	.00	-.03	.99
Couple Status	-.08	.07	.26	.00	.92
Sex	-.28	.08	.00	-.04	.75
Part Time	-.27	.12	.02	-.02	.76
Gross Wage	-.00	.00	.01	-.02	1.00
Shares	-.08	.07	.28	.00	.93
CTBand A	.20	.10	.05	.02	1.22
CTBand B	.33	.09	.00	.04	1.39
CTBand C	.20	.09	.03	.02	1.22
CTBand E	.05	.12	.69	.00	1.05
CTBand F	-.10	.17	.55	.00	.91
CTBand G	.08	.49	.69	.00	1.08
CTBand H	.88	.49	.07	.01	2.41
Constant	-.55	.14	.00	/	/

Cases = 6458

The results from Table 3.17 show although there are some similarities, personal pension coverage has a different pattern than that for occupational pensions. The major similarity is that as with occupational pension coverage, women are significantly less likely to have a personal pension, the odds being 75% of those for a man. In this case, lower coverage cannot be explained by lack of access as might be the case for occupational pension schemes. In a similar vein, part-time workers are significantly less likely to have coverage than full-time workers.

In the case of occupational pensions there is clear evidence that command over financial resources is linked positively with the likelihood of having a personal pension. However, an improved financial position appears to make it in general less likely that an individual will have personal pension coverage. An increase in gross income level makes it significantly less likely that an individual will have a personal pension with

each step making the individual only 93% as likely to have a personal pension as the tier below. Likewise, those with share-based investments are also only 93% as likely to have a personal pension compared to those without share-based investments. Command over property resources does appear to have a major, though contrary impact. Control over property resources as displayed by council tax band is linked negatively with having a personal pension, but the significance of the "Social Renter" dummy shows that owner-occupiers are more likely to have a personal pension than social renters. The "Private Renter" dummy is not significant.

The results for the three remaining variables differ from those for occupational pension coverage. Children appear have a slight (though insignificant) negative effect on personal pension coverage with each child making it only 99% as likely that an individual will have a personal pension. This runs counter to the finding from occupational pension coverage that each child up to the third had a significant positive effect. Couples appear to be slightly less likely to have personal pension coverage than single groups, though as with occupational pension coverage, this variable is not significant. Age was linked positively with higher occupational pension coverage, but here, advancing age makes it significantly less likely that an individual will have a personal pension scheme. This bears out the pattern established in Table 3.6 where personal pension coverage peaks in the 26-30 age group and declines thereafter.

As with occupational pension coverage, we can investigate personal pension coverage in more detail by omitting those variables which in Table 3.17, appeared to have no explanatory power.

Table 3.18: Personal pension coverage (variables with no explanatory power removed)

Variable	B	S.E	Significance	R	Effect on Odds
Social renter	-.31	.10	.00	-.03	.74
Age	-.01	.00	.00	-.03	.99
Sex	-.32	.08	.00	-.05	.73
Part Time	-.27	.12	.02	-.02	.76
Gross Wage	-.00	.00	.00	-.03	1.00
CTBand A	.20	.09	.03	.02	1.22
CTBand B	.32	.08	.00	.04	1.38
CTBand C	.20	.08	.01	.02	1.22
CTBand H	.89	.49	.07	.01	2.43
Constant	-.61	.13	.00	/	/

Cases = 6480

Table 3.18 shows that as with Table 3.16, the omission of variables with no explanatory power have little effect on the odds ratio and the fit of the variables. For six of the variables (Social Renter, Age, Employment Status, Gross Wage), the effect on the odds remains unchanged. As measured by "r" value, the five most important determinants of personal pension coverage are income level, sex, council tax band dummy B, the social renter dummy and age. The direction of these effects in total mean that the group most likely to have a personal pension are younger, poorer men. This would imply that having a personal pension is associated with a disadvantaged position in terms of overall wealth. This contrasts with the association between having an occupational pension and being in an advantaged position.

Illustrative Cases

We can use the co-efficients of the logistic regressions to examine the probability that an individual will have occupational or personal pension coverage. The revised regressions (Tables 3.16 and 3.18) have been used rather than the original versions because the revised versions omit variables which are found to be insignificant. There is little point in including the co-efficients of insignificant variables in these illustrative cases, as it is the intention to demonstrate the impact of those co-efficients found to be significantly different from zero.

In order to demonstrate the full impact of the data, it will be necessary to set up two cases for each of occupational and personal pension coverage. One case will feature an individual with a comparatively high chance of coverage and one case will have an individual with a low chance of coverage. In order to estimate the probability that an individual has private pension coverage, it is necessary to input the co-efficients of the logistic regression in order to obtain a value for the individual, known as the logit. This logit is then entered into a formula in order to obtain the probability. The formula to be used is: probability = $1/\ 1+e^{-(\alpha+\Sigma\beta_k X_{ki})}$, where the logit represents the superscript in the formula.

Case One

What is the probability that a fifty-three year old male owner-occupier (council tax band F), with two children under 16, who holds shares and earns £610 per week in full-time employment will be a current member of an occupational pension scheme?

Logit = -1.23 + .03(53) -.15(0) -.64(0) -.29(0) +.31(1) +.25(2) +.62(1) +.003(610) – 8.3E-07(372100) –1.85(0)

= -1.23 + 1.59 +.31 +.50 +.62 +1.83 -.31

= 3.31

Probability = $1/ (1+ 2.718^{-(3.31)})$

= 1/ (1+ .04)

= .96

Case Two

What is the probability that a twenty-nine year old female social renter (council tax band B), with no children under 16, with no share-based investments, and earning £90 per week in part-time employment will be a current member of an occupational pension scheme?

Logit = -1.23 + .03(29) -.15(1) -.64(1)-.32(0) -.20(1) + .25(0) +.63(0) –8.3E-07(8100) +.003(90) –1.85(1)

= -1.23 +.87 -.15 -.64 -.20 + .27 -.01 -1.85

= -2.94

Probability = $1/ (1+ 2.718^{-(-2.94)})$

= 1/ (1+ 18.91)

= .05

Although these two examples are contrived to show the range of the data, they indicate just how strongly occupational pension coverage is linked to social advantage and disadvantage. For older male full-time employees, the probability of being a current member of an occupational pension scheme is very high indeed, 96% in the example given. At the other end of the scale, it is clear that part-time workers have a very low chance of being a current scheme member, especially when this factor is linked to housing status and low earnings. In the example given, the probability that this individual would be a current member of an occupational pension scheme is just 5%.

Case Three

What is the probability that a twenty-four year old, male private renter (council tax band B), earning £180 per week in full-time employment will have a personal pension?

Logit = -.61 -.01(24) -.32(0) -.31(0) +.32(1) -.0005(180) -.27(0)
= -.61 -.24 +.32 -.09
= -.62

Probability = $1/ (1+ 2.718^{-(-.62)})$
= 1/ (1+ .1.86)
= .35

Case Four

What is the probability that a forty-six year old female social renter (council tax band D), earning £310 per week in part-time employment will have a personal pension?

Logit = -.61 -.01(46) -.32(1) -.31(1) -.0005(310) -.27(1)
= -.61 -.46 -.32 -.31 -.16 -.27
= -2.13

Probability = $1/ (1 + 2.718^{-(-2.13)})$
= 1/ (1 + 8.41)
= .11

These two results indicate that the probability of an individual having a personal pension is not skewed as strongly as the results for occupational pensions at either the higher or lower end. The first example shows that it is possible that the probability of an individual having a personal pension can exceed one-third. These individuals would tend to be young males with low earnings. The second example indicates that some individuals will have a far lower probability of having a personal pension. These individuals are older, female and middle to higher earners. That they are not likely to have a personal pension might indicate a greater probability of having an occupational pension. This explanation is plausible in terms of age and earnings, but we have seen already that women are less likely to be current members of an occupational scheme

than men. In fact we have seen from analysis of occupational and personal pension coverage that women are far less likely to have private pension coverage than men. This indicates a greater reliance on a partner's provision, which is not a certain source of income, and a far greater likelihood of reliance on state provision in retirement.

Conclusion

This chapter has analysed coverage for both occupational and personal pensions through the use of cross-tables and logistic regression analysis. It is important to remember that both methods provide useful information. Logistic regression analysis unbundles the characteristics of an individual in order to give more detail on the linkages between variables, but cross-tables show us what is happening in terms of current coverage as well as providing some information on inter-variable relationships. In terms of current coverage most of the patterns discovered for occupational pension coverage are replicated in personal pension coverage. Slight differences arise over coverage by marital status, where the divorced group have lower coverage than married couples in occupational schemes but the same coverage in personal schemes; and membership patterns by age are very different. However, for private pensions as a whole, men have greater coverage than women, full-timers have greater coverage than part-timers, and owner-occupiers have greater coverage than renters.

The logistic regressions tend to bear out the results of the cross-tabulations. The dominant message to be drawn from them is that occupational pensions are associated with financial well-being while personal pensions are the preserve those in a less advantageous position. An increasing level of income, advancing age and the presence of share-based investments make the individual more likely to have an occupational pension, as does command over housing position as expressed by council tax band and ownership status variables. For personal pension holders the situation is reversed, with an increasing level of income and the presence of share-based investments making it less likely that an individual will have coverage. In both cases, women have a far lower level of coverage than men.

These observations provide the background for the following chapters, which focus on those with private pension schemes. It is important to remember that possession of a private pension does not guarantee a prosperous retirement. The research examined in Chapter One concluded that the flat rate COR was not sufficient

on its own to provide an adequate retirement. It also indicated that the growth of DC occupational schemes meant that an increasing proportion of occupational pension holders were not guaranteed an adequate retirement by their scheme contributions alone. Only DB pension holders were judged to be in a safe position.

This leaves two important avenues of enquiry. One is to analyse the level of contributions being paid into private pension schemes, both DB and DC. This will reveal whether the patterns of coverage are replicated in terms of pension contributions once an individual is a member of a scheme. It will also investigate whether, and to what extent, employees pay more in automatic scheme contributions to DB than DC schemes. The other important avenue to explore is additional contributions to private pension schemes, to examine whether those in an "inadequate" position are responding by paying additional contributions. It is this area that will be tackled first.

Chapter Four: Additional Contributions- Who Pays?

Introduction

As we have seen from Chapter One, possession of a private pension is not enough to guarantee a reasonable income in retirement due to the varying contribution rates in occupational pension schemes and the level of the COR in personal pension schemes. It is clear that to increase the chance of an adequate income in retirement, many people may need to pay additional contributions into their private pension. In order to evaluate the current situation, it is necessary to look at the numbers paying additional contributions into both types of private pension scheme. It is important to note that the issue of additional contributions may become more important as DC coverage increases, due to the lower total "compulsory" contribution of these schemes, both occupational and personal. The issue of automatic scheme contributions will be investigated in more detail in Chapter Five.

This chapter will be split into two parts. The first part will be an overview of which groups are more likely to pay additional contributions in private pension schemes through the use of cross-tables. This will be in terms of the factors used in Chapter Three: income, sex, employment status, age, marital status, housing status and household composition. This will be done for DB and DC occupational schemes and personal pensions. As Chapter Three noted, a cross-table can only illustrate the inter-relations between a few variables before suffering a loss of clarity. As a result, the second part will use logistic regression analysis to investigate the linkages between variables in more detail for occupational and personal pensions. This will enable us to see whether variables linked with a high likelihood of additional contribution payment are the causal factors or merely a proxy for other variables. It will also indicate whether those characteristics linked with a high likelihood of additional contribution payment to occupational schemes are also associated with a high likelihood of payment to personal pension schemes.

As a result, this chapter should provide answers to the questions raised in the literature, most notably by Hancock et al (1995) in their notional exercise. It should indicate whether richer groups more likely to pay additional contributions than poorer groups, whether women more likely to pay additional contributions than men, if

younger groups are more likely to pay additional contributions than older grou flat-rate COR would suggest), and the impact of divorce.

Section A: Likelihood of Additional Contribution payment

Overall Additional Contribution Payment

This section will analyse additional contribution payment for all private p members, attempting to isolate which factors make people likely to pay. The c starting point is to look at how many people are actually paying additional contri to occupational and personal schemes. It is possible to scrutinise occupational p more deeply, by comparing the percentages paying additional contributions betw and DC scheme members. It is difficult to predict *a priori* whether DB or DC members are more likely to pay additional contributions. On the one hand DB members are better off, on the other DC members have lower "comp contributions, and thus may feel more need to pay additional contributions.

It is important to remember that in measuring the percentage making ad contributions to personal as opposed to occupational schemes we are meas different phenomenon. Additional contributions to occupational pension sche supplementary to any compulsory contribution made as a result of being a me the scheme. With personal pensions, there is generally no employer contributio result, additional contributions to personal pensions are generally building fr contracted-out rebate (COR) gained by opting-out of SERPS. As a result it i expected that additional contributions to personal schemes will be made by mo those who pay additional contributions to occupational schemes.

Table 4.1: Additional contribution payment by scheme type

	All Occupational Members	DB Members	DC Members	Per Me
N	10060	8042	2018	4
As % of all adults	21.9*	17.5	4.4	9
% paying additional contributions	14.0	13.6	15.6	4
% paying additional contributions as % of all adults	3.1	2.4	.7	4

* Total Number of adults = 46010

Looking at occupational pensions first, of all those currently members of these schemes, only 14% are making additional contributions towards their own retirement. A chi-square test of the difference between DB and DC scheme members was significant at the 5% level. This indicates that DC pension scheme members are more likely to pay additional contributions than DB scheme members. This result may also imply that DC scheme members are reacting to the fact that their schemes have a lower overall contribution. The possibility must also be considered that DB pension holders recognise that they do not have to pay additional contributions due to their higher scheme contribution rate. It is important not to overplay this difference though, as the percentage paying additional contributions in DC schemes is still less than one-sixth. DC scheme members may be reacting to their situation, but certainly not by enough to get back to "parity" with DB scheme members.

Table 4.1 reveals that just under half of employees in personal pension schemes have paid additional contributions towards their pension in the last twelve months. This corresponds exactly with the Inland Revenue data for the period (Inland Revenue Statistics 1995) and as we have seen, this is a far greater proportion than pay additional contributions to occupational schemes. Even in absolute terms, more are paying something towards their personal scheme (2136) than are paying towards occupational schemes (1412), despite the greater overall coverage of occupational schemes. Again, it is important not to be carried away by this, as it means that 51.4 percent of personal pension members are only contributing their COR to a personal pension, the value of which will fall in future.

It is useful to avoid looking at additional contribution payment as a simple dichotomy between payers and non-payers. The decision whether to pay additional contributions or not, is not an irrevocable one. Whether through choice or constraint, an individual may choose to cease paying contributions, or even to resume them. The following table analyses the contribution patterns of personal pension members in more detail.

Table 4.2: Additional contribution patterns of personal pension members

	Cell Size	% of total
Currently paying additional contributions	2136	48.6
Used to pay additional contributions	339	7.7
Never paid additional contributions	1921	43.9
Total	4396	100.0

According to Table 4.2, almost one-sixth of those not paying extra contributions have done so at some stage. This indicates that there are three identifiable groups with respect to extra contribution payment to personal pensions: those who have never paid extra contributions (43.6%), those who have paid extra contributions in the past (7.7%), and those who pay extra contributions currently (48.6%). This angle is a useful one, and could be pursued as a parallel set of tables. However for the sake of clarity it is best to highlight the extent of this phenomenon, while sticking to an analysis of current contributors.

Income

The next step is to analyse additional contribution payment by income level. We have seen from Chapter Three that occupational pension coverage tends to rise with income level, while personal pension coverage seems to fall. It would be expected that the likelihood of additional contribution payment would rise with income for occupational schemes, but it is difficult to predict whether this pattern would also apply to personal schemes. As before, it must be remembered that due to differences in the derivation of data, cell sizes are smaller for this section, and the results are likely to be biased upwards.

Table 4.3: Percentages paying additional contributions by income level and scheme type

		Additional Contribution Payment (%)			
		All Occupational Members	DB members	DC members	Personal Pension Members
Gross Income Level	£0-99.99	13.3	11.3	20.3	39.3
	£100-199.99	17.0	16.0	20.2	49.7
	£200-299.99	15.4	14.8	18.3	52.4
	£300-399.99	15.9	15.4	18.3	54.0
	£400-499.99	19.0	19.5	15.5	58.0
	£500+	22.7	21.3	31.0	48.0
	Total	16.8	16.0	19.9	49.9
	Sig of χ^2	.00	.00	.33	.00
	N	3912	3169	743	1688

Table 4.3 shows that for both occupational and personal pensions, the likelihood of paying additional contributions rises with income. For all occupational members, a chi-square test shows that this relationship is significant at the 1% level. Additional

contribution payment is fairly similar in the lowest four income categories, but increases sharply at income levels above £400 to reach 22.7% in the £500+ income category. This pattern applies to DB schemes, but not to DC plans, as here the likelihood of paying additional contributions seems to fall with income level. However this may be a product of a lower sample size, a chi-square test indicates that there is no significant relationship between income level and additional contribution payment for DC schemes.

For personal pension members, a chi-square test also shows that the payment of additional contributions has a significant association with increasing income level, at the 1% level. The data shows a smooth progression from 39.3% paying additional contributions in the £0-99.99 bracket to 58% in the £400-499.99 range, before falling back to 48%.

Sex

It is also important to analyse additional contribution payment by sex. Given that compared to men, women face the additional problem of career breaks for children, it can be argued that they have even more need to pay additional pension contributions during the periods that they are in the labour market. Analysis of additional contribution payment by sex is the first test of whether the results of Hancock et al's (1995) notional exercise transfer to the real world.

Table 4.4: Percentages paying additional contributions by sex and scheme type

		Additional Contribution Payment(%)			
		All Occupational Members	DB Members	DC Members	Personal members
Sex	Male	15.6	15.0	17.8	47.4
	Female	11.6	11.5	12.2	50.4
	Total	14.0	13.6	15.6	48.6
	Sig of χ^2	.00	.00	.00	.05
	N	10060	8042	2018	4396

Table 4.4 shows that while 15.6% of men are currently paying additional contributions to their occupational pension, only 11.6% of women are doing so. The chi-square test of this difference was significant at the .1% level. Thus it seems that men are significantly more likely to pay additional contributions than women in occupational pension schemes. Those with most need to pay additional contributions are not paying

them. It is interesting to ask whether this pattern exists for both DB and DC plan members. In both cases, men are significantly more likely to pay additional contributions than women. However the gap between the sexes is far greater in the case in the case of DC pensions. This may indicate that men are reacting to DC pensions by making additional contributions, while women are not.

Analysis of additional contribution payment by sex has indicated that in occupational pensions at least, men are more likely to pay additional contributions than women. It is important to note that this result does not take account of income, which men have more of than women. The effects of income will be stripped out in the logistic regressions, which come later and will provide a fairer test of Hancock et al's assertion.

Given that the analysis of additional contributions to occupational pensions showed that men are more likely to pay additional contributions to a pension than women, with the effect being even more pronounced in DC occupational pensions, it might therefore be expected that men will be far more likely to pay additional contributions than women in personal schemes. However the results in Table 4.4 do not conform to the expected pattern. It is clear that women are at least as likely to pay additional contributions as men, with over 50% of women in a personal pension scheme making additional contributions as opposed to 47.4% of men. However, a chi-squared test analysing the significance of this difference yielded a value of .052, indicating that this gap is not significant at the 5% level. This result is all the more interesting when we consider that women have lower incomes than men. It would be expected that in a logistic regression which strips out the effects of income, that women will be significantly more likely to pay additional contributions than men.

The search for explanations for this result is difficult. It is insufficient to cite the DC nature of personal pension schemes, given that the male-female gap was larger for DC occupational schemes than DB schemes. It is possible that the explanation lies with the nature of men in personal pensions. Older men in personal pensions may be a self-selected group, cut off from the "normal" occupational provision of their contemporaries. It has also been alleged (Disney and Stears 1996) that younger men have contracted-out of occupational pensions to avoid making a positive contribution to their retirement. Whether this is a plausible explanation will be tested in the later section on age.

Employment Status

Chapter Three demonstrated that part-time workers were disadvantaged in terms of private pension coverage. Part-timers were only half as likely to have a personal pension and one-third as likely to have occupational pension coverage as compared to full-time workers. It is worth noting that once part-timers had occupational pension coverage, it was as likely to be DB as the scheme of a full-time worker. It is useful to analyse additional contribution payment by employment status, to find out if part-time workers are equally likely to pay additional contributions as their full-time counterparts.

Table 4.5: Percentages paying additional contributions by occupational status and scheme type

		Additional Contribution Payment (%)			
		All Occupational Members	DB Members	DC Members	Personal Pension Members
Employment Status	Full-time Males	15.6	15.1	17.7	47.8
	Full-time Females	12.5	12.3	13.4	52.6
	Total full-time	14.6	14.1	16.3	49.3
	Part-time Females	9.0	9.1	8.4	45.7
	N	9891	7914	1977	4347

It is clear from Table 4.5 that part-time workers are less likely to pay additional contributions to occupational schemes than full-time workers. The chi-square test examining differences in additional contribution payment between full and part-time workers is significant at the .1% level.

The analysis of additional contribution payment by employment status can be extended to occupational scheme type. There are two points to be made here. Firstly, Table 4.5 demonstrates that all of the difference between the additional contribution payment of DB and DC scheme members can be explained by the activity of full-time workers; additional contribution payment for part-time workers is consistent and low. Secondly, Table 4.5 allows further comment on the increased gap in additional contribution payment between men and women in DC over DB schemes. This can only be explained partly by part-time workers being slightly less likely to pay additional contributions in DC rather than DB occupational schemes. Even if part-time workers are excluded, men are more likely to "react" to DC occupational pensioning by paying additional contributions, than women.

Analysis of results for personal pensions shows that in total, full-timers are more likely to pay additional contributions to a personal pension than part-timers. The chi-square test being significant at the 5% level. Table 4.5 also allows a more valid

comparison of the behaviour of men and women, given that women are far more likely to be part-time workers. The chi-square test for male and female full-time workers was significant at the 1% level. This is a very important result, confirming that women are significantly more likely to be current payers of additional contributions than men to personal pension schemes.

These results have implications for the government's proposed new "stakeholder" pensions. If these pensions are to be aimed primarily at women, then the seed may be planted on fertile ground as the payment structure of these pensions would be that of a personal pension, with the COR as a base, with extra contributions to be paid in addition. Women seem particularly ready to contribute to this type of pension. This structure may also be useful for men, as a stakeholder pension system would give enhanced flexibility for those who wish to vary the level of their contributions, without penalty.

Age

This is one of the most important sections of this analysis. One of the key questions to be answered is the relationship between additional contributions and age. This is important given the warnings about the need to plan early for retirement. There are countervailing tendencies at work here. Younger people may be more likely to pay additional contributions as their contributions have more time to compound; alternatively older groups may be more likely to pay as the spectre of retirement is more relevant to them. In their notional exercise Hancock et al (1995) indicated that younger groups appeared more willing to pay additional contributions than their elders; it will be interesting to examine whether or not this applies to occupational and personal pension schemes.

It is also reasonable to examine additional contribution payment by age and occupational pension type. We have seen that overall, DC scheme members are more likely to pay additional contributions than DB scheme members. However DC scheme members are concentrated proportionately at both ends of the age spectrum. It will be interesting to look at whether the higher additional contribution payment is simply a function of having more older members, or is evenly distributed throughout the age range.

Table 4.6: Percentages paying additional contributions by age and scheme type

		Additional Contribution Payment (%)			
		All Occupational Members	DB Members	DC Members	Personal Pension Members
Age of adult last birthday	16-20	0	0	0	48.6
	21-25	5.3	4.2	8.6	44.6
	26-30	7.1	5.9	11.0	52.8
	31-35	9.0	7.9	13.7	49.3
	36-40	12.3	12.0	13.9	46.6
	41-45	15.5	16.0	13.3	48.6
	46-50	17.9	17.2	21.0	48.6
	51-55	23.8	23.9	23.6	51.6
	56-60	26.7	28.9	18.8	44.0
	61-65	21.5	14.8	36.4	38.5
	66+	0	0	0	36.8
	Total	14.0	13.6	15.6	48.6
	Sig of χ^2	.00	.00	.00	.20
	N	10060	8042	2018	4396

The overall statistics for occupational schemes describe a schedule whereby additional contribution payment starts at a low level, advances steadily and then undergoes massive acceleration as the sample reaches its fifties. There can be no doubt that in fact young people are much less likely to pay additional contributions to occupational schemes than their elders, the chi-square test investigating the link between age and additional contribution payment was significant at the .1% level. This is especially disconcerting when one considers that the youngest cohorts are far less likely to be occupational scheme members, and thus represent a self-selected group.

These results would appear to be a severe blow to Hancock et al's hypothesis that the young would be more likely to pay additional contributions. It is perhaps unfair to compare this result directly, as in the notional exercise the sample were informed of the consequences of their actions, which is not the case here. There is also the consideration that Hancock et al's exercise, used logit models to produce the assertion. As such, the second part of this chapter will provide a better test of whether young people are more likely to pay additional contributions once other factors are taken into consideration. However this result should be interpreted as a warning to treat the results of attitudinal exercises with extreme caution. Willingness to pay additional contributions is a separate matter from actually paying them.

The overall results are consistent with a model of additional contribution payment where the young do not pay additional contributions. This may be because of time-preference rates or lack of information. The issue gradually becomes more

sentient, as respondents reach peak occupational pension coverage. Once respondents reach fifty, payment rises sharply as the spectre of retirement looms.

It is clear that DB and DC schemes have very different additional contribution age-payment profiles. DB schemes have an even more skewed additional contribution payment schedule than the average. Additional contribution payment is even lower for younger age groups, being a mere 7.9% for the 31-35 age group, but then rises more sharply to hit a higher peak than the average, at 28.9% for the 56-60 age group (compared to 26.7%). DC schemes follow a different trajectory. Additional contribution payment is far higher for younger age groups, stagnates in the thirties and early forties before hitting a mini-peak at a lower level than the average. The high result for the 61-65 age group is based on a very low sample, but might be significant with those not already retired making a last effort to boost their pensions.

Analysis of DC schemes force a rethink of the obvious conclusions to be drawn from the overall statistics, that young people will inevitably be very unlikely to pay additional contributions. It is still clear that younger age groups are less likely to pay than their elders. However the question must be asked, why are young people up to twice as likely to pay additional contributions in DC than DB schemes? This question is especially apposite when we consider that DB pensions are connected with stable employment and higher pay. The answer may lie in the nature of pension schemes. Young people may be unwilling to pay additional contributions to final salary schemes if they believe they are likely to leave the company. This may conversely explain the sharp increase in payment for the over-fifties in DB schemes, as they may believe that they are with their last employer. In DC schemes younger people may have more incentive to pay additional contributions, as they will get more of the benefit from their contributions. This may hold out some hope for the proposed stakeholder pensions. As they would be constructed on a DC basis, it is possible that more people would contribute earlier, giving the contributions a long time to compound.

It is also clear from Table 4.6 that additional contributions to personal pensions follow a very different pattern than those to occupational pensions, both DB and DC. Numbers making contributions in the last twelve months start at the median level and reach their peak in the 26-30 age group, a far younger age than that for occupational schemes. The percentage paying additional contributions is broadly flat from then on until it reaches the late fifties, when it declines quite sharply. This is a complete reversal of the patterns found in occupational schemes, especially DC ones where the early sixties mark a late spurt to pay contributions.

A chi-square test to analyse whether age is a significant factor proved to be insignificant. This does not support Hancock et al's notional result that the young were more likely to pay extra contributions than their elders. However, it does remind us that the barriers to the young paying additional contributions to a pension are not immutable. This again holds out hope for the stakeholder pensions vehicle, which could encourage more young people to pay contributions at a fruitful point in the life cycle, given that these contributions have more time to compound.

It also makes sense to examine additional contribution payment by age and sex. In looking at occupational pension schemes, it will be interesting to see whether both men and women have a very skewed distribution of additional contribution payment for DB schemes or have the same steady rise in DC schemes. With respect to personal pensions, it will also be useful to discover if the phenomenon observed in Table 4.6, that age is not a significant factor in determining additional contribution payment, is true for both sexes. For the purposes of clarity, the following table presents additional contributions to occupational schemes for DB and DC members, not as a total.

Table 4.7: Percentages paying additional contributions by age, sex and scheme type.

		Additional Contribution Payment (%)					
		DB Occupational		DC Occupational		Personal Pension	
		Male	Female	Male	Female	Male	Female
Age	16-20	0	0	(0)	(0)	42.9	(56.3)
	21-25	6.0	2.6	8.8	8.6	45.9	43.1
	26-30	6.1	5.6	13.1	8.1	53.3	52.2
	31-35	8.8	6.2	14.3	12.7	49.9	48.0
	Total under 35	7.3	5.0	12.4	9.3	50.3	48.5
	36-40	13.0	10.3	16.1	10.0	43.2	52.8
	41-45	16.8	14.7	18.1	5.8	42.8	56.5
	46-50	18.1	15.7	23.8	16.5	50.3	46.4
	51-55	25.4	21.3	22.9	25.0	49.5	54.6
	56-60	32.6	22.6	17.7	20.8	40.7	50.7
	61-65	16.3	9.4	38.9	(25.0)	38.1	40.0
	66+	(0)	(0)	(0)	(0)	(27.3)	(50.0)
	Total over 35	19.0	15.7	21.1	14.6	45.0	52.1
	Total	15.0	11.5	17.8	12.2	47.4	50.4
	Sig of χ^2	.00	.00	.00	.00	.02	.23
	N	4856	3186	1238	780	2711	1685

Brackets denote a cell size of 20 or less

If we consider DB scheme members first, it is clear that male and female workers have a very similar additional contribution payment pattern. In both cases there

is a gradual build-up in the percentages paying additional contributions from a low base and a boom in the 50-60 age group.

Analysis of DC scheme members is hampered by the fact that the cell sizes are smaller, but useful extrapolations can be made. It is interesting to note that unlike DB schemes, males and females do not follow exactly the same pattern. In both cases additional contribution payment starts at a higher level than in DB schemes, and increases up to the mid-thirties. From this point, the percentage of males paying additional contributions continues to increase. However female additional contribution payment dips badly in the late thirties and early forties, only to recover strongly in the fifties. Table 4.7 causes us to take the phenomenon of a high likelihood of additional contribution payment in the over-sixties more seriously, despite the low sample size, as it affects both men and women.

Table 4.7 also shows that there are slight differences in the additional contribution patterns of men and women to personal pensions. The male pattern peaks in the 26-30 age group and then falls back. It hits a secondary peak in the late forties and early fifties, and then falls back sharply. The female pattern is less obvious, having series of mini-peaks, but without the tail-off for older age groups characteristic of the male pattern. It was argued earlier that the lower male propensity to pay additional contributions could be due to the characteristics of men with personal pensions. In this scenario younger men would be less willing to pay a positive contribution to their retirement having potentially opted-away from occupational provision while older men would be cut off from the "normal" occupational provision of their contemporaries. It is clear that the first of these explanations is faulty. Young men (under 35) are certainly as likely to pay additional contributions to a personal pension as young women (the gap is not significant). The second explanation does seem to have persuasive power. There is a large and very significant gap (at the .1% level) between the percentage of older men who pay additional contributions and that of older women.

This has implications for any stakeholder pension vehicle that is set up. The stakeholder pension concept is designed primarily to improve the position those without access to occupational schemes, who would tend to be women. However it is clear that for whatever reason, older men are less likely be paying additional contributions to a personal pension. A second task for a stakeholder pension system therefore must be to encourage older men to keep paying additional contributions.

Marital Status

Chapter Three has demonstrated that married couples have better private pension coverage than the divorced group. It may be expected that this result will be replicated for additional contribution payment. This would then indicate that divorce might be the precursor of poverty in retirement.

Table 4.8: Percentages paying additional contributions by marital status and scheme type

		Additional Contribution Payment (%)			
		All Occupational Members	DB Members	DC members	Personal Pension Members
Marital Status	Married (spouse in household)	15.2	14.6	17.4	49.1
	Living as a couple	9.7	10.0	8.9	48.1
	Single/ never been married	10.0	9.5	11.8	48.8
	Widowed	16.2	14.9	20.8	43.4
	Separated	13.9	15.2	9.5	35.8
	Divorced	17.0	16.9	17.2	47.2
	Total[11]	14.1	13.7	15.6	48.6
	Significance of χ^2	.00	.00	.01	.35
	N[12]	10027	8013	2014	4386

Table 4.8 does not follow the simple theory outlined above. Instead it shows that for occupational pension holders, the divorced group have a higher likelihood of additional contribution payment than married couples at 17% as compared to 15.2%. The test of the difference in additional contribution payment for these groups was not significant at the 5% level. However, this result is important in itself as it contradicts Hancock et al's (1995) finding that divorce was associated with a lower likelihood of additional contribution payment. For other groups, the results were as expected and can mostly be explained by the average age of the group. Co-habitees and single people had predictably low additional contribution payment at around 10% of the total, while the widowed category had a relatively high propensity to pay at 16.2%. Table 4.8 also illustrates that additional contribution patterns are generally similar for DB and DC scheme members. However the lead held by DC married couples is slightly greater than

[11] These results may differ slightly from the overall totals due to the exclusion of the Married (spouse not in household) category

expected. This leads to the position whereby in DC schemes, married couples have a slight lead (.2%) over the divorced group in the payment of additional contributions, although of course this is not significant.

When we switch our attention to personal pension holders we can see that married couples seem more likely to pay additional contributions than the divorced group, although a chi-square test indicates that this difference is not significant. Nevertheless, this result is important in that it reinforces the previous evidence that divorce does not make people less likely to pay additional contributions to a pension, whether occupational or personal.

The behaviour of co-habitees and single people is also worthy of interest. These two groups were the least likely to pay additional contributions to occupational pensions, and it was hypothesised that this was due to the low average age for these groups. For personal pensions, age has proved to be much less important as a factor. This impression is reinforced in this table, with the two "young" groups being as willing to pay additional contributions as their elders. The group that obviously under-performed the rest is the "separated" group, with only 35.2% paying additional contributions to a personal pension. Despite the low sample size, this group is significantly less likely to pay additional contributions than the married couples group at the 5% level. This result resembles the performance of the separated for DC occupational pensions, where a mere 9.5% were paying additional contributions. It could be that the uncertainty caused by separation causes a break on pension contributions.

Understanding the relationship between additional contribution payment and marital status is of special importance to women, as it is possible that they had been relying on a husband's retirement arrangements rather than take personal responsibility.

Table 4.9: Percentages paying additional contributions by sex and marital status

		Additional Contribution Payment (%)			
		Occupational Pensions		Personal Pensions	
		Male	Female	Male	Female
Marital Status	Married (spouse in household)	16.8	12.2	48.0	51.2
	Living as a couple	10.7	8.7	44.6	52.4
	Single/ never been married	10.2	9.7	49.3	47.8
	Widowed	20.0	14.1	28.6	48.7

[12] These totals differ slightly from the overall totals due to the absence of the Married (spouse not in household) category.

	Separated	17.0	10.9	31.4	40.6
	Divorced	18.5	15.8	43.9	50.0
	Total	15.6	11.7	47.5	50.5
	Significance of χ^2	.00	.05	.17	.77
	N	6076	3951	2706	1680

Table 4.9 shows that in occupational schemes, divorced women seem at first glance to be far more likely to pay additional contributions than married women (15.8% compared to 12.2%). This would indicate that divorced women recognise the need to make their own retirement arrangements, and not rely on that of their husband. However a chi-square test conducted on this difference was not significant at the 5% level. Divorced men also seem at first to be more willing to pay additional contributions than married men (18.5% compared to 16.8%), although again, the difference is not significant. It is clear though from the analysis of occupational pensions that divorce does not make people less likely to pay additional contributions, for either men or women.

Analysis of additional contributions to personal pensions also indicates that divorce does not damage the likelihood of making them. For both men and women, chi-square tests of the difference in propensity of the divorced and married groups to make additional contributions to a personal pension were not significant at the 5% level. The data also shows that the low additional contribution payment amongst the separated group is true for both men and women. This would indicate that uncertainty about marital status is detrimental to the current payment of additional contributions.

It is possible that the efficacy of these tests have been hampered by low cell sizes. However, given the evidence available, it seems that the likelihood of paying additional contributions to either an occupational or personal scheme is not harmed by divorce, for either men or women. This contradicts the results of Hancock et al's (1995) notional exercise. The association between marital status and additional contribution payment will be probed further in the second section of the chapter through the use of logistic regressions.

Housing Status

In Chapter Three, Table 3.10 demonstrated that owner-occupiers were in an advantaged position compared to renters in terms of private pension coverage. It also showed that there was a cleavage amongst renters, with private renters having better

coverage, and in the case of occupational pensions, being more likely to have a DB scheme. It is possible to investigate whether these trends are borne out with additional contributions, with owner-occupiers being more likely to pay than private renters, with social renters running a poor third. This will allow further speculation as to whether pension and non-pension assets are substitutes or complements. It will also be possible to analyse whether these trends are affected by occupational scheme type.

Table 4.10: Percentages paying additional contributions by housing status and scheme type

		Additional contribution payment (%)			
		All Occupational Members	DB Members	DC Members	Personal Pension Members
Housing Status	1 Rented from local authority	10.3	8.8	14.2	38.5
	2 Rented from housing association	10.8	8.7	15.2	33.9
	3 Rent privately (unfurnished)	13.3	11.4	18.8	45.2
	4 Rent privately-furnished	6.6	6.4	7.2	39.0
	5 Owned with mortgage	13.8	13.5	15.1	50.6
	6 Owned outright	19.7	19.5	20.4	48.0
	Total	14.0	13.6	15.6	48.6
	Significance of χ^2	.00	.00	.08	.00
	N	10060	8042	2018	4396

Table 4.10 confirms some of the lessons gleaned from Chapter 3, but demonstrates that simplistic theories cannot explain the behaviour of the sample. The overall figures confirm that owner-occupiers (groups 5 and 6) seem the most likely to pay additional contributions, and also stress the dire position of social renters (groups 1 and 2).

Looking at occupational pensions first, it is to be expected that outright owners have the greatest likelihood of additional contribution payment given the relationships displayed in the section analysing age. It may be that when owner-occupiers have finished paying off the mortgage, there is more spare cash available to consider spending on a higher income in retirement. The extremely low payment from furnished private renters is a surprise. This group does have the lowest average age, but this in itself would not have led to such a low prediction. It must also be considered that the

furnished private renting group has a comparatively high income (and presumably few dependants), which would indicate a higher propensity to pay additional contributions. Conversely, unfurnished private renters and mortgagees have a very similar additional contribution payment profile rather than the lead in additional contribution payment for the mortgagees that might have been expected.

It is clear that additional contribution payment patterns by housing status are not the same for DB and DC occupational schemes. The likelihood of paying additional contributions is far more equal across housing types in DC than DB schemes leaving the impression that renters as a whole are proportionately more likely to pay additional contributions in DC schemes. Table 4.10 counsels us especially against fatalism towards social renters. For this group additional contribution payment in DC schemes is around the average, not mired at a low level. However, it is important to remember that analysis of additional contribution payment by housing status and scheme type still enshrines the dominance of outright owners (highest in both scheme types).

Table 4.10 shows clearly that additional contributions to personal pensions do not follow the varied pattern of additional contribution payment to DC occupational schemes. It is in fact at least as skewed towards homeowners as additional contribution payment to DB schemes. Social renters are clearly less likely to pay additional contributions than owner-occupiers. A chi-square test proved that the difference between local authority renters (group 1) and mortgagees (group5) was significant at the .1% level, the identical test for housing association renters produced a significance level of .013 (due to the smaller cell size). Thus the observation drawn from analysis of DC occupational pensions, that a DC pensioning arrangement might break down the gap in additional contribution payment between social renters and home owners, does not apply to personal pensions.

The additional contribution payment patterns of private renters in personal pensions to a large extent mirror the patterns found in DB occupational schemes. As before, the difference between unfurnished private renters and mortgagees is not significant. However the difference between furnished private renters and mortgagees produced a significance level of .012. Given that there is not a direct relationship between age and extra payments to personal pensions, it is difficult to explain why this group lags behind the unfurnished group.

Household Composition

It was clear from Chapter Three that four household types are associated with high occupational and indeed personal pension coverage. These types are single adults under pension age and two adult households under pension age with no, one and two children respectively (groups 2,5,10 and 11 in the tables below). Other household types were synonymous with low occupational coverage. Single parent households came into this category and on a broader level, the presence of a third child was always deleterious. It might be expected that these results would transfer to an analysis of likelihood to pay additional contributions. In the following table, the data is not displayed with reference to the type of occupational pension scheme, as this would push some cell sizes to meaninglessly low levels.

Table 4.11: Percentages paying additional contributions by household composition and scheme type

		Additional contribution payment (%)	
		All Occupational members	Personal Pension Members
Household Composition	1. 1 adult, no children over pension age	(25.0)	(41.2)
	2. 1 adult, no children under pension age	15.4	49.8
	3. 2 adults, no children, both over pension age	11.1	(37.5)
	4. 2 adults, no children, one over pension age	21.2	40.0
	5. 2 adults, no children, both under pension age	16.3	52.7
	6. 3+ adults, no children	14.5	46.4
	7. 1 adult, 1 child	14.5	53.8
	8. 1 adult, 2 children	5.8	33.3
	9. 1 adult, 3 children	(0)	(20.0)
	10. 2 adults, 1 child	10.9	49.3
	11. 2 adults, 2 children	12.4	45.1
	12. 2 adults, 3+ children	10.1	42.0
	13. 3+ adults, 1 child	15.6	50.3
	14. 3+ adults, 2 children	5.9	53.8
	15. 3+ adults, 3+ children	6.4	50.0
	Total	14.0	48.6
	Significance of χ^2	.00	.01
	N	10060	4396

Brackets denote a cell size of 20 or less

Table 4.11 debunks the notion that high occupational pension coverage translates seamlessly into a higher probability of additional contribution payment. Of

the groups with high occupational pension coverage, single adult and dual adult with no children households have above average additional contribution payment. However dual adult households with one and two children respectively have below average payment. This can perhaps be explained by the role of children.

Table 4.11 also furnishes information on the groups paying additional contributions to personal pensions. As with occupational pensions, there is no simple link between coverage, and propensity to pay additional contributions. Of the groups with high personal pension coverage, single and dual adult households with no children, and dual adult and one-child households (groups 2,5 and 10), have above average additional contribution payment. However dual adults with two children households (group 11) are below average.

This all suggests that children have an adverse effect on additional contribution payment in personal pension schemes as well as occupational pension schemes. For the following table, households including pensioners (groups 1,3 and 4) have been excluded to ensure equivalence.

Table 4.12: Percentages paying additional contributions by number of children in household

		Additional Contribution Payment (%)			
		All Occupational Members	DB Members	DC Members	Personal Pension Members
Number of children in household	0 (groups 2,5 and 6)	15.6	15.3	17.0	50.4
	1 (groups 7,10 and 13)	12.1	11.7	13.8	49.8
	2 (groups 8,11 and 14)	11.7	11.5	12.6	45.1
	3+ (groups 9,12 and 15)	9.6	9.3	11.1	42.3
	Total	13.8	13.5	15.3	48.9
	Significance of χ^2	.00	.00	.08	.00
	N	9735	7790	1945	4253

Table 4.12 indicates that the presence of children lowers the likelihood of an occupational scheme member paying additional contributions. A chi-square test of the relationship between the number of children and the likelihood of additional contribution payment for all occupational pension holders was significant at the .1% level indicating that there is certainly an association. This holds for DB members (significance level = .00), but not for DC members (significance level = .08), although this may be due to the lower sample size.

The interesting question to ask is how this relationship works. The presence of the first child damages the probability that an individual will pay additional contributions, the chi-square test for all occupational scheme members being significant at the .1% level. This is quite plausible. The presence of children would logically lessen the amount of spare cash available in the household, and on an equivalent basis makes the household "poorer", which lessens the probability of paying additional contributions. However it must be noted that when occupational pension holders are broken down further, this result applies to DB pension holders, but not DC pension holders. This is probably at least partly due to cell size.

Given that the likelihood of additional contribution payment falls with the first child, it is worthwhile to check whether additional children are also linked to a significant fall. However, the data shows that although the percentage paying additional contributions falls with each child, chi-square tests indicate that the fall is not significant. From a policy perspective, this would indicate that for its stakeholder pensions, the government has to target all families with children in its drive to increase the number of individuals paying additional contributions.

As with occupational pensions, there is a negative relationship between the number of children and the likelihood of a scheme member paying additional contributions to personal schemes. Unlike the situation with occupational pension schemes, the negative relationship does not start with the first child, but with the second. A chi-square test for the difference in propensity to make additional contribution payments in the past twelve months between households with 0 or 2 children yielded a significance level of .011, and the difference is even more clear cut with a third child.

The obvious line of reasoning is again that on an equivalent income basis, the household becomes "poorer" with each child, and thus less likely to pay additional contributions to a pension. The difficulty is that this does not explain why households with one child are in an equivalent position to those without children, or which is the direction of cause and effect. However it is clear that households with two or more children are in a disadvantaged position. As this result applies to both occupational and personal pensions, it is clear that any attempt by the government to raise private pension contributions must address this phenomenon, and specifically target families with children.

A similar exercise can be attempted to test the notion that single parent households have a lower likelihood of additional contribution payment than households

with more than one resident adult and children. In the interests of keeping cell sizes at meaningful levels, occupational pension holders have not been split into DB and DC members. The average age of occupational pension members has also been included.

Table 4.13: Percentages paying additional contribution in households with children

		Additional Contribution Payment (%)		
		Occupational pension members (%)	Average age of occupational members	Personal Pension Members
Number of adults in household	1 (groups 7,8 and 9)	10.2	38.1	44.1
	2 (groups 10,11 and 12)	11.5	37.8	46.3
	3+ (groups 13,14 and 15)	12.8	41.6	51.0
	Total	11.6	38.3	46.8
	Significance of χ^2	.53	/	.33
	N	4411	/	1818

It was certainly not an obvious prediction that 3+ adult households would appear most willing to pay additional contributions to an occupational pension, although the result is not significant. This gap can probably be explained by the four-year gap in average age. To focus on one and two adult households, A chi-square test for the differences in additional contribution payment between single and dual adult with children households yielded a significance level of .568. A similar test between single and 3+ adult households did not yield a significant result either. These results are important as they show that single parent households are as likely to pay additional contributions as other households with children. This has implications for any government campaign to increase the levels of voluntary pension contribution. All families with children will have to be targeted.

The results for personal pensions mirror those from occupational pensions, with 3+ adult households appearing most likely to have paid additional contributions in the last twelve months, with single adult households being the least likely. However chi-square tests prove that these differences are not significant. It could be hypothesised that households with one adult and children would be more likely to cease paying extra contributions owing to financial pressures. However, chi-square tests indicate that this is not the case. This implies again that any attempt to boost or maintain the payment of additional contributions from families with children, should be targeted at all families with children.

Interim Summary

Analysis of additional contributions to private pension schemes has produced some important results. These can be summarised as follows:

- Additional contributions payment are made by a minority of occupational scheme members and by around a half of personal scheme members.
- DC pension holders are significantly more likely to pay additional contributions than DB pension holders.
- Men are significantly more likely to pay additional contributions than women. This gap is greater in DC than DB occupational schemes. Female full-time employees are significantly more likely be paying additional contributions to personal schemes than male full-time employees.
- Full-time workers are far more likely to pay additional contributions than part-timers in both occupational and personal schemes.
- Older age groups are far more likely to pay additional contributions than younger age groups in occupational pension schemes. Age-additional contribution schedules are radically different for those in DB and DC schemes. Age is not as significant a factor with personal pensions.
- Divorce does not damage the payment of additional pension contributions. This holds for occupational and personal schemes.
- Owner-occupiers are more likely to pay additional contributions than most renters in DB occupational schemes. This simple relationship does not hold in DC occupational schemes. In personal pension schemes, owner-occupiers are significantly more likely to pay additional contributions than social renters, and furnished private renters.
- Children are deleterious to the payment of additional contributions. This applies from the first child with occupational schemes and from the second child with personal schemes.

The summary indicates that for occupational pension members, there appears to be a strong link between the groups associated with a stable position in society and additional contribution payment. Men are more likely to pay additional contributions than women, full-timers more likely to pay than part-timers, and generally home-owners are more likely to pay than renters. However, one factor can be identified as dominant

in determining the likelihood of making additional contributions payments, and it is age. The spectre of retirement seems to outweigh any rational advantages connected with paying additional contributions while young. It is important to realise that this must be at least partly due to the structure of occupational pensions. The benefits from final salary schemes are weighted in favour of long stayers. It may not be logical for young people to pay additional contributions if they envisage leaving the company.

It is also important to remember that in analysing differences in propensity to pay additional contributions between groups of occupational pension holders that we are dealing with low percentages. If one group has a comparative advantage over another, then it may be hair-splitting between a low, and very low likelihood of payment. The central point is that additional contribution payment is generally very low. This is not to suggest that all members of occupational pension schemes need to pay additional contributions. Some, especially long-serving DB scheme members, need not. However the percentage that need to pay additional contributions to maintain their living standards in retirement is certainly higher than the 14% doing so at the moment.

The most noteworthy aspect of the results for additional contributions to personal pensions is the lead that women have over men in current additional contribution payment. In explaining this, Hancock et al (1995) concluded that women were more likely than men to pay small contributions, rather than nothing. This can perhaps form part of an explanation. However more importantly, we have seen that there is a qualitative difference between young men, who seem as likely to pay additional contributions as their female counterparts, and older men, who are certainly less likely. These older men could be less willing to pay as they do not see the point, given that they are removed from the "normal" occupational provision of their contemporaries. This theory can perhaps be extended to explain the dire position of social renters, mired fifteen percentage points below the average for additional contribution payment. The belief that pension contributions are partly determined by a "virtuous cycle", in which those with assets are more likely to acquire other assets, is strengthened by an analysis of additional contributions.

The analysis of additional contribution payment with respect to occupational pensions have not confirmed the findings of Hancock et al's notional exercise. Men are more likely to pay additional contributions than women, the old are more likely to pay than the young, and divorce appears to have no impact. Analysis of additional contributions to personal pensions has proved slightly closer to Hancock et al's

findings. As they predicted, women are more likely to pay extra contributions than men. However in the areas of age and divorce, the notional results again seem to be faulty.

It is important to remember that so far we have been using cross-tables to track additional contribution payment, while Hancock et al used logit models to make their assertions. The next step is therefore to use logistic regressions to analyse the inter-relationship between the variables highlighted in this chapter in more detail. This will provide a better test of whether the results of Hancock et al's notional exercise have translated into reality.

Section B: Logistic Regression Analysis

The earlier part of this chapter has discovered various patterns in additional contribution payment to occupational and personal pension schemes. As with Chapter Three, the next stage is to use logistic regression analysis in order to discover the importance of these characteristics when other variables are accounted for. For the purposes of this chapter it is necessary to complete two streams of logistic regressions, one to analyse additional contributions to occupational pensions, and one to examine additional contributions to personal pensions. As with Chapter Three the process of deciding which variables should be included and their coding was a lengthy one. There were issues concerning whether the "Bigfam" variable used to measure the effect of children should be retained, whether previous occupational pension coverage was a factor, and whether the squared variables for age and gross wage should be included. However, after a great deal of experimentation, a set of variables was decided upon, the coding for which is set out in Table 4.14.

Table 4.14: Variable coding for logistic regressions

Variable	Coding and Explanation
AC-Occupational	0=Not paying additional contributions to occupational scheme 1=Paying additional contributions to occupational scheme
AC- Personal	0=Not paying additional contributions to personal scheme 1=Paying additional contributions to personal scheme
Social Renter	0= Not social renter 1= Social Renter
Private Renter	0= Not private renter 1= Private renter
NchildH	Number of under-16s in household. 0=none 1=one 2=two 3+= three or more
Age	Age at last birthday: Interval variable

Couple Status	0=Married or co-habiting 1=Single, divorced, separated or widowed
Sex	0=Male 1=Female
Part Time	0=Full-time employed 1=Part-time employed
Gross Wage	Gross Wage (£ per week): Interval variable
GrWageSq	$(\text{Gross Wage})^2$
CTBandA	0=All other bands 1=Council Tax Band A
CTBandB	0=All other bands 1=Council Tax Band B
CTBandC	0=All other bands 1=Council Tax Band C
CTBandE	0=All other bands 1=Council Tax Band E
CTBandF	0=All other bands 1=Council Tax Band F
CTBandG	0=All other bands 1=Council Tax Band G
CTBandH	0=All other bands 1=Council Tax Band H
OccPen type	1=Member of DB occupational scheme 2=Member of DC occupational scheme
MemLength	Years spent in firm's occupational scheme: Interval variable
Shares	0= No share-based investments 1= Has share-based investments

All of these variables were used in Chapter Three with the exception of "occupational scheme type" and "MemLength". The former has been included to analyse whether members of DC occupational schemes are significantly more likely to pay additional contributions than DB members when other factors are accounted for. The latter has been included to test the plausible hypothesis that the number of years spent in an occupational scheme might explain some of the association between advancing age and the payment and additional contribution payment seen earlier in the chapter. At this point we can proceed to analyse the determinants of additional contributions to occupational pension schemes.

Table 4.15: Logistic regression: percentages paying additional contributions (occupational schemes)

Variable	B	S.E	Significance	R	Effect on Odds
Social Renter	-.17	.19	.37	.00	.84
Private Renter	-.03	.21	.88	.00	.97
NchildH	.00	.02	.99	.00	1.00

Age	.04	.01	.00	.15	1.04
OccPen type	.37	.11	.00	.05	1.45
Couple Status	.00	.12	.97	.00	1.01
Sex	-.04	.14	.79	.00	.96
Part Time	-.57	.31	.07	-.02	.57
Gross Wage	.00	.00	.01	.04	1.00
Shares	.39	.10	.00	.07	1.48
MemLength	.01	.01	.32	.00	1.01
CTBandA	-.10	.17	.54	.00	.90
CTBandB	-.36	.15	.02	-.03	.70
CTBandC	-.12	.13	.35	.00	.89
CTBandE	-.05	.15	.74	.00	.95
CTBandF	-.16	.20	.66	.00	.85
CTBandG	.10	.23	.65	.00	1.11
CTBandH	-1.00	.80	.21	.00	.37
Constant	-4.09	.27	.00	N/A	N/A

Cases=*3843*

It appeared from the first part of the chapter that by far the most important factor in determining additional contribution payment to occupational pensions is age. This is borne out by Table 4.15. Age is significant at the .1% level and has the highest "r" value at *.15*, whilst the final column shows that each additional year makes the individual *4%* more likely to pay additional contributions. This result combined with the insignificant finding for "MemLength" indicates that it is the age of the individual, not the length of membership of an occupational pension scheme which explains the association between advancing age and an increased likelihood of making additional contributions. The age finding demonstrates emphatically that the results from Hancock et al's (1995) notional exercise do not transfer to reality with occupational pensions. That sex and marital status are not significant variables merely confirm the point.

There are only four other significant variables. These relate to the type of occupational pension the member has, their gross income, whether they have share-based investments and the dummy variable for council tax band B. The data shows that people with a DC occupational scheme are 46% more likely to pay additional contributions than those with a DB scheme. This may be because DC scheme members know that the value of the scheme is produced by the contributions placed into it rather than by years of service. An alternative explanation is that some DC members are reacting to the lower level of total contribution to their scheme by the payment of additional contributions. The significance of gross income bears out the results from Table 4.3 and means that the observation that higher earners are more likely to make additional contributions is not totally due to extraneous factors. The presence of share-

based investments is associated with a greater likelihood of paying additional contributions, with shareholders being 50% more likely to pay additional contributions than non-shareholders. This suggests that those accumulating financial assets are also likely to be accumulating pension assets. The significance of the council tax band B dummy indicates that there is some form of property value effect in operation, with people living in lower value property being less likely to make additional contributions. It is important not to overplay this though, as most of the council tax band dummies produce negative co-efficients in relation to Band D.

The rest of the variables are not significant at the 5% level. This is useful information in itself as it suggests that some of the more striking results seen earlier were merely artefacts of other characteristics of the sample rather than the ones being observed. For example, men had a clear lead over women in the payment of additional contributions, which was significant at the .1% level. It now appears that this lead was due to other factors, meaning that there is no real difference in the propensity to pay additional contributions between the sexes. The same considerations apply when looking at employment, family and the other housing variables.

As with Chapter Three, we can explore those variables which appear to be important by performing a second logistic regression in which those variables which appear to have no explanatory power, as shown by an "r" rating of .00 are omitted.

Table 4.16: Logistic regression: percentages paying additional contributions to occupational schemes (variables with no explanatory power removed)

Variable	B	S.E	Significance	R	Effect on Odds
Age	.05	.00	.00	.17	1.05
OccPen Type	.34	.11	.00	.05	1.41
Part Time	-.62	.30	.04	-.03	.54
Gross Wage	.00	.00	.01	.04	1.00
Shares	.42	.09	.00	.07	1.53
CTBandB	-.30	.12	.02	-.03	.75
Constant	-4.15	.25	.00	N/A	N/A

Cases = 3858

Table 4.16 confirms some of the lessons from the previous equation, none of the variables have changed sign, but there have been some changes in significance. In the previous equation, only five variables ("Age Group", "Occpen Type", "Gross Income Band", "CTBandB" and "Shares") were significant at the 5% level. When the variables

with no explanatory power are removed, it appears that "Part Time" is also a significant factor at the 5% level.

The omission of the variables with no explanatory power does seem to have an effect on the strength of the positive and negative associations as described by the effect on odds; it also affects the fit of the variables as shown by the "r" value. The age, occupational status, share-based assets and income variables have a stronger effect in this regression than the last both in terms of the effect on odds and the "r" value. For the occupational pension type and council tax band B variables, the reverse is true.

This leaves us with six significant factors associated with the likelihood of additional contribution payment. Of these, age group, income, occupational status, council tax band B and share-holding status all seem to pull in one direction. They imply that additional contribution payment to occupational pensions is the province of well-off older full-time employees who are accumulating other assets. The other significant variable, occupational scheme type, does not conform to this pattern as it would be expected that older and better-off people would be expected to have DB, not DC schemes. That this variable is significant indicates that the structure of DC pensions encourages a greater level of additional contributions. This could be because individuals recognise that there is a lower level of overall contributions to these schemes, or because they see more point in making additional contributions to this type of scheme if they do not envisage a long tenure at the company.

At this point we can move on to the analysis of personal pension coverage. We can surmise from earlier results that age is not as important a factor for personal pensions as it is for occupational pensions. It is unclear which variables will have similar explanatory power in this case. As before, several specifications have been experimented with for this logistic regression, most notably the inclusion of the "Bigfam" variable used in Chapter Three. However, the specification seen below represents the best specification in terms of overall variance explained, subject to examining the effects of the categories seen elsewhere in this chapter.

Table 4.17: Logistic regression: percentages paying additional contributions (personal schemes)

Variable	B	S.E	Significance	R	Effect on Odds
Social Renter	-.52	.18	.00	-.05	.59
Private Renter	-.25	.19	.19	.00	.78
NchildH	-.07	.03	.02	-.04	.93
Age	-.00	.01	.82	.00	1.00

Couple Status	-.14	.13	.25	.00	.87
Sex	.20	.15	.19	.00	1.22
Part Time	-.12	.23	.62	.00	.89
Gross Wage	.002	.001	.00	.06	1.00
GrWageSq	-1.3E –06	4.9E –07	.01	-.05	1.00
Shares	.24	.12	.06	.03	1.27
CTBand A	.25	.18	.16	.00	1.29
CTBand B	.31	.16	.05	.03	1.36
CTBand C	.10	.16	.54	.00	1.10
CTBand E	.30	.21	.15	.01	1.35
CTBand F	.17	.30	.57	.00	1.19
CTBand G	-.35	.36	.32	.00	.70
CTBand H	-.92	.88	.30	.00	.40
Constant	-.34	.27	.21	/	/

Cases=1664

Table 4.17 shows that no variable has the level of influence in determining whether an individual pays additional contributions to personal pension schemes that age had for occupational schemes. There are four significant variables. The first of these concerns social renters who are significantly less likely to pay additional contributions, with the odds being only 59% of those for owner-occupiers. The other significant results involve gross income and the number of children in the household. The significance of the gross wage variable indicates that income is linked positively to the payment of additional contributions. However the negative co-efficient of "grwagesq" shows that this effect is less than proportional. Children are linked with a lower likelihood of additional contribution payment, with each child reducing the odds by 7%.

It is useful to survey some of the remaining results even though they are not significant. There are some variables which might have been expected to be significant given earlier results, but are not. The data indicates that women are not more likely to make additional contributions than men, a result that might have been expected given Table 4.5 where female full-time employees were found to be significantly more likely to make additional contributions than male full-time employees. This table also showed us that part-timers were significantly less likely than full-timers to pay additional contributions. However, the logistic regression tells us that once other factors (most probably income), are accounted for, part-timers are as likely to make additional contributions. In a similar vein, it appears that there is not a continuous housing status effect. Although we have seen that social renters are significantly less likely to make additional contributions than owner-occupiers, private renters are not less likely to make them. Council tax band, which acts as a proxy for control over housing resources

actually shows a negative, though not significant, association with likelihood of paying additional contributions rather than the positive association that might be expected.

Overall, the assertions made in Hancock et al's notional exercise do not seem any closer to the findings from personal pensions than they were to occupational schemes. Neither sex, marital status nor age appear to be significant factors. This indicates that the results of the notional exercise have again not transferred to reality.

As with additional contributions to occupational schemes, we can investigate the determinants of additional contributions to personal schemes in more detail by omitting those variables which in Table 4.17, appeared to have no explanatory power.

Table 4.18: Logistic regression: percentages paying additional contributions to personal schemes (variables with no explanatory power removed)

Variable	B	S.E	Significance	R	Effect on Odds
Social renter	-.46	.18	.01	-.05	.63
NchildH	-.08	.03	.01	-.05	.93
Gross Wage	.002	.001	.00	.05	1.00
GrWageSq	-1.3E -06	5.1E –07	.01	-.04	1.00
Shares	.20	.12	.09	.02	1.22
CTBand B	.22	.12	.05	.03	1.25
CTBand E	.22	.18	.22	.00	1.24
Constant	-.29	.13	.02	N/A	N/A

Cases = 1679

Table 4.18 shows that the omission of variables with no explanatory power does not affect the sign of the remaining variables, but it does affect their significance level in some cases. Where the number of children in the household was significant at the 5% level in Table 4.17, it is now significant at the 1% level. In contrast, the "Social Renter" variable has moved from significance at the 1% level to significance at the 5% level.

As measured by "r" value, the three most important factors variables influencing the payment of additional contributions are whether the individual is a social renter, the number of under-16s in the household and gross income. This implies that social renters, individuals with children and low earners are the least likely to make additional contributions to personal pensions. This would imply that unlike the position for personal pension coverage, which was associated with a disadvantaged position in terms of overall wealth, the payment of additional contributions is associated with an advantaged position. However we must consider the role of the squared variable for income, and the negative co-efficients for council tax band dummies G and H in Table

4.17. These imply that there is a "U-shaped" effect, meaning that additional contributions are more likely to be paid in the middle range of prosperity, rather than at either end.

Illustrative Cases

As with private pension coverage it is useful to provide some illustrative cases to examine the probability that an individual will pay additional contributions to an occupational or personal pension scheme. The revised regressions have been used rather than the originals, and in these, only those variables with explanatory power have been used. As before, there will be two cases for occupational pension members, and two for personal pension members. One case will have a comparatively high probability of making these contributions, and one will have a comparatively low probability. In order to estimate the probability that an individual will pay additional contributions, the co-efficients of the logistic regressions will be used to obtain a logit which will be entered into a formula in order to obtain the probability. As with Chapter Three, the formula to be used is: probability = $1 / 1+ e^{-(\alpha+\Sigma\beta_k X_{ki})}$, where the logit represents the superscript in the formula.

Case One

What is the probability that a fifty-six year old living in a council tax band D property, who holds shares while earning £620 per week in a full-time job and has a DC scheme, will pay additional contributions to an occupational pension scheme?

Logit = -4.15 + .05(56)- .30(0) + .43(1) +.0005(620) -.63(0) +.34(1)

= -4.15 + 2.8 +.43 +.31 +.34

= -.27

Probability = $1/ (1+ 2.718^{-(-.44)})$

= 1/ (1+ 1.31)

= .43

Case Two

What is the probability that a twenty-five year old living in a council tax band B property, who holds no share-based investments while earning £85 per week in part-time employment and has a DB scheme, will pay additional contributions to an occupational pension scheme?

Logit = -4.15 + .05(25) -.30(1) +.45(0) +.0005(85) -.60(1) +.36(0)

= -4.15 +.1.25 -.30 +.04 -.60

= -3.76

Probability = $1/ (1+ 2.718^{-(-3.76)})$

= 1/ (1+ 42.93)

= .02

Just as with occupational pension coverage, the illustrative cases show how strongly the probability that an individual will be paying additional contributions is linked to social advantage and disadvantage. For older, higher-paid workers, the probability that additional contributions will be paid can exceed 40%. At the other end of the scale, the probability can reach as low as 2%. As has been seen earlier, the key factor in determining the probability that an individual will pay additional contributions is age. Age represents over half of the difference in the logit values of the two examples given.

Case Three

What is the probability that an owner-occupier (council tax band B), with no children under 16, who holds shares and earns £400 per week, will pay additional contributions to a personal pension scheme?

Logit = -.29 -.52(0) +.22(1) -.08(0) +.20(1) +.0016(400) – 1.3E-06 (160000)

= -.29 +.22 +.20 + .64 -.21

= .56

Probability = $1/ (1+ 2.718^{-(.56)})$

= 1/ (1+ .57)

= .64

Case Four

What is the probability that a social renter (council tax band D), with two children under 16, who holds no shares and earns £110 per week, will pay additional contributions to a personal pension scheme

Logit = -.29 -.52(1) +.22(0) -.08(2) +.22(0) +.0016(110) –1.3E–06 (12100)

= -.29 -.52 -.16 + .18 -.02

= -.81

Probability = $1/ (1+ 2.718^{-(-.81)})$

= 1/ (1+ 2.25)

= .31

As was the case with Chapter Three, the probability that an individual will pay additional contributions to a personal pension is not skewed as strongly as the results for occupational pensions. However, there is a good deal of spread around the central tendency. The probability of paying additional contributions to a personal pension can be almost two-thirds, but can also fall as low as 31%. The social renter dummy implies that this group are especially likely to have a low likelihood of additional contribution payment.

Conclusion

Once again, the use of cross-tables and logistic regressions has provided useful and complementary information. In terms of the cross-tables, it is clear that while there are similarities between those paying additional contributions to occupational and personal pensions, the differences over-ride them. The broad similarities include the effects of children, divorce and housing status. However there are extremely important differences in the varying impact of age and sex. In occupational schemes, men are significantly more likely to pay additional contributions than women. Age is the most important factor of all, being at least a partial explanation in other areas such as housing status and household composition. By contrast with this, age is less important as a general variable in personal schemes, while women full-timers are more likely to pay additional contributions than full-time men.

The logistic regressions indicate that some of the factors which seem important are not significantly associated with additional contribution payment, examples include sex along with housing (except for council tax band dummy B) for occupational schemes and employment status for personal schemes. They also show that the significant factors are generally different for occupational and personal schemes. For occupational pensions, the significant factors are age, share-based investments, employment status, income, council tax band dummy B and the type of occupational pension scheme. Age was clearly the most important factor of all, as can be seen through its "r" value of .17. DC pension holders are over 40% as likely to pay additional contributions as DB pension holders. This could indicate that some DC members are reacting to their position by paying additional contributions. That the presence of share-based investments was significant indicates that those accumulating pension assets were also likely to be accumulating financial assets, a theme which will be pursued more extensively in Chapter Seven. The idea that the payment of additional contributions is linked to fiscal well-being is supported by the significance of income, council tax band dummy B and employment status.

For personal pensions, the significant variables are social renter status, gross wage, gross wage squared and the number of children in the household. These show that social renters are less likely to have personal pension coverage than owner-occupiers, and when they do, they are less likely to pay additional contributions. This indicates that this group are more likely to be reliant on state provision in retirement. The data also shows that unlike the situation with personal pension coverage, increasing levels of income make the individual more likely to make additional contributions, subject to the increasing effect of the squared variable. This means that low earners are more likely to have a personal pension, but the high earners amongst them are more likely to make additional contributions. Children appear to be deleterious to the likelihood of paying additional contributions, as they were to acquiring personal pension coverage. This reinforces the message that any attempt by government to raise the level of private pension contributions must target families with children.

It is also essential to recognise that while additional contributions to occupational pensions are largely the preserve of a self-selected minority, additional contributions to personal pensions are truly a mass phenomenon. Perhaps this is a function of the induction process into a pension scheme. With personal schemes, the level of contribution is decided at the outset, by contrast in occupational schemes, the decision taken is whether or not to join the scheme. This could perhaps begin to explain the huge

difference in the age-additional contribution payment schedules between occupational and personal scheme members. However, despite the greater willingness for women and part-time workers to pay additional contributions in personal-type schemes, we must remember that 50% are still only paying in the COR, which Chapter One indicates is not enough to give an adequate retirement. If we pursue this line of thinking, compulsion (ensuring that a higher proportion of earnings goes into pension provision, whether from employer or employee) will have to be seriously considered. It also avoids the otherwise necessity of encouraging particular groups to keep contributing.

Finally, it must be remembered that whether a voluntary or compulsion-based vehicle is used to increase contributions to a second pension, it does not answer the question as to what is to be done about those not in the labour market, or the self-employed.

Chapter Five: Scheme Contributions

Introduction

Chapter Four has provided a considerable amount of information on the percentage paying additional contributions to occupational and personal pensions. It is important to remember additional contributions are built on contributions paid automatically into a scheme as a result of membership. Chapter Five will analyse these contributions for both occupational and personal pension holders. As with Chapters Three and Four, Chapter Five is organised in two parts. The first is a straightforward analysis of scheme contributions to private pensions for occupational and personal pension holders. The second part will use regression analysis to analyse which variables have the greatest level of association with high and low scheme contribution payment.

It is important to recognise that although we can find out the contribution or input from an employee to a scheme, this is not an infallible guide to the likely output. There are two points to be made here. The first is that data measuring the level of scheme contributions made by the employee will not take account of non-contributory occupational schemes. The second is that due to the limitations of the questions in the FRS, there is unfortunately no information on employer contributions to pension schemes. This is a pity, but should not affect the implications of any analysis of employee contributions. If it is found that certain groups pay higher automatic contributions into pension schemes, then there is no reason to suppose that this should be overturned by the employer contribution element.

It is essential to recognise what we are measuring with the data for personal pensions. It is reasonable to conclude that these contributions are paid through a group personal pension environment, given that these contributions are not classed as voluntary. This means that these results are not likely to cover the majority of personal pension arrangements. However this does have the virtue of comparability with occupational pension holders. The base of contributions in both cases is the contracted-out rebate. Therefore, it will be possible to analyse whether group personal or occupational pension holders are paying more towards their pensions.

Although this data has its limitations, it does provide information as to how much people are contributing towards their retirement needs. This should provide answers to many interesting questions. Will those in DB occupational schemes pay

higher contributions than those in other arrangements? Will men make higher contributions than women? Will older groups have higher contributions than younger groups? Does the pension contribution taken as a percentage of income rise as income rises?

Methodology

As before, this chapter will be based on responses given to the 1994-95 Family Resources Survey. However, as Chapter Two points out, due to the structure of the FRS, responses relating to the amount paid in pension contributions are garnered through the employee pay details section as deductions from salary, rather than the pensions section. As a result, some people with an occupational or personal pension were not given the opportunity to answer questions on the level of contribution made. There is the further point that in measuring the scheme contributions to personal pension holders, we have to be sure that the scheme contribution relates to this and not an occupational pension, which is done by excluding those with an occupational pension. This has the result of reducing the number of cases available for analysis.

The second point to note is that as this chapter deals with the continuous data relating to scheme contributions, it is important to have a gross income record for the individual as a basis for comparison. As a result, the only cases used in this Chapter are those that also have a reading for gross wage. This has the effect of decreasing the number of cases available for analysis, but means that for every case, the percentage of gross income paid in pension contribution can be calculated. This has the by-product that only workers who consulted a payslip have been sampled, but is an unfortunate necessity given that the percentage of income paid in pension contribution should be measured gross rather than net. This is because pension contributions are taken out of gross wages, and have no set relationship to take-home pay.

As a result of these methodological issues, the cell sizes in this chapter are smaller than those in Chapter Four. The total available sample is 2366 for occupational schemes, but only 228 for personal schemes. However these sample sizes are certainly large enough to make comparisons.

Section A: Scheme contributions to Private Pensions

Overall Scheme Contribution

The first stage is to analyse the level of pension contribution being paid by occupational and personal pension holders. The absolute measures to be used are the mean and median. However the third measure, median percentage contribution, is relative. For all cases, the amount of scheme contribution was divided into gross income. The median of this tells us what the 50th percentile is paying in scheme contributions as a proportion of gross income.

For occupational pension holders, the use of these measures might be expected to confirm existing evidence that DB pension holders pay more automatically into their schemes than DC pension holders. It will also be useful to compare the contribution levels of personal pension holders to both DB and DC occupational members.

Table 5.1: Pension contribution by scheme type

		Pension Contribution			
		Mean Contribution (£)	Median Contribution (£)	Median percentage contribution (%)	Cases
Scheme type	Personal	13.10	10.61	5.00	228
	DB	16.59	14.09	5.00	1964
	DC	12.89	11.51	4.26	402
	All Occupational	15.96	13.47	5.00	2366

Table 5.1 demonstrates clearly that DB pension holders do pay more into their pension schemes than DC pension holders, in both absolute and relative terms. A t test of the difference in the means was significant at the .1% level. Table 5.1 also shows that absolute pension contributions to personal pensions are lower overall than those paid to occupational pensions. However this hides a degree of variation between occupational pension types. In absolute terms, contributions to personal pensions are less than those to DB occupational schemes, and are very similar to those being paid into DC schemes, with the mean being slightly higher and the median slightly lower. On a relative basis, payments made are similar between personal pension and DB scheme members, at 5%

of gross salary, with DC scheme members lagging behind. These statistics call into question the view of personal pensions as a necessarily inferior option.

Other lessons can be gleaned from Table 5.1. The first is that the mean figures seem to be larger than the median figures in both absolute and percentage terms. This is consistent with a scenario where a few large contributions pull up the mean, but of course leave the median untouched. The second point is that the gap between the mean and median is larger for DB than DC pension holders, whether occupational or personal. This can be explained with recourse to the nature of the different types of pension scheme. It would be expected that DB occupational schemes have this greater disparity owing to their incentive structure, which works to the benefit of those with a long tenure with the firm, who tend to be higher earners.

Income

The previous table has given the total picture, but it is useful to break this down further. Previous chapters have demonstrated that income is an important factor, linked to higher coverage with occupational schemes, but with lower coverage for personal schemes. It would be expected that the absolute level of contribution would rise with income, but it will be useful to see if these patterns are borne out by analysis of relative scheme contributions.

Table 5.2: Scheme contribution by income level and pension type

		Median pension contribution and pension type					
		DB		DC		Personal	
		Absolute (£)	Relative (%)	Absolute (£)	Relative (%)	Absolute (£)	Relative (%)
Gross In-come Level	£0-99.99	4.00	5.00	2.58	4.73	(4.27)	(5.10)
	£100-199.99	7.24	5.00	6.74	4.50	6.80	4.44
	£200-299.99	12.13	5.00	10.90	4.61	11.92	4.98
	£300-399.99	18.65	5.25	15.55	4.49	17.87	5.51
	£400-499.99	24.41	5.87	15.58	3.40	(25.42)	(6.00)
	£500+	31.40	5.00	21.30	3.85	(41.77)	(5.57)
	Total	14.09	5.00	11.51	4.26	10.61	5.00
	N	1964		402		228	

Brackets denote a cell size of 20 or less

Table 5.2 indicates that the amount of gross income devoted to automatic pension contributions rises with income. For DB and DC occupational schemes, as well as for personal pensions the median level of absolute contribution in the £500+ income bracket is at least seven times greater than that devoted in the £0-99.99 bracket. The more interesting data concerns levels of contribution as a percentage of gross income. We can see from this that high and low earners are not members of qualitatively different schemes. For members of DB schemes, the median contribution level in four of the six income brackets is 5% of income, though we must recognise that due to regressive benefit formulas, as noted in Chapter One, low earners may receive a lower return on their contributions. For DC occupational and personal pension schemes, the amount paid in contributions is related directly to the eventual payout. The median percentage contribution made by low earners to DC occupational schemes is the highest of all the income brackets whilst low earners contributing to group personal pension arrangements are still contributing 5% of their income.

Sex

The previous tables have given the overall picture and scheme contributions broken down by income level. It is useful however, to break down scheme contributions by sex. Previous chapters have showed that men are more likely to be members of occupational schemes than women, and are more likely to make additional contributions. This does not apply to personal pensions, where although men are more likely to be members, women are certainly as likely to make additional contributions.

Table 5.3: Median Pension contribution by scheme type and sex

			Pension Type			
			Occupational	DB	DC	Personal
Median Pension Contribution	Male	Absolute (£)	13.41	14.02	11.37	10.88
		Relative (%)	5.00	5.00	4.21	5.00
	Female	Absolute (£)	13.64	14.35	11.85	9.65
		Relative (%)	5.31	5.72	4.50	4.29
	N		2366	1964	402	228

Table 5.3 indicates that women are in fact paying more of their income in occupational pension contributions than men. This applies in both absolute and relative terms. The disparity is especially noticeable with respect to DB pensions where the difference in relative pension contribution is a full half-percent. This implies clearly that if women are members of an occupational pension scheme, there is no reason to expect that less will flow into it on grounds of sex. Although women seem to be making higher scheme contributions than men to occupational schemes, the reverse appears to be true with personal schemes. In this case, men are contributing more in absolute and relative terms. However it must be remembered that this is based on a far lower sample.

Employment Status

It is also useful to examine scheme contributions with respect to employment status, as this will allow us to separate the effects of employment status and sex, and obtain a more accurate picture of scheme contributions amongst different sections of the workforce. This will be done firstly for occupational schemes. It was demonstrated in Chapter Three that part-time workers were less likely to have an occupational pension, and Chapter Four showed that part-timers were less likely to pay additional contributions to an occupational pension. Given this evidence, it could be presumed that less would be deducted in contributions to an occupational pension for part-timers than full-timers.

Table 5.4: Contribution to occupational pensions by scheme type and employment status

		Median Pension Contribution					
		Male full-time		Female full-time		Female part-time	
		Absolute (£)	Relative (%)	Absolute (£)	Relative (%)	Absolute (£)	Relative (%)
Pension Type	DB	14.04	5.00	14.88	5.82	6.34	4.74
	DC	11.40	4.18	12.98	4.82	7.44	5.00
	Total	13.60	5.00	14.56	5.64	6.65	4.91
	N	1766		501		55	

Table 5.4 shows clearly that in absolute terms, female part-timers contribute far less than full-timers of both sexes. In relative terms, the picture is more complex. Overall, female part-timers have lower contributions than female full-timers, but pay roughly the same percentage of their income in pension contributions as male full-

timers. For DC pension schemes, female part-timers make the highest median percentage contribution. However, this outcome is likely to be influenced by the low cell size of the female part-time group.

The next step is to analyse scheme contributions with respect to employment status for personal pension holders. Cross-tables from previous chapters show that part-time workers are significantly less likely to have a personal pension or pay additional contributions than full-timers. However Table 5.4 has demonstrated that part-timers do not have markedly lower scheme contributions than full-timers. Due to the structure of the FRS, there is no data for the self-employed group. This is a pity, as would have been interesting to analyse the scheme contributions of the self-employed, as they would have a measure of control over the scheme contributions that they pay. For the following table, the full-time and part-time employed groups have not been split by sex as this would result in insufficient cell sizes to draw meaningful conclusions.

Table 5.5: Personal pension contribution by occupational status

		Pension contribution			
		Mean (£)	Median (£)	Median percentage contribution (%)	Cases
Employment Status	Full time	12.74	10.57	5.00	209
	Part time	16.92	11.40	4.86	14
	Total	13.00	10.65	5.00	223[13]

The first point to make with respect to this table is that due to the vagaries of the FRS, it appears that part-timers with group personal pensions are earning more than full-timers, though a t test shows that difference in the means is not significant. While the part-timers with this arrangement are likely to be a better-off minority than the average, it is unlikely that part-timers with a group personal pension are better off than the equivalent full-timers. For this sample, part-timers appear to have a higher absolute contribution level to personal pensions than their full-time counterparts. However the median percentage contribution for each of the two groups is similar at around the 5% mark. This tallies with all evidence so far, that median contributions for all groups are very similar at around the 5% level.

[13] The number of cases is lower than the total due to the omission of the "unemployed" and "not working for any other reason" categories

Age

As in Chapter Four, this is an extremely important section of the analysis. One of the key relationships to be investigated is that between pension contributions and age. Chapter Four demonstrated that there was certainly a relationship between additional contribution payment and age. For occupational schemes it was shown that the likelihood of making additional contributions increased with age, while with personal pensions, logistic regression analysis demonstrated that the likelihood decreased with age. It was also clear that different age-additional contribution payment schedules existed for DB and DC occupational pension holders. Analysis of scheme contributions will allow an assessment of how far the additional contribution data is a reaction to the state of affairs within the scheme.

Table 5.6: Scheme contribution by pension type and age

		Median Pension Contribution					
		DB		DC		Personal	
		Absolute (£)	Relative (%)	Absolute (£)	Relative (%)	Absolute (£)	Relative (%)
Age Group	16-20	(6.94)	(3.57)	(6.33)	(4.17)	/	/
	21-25	11.57	4.99	8.17	2.60	(6.00)	3.00
	26-30	13.19	4.55	12.51	4.42	10.65	5.98
	31-35	14.30	4.85	12.98	4.50	12.11	5.00
	36-40	14.52	5.00	13.27	4.20	9.96	5.32
	41-45	16.06	5.86	10.01	4.25	10.82	5.00
	46-50	13.74	5.54	9.68	4.22	10.70	5.00
	51-55	14.85	5.34	9.24	4.49	10.35	4.77
	56-60	13.05	5.01	8.71	4.25	(13.25)	5.50
	61-65	12.33	5.00	(12.08)	(4.20)	(19.01)	5.64
	Total	14.09	5.00	11.51	4.26	10.61	5.00
	N	1964		402		228	

Brackets denote a cell size of 15 or less

Table 5.6 shows clearly that the relationship between age and scheme contributions is more complicated than that between age and additional contribution payment. For DB schemes, the level of scheme contribution rises to hit a peak in the 41-45 age group, and falls gently thereafter. Relative contributions appear to be higher for the over-40 age group, than the under 40s. The pattern of scheme contributions for DB schemes by age is very similar to that of scheme coverage by age, as described in Table 3.6.

Analysis of scheme contributions to DC pensions shows the benefit of using both absolute and relative measures. Absolute measures indicate that younger age groups are paying more in scheme contributions to DC schemes than older groups. Contributions build to a major peak in the 36-40 age group, and fall thereafter. It is important to note though, that as with the analysis of additional contributions, the amount paid does seem to pick up in the 61-65 age group; however, the low cell size for this group makes this result unreliable. The use of a relative measure tells a different story. It appears that from the 26-30 age group onwards, the median percentage contribution in each age group is in the very narrow 4.25-4.50% range. This indicates that contributions to DC occupational schemes do not vary much according to age, unlike DB schemes.

Scheme contributions to personal pensions follow a similar pattern to DC schemes. In absolute terms, contributions rise to hit an early peak in the 31-35 age group. After this, they fall back to a consistent reading in the £10-11 range before reaching its highest readings in the late fifties and early sixties. However it must be noted that these readings may be unreliable due to low cell sizes.

It also makes sense to examine age-scheme contribution schedules with respect to sex. This will only be done for occupational pension holders, as there are not enough readings for personal pension holders to sustain useful sample sizes. We will be able to examine whether men and women follow the same pattern in DB schemes, as was the case with the relationship between age and additional contributions. It will also be useful to examine whether the proportion of contribution paid is higher at the start of working life for both men and women in DC schemes.

Table 5.7: Scheme contribution by pension type, age and sex.

		Median pension contribution (%)			
		Male		Female	
		DB	DC	DB	DC
Age Group	16-20	(3.52)	(4.17)	/	/
	21-25	3.97	3.22	6.00	(2.08)
	26-30	4.27	4.74	5.74	3.75
	31-35	4.75	4.26	5.00	(5.00)
	36-40	5.00	4.11	5.29	(4.50)
	41-45	5.77	3.92	6.00	4.65
	46-50	5.24	4.13	5.94	5.79
	51-55	5.24	4.49	5.92	(3.73)
	56-60	5.00	4.24	5.31	(4.34)
	61-65	5.00	4.20	(4.48)	/
	Total	5.00	4.21	5.73	4.50

	N	1497	300	466	102

Brackets denote a cell size of 15 or less

Table 5.7 shows us that scheme contributions for men and women are higher to DB than DC schemes throughout the vast majority of the age range. The DC median scheme contribution for men only exceeds the DB contribution once, for the 26-30 age group, while for women, this does not happen at all. This indicates that DC scheme holders are paying less automatically to their pension than DB pension holders. This is all the more important when we consider the nature of DC schemes, as these contributions are related directly to retirement income.

It is clear that male and female DB pension holders do not have similar age-scheme contribution patterns. The male pattern involves scheme contributions starting off low, and rising to reach a peak in the early forties and declining thereafter. The female pattern starts at the 6% level and declines, before picking up again to hit 6% again in the 41-45 age range and maintains a median 5.9% contribution rate into the mid-fifties.

It also seems that male and female DC pension holders also have different age-scheme contribution patterns. The male pattern shows that contributions are higher during the early part of working life. The female pattern indicates that scheme contributions are greatest in the middle of working life, peaking in the 46-50 age group. These findings must be qualified by the small cell sizes observed for female DC holders.

Marital Status

Previous chapters have demonstrated that although the divorced group have lower occupational pension coverage than married couples, they are at least as likely to pay additional contributions. Other marital status groups such as co-habitees and single people tended to have lower occupational pension coverage, and were less likely to pay additional contributions, though this was at least partly due to their lower average age. This all makes it difficult to predict the level of scheme contributions for different marital statuses in advance.

Table 5.8: Scheme contribution by pension type and marital status

		Median pension contribution					
		DB		DC		Personal	
		Absolute (£)	Relative (%)	Absolute (£)	Relative (%)	Absolute (£)	Relative (%)
Marital Status	Married	13.94	5.01	12.00	4.58	10.41	5.00
	Living as a couple	14.11	5.07	9.88	3.79	13.94	5.00
	Single/ never married	15.17	5.00	11.24	3.75	(5.54)	(2.51)
	Widowed	12.05	5.00	(5.97)	(4.16)	/	/
	Separated	12.98	5.39	(13.33)	(5.01)	/	/
	Divorced	14.41	5.46	11.62	4.49	(11.25)	(4.42)
	Total	14.17	5.00	11.51	4.26	10.61	5.00
	N	1952		402		228	

Brackets denote a cell size of 20 or less

Table 5.8 demonstrates that the pattern of scheme contributions varies between DB and DC schemes. In DB schemes, the absolute contributions of the married, co-habiting and single groups are very similar, but in terms of relative contribution, the median member of the divorced group is contributing 5.5% of gross income as opposed to 5% for the other groups. However, these patterns do not transfer to DC schemes where the co-habiting and single groups seem to be contributing less than the married or divorced groups, which now have a similar level of median payment. Little can be gleaned from analysis of scheme contributions to personal pension schemes due to the low cell sizes. However, relative contributions are exactly 5% of gross income for the married and co-habiting groups. This indicates that relative contributions are largely constant across society.

The preceding table did not take account of sex. It may be that marital status has a different impact on the actions of men and women with regard to scheme contributions. Understanding the relationship between scheme contribution and marital status is especially important for women, as it is possible that they had been relying to a greater or lesser degree on a husband's retirement arrangements. Due to an insufficient number of cases, the following table will concentrate purely on occupational pension members.

Table 5.9: Contributions to occupational pensions by scheme type, marital status and sex.

	Median Pension Contribution (%)	
	Male	Female

		DB	DC	DB	DC
Marital Status	Married	5.12	4.76	4.00	3.32
	Living as a couple	5.13	3.79	(5.00)	(4.37)
	Single/ never been married	4.38	3.62	5.87	4.01
	Widowed	4.32	(4.57)	5.64	(4.02)
	Separated	4.79	(4.99)	5.90	(5.08)
	Divorced	4.80	3.50	5.76	5.00
	Total	5.00	4.21	5.71	4.50
	N	1493	300	459	102

Brackets denote a cell size of cell size of 15 or less

Table 5.9 demonstrates clearly that contribution patterns vary between men and women. For men, the married group is among the highest payers of scheme contributions, in both DB and DC schemes. For women, the opposite is true.

It is useful to compare the scheme contributions of the married and divorced groups. Married men pay more scheme contributions than divorced men, in DB and DC schemes. For married women, the opposite is true. It is important to emphasise the size of this gap. The median divorced woman is paying at least 5% of her gross income in scheme contributions as opposed to the median of the married group which is 4.00% in DB schemes and only 3.32% in DC schemes. It is difficult to find a ready explanation for this phenomenon given that occupational pension holders do not choose the level of scheme contributions. However it is possible that married women are not as immediately concerned with the need to make pension arrangements, given that they can rely to an extent on a husband's provision. This line of argument can be related to the scheme contributions being made by other groups. For example, the scheme contributions of the single group are less than married couples in the case of men, but more in the case of women.

Housing Status

Previous chapters have investigated pension accumulation patterns with respect to housing status. Cross-tabulations have demonstrated that owner-occupiers have better private pension coverage than renters, and that there is a cleavage amongst renters, with private renters having better coverage than social renters. It was also found that these trends were replicated largely with regard to additional contribution payment, with only unfurnished private renters matching the additional contribution payment of owner-

occupiers. However it is unclear whether these patterns will be mirrored in a high level of scheme contributions for owner-occupiers given the evidence from earlier in this chapter. In order to produce meaningful cell sizes, it has proved necessary to reduce the number of housing status categories to social renters, private renters, and owner-occupiers. The readings have also been pooled for the DB and DC occupational categories.

Table 5.10: Scheme contribution by pension type and housing status

		Median pension contribution			
		Occupational		Personal	
		Absolute (£)	Relative (%)	Absolute (£)	Relative (%)
Housing Status	Social Renter	9.66	4.90	(6.15)	(3.72)
	Private Renter	13.49	4.90	(13.52)	(5.67)
	Owner-occupier	13.99	5.00	10.80	5.00
	Total	13.47	5.00	10.61	5.00
	N	2366		228	

Brackets denote a cell size of 20 or less

Analysis of scheme contributions with respect to housing status provides similar information to that found elsewhere in this chapter. Although the absolute level of scheme contribution paid may vary, the median amount paid is usually close to 5%. This is borne out especially by scheme contributions to occupational schemes. Social renters are paying less than other tenure types, but the median relative amount paid is within one-tenth of one per cent, for all three groups. The data for personal schemes is hampered by the especially low cell sizes (eight and seven respectively), for the social and private rented groups.

Household Composition

Cross-tabulations in Chapter Four indicated that households with children were less likely to pay additional contributions than those without, though this was found not to be a significant factor in logistic regressions. Nevertheless, it is useful to compare, on an overall basis, whether households without children pay more of their income in scheme contributions than households with children. For the following table, as in other chapters, household types that include pensioners have been excluded to ensure equivalence between the categories.

Table 5.11: Scheme contributions by number of children in household and scheme type

		Median pension contribution			
		Occupational		Personal	
		Absolute (£)	Relative (%)	Absolute (£)	Relative (%)
Number of children in household	0	13.38	5.00	10.65	4.86
	1	12.85	5.14	12.11	5.55
	2	14.88	5.25	9.01	5.40
	3+	14.26	4.74	(5.52)	5.77
	Total	13.58	5.00	10.50	5.00
	N	2250		226	

Brackets denote a cell size of 20 or less

Table 5.11 indicates that for occupational pension holders, there does not seem to be a link between the number of children in a household and the contributions made. The median contribution for each group is close to the overall median. This is a useful result as it implies that any additional contributions being paid are coming from a level playing field and not a scenario where those without children have significantly higher scheme contributions. With personal pensions there is a trend towards those with children paying a slightly higher percentage of their income in scheme contributions than those without children, however it must be remembered that these results are affected by the low cell sizes available.

It is important to note that the results in Table 5.11 are influenced by the large cell sizes of the two adults with children groups. This influence can be removed by looking at scheme contributions with regard to the number of adults in the household for households with children. This will allow a comparison of the contributions made by lone parent households as compared to other households with children. This should confirm that lone parent households pay as much in scheme contributions as other households with children. Unfortunately, due to low cell sizes, the exercise has only been undertaken for occupational scheme members

Table 5.12: Contributions to occupational schemes for households with children

		Median Pension Contribution		
		Occupational		
		Absolute (£)	Relative (%)	Cell Size
Number of adults in	1	14.19	5.98	109
	2	14.08	5.00	690

household	3+	13.47	5.50	82
	Total	14.02	5.13	881

Table 5.12 shows clearly that single adult with children households are not at a disadvantage in terms of scheme contributions. The point must be made that the cases represented here are not a reflection of the average, otherwise it would imply that lone parent households have higher incomes than dual parent households, which is not the case.

With this caveat in mind, the data indicates that in both absolute and relative terms, lone adult with children households contribute more of their income in scheme contributions than two adults with children households. This can be related to the findings in Chapter Four that there was no significant difference between the additional contribution payment of lone and dual parent households. It is clear that when lone parents have access to occupational pension schemes, the schemes have as high a contribution rate as that for any other group.

Interim Summary

This section has produced some noteworthy results. These can be summarised as follows:

- Contributions paid into DB occupational schemes are higher than those paid into DC occupational schemes, in both absolute and relative terms. Scheme contributions to personal pensions are lower than those to occupational schemes, but comprise the same percentage of income as contributions to DB schemes.
- As expected, absolute scheme contributions rise with income. The percentage of gross income paid as scheme contributions rises with income for DB occupational and personal pension holders, but falls for DC occupational pension holders.
- Women pay higher scheme contributions than men to occupational schemes in both absolute and relative terms. In personal pensions, the situation is reversed.
- Female part-timers pay less in scheme contributions to occupational pensions in absolute terms than full-timers of either sex, but as much in relative terms.
- In DB occupational schemes, older age groups may pay more in scheme contributions than younger groups. In DC occupational schemes, absolute scheme

contributions are higher for younger groups. Scheme contributions to personal pensions are fairly constant in relative terms.

- Age-scheme contribution profiles vary between men and women.
- Married men pay more in scheme contributions than divorced men, for women, the opposite is true.
- All housing status groups pay the same relative contribution to occupational schemes, though in absolute terms, social renters pay less.
- There is no relationship between the number of children in a household and the scheme contribution paid for occupational schemes, but there is a positive relationship for personal schemes.
- Lone parent households pay at least as much as dual parent households in scheme contributions. This is true in both absolute and relative terms.

It is difficult to draw conclusions from analysis of scheme contributions to private pensions because it is an area over which people do not have direct control. The level of contribution is decided automatically as a function of belonging to a particular scheme, and as such there is limited room for human agency. However, analysis of scheme contributions is important, as it provides evidence of the base from which other pension decisions are made.

The most important point to note is that DB occupational pension holders pay a greater amount directly to their pensions than DC members in both absolute and relative terms. That DC pension holders are contributing less than DB holders is important for two reasons. The first is that due to the nature of DC pensions, these contributions are related directly to the size of the final payout, whereas the relationship between contributions to DB schemes and the pension entitlement gained is more oblique. The second reason is that as DC occupational coverage expands, it is reasonable to expect, other things being equal, that the resources devoted automatically to a pension will shrink. Scheme contributions to personal schemes are even lower, and it must be remembered that the majority of personal pension members are only devoting the COR to their personal pension.

When we go beyond the overall levels of contribution, it is clear that a disadvantaged position in the labour market is not associated automatically with a low level of relative scheme contributions. With respect to income, even at the lowest levels, DB and personal pension holders are paying 5% of income in scheme contributions, while for DC occupational members, the percentage paid declines as income rises. Part-

timers do not appear to be paying less than full-timers or renters less than owners. Women seem to be paying more to occupational schemes than men, though the relationship is reversed for personal schemes.

Section B: Regression Analysis of Scheme Contributions

The earlier part of this chapter has analysed scheme contributions to private pensions with respect to various cleavages in society. As with previous chapters, the next step is to discover the importance of each variable when all factors are taken into account. The previous two chapters used logistic regression analysis for this purpose. This would not be appropriate for this chapter as we are investigating a continuous variable, scheme contributions, rather than the dichotomous variables that have been investigated previously. The appropriate tool for this chapter is multiple regression analysis. This will be used to analyse scheme contributions for both occupational and personal pension schemes.

To complete these regressions, it is necessary to investigate the factors highlighted earlier in the chapter; but we have seen from Chapters Three and Four that other factors may have a part to play, and should therefore be included. After an amount of experimentation, a set of variables was decided upon, the coding for which is given in Table 5.13.

Table 5.13: Coding of variables for OLS regressions

Variable	Coding and Explanation
Social Renter	0=Social Renter 1=Not Social renter
Private Renter	0=Private Renter 1=Not Private Renter
NchildH	Number of children in household 0= None 1=One 2=Two 3+=Three or More
Bigfam	0=Zero, one or two children in household 1=Three or more
Age	Age at last birthday: Interval variable
Occupational pension Type	1=Member of DB scheme 2=Member of DC scheme
AC-Occupational	0= Not paying additional contributions to an occupational scheme 1= Paying additional contributions to an occupational scheme
AC- Personal	0= Not paying additional contributions to a personal scheme

	1= Paying additional contributions to a personal scheme
Couple Status	0= Married or co-habiting 1= Single, divorced, separated or widowed
Sex	0=Male 1=Female
Part Time	0=Full Time 1=Part Time
Gross Wage	Gross wage (£ per week): Interval variable
Shares	0= Does not have share-based investments 1= Does have share-based investments
CTBand A	0= All other bands 1= Council Tax Band A
CTBand B	0= All other bands 1= Council tax Band B
CTBand C	0= All other bands 1= Council tax band C
CTBand E	0= All other bands 1= Council tax Band E
CTBand F	0= All other bands 1= Council tax band F
CTBand G	0= All other bands 1= Council tax band G
CTBand H	0= All other bands 1= Council tax Band H

Most of these variables and their coding will be familiar from earlier chapters. However, these regressions feature "additional contributions" variables as an independent factor for both occupational and personal schemes. These variables have been included in order to analyse whether those paying additional contributions tend to pay more or less in scheme contributions. If more, then it could be hypothesised that these members were building on an already strong position, if less, then it could be intimated that they were trying to compensate for this weakness.

At this point we can proceed to analyse the payment of scheme contributions to occupational schemes. The first regression will analyse the absolute amounts being paid.

Table 5.14: Regression of absolute scheme contributions to occupational schemes

Variable	Regression with all variables	Regression of significant variables only
Social Renter	-.18 (.65)	
Private Renter	.19 (.68)	
NchildH	.10 (.22)	

Bigfam	-1.26 (.92)	
Age	.06** (.02)	.07** (.02)
AC- Occupational	.08 (.43)	
Occupational pension type	-1.83** (.43)	-1.77** (.40)
Couple Status	-.69 (.44)	
Sex	1.28** (.47)	.73* (.35)
Part time	.00 (.97)	
Gross Wage	.05** (.00)	.05** (.00)
Shares	-.79* (.35)	-.78* (.33)
CTBand A	-1.40* (.58)	-1.26** (.44)
CTBand B	-.73 (.51)	
CTBand C	-.28 (.47)	
CTBand E	-.74 (.57)	
CTBand F	.97 (.78)	
CTBand G	1.51 (1.00)	
CTBand H	-5.01 (2.87)	
Constant	.23 (1.04)	

Cases =2212

*= significant at 5% level

**= significant at 1% level

It appeared from earlier in the chapter that age and income level were important factors linked to the amount of scheme contributions being paid. Table 5.14 confirms this, with both variables being associated with higher scheme contributions, at the 1% level of significance. The other two variables which are significant at the 1% level are sex and occupational scheme type. The former confirms the findings from earlier in the chapter that women are paying a higher percentage of their income as scheme contributions than men. However we must remember from the analysis of the sample in Table 2.3 that Chapter Five has a different population than the whole, being less female

and more full-time. This may imply that this finding is an artefact of this different sample population. The clear significance of occupational scheme type indicates that those with DC pensions are certainly paying less in scheme contributions than those with DB pensions. Two other variables, share-based asset status and the council tax band A dummy are significant at the 5% level. These indicate conversely that those with share-based assets (presumably better-off sections of the sample) are paying a lower percentage of their income in scheme contributions, but that those living in council tax band A property are paying less than those in band D. When the significant variables are used in a second regression we can see that each one retains its sign, and either keeps or increases its significance.

No other variables are significant. This is important as it indicates that there are no significant effects connected with employment status, housing ownership status or children, which shows that these groups are not disadvantaged in terms of automatic contributions to occupational pensions.

It is possible to investigate further by changing the dependent variable to scheme contributions as a percentage of gross income. This should provide a better test of the relationship between scheme contributions and income. The same format will be used, with all relevant variables used in the first regression, and the significant ones used in a second regression.

Table 5.15: Regression of scheme contributions to occupational schemes, as a percentage of gross income

Variable	Regression with all variables	Regression of significant variables only
Social Renter	-.07 (.19)	
Private Renter	.05 (.20)	
NchildH	.14* (.06)	.00 (.02)
BigFam	-.45 (.26)	
Age	.014** (.005)	.01** (.00)
AC- Occupational	-.13 (.12)	
Occupational Pension Type	-.48** (.12)	-.46** (.12)
Couple Status	-.06 (.13)	

Sex	.28* (.14)	.14 (.17)
Part Time	-.25 (.28)	
Gross Wage	.00 (.00)	
Shares	-.13 (.10)	
CTBand A	-.40* (.17)	-.37** (.13)
CTBand B	-.24 (.15)	
CTBand C	-.07 (.14)	
CTBand E	-.05 (.16)	
CTBand F	.25 (.22)	
CTBand G	.85** (.29)	.83** (.26)
CTBand H	-.45 (.82)	
Constant	4.75** (.30)	4.65** (.23)

Cases = 2361

*= significant at 5% level

**= significant at 1% level

Table 5.15 shows that unlike the situation with absolute scheme contributions, the percentage of income paid as scheme contributions does not rise with the income of the individual. There is no indication of occupational schemes with a higher proportion of better-off members using this to enshrine lower employee contribution rates, though of course it must be noted that we do not have evidence of the employer's contributions in each case.

The significant variables identified in the regression of all variables are council tax band dummies A and G, occupational scheme type, age, sex and the number of children in the household. The significance of the council tax band dummies indicates that despite the insignificant result for income, there is still a link between general prosperity and a higher level of scheme contributions as those in band A are paying a significantly lower percentage of income as scheme contributions than those in band D, while those in Band G are paying a higher percentage. This regression also shows that both in absolute terms and as a percentage of income, DC pension holders are paying less automatically to their schemes than DB holders.

As with the position with absolute scheme contributions, this regression indicates that age is a significant factor with respect to relative scheme contributions. Older workers are contributing a higher percentage of their salary in pension contributions than younger workers. Individuals with children pay significantly more in scheme contributions as a percentage of gross income than those without children. The first regression also shows that women are paying more in pension contributions as a percentage of income than men. However, when these variables are used in a second regression, there is a change in their significance. The variables previously significant at the 1% level, council tax band dummies A and G, occupational pension type and age, retain their significance. However, the variable previously significant at the 5% level, sex and the number of children in the household, do not.

The remaining variables are insignificant, showing that there is no link between such factors as employment status, share ownership and the percentage of income paid as scheme contributions. There is also no link between the level of scheme contributions, and whether an individual pays additional contributions. This is an interesting point, as it implies that those paying additional contributions are starting from a level playing field with their non-paying contemporaries.

At this point we can switch to analysing scheme contributions to group personal pensions. This will shows whether those variables found to be significant with occupational schemes are also significant with personal schemes. As with occupational pensions, the first stage is to analyse the absolute amounts being paid.

Table 5.16: Regression of absolute scheme contributions to personal pensions

Variable	Regression with all variables	Regression for significant variables only
Social Renter	-1.31 (2.30)	
Private Renter	3.63 (2.69)	
NchildH	.48 (.58)	
Bigfam	-1.15 (2.81)	
Age	.15** (.04)	.10** (.03)
Couple Status	1.99 (2.09)	
AC- Personal	-.00 (.92)	

Sex	-3.85* (1.74)	-3.34** (.87)
Part Time	.92 (2.30)	
Gross Wage	.06** (.00)	.06** (.00)
Shares	1.54 (1.14)	
CTBand A	.33 (1.51)	
CTBand B	-.38 (1.32)	
CTBand C	-.54 (1.35)	
CTBand E	-4.04* (1.91)	-1.23 (1.15)
CTBand F	1.75 (3.09)	
CTBand G	9.21** (2.56)	6.71** (1.89)
CTBand H	-23.52** (6.58)	-23.03** (6.98)
Constant	-8.00** (2.30)	-5.42** (1.48)

Cases = 220

*= significant at 5% level

**= significant at 1% level

Table 5.16 shows that as with the equivalent regression for occupational pensions, income and age are significant at the 1% level. That the former is significant is not surprising, but Chapter Four showed that age was not related to the payment of additional contributions, so it is perhaps unexpected to discover that older age groups pay most in scheme contributions to group personal pensions. The other significant variables are sex, and council tax band dummies E, G and H. It appears from the evidence available that men are paying a higher level of automatic contribution to personal pensions than women. The lessons to be drawn from the council tax band dummies are more uncertain as the co-efficients do not show a constant direction. A second regression of the significant variables shows that when other variables are removed, all the variables retain their significance and sign, except for council tax band dummy E, which loses its significance.

As before we can investigate the data further by analysing scheme contributions as a proportion of gross income. This will test whether as with occupational schemes, scheme contributions do not rise as a proportion of income, as income increases.

Table 5.17: Regression of scheme contributions to personal schemes as a percentage of gross income

Variable	Regression of all variables	Regression of significant variables only
Social Renter	-1.10 (.69)	
Private renter	.86 (.75)	
NchildH	.12 (.16)	
Bigfam	-.19 (.79)	
Age	.04** (.01)	.01 (.01)
Couple Status	.05 (.59)	
AC- Personal	.21 (.26)	
Sex	-.72 (.49)	
Part Time	-.41 (.64)	
Gross Wage	.02 (.01)	
Shares	.23 (.32)	
CTBand A	.05 (.42)	
CTBand B	-.34 (.37)	
CTBand C	-.14 (.38)	
CTBand E	-.46 (.54)	
CTBand F	.45 (.86)	
CTBand G	1.49* (.72)	1.54** (.54)
CTBand H	-3.87* (1.85)	-3.09 (2.05)
Constant	2.76** (.644)	4.25** (.39)

Cases = 220

*= significant at 5% level

**= significant at 1% level

Table 5.17 indicates that there are only three significant variables associated with the percentage of gross income paid in scheme contributions to personal pensions, age and council tax band dummies G and H. Age was significant when we examined absolute scheme contributions to personal pensions. That it has not changed sign would indicate that older age groups pay more in scheme contributions in both an absolute and relative sense. As with Table 5.16, council tax band dummies G and H are significant, but with opposite signs. This makes it very difficult to hypothesise a relationship between council tax band and scheme contributions. A regression of the significant variables leads to age and council tax band dummy H losing their significance.

Elsewhere, none of the other variables are significant. This may be due in part to the comparatively low sample size for this regression. However it is worthwhile to note that variables which were significant when looking at absolute contribution to personal schemes, like gross wage and sex, are not significant when income is taken into account.

Conclusion

Scheme Contributions to private pensions are extremely important, given that they, together with employer contributions, form the bedrock on which future pensions are based. However it is an area over which people do not have direct control. The picture is complicated further by the vagaries of the FRS, which ensures that not all of those making scheme contributions have an opportunity to inform us of their magnitude.

The significant factors associated with higher scheme contribution payments vary between occupational and personal pension schemes. For the two regressions measuring absolute levels of contribution, gross income and age are both significant. However beyond this we can see that sex, with women paying more than men, and occupational pension type, are the important factors when looking at scheme contributions to occupational schemes. With personal pensions, it is clear that men are paying more in scheme contributions than women and full-timers more than part-timers. When looking at the regressions of relative scheme contributions, the significant factors for occupational schemes largely remain, while for personal pensions only age and council tax band dummies G and H are significant.

The evidence that DB scheme members are contributing more than DC scheme members ties in with the patterns unearthed in Chapter One. However, it is difficult to explain the rest of the patterns given that scheme contributions are not under the direct

control of the individual. In explaining why older people might have higher scheme contribution levels than younger people, an explanation may lie with older groups being more concerned with retirement than younger groups, and thus ranking a good pension as an important component of a job. It is difficult to find an explanation for the fact that women are paying more in relative scheme contributions than men in occupational, but not personal schemes.

Chapter Five has analysed the contributions paid automatically by the individual into private pension schemes. It must be noted that the return from a pension is not determined solely by contributions paid as a virtue of membership. There is also a role for additional contributions paid by the individual. We have already analysed the percentages making additional contributions. The next stage is to analyse the amount of these additional contributions.

Chapter Six: Additional Contributions-How Much?

Introduction

Chapter Four revealed that about 14% of occupational pension members and 49% of personal scheme members are paying additional contributions into their schemes. Chapter Six will investigate this further, by analysing the amount of additional contribution that are being paid to both occupational and personal pension schemes. Chapter Six will follow the same format as the earlier results chapters. The majority of the chapter will be an overview of which groups pay the most in additional contributions through the use of cross-tabulations. As before, the final section will use regression analysis to sift through the data to indicate which variables have the greatest impact on additional contribution payment. Chapter Six will allow us to observe whether the patterns of additional contribution payment follow the patterns discovered in earlier chapters, whether in terms of private pension coverage, scheme contribution payment or who is paying additional contributions.

This will allow further comment on the five major themes established earlier. Analysis of additional contribution payment will indicate whether these actions are consistent with a rational economic calculus. The results for various groups will highlight issues of adequacy and coverage. The results measured with reference to age will indicate how income is being distributed over the life cycle. All of these issues then filter back to the overall question of whether the current voluntary approach is working.

Methodology

As with other results chapters, this chapter uses data from the 1994-5 Family Resources Survey. It should be noted that in this survey, the additional contribution data for occupational and personal pension holders is not derived in the same way. The data for those making additional contributions to their personal pension is collected through the pensions section of the questionnaire. Everyone who states that they are paying additional contributions is asked in the next questions, how much is being paid, and for what length of time this payment is to cover. However the data for occupational pension members is not collected in the pension section of the survey, but through the employee

pay details section. This is an important point as this method excludes those who make additional contributions, but through mechanisms other than direct deduction from their salary. This could apply to those who make additional contributions to another provider through free-standing additional voluntary contributions. It could also apply to those who buy whole pension years at irregular intervals. This makes the data for personal pensions more straightforward to analyse. In both cases, the additional contribution data is presented in terms of pounds paid per week.

This chapter also faces the problems outlined in Chapter Five. As the chapter deals with the continuous data relating to additional contribution payments, it is important to have a gross income record for the individual as a basis for comparison, especially as Chapter One noted that individuals themselves rated the adequacy of their pension provision in a relative not absolute sense. The following analysis only covers those individuals with a gross income record. Unfortunately, not all of those with a record outlining the additional contribution paid have a gross income record. The result of these methodological difficulties is to reduce the effective sample to 252 cases for occupational scheme members and just over 1100 for personal scheme members

In the light of these methodological issues, the first part of the chapter will take the following form. There will be a brief discussion of the results for occupational pensions, as owing to the small sample size it has not been possible to get meaningful data broken down by employment, marital and housing status due to some cell sizes being too small. The larger element will focus on the additional contributions being paid by personal pension scheme members.

Section A: Additional contribution payment to occupational and personal pensions

Occupational Pensions

The first step is to look at overall additional contribution payment. This will represent the situation in total, but also examine the position of DB and DC scheme members. This latter point is important, as we have established in Chapter Five that in general, less is being paid into the schemes of DC members. It is should be repeated that because of the methodological limitations, the analysis of additional contributions to

occupational pension schemes will only comprise 252 cases out of the 1412 occupational scheme members who are currently paying additional contributions.

Table 6.1: Overall additional contribution payment to occupational schemes

		Amount of additional contribution paid per week (£)			
		Mean	Median	Median Percentage contribution (%)	N
Occupational Pension type	DB	18.40	10.00	3.01	210
	DC	15.39	9.73	2.75	42
	Total	17.90	10.00	3.01	252

Table 6.1 provides us with three measures of the additional contributions being paid to occupational pension schemes. The first two, the mean and median contribution levels refer to the absolute levels of contribution being paid by the sample. However the third measure, median percentage contribution, is a relative measure. For all cases, the amount of additional contribution was divided into the individual's gross income. The median of this tells us how much the 50th percentile of those paying additional contributions is paying as a percentage of gross income.

The first point to note from the results is the large gap between the median and mean contribution levels. The overall median additional contribution level is £10 per week, but the mean contribution is £17.90 per week. The distribution of additional contributions is obviously highly skewed with a few large contributions pulling up the mean. This illustrates the value of including measures other than the mean.

A comparison of the results for DB and DC scheme members indicates that the amounts paid appear to be very similar, with perhaps DB members paying slightly more in both absolute and relative terms, though the gap between the means is not significant. We have seen in Chapter Five that DC pension holders tend to have a lower level of contributions paid to their schemes. Table 6.1 indicates that DC pension holders are not compensating for this through a higher level of additional contribution payment.

Income Level

We have seen from analysis of occupational pension coverage, and likelihood of paying additional contributions, that income level is an important factor. Rising income has been associated with higher coverage, and a higher likelihood of paying additional

contributions in occupational schemes. It is to be expected that this pattern would continue into the amount of additional contribution paid, at least in an absolute sense.

Table 6.2: Amount of additional contributions by income level (occupational schemes)

		Mean (£)	Median (£)	Median percentage contribution (%)	N
Income level (£ gross per week)	0-99.99	4.84	4.93	6.21	6
	100-199.99	5.83	4.69	2.65	29
	200-299.99	10.41	9.54	3.82	60
	300-399.99	12.59	9.62	2.71	54
	400-499.99	16.85	11.54	2.80	48
	500+	39.97	20.19	2.79	55
	Total	17.90	10.00	3.01	252

Table 6.2 indicates that the identifiable relationship between the amount of additional contribution paid and the individual's income level varies considerably depending on whether it is viewed absolutely or relatively. In an absolute sense, the results are of course predictable, the higher the gross income is, the greater the amount paid in additional contributions. Even within this simple message, there are noteworthy phenomena. It is only within the £400-499.99 income bracket, that the median contribution reaches the £50 per month level (11.54 multiplied by 52/12).

The results relative to gross income imply a far different relationship. It is admittedly unwise to base any conclusions on the results from the £0-99.99 group, but even without this, it is clear that the amount invested in additional contributions in percentage terms does not increase with income level. The high point of the distribution is reached in the £200-299.99 bracket at 3.82% and stays 1% below this thereafter. In speculating as to why this should be the case, it is useful to ponder the process of agreeing additional contributions to occupational pensions. The individual is agreeing an amount that will leave her or his bank account every month for the foreseeable future. The amount must therefore be within their means. It is reasonable to conclude that this amount will be a "round number". As such it may be the case that those with higher incomes will agree a "round number" that is a lower percentage of earnings.

Sex

We have seen in previous chapters, that with regard to occupational pension provision, women tend to have lower coverage, and are far less likely to pay additional

contributions. It is obviously useful to analyse additional contributions to occupational pensions by sex, to see whether this pattern is maintained.

Table 6.3: Amount of additional contributions by sex (occupational schemes)

		Mean (£)	Median (£)	Median percentage contribution (%)	Standard Deviation of Mean	N
Sex	Male	18.99	10.00	3.00	29.60	205
	Female	13.12	9.23	3.76	11.63	47
	Total	17.90	10.00	3.01	27.24	252

It is clear from looking at Table 6.3 that the lessons from the mean and the median statistics are quite different. Comparison of the two means indicates that men are paying more in absolute terms than women. A t test of this difference was significant at the 5% level. However, comparison of the median data indicates that male and female contributions are very similar. The male contribution equates to £520 per year, while the median female contribution is £480 per year (9.23 multiplied by 52/12, which is £40 per month). When the gross income data is brought in, it is clear that the median contribution by women is higher as a proportion of earnings than the median paid by men at 3.76% as opposed to 3%.

It is interesting to ask why these results have turned out in this way, with men having a significantly higher mean contribution, but a lower relative one. It must also be remembered that the sample size is low, so firm explanations are unwise. It is clear though that the male distribution of contributions is far more skewed than the female from looking at the respective standard deviations. Male contributions follow a scattergun profile, while women's are packed more tightly around the mean. In this way, women may be adopting a more effective approach than men, giving more consideration to the amount to be paid, which results in a far lower mean, but a higher amount in relative terms.

Age

The final area to be viewed is the relationship between the amount of additional contributions paid and the age of the contributor. We have seen that both occupational pension coverage and propensity to pay additional contributions rise with age. It might be expected that the amount paid in additional contributions would rise as well.

Table 6.4: Amount of additional contribution by age group (occupational schemes)

		Mean (£)	Median (£)	Median percentage contribution (%)	N
Age Group	21-25	4.62	3.00	1.16	7
	26-30	7.47	6.55	1.78	9
	31-35	11.47	6.92	1.27	13
	36-40	9.72	5.77	2.00	27
	41-45	14.55	15.00	3.98	37
	46-50	15.33	9.23	2.73	47
	51-55	26.45	11.18	3.85	54
	56-60	24.98	11.54	5.06	42
	61-65	16.44	13.00	4.94	16
	Total	17.90	10.00	3.01	252

Table 6.4 provides us with useful information despite the low cell sizes for some groups. In general, additional contributions seem to follow a gradual upward path with respect to age. Mean contributions rise from £4.62 for the 21-25 age group to reach a peak at £26.45 in the 51-55 age range before a slight decline. The median, which of course avoids the skewness problems inherent in the mean, tells a similar story despite the blip in the 41-45 age group. The median percentage contribution measure gives the same information; additional contributions only exceed 2% of gross income level from the forties onwards and peak at over 5% in the 56-60 age group.

This data is reminiscent of the patterns found in Chapter Four. It is clear that older age groups are paying more into their occupational pensions than their younger counterparts, and there is also the sense of a big jump in contributions in both an absolute and relative sense during the fifties. This mirrors the jump in the percentages paying additional contributions during their fifties. It seems that the need to pay additional contributions to an occupational pension becomes pressing as retirement draws near. This outweighs any rational considerations as to the benefits of paying contributions at an earlier stage.

Interim Summary

Although this a short section, it is useful to summarise its findings:

- The median additional contribution to occupational pensions is £10 per week. This represents 3% of median gross income. DB occupational pension holders appear to be paying slightly more than DC pension holders in absolute terms and as a percentage of gross income.

- Although the mean and median additional contributions rise with income level, additional contributions are lower as a percentage of income above the £300 per week level.
- In relative terms women appear to pay slightly more in additional contributions than men. Male contribution levels are far more widely dispersed, with a higher mean.
- There appears to be a clear relationship between rising levels of additional contribution and advancing age both in absolute terms and as a percentage of gross income.

Given these results, it is useful to analyse the relationship between the propensity to pay additional contributions, and the level of the contributions themselves. Although the available sample size is low, it seems clear that a high propensity to pay additional contributions for a group is not associated with a high level of contributions being paid. Chapter Four showed that DC pension holders are significantly more likely to pay additional contributions, but Table 6.1 implies that the amount of these contributions is actually lower than that of DB holders. DC pension holders appear not to be paying a greater amount to compensate for their lower level of scheme contributions. Although the propensity to pay additional contributions rises with income, the percentage of income paid in additional contributions seems to fall with rising income. Men are more likely to pay additional contributions than women are, but median contribution levels are very similar, and as a percentage of income, women seem to be paying more. It is only with age that the relationship between the likelihood of paying additional contributions and the amount paid is similar. This leaves the clear message that older cohorts appear to be more intent on boosting their retirement income than younger ones.

Personal Pensions

The data in the FRS asks two questions in relation to contributions paid to personal pensions; it asks how much is being paid, but it also asks for what period this amount is intended to cover. This second point is not merely a semantic one. The structure of contribution payment will shed insight as to how the public approaches additional contribution payment. Additional contribution payment could be performed on a regular basis, or it could be ad hoc. If it is performed on a regular basis, then it is

important to know the time frame chosen. The data indicates that in almost 90% of cases, (1003 out of 1120), payments are made monthly, with yearly payments being the next most popular option. It is clear from the data that additional contributions are organised in a structured way, with only 17 people organising their contributions in an ad hoc manner.

The following tables will analyse the amount of additional contribution being paid in more detail. As such an exercise requires a common denominator, the tables will only include those paying contributions regularly, which excludes those paying in an ad hoc manner. The first step is to look at the contributions being paid by all remaining members.

Table 6.5: Overall additional contribution payment to personal schemes

	Mean (£)	Median (£)	Median percentage contribution (%)	Standard Deviation of Mean	N
Amount per week	16.31	10.38	5.17	28.31	1102

Table 6.5 provides us with very important facts. The first point to realise is that the amounts being paid in additional contribution are certainly quite large, in an absolute and relative sense. The median contribution stands at 5% of the median gross income of the sample. This is certainly a large sum when added to the 4.8% of the COR. In an absolute sense, the median contribution indicates that £540 per annum is being directed voluntarily towards the individual's pension provision.

Looking at the data, it is clear that the mean is considerably higher than the median, indicating that we have a very skewed distribution. This is backed up by the fact that the standard deviation is very high. If the distribution is normal, 95% of the observed values should lie within two standard deviations of the mean. This indicates that a few very large contributions are pushing the mean upwards. However it is important to note that the median is still at quite a high level.

It is useful to compare the position for occupational and personal pension members in Tables 6.1 and 6.5. Personal pension members are paying the same absolute level of contribution as occupational pension members, however, as a proportion of gross income, it is clear that they are paying far more.

Income Level

It is obviously important to analyse the level of additional contribution being paid with reference to the individual's income level. We have seen that the likelihood of paying additional contributions to a personal pension is correlated positively to income. It would be expected that the amount paid into a personal pension has the same relationship.

Table 6.6: Amount of additional contributions by income level (personal schemes)

		Mean (£)	Median (£)	Median percentage contribution (%)	N
Gross Income Level (£)	0-99.99	16.03	9.23	15.38	169
	100-199.99	13.78	9.23	5.86	357
	200-299.99	14.03	10.07	4.10	288
	300-399.99	18.43	11.54	3.36	158
	400-499.99	26.94	13.15	3.01	76
	500+	24.93	22.76	3.23	54
	Total	16.31	10.38	5.17	1102

Table 6.6 indicates firstly that the mean level of contribution is lower in the £100-199.99 and £200-299.99 brackets than for those with the lowest level of income. Mean contribution levels only pick up after the individual earns £300 a week or more. It is difficult to understand this finding. It could be that income in itself is not that important a factor, or that the income of the whole household should be taken into consideration.

Median contributions rise steadily, but not commensurately with the rise in income. As can be seen from the third column, the proportion of income spent as additional pension contributions falls as income rises, only recovering when the individual earns more than £500 per week. This is similar to the data on occupational pensions, although the evidence is far more pronounced in this case.

Sex

The next step is to analyse the amount of additional contributions being paid with respect to sex. We have seen that although they have lower personal pension coverage, women are at least as likely to pay additional contributions to their personal pensions as men. It is another question as to whether this will translate into higher additional contribution payments.

Table 6.7: Amount of additional contributions by sex (personal schemes)

		Mean (£)	Median (£)	Median percentage contribution (%)	Standard Deviation of Mean	N
Sex	Male	17.20	10.73	5.43	30.72	915
	Female	12.00	8.90	4.35	9.40	187
	Total	16.31	10.38	5.17	28.31	1102

Table 6.7 indicates that in both absolute terms and as a percentage of gross income, men seem to contribute more in additional contributions to personal pensions than women. A t test confirms that men pay higher mean additional contributions than women, at the .1% level. It is difficult to speculate why, when logistic regressions show they are no more likely to make additional contributions, men pay greater amounts than women do. An explanation can be developed from Hancock et al's (1995) observation that men have less belief in the efficacy of small pension contributions than women. This could explain a reluctance from men to pay additional contributions, but those that do, pay greater amounts.

The other main point to note is that the additional contributions made by men have a far greater dispersion than those paid by women. This may suggest that although women are paying less, their contribution patterns are in some way more logical than that for men. Female contributions are fairly closely targeted around a central point, whereas male contributions are extremely variable.

It is clear that additional contribution payments to personal pensions follow a different pattern to those for occupational pensions. In both cases, men have a higher mean contribution, and a far more dispersed distribution of payments. However for personal pensions, men pay a considerably greater proportion of their income as additional contributions, whilst for occupational pensions, the reverse is true.

Employment Status

As before, it will be useful to look at additional contributions with respect to employment status. Earlier chapters have indicated that the part-time employed or self-employed category is at a disadvantage in terms of personal pension coverage and propensity to pay additional contributions. It might be expected that these trends would be borne out. Chapter Four also showed that the full-time self-employed were far more likely to pay additional contributions than any other group. It could be expected that they would pay more in terms of additional contributions.

Table 6.8: Amount of additional contributions by employment status (personal schemes)

		Mean (£)	Median (£)	Median percentage contribution (%)	N
Employment Status	Full time self employed	18.32	11.54	7.42	278
	Full time employed	15.81	9.62	4.50	763
	Part time employed or self-employed	13.43	8.75	5.57	55
	Total	16.33	10.38	5.17	1096 [14]

Table 6.8 reveals that the full-time self-employed appear to be the group paying the most into their personal pensions. However, the difference in mean contribution between the full-time self-employed and full-time employed groups is not significant.

More interesting information can be gathered by looking at the median and relative data. The median self-employed person making additional contributions is contributing over 7% of their gross income. Expressed in absolute terms, the median contribution is £50 per month (11.54 multiplied by 4.33). This group certainly appears to be making a substantial contribution towards future security in retirement. It is useful to speculate as to why this might be the case. It could be because the self-employed as a group are more used than employees to taking responsibility for their own arrangements, and know that there will be no other provision for them beyond the basic state pension. An alternative explanation may lie in the data. Income statistics for the self-employed always need to be viewed with a healthy scepticism. If these are substantial underestimates of the true situation then it is unlikely that the median self-employed person making additional contributions will be contributing over 6% of gross income for this purpose. However, this does not detract from the observation that in absolute terms, the self-employed are paying more than other groups.

Turning to the other groups, it appears that full-time employees make higher contributions in absolute terms than the part-timers. However, a t test shows that the gap in mean contribution is not significant. The situation is reversed when looking at the position relatively. In attempting to explain this result, it is important to note that the part-timers group contains some self-employed people, which might improve the

[14] Table 6.10 omits the "unemployed" and "not working for any other reason" categories. As a result, the number of cases is less than the total.

relative position for the reasons outlined earlier. The low relative position of full-timers can perhaps be explained through inertia. People seem to pay a convenient round sum into their personal pensions. Perhaps with full-timers, who have higher incomes, this will tend to produce a lower relative figure. However the amounts paid are still substantial, the median full-time employed contribution is £500 per year (9.62 multiplied by 52), while the median part-timers contribution is worth £455 per year.

Age

Chapter Four revealed that for personal pensions, there was no overall relationship between the payment of additional contributions and age. It is useful to analyse whether this finding extends to the amount of additional contributions being paid. Analysis of additional contribution payment by age also highlights the issue of how income is being distributed over the life cycle.

Table 6.9: Amount of additional contributions by age group (personal schemes)

		Mean (£)	Median (£)	Median percentage contribution (%)	N
Age group	16-20	(6.35)	(6.35)	(3.41)	2
	21-25	7.46	6.76	3.32	60
	26-30	11.67	9.23	4.15	196
	31-35	11.79	9.23	4.00	160
	36-40	16.40	11.54	6.05	161
	41-45	18.31	11.54	6.12	169
	46-50	17.37	11.54	6.58	164
	51-55	21.60	11.54	6.98	107
	56-60	32.57	13.85	8.93	67
	61-65	(16.15)	(11.77)	(6.19)	16
	Total	16.31	10.38	5.17	1102

Brackets denote cell size of 20 or less

Table 6.9 indicates that as with the situation for occupational pension holders, there is a clear relationship between advancing age and increased additional pension contributions. The median additional contribution rises from £6.35 a week for the 16-20 age group, through £9.23 a week (£40 per month) for the 26-35 group through to a plateau at £11.54 (£50 per month) for the 20 year age range from 36-55. It hits a peak at £13.85 (£60 per month) for 56-60 year olds before declining. The median percentage contributions made start at 3.41% in the 16-20 age group but rise gradually, reaching 6.05% in the 36-40 age group before peaking at 8.93% in the 56-60 bracket. Mean

contributions behave in a similar way. They start at £6.35 for the 16-20 age group and rise consistently to around the £18 level in the forties, before a jump to £32.57 in the late fifties. Comparison of the mean to the median figures indicates that the level of skewness in the distribution increases with age.

It is clear that for both occupational and personal pension members, retirement income is not decided in a smooth manner over the life cycle, instead the last few years have a disproportionate effect. There are two explanations for this sudden jump in additional contribution payment in the fifties. Firstly, in the decision–making calculus of the sample, the benefits of making additional contributions while young may be outweighed by the psychological effect of the "spectre of retirement" looming. Secondly, it may also be the case that individuals have more spare income in their fifties, due to children having left the parental home. These two explanations may be linked, the departure of children may provide increased means to make additional pension contributions, but the "spectre of retirement" may complement this with a greater motivation to make them. This model of pension accumulation behaviour may be especially damaging to those who have to retire early, whether voluntarily or involuntarily. They will not have as much opportunity to embark on the "crazy dash" for retirement income in their late 50s.

Marital Status

Previous chapters have shown that although the divorced group has lower personal pension coverage than the married group, it is no less likely to pay additional contributions. This line of enquiry can be pursued to examine the amount of the additional contributions being paid. It would be advantageous to split the findings by sex in order to examine whether they differ for men and women. However, this would result in very small cell sizes for some groups. As a result, Table 6.10 presents pooled data.

Table 6.10: Amount of additional contributions by marital status (personal pensions)

		Mean (£)	Median (£)	Median Percentage Contribution (%)	N
Marital Status	Married spouse in household	18.09	11.54	6.20	751
	Living as a couple	10.93	9.23	4.62	101
	Single/ Never been married	12.93	9.62	3.50	153

	Widowed	(18.19)	(14.72)	(11.32)	11
	Separated	(12.72)	(8.48)	(3.39)	16
	Divorced	13.09	8.80	3.76	68
	Total	16.33	10.38	5.18	1100[15]

Brackets denote a cell size of 20 or less

Table 6.10 indicates clearly that once making additional contributions to a personal pension, the married group contributes more than the divorced group. A t test of the difference between the mean contributions of the married and divorced groups was significant at the 1% level. This is an interesting result, as in Chapter Four it was demonstrated that the divorced group was as likely to pay additional contributions as the married group. The married group's higher level of contributions is not just an artefact of the data caused by a few large contributions inflating the mean. Its contribution levels are also greater both in terms of the median, and the median percentage contribution.

Elsewhere, the results are unsurprising. The widowed group has a high contribution level in absolute and relative terms. This can be explained by its high average age. The comparatively poor relative performance of the single group can also be attributed to age.

Housing Status

Previous chapters have indicated that owner-occupiers tend to have better personal pension coverage than other groups, and are more likely to pay additional contributions. They also indicate that within the rented sector, council and housing association tenants may be less likely to have personal pension coverage or pay additional contributions. It will be useful to analyse additional contribution payment with respect to housing status, to see whether these patterns are still operative.

Table 6.11: Amount of additional contributions by housing status (personal pensions)

		Mean (£)	Median (£)	Median percentage contribution (%)	N
Tenure Type	Rented from local authority	8.52	7.65	4.69	55
	Rented from housing association	(13.34)	(8.31)	(3.09	7

[15] This differs from the overall total due to the omission of the "Married (spouse not in household) category"

	Rented privately (unfurnished)	14.09	7.69	4.35	49
	Rented privately-furnished	9.47	7.61	3.39	27
	Owned with mortgage	16.14	11.53	5.17	839
	Owned outright	23.50	11.54	6.63	125
	Total	16.31	10.38	5.17	1102

Brackets denote cell size of 20 or less

It appears from Table 6.11 that the owner-occupied groups pay substantially more in additional contributions than other groups. It might be expected that this group pays the highest contributions in absolute and relative terms as they tend to be older (having had time to pay off a mortgage), and thus have the spare cash to make large pension contributions. However, t tests indicate that the difference in mean contribution between outright owners and both mortgagees and unfurnished private renters is not significant.

In the social rented category, housing association tenants have a far higher mean contribution than council tenants. This is probably an artefact of the small sample size of the former. In the private rented category, unfurnished tenants have a higher mean contribution than furnished tenants. It is difficult to find a ready explanation for this, though it must be remembered that furnished tenants were far less likely to make additional contributions than unfurnished tenants.

Mortgagees have a virtually identical median payment to the outright owner group, but a lower mean, indicating a less skewed distribution. It is important to relate this to the finding for the rented groups. This mean figure is not significantly higher than the means for the housing association and unfurnished private renter groups. This indicates that there is not a strict dividing line between the contribution patterns of owners and those of renters. However, although the mean figures for the rented groups vary, the median figures are all in the £7-8 per week range, this is considerably less than the £11.50 median for both owner-occupied groups.

More meaningful data can be created by merging the six categories into social renters (groups 1 and 2), private renters (groups 3 and 4), and owners (groups 5 and 6). This will increase the available sample size and give an overall assessment of the positions of these three groups.

Table 6.12: Amount of additional contributions by housing status (breakdown)

		Mean (£)	Median (£)	Median percentage contribution (%)	N
Housing Status	Social Renter	9.05	7.85	4.05	62
	Private Renter	12.45	7.66	4.00	76
	Owner- Occupier	17.09	11.54	5.46	964
	Total	16.31	10.38	5.17	1102

Table 6.12 gives a clearer picture of the overall relationship between the amount of additional contribution paid and housing status. In terms of the mean it would seem that owners are paying more than private renters, who in turn are paying more than social renters. We can see from t tests that owners are paying a significantly greater amount than private renters (at the 1% level), and that private renters are paying a greater amount than social renters (at the 5% level).

Table 6.12 also shows that owners have a higher median additional contribution than private and social renters both in absolute terms and as a percentage of income. The median owner devotes 5.5% of gross income to additional contributions as opposed to 4% for the median renter. It appears that there is little difference between the median contribution levels of private and social renters, whether in absolute or relative terms. This is surprising, as it would be expected from the evidence of the previous chapters that social renters would be paying the least of any group.

Household Composition

Earlier chapters showed that households with no children had higher personal pension coverage and were more likely to pay additional contributions than households with children. It is important to analyse whether this relationship also applies to the amount of additional contributions being paid to personal pensions as this may indicate that households with children are heading for a lower retirement income.

Table 6.13: Amount of additional contributions by number of children in household

		Mean (£)	Median (£)	Median percentage contribution (%)	Average Age	N
Number of children in household	0	16.59	10.69	4.76	40.41	664
	1	13.47	9.23	5.43	38.91	199
	2	15.69	10.79	6.98	38.59	172
	3+	26.41	13.85	6.55	37.91	45
	Total	16.28	10.38	5.17	39.74	1080

Table 6.13 indicates that there is not a simple relationship between the number of children in the household and the amount of additional contributions paid into a personal pension. The absolute mean and median values produced for zero, one and two children seem to be fairly similar, while the level of contributions from individuals living in household with three or more children appear to be much greater. The real picture is somewhat more complex. The only significant result from t tests is that the difference in additional contributions between households with zero and one child is significant at the 5% level. This would seem to run counter to the patterns discovered in earlier chapters. This is even more apparent when we look at the median percentage contributions being made with respect to the number of children in the household. It would appear from this that households without children are paying the least in additional contributions to personal pensions as a percentage of income.

It is also useful to look at the additional contributions made by households with children with respect to the number of adults. This will enable us to discover whether single parent households are paying less in terms of additional contributions than two parent households.

Table 6.14: Amount of additional contributions paid by households with children

		Mean (£)	Median (£)	Median percentage contribution (%)	N
Number of adults in household	1	9.27	7.14	3.44	28
	2	17.28	10.85	6.49	319
	3+	11.53	9.23	6.56	69
	Total	15.79	9.77	6.26	416

Analysis of Table 6.14 is hindered by the low cell sizes, but useful extrapolations can still be made. It can be shown from t tests that individuals in two adult with children households pay a significantly higher mean amount in additional contributions than those in single adult with children households (at the .1% level), and those in three plus adult with children households (at the 1% level). This is compatible with the findings of earlier chapters. Chapter 3 showed that individuals in single adult with children households were significantly less likely to have private pension coverage than those in two adult with children households. Chapter 4 indicated that the single adult group was significantly less likely to pay additional contributions. There seems to be a pattern of accumulated pension disadvantage, which will have consequences in terms of this group's position in retirement.

Interim Summary

This section has provided some important results, which can be summarised as follows:

- Most of those paying additional contributions to personal pensions do so by the calendar month.
- Those paying additional contributions pay sizeable amounts into their personal pensions. The median contribution of £10.38 per week represents an annual contribution of £540 per year.
- The percentage of income spent on additional pension contributions falls as the individual's income rises.
- Men pay significantly more in additional contributions than women. They also pay more in relative terms. Male contributions are far more widely dispersed than female contributions.
- There is a clear link between increasing age and greater amounts being paid in additional contributions. The fiscal benefits of making contributions while young are outweighed by factors specific to the older generation, such as seeing the "spectre of retirement" looming, or having more spare income for the purpose of making pension contributions.
- Married people pay significantly more in additional contributions than the divorced group. They also pay more in relative terms.
- When looked at as a whole, owners pay significantly more in additional contributions than private renters, who in turn pay significantly more than social renters.
- Individuals in households with no children pay significantly more than those in households with one child. Otherwise, children are not associated with lower additional contribution payment.
- Individuals in two adults with children households pay significantly more than those in single parent households.

The most interesting relationships are those between membership of a personal pension (Chapter Three), the proportion of a group paying additional contributions (Chapter Four) and the amount of additional contributions being paid. Other things being equal, one would expect a complementary relationship between scheme membership, propensity to pay additional contributions and the amount of additional

contributions being paid. Chapter Six provides instances where this is borne out in practice and instances where the reverse is true.

Examples of the complementary relationship are found in the housing status and household composition sections. Owner-occupiers pay a greater amount in additional contributions than renters. This mirrors the results from Chapters Three and Four, where on the whole, owners had higher pension coverage and propensity to pay additional contributions than renters. In the same way it was predictable that households with one adult and children would pay a low amount in additional contributions, given their low personal pension coverage and low propensity to pay additional contributions.

In other areas, this smooth relationship does not exist. A prime example is the lead that men have over women in the amount of additional contribution being paid. This is reminiscent of the pattern of Chapter Three where men had substantially greater coverage than women, but must be seen as a surprise given that fewer men pay additional contributions to personal pensions than women. Another example is the payment of larger additional contributions by older age groups than the young, although Chapter Four showed that there was no overall relationship between age and additional contribution payment in personal pensions. The finding that the married group paid larger contributions than the divorced group was consistent with the results in Chapter Three, but again not with Chapter Four where there was certainly no suggestion that the divorced group was less likely to pay additional contributions.

Section B: Regression analysis of additional contribution payment

The earlier part of this chapter has discovered certain patterns in the level of additional contribution payment amongst groups in the population. The next step is to use multiple regression analysis in order to discover the overall significance of each variable when all of the others are taken into consideration. This section will complete regressions for additional contributions to both occupational and personal pension schemes. It must be noted that there are fewer variables available for the regression of additional contributions to occupational schemes. This is because, as was noted earlier, there was only sufficient data to analyse additional contributions with respect to a few parameters: age, sex and income level. This means that this regression is certainly more prone to omitted variable bias, which would distort the results. However it has been judged that it is best to produce a regression despite possible problems in order to

facilitate comparison between additional contribution payments to occupational and personal pension schemes. For the examination of additional contributions to personal pensions, a larger number of cases and larger range of variables are available.

To complete these regressions, it is necessary to investigate the factors highlighted earlier in the chapter. However, variables explored in regressions from earlier chapters have also been included as they also have a part to play in explaining the level of additional contributions paid. The coding for the regressions is set out in Table 6.15.

Table 6.15: Variable coding for OLS regressions

Variable	Coding and Explanation
Social Renter	0=Not social renter 1=Social renter
Private Renter	0=Not private renter 1=Private renter
NchildH	Number of children in household: 0=none 1=one 2=two 3+=three or more
BigFam	0=zero, one or two children in household 1=three or more children in household
Age	Age at last birthday: Interval variable
Couple Status	0=Married or co-habiting 1=Single, divorced, separated or widowed
Sex	0=Male 1=Female
Part time	0=Full time employed 1=Part time employed
Gross Wage	Gross wage (£ per week): Interval variable
Shares	0=no share-based investments 1=has share-based investments
CTBand A	0=All other bands 1=Council Tax band A
CTBand B	0=All other bands 1=Council Tax Band B
CTBand C	0=All other bands 1=Council tax Band C
CTBand E	0=All other bands 1=Council tax band E
CTBand F	0=All other bands 1=Council Tax Band F
CTBand G	0=All other bands 1=Council Tax Band G
CTBand H	0=All other bands 1=Council Tax Band H

These variables and their coding will be familiar from earlier chapters. An important point to note is that this table includes the "Bigfam" variable which was omitted from other regressions concerning personal pension holders. It is included here because it was found that individuals in households with three or more children made the highest additional contributions to their personal pension and consequently the "Bigfam" variable can be used to find whether this is significant when all other factors are taken into consideration.

At this point we can proceed to analyse the payment of additional contributions to occupational schemes. As has been mentioned, because of the number of cases, it is only possible to use a restricted range of variables.

Table 6.16: Regression of the amount of additional contributions paid to occupational schemes

Variable	Regression with all variables	Regression of significant variables only
Age	.54** (.12)	.56** (.12)
Sex	-.42 (2.93)	
Gross Wage	.05** (.01)	.05** (.01)
Shares	.80 (2.41)	
CTBand A	1.93 (3.92)	
CTBand B	-.47 (3.74)	
CTBand C	2.89 (3.36)	
CTBand E	5.13 (3.80)	
CTBand F	10.28* (4.76)	8.41 (4.30)
CTBand G	22.20** (6.35)	19.90** (5.97)
CTBand H	119.62** (19.54)	116.10** (19.22)
Constant	-31.96** (6.62)	-31.29** (6.09)

Cases = 252

* = significant at 5% level

**= significant at 1% level

Table 6.16 shows that we can still obtain valuable inferences about additional contributions to occupational pensions despite the low sample size. The data indicates that income level and council tax dummies F, G and H are significant factors. These variables indicate that prosperous groups in terms of command over property resources or income, pay a greater amount in additional contributions. This finding would be expected, but it is interesting that it comes through so strongly, on just 252 cases. The age of the individual is also found to be significant at the 1% level. This ties in with evidence from earlier chapters that older age groups were more likely to have occupational pension coverage, and were more likely to pay additional contributions. The data also shows that women are not paying less in additional contributions than men. When the non-significant variables are removed, we can see that the remaining variables are still significant, with the exception of council tax band dummy F.

It is possible to investigate the data further by changing the dependent variable from the absolute level of contributions being paid to contributions paid as a percentage of income. This should provide a better test of whether prosperous groups pay more, when their prosperity is taken into account.

Table 6.17: Regression of additional contributions to occupational schemes, as a percentage of income

Variable	Regression of all variables	Regression of significant variables only
Age	.12** (.02)	.13** (.02)
Sex	-.26 (.49)	
Gross Wage	-.00 (.00)	
Shares	.13 (.40)	
CTBand A	-.43 (.66)	
CTBand B	-.60 (.63)	
CTBand C	.45 (.56)	
CTBand E	1.28* (.64)	1.34** (.53)
CTBand F	1.90* (.80)	1.94** (.72)
CTBand G	2.62* (1.07)	2.43** (.87)

CTBand H	6.82* (3.28)	6.11* (2.93)
Constant	-1.96 (1.11)	-2.38* (.94)

Cases 251

*= significant at 5% level

**= significant at 1% level

Table 6.17 shows us that analysis of additional contributions to occupational pensions as a percentage of gross income produces a more complex picture than just analysing the total amount. For analysis of the total amount there was unsurprisingly a clear link to the prosperity of the individual, with gross income and council tax band dummies for higher value properties being linked with increasing levels of contribution. When we switch to looking at additional contributions as a percentage of gross income, council tax dummies F, G and H are still significant and been joined by E, but gross income is not and has even switched to being a negative, though not significant, influence. It is clear though that the effect of age has not changed. Increasing age is still linked at the 1% level with the payment of increased additional pension contributions. There is little change when the significant variables are re-regressed. Age and council tax band dummies E, F, G and H are still significant at the 5% level. The one change is that the constant was not significant previously, but is in the second regression.

At this point we can proceed to analyse the influences on additional contribution payment to personal pension schemes. This will indicate whether those variables, which are significant with regard to additional contributions to occupational pensions, are also significant with additional contributions to personal pensions.

Table 6.18: Regression of the amount of additional contributions paid to personal schemes

Variable	Regression of all variables	Regression of significant variables only
Social renter	-3.56 (3.62)	
Private renter	-1.829 (3.50)	
NchildH	-1.075 (1.27)	
BigFam	13.99** (5.26)	9.57* (3.78)
Age	.40** (.10)	.42** (.08)

Couple Status	-.66 (2.37)	
Sex	-5.79* (2.64)	
Part Time	-2.41 (3.97)	
Gross Wage	.01* (.00)	.02** (.01)
Shares	3.55 (2.14)	
CTBand A	-.24 (3.24)	
CTBand B	-3.00 (2.89)	
CTBand C	-2.69 (2.90)	
CTBand E	6.76 (3.66)	
CTBand F	.20 (5.05)	
CTBand G	29.87** (6.91)	30.03** (4.77)
CTBand H	217.40** (17.98)	198.23** (12.42)
Constant	-1.68 (5.03)	-4.91 (3.48)

Cases = 791

*= significant at 5% level

**= significant at 1% level

Table 6.18 shows that there is also a considerable degree of overlap with the results for occupational pensions. The three variables that have a significant impact on the amount of additional contribution paid to occupational pension schemes are council tax band dummies G and H, age and gross income. These are all significant factors for the payment of additional contributions to personal pensions. That the individual's council tax band is significant rather than ownership status as manifested through the private renter and social renter dummies, indicates that it is command over property resources rather than ownership that is relevant to the amount paid in additional contributions. Advancing age is linked to an increasing amount paid in additional contributions. This indicates that although older people are less likely to be members of personal schemes and are no more likely to pay additional contributions, those that do pay, are paying a greater amount. Gross income is also significant, indicating that high earners pay a greater amount in additional contributions than low earners. Although this

result was is predictable in itself, it must be remembered that there is the possibility of inter-household transfers which might perhaps have boosted the position of low earners. The final two significant variables are "Bigfam", which implies that adults in large families pay a significantly greater amount in additional contributions to personal pensions than members of smaller families, and the sex variable, which indicates that men pay a greater amount in additional contributions than women to their personal schemes. A second regression shows that all of the variables retain their significance, though the significance of "Bigfam" is reduced from the 1% to the 5% level.

Table 6.18 showed results for the absolute level of additional contribution paid to personal pensions. However we can also examine the influences on the percentage of gross income paid in additional contributions. This is done in Table 6.19.

Table 6.19: Regression of additional contributions to personal schemes, as a percentage of gross income

Variable	Regression of all variables	Regression of significant variables only
Social renter	-7.04 (7.93)	
Private renter	-3.10 (7.64)	
NchildH	-.53 (2.78)	
BigFam	12.38 (11.48)	
Age	.64** (.21)	.48** (.14)
Couple Status	-1.42 (5.18)	
Sex	-6.75 (5.76)	
Part Time	-3.90 (8.68)	
Gross Wage	-.04** (.01)	-.04** (.01)
Shares	-.85 (4.68)	
CTBand A	6.83 (7.08)	
CTBand B	-5.82 (6.31)	
CTBand C	-6.06 (6.32)	
CTBand E	2.55 (7.98)	

CTBand F	6.06 (11.01)	
CTBand G	5.75 (15.09)	
CTBand H	37.90 (39.22)	
Constant	.82 (10.98)	1.09 (6.41)

Cases =795

*= significant at 5% level

**= significant at 1% level

Table 6.19 indicates that there are only two significant variables affecting the proportion of income paid in additional contributions to personal pensions; these are age and gross income. As well as being linked with a higher absolute amount of contributions being paid, advancing age is associated with a higher percentage of income being devoted to pension contributions. This tallies with the evidence from additional contributions to occupational pension schemes. It is clear that advancing age is linked with a higher level of contributions to private pensions. An increasing level of gross income has a significant negative effect on the amount of pension contribution paid as a percentage of income. This would imply that better-off groups with personal pensions as a major source of potential retirement income, will find that their pension generates a smaller income as a percentage of their salary, than worse-off groups.

Conclusion

Before discussing the results from Chapter Six, it is worthwhile to consider the circumstances from which they are derived. The structure of the FRS means that we cannot derive a full slate of answers concerning the level of additional contribution being paid to occupational pensions, while the results that remain have low cell sizes. This latter problem also affects some of the results for personal pensions.

The patterns of additional contribution to occupational and personal pensions show similarities and differences. Absolute levels of contribution by income band are more heavily skewed towards high earners for occupational than personal pension members, but relative contributions are highest in the lowest income band for both groups. Cross-tables show that women pay more relative to men in occupational schemes, with the reverse being true for personal schemes; however the regressions

imply that sex is not a significant factor, with absolute levels of contribution to personal schemes being the exception. The clearest similarity lies in comparing additional contribution patterns by age. For both occupational and personal pension schemes, contribution levels tend to increase with age both in absolute terms, and as a percentage of income. This is all the more important when we consider that, for occupational pensions at least, age was the most important predictive factor in deciding whether or not an individual would pay additional contributions. It is clear that age is key when discussing the level of additional contributions. Despite any advantages connected with paying additional contributions while young, older age groups pay a far greater amount.

In some areas, we only have useful data for personal pension holders. The overall data indicates that the amount of additional contribution paid tends to follow the relationships established in Chapter Three (private pension coverage), rather than those of Chapter Four (propensities to pay additional contributions). As such, owner-occupiers tend to pay more than renters, and the married group pays more than the divorced group. However as with the earlier chapters, we have seen from regression analysis that when all factors are taken into consideration, a more complex picture emerges. Ownership status is less important than command over property resources, while marital status was found to be insignificant. We have been unable in most cases, to compare this to similar data for occupational pension holders, though regression analysis has indicated that command over property resources is a significant factor influencing additional contribution payment to occupational pensions.

The most important overall lesson to be drawn from this chapter is that it is personal pension holders who are making the proportionately larger contribution to their own retirement. It is important to dwell on why this might be the case. It may well be that personal pension holders have a greater need to pay a large amount in additional contributions, since they are building from a lower base than most occupational pension holders. The only obvious differences between the samples which might tend to increase the amount paid, is the inclusion of the self-employed on the personal pension side. However, this cannot explain a 2% gap in the relative additional contribution paid. The most likely explanation lies in the fact that most contributions are paid by the calendar month. Each month a set sum leaves the individual's bank account to enrich their pension. We have seen by the reoccurrence of certain figures that individuals tend to pay "round numbers" such as £50 per month. It could be that the inertia motive, which works elsewhere against the interest of the individual, might benefit the level of the individual's personal pension. If personal pension holders could vary contribution

levels more easily, then they might choose to cut the amount paid, to their own detriment.

The last four chapters have provided evidence about private pension coverage and the contributions made into these schemes. It is clear that many people are choosing not to boost their pension to an adequate level in order to provide a reasonable income in retirement. It is possible that they are choosing to invest in other asset forms. However it is more likely that pension assets are complementary to other asset forms. It is these issues that we will discuss in Chapter Seven.

Chapter Seven: Accumulation of non-pension assets

Introduction

Previous chapters have investigated the accumulation of pension assets in the UK. However it is clear that pension assets are not the only means by which an individual can accumulate a potential stream of income in retirement. An individual could accumulate an income stream through selling a small business or more arcane stores of value like gold or paintings. However, more widespread options for the whole population include financial assets, whether in deposit or share-based form, and housing assets through owner-occupation. It is important to note that the reasoning behind the accumulation of assets will vary between individuals so that the accumulation of other asset forms by an individual is not prima facie evidence that they intend to use these assets as an income stream during their retirement. However, analysis of asset accumulation does shed light on the fifth thematic question set out in Chapter Two in that we can analyse the accumulation of pension and non-pension assets in terms of the allocation of lifetime income. This should also answer the eighth empirical question, namely whether pension and non-pension assets are complements or substitutes for those accumulating them.

This chapter has three major sections. Section A analyses the accumulation of financial and housing assets by the whole population. Section B relates this more specifically to the different pension arrangements of the sample. Section C examines asset accumulation controlling for the influence of extraneous characteristics of private (especially occupational) pension members by means of logistic regression analysis. This should confirm whether pension and non-pension assets are substitutes or complements for different groups within the population.

Methodology

There are several important points about the methodology of this chapter that need to be identified. The first point is that the FRS data for financial assets is collected for each benefit unit, while the pension data is collected on an individual basis. The assumption is that assets are being shared equally within the benefit unit. While this assumption may be questionable, there is little option but to go along with it. However it

does render straightforward analysis of financial assets by sex and marital status pointless. The next problem concerns the 66+ age group. This group was of limited importance in the chapters that dealt with pension accumulation, because it tended not to be building up private pension entitlement. However, when dealing with asset accumulation for the whole population, the 66+ age group make up a large proportion of the population. The decision has been taken to excise this group from the analysis. This is for two major reasons, the first being that while this chapter is concerned with asset accumulation, the 66+ age group may be engaged in living off its assets. The second reason is that section B compares the actions of those with different private pension accumulation strategies. The inclusion of the 66+ age group would have a disproportionate bearing on the group that has no current private pension provision.

Section A: Asset accumulation by the whole population

This section is concerned with the accumulation of financial assets by the whole population. The FRS groups various types of financial asset according to whether they are deposit-based, or share-based. The first stage of analysis is to look at the prevalence of these investments among the population by age group. We would expect that the presence of deposit or share-based investments would tend to increase with age.

Table 7.1: Whether deposit or share-based investments held, by age group

		% with deposit-based account	% with share-based investment
Age Group	16-20	79.4	2.9
	21-25	85.5	7.4
	26-30	87.9	11.8
	31-35	89.6	14.7
	36-40	88.6	16.1
	41-45	89.6	19.4
	46-50	90.3	23.8
	51-55	89.2	24.8
	56-60	88.3	29.5
	61-65	87.5	29.1
	Total	88.1	18.1
	Significance of χ^2	.00	.00
	N	36467	36470

Table 7.1 shows that 88.1% of the working age population have a deposit account, while 18.1% have some form of share-based investment. Although the former

amount is a very high percentage, it is important to note that it is telling us that 12% of the working age population do not even have access to a current account.

There is a positive relationship between age and the holding of financial assets, which in both cases is significant at the .1% level based on chi-square tests. However it is clear that this relationship is very different for deposit and share-based investments. The percentage of the working population with a deposit-based investment starts at nearly 80% for the youngest age group and rises quickly to the average figure. The peak is reached in the 46-50 age bracket from which coverage declines slightly. Coverage for share-based investments starts at 2.9% for the 16-20 age group and rises consistently, reaching a peak in the 56-60 age group at 29.5%. The holding of share-based investments is far more skewed towards older age groups than the distribution for deposit-based investments.

The next step is to relate the prevalence of financial assets to the housing status of individuals. We have seen from the earlier chapters that, other things being equal, owner-occupiers tended to accumulate more pension assets than renters. There was also a cleavage amongst renters, with private renters accumulating more than social renters. It is therefore important to investigate whether this relationship also exists for financial assets, as the first step to establishing whether financial and pension assets are complements or substitutes for those accumulating them.

Table 7.2: Financial asset accumulation by housing status

		% with account	% with share-based investment	Average Age
Tenure type	Rented from local authority	64.4	3.6	39.8
	Rented from housing association	68.1	3.3	37.7
	All social renters	64.9	3.6	39.5
	Rent privately (unfurnished)	85.0	11.9	38.6
	Rent privately- furnished	86.5	9.3	29.8
	All private renters	85.8	10.5	33.9
	Owned with mortgage	95.3	20.5	38.5
	Owned outright	93.0	30.6	50.6
	All owner-occupiers	94.7	23.0	41.6
	Total	88.1	18.1	40.4
	Significance of χ^2	.00	.00	/
	N	36467	36470	/

Table 7.2 shows us that there is definitely a relationship between housing status and financial asset accumulation, for both deposit and share-based forms of investment. Dealing with deposit-based forms of investment first, chi-squared tests confirm that owner-occupiers are more likely to have a deposit based investment than both social and private renters, at the .1% significance level. The data also indicates that there is also a cleavage amongst renters, with private renters being more likely to have some form of deposit-based investment than social renters, again at the .1% significance level. Social renters are at a severe disadvantage in terms of deposit-based savings accumulation with less than two-thirds in possession of this form of savings. It is clear that this cannot be explained by age; as Table 7.1 showed, there is only a minor age effect for deposit-based investments, affecting the under-25 age group primarily. Table 7.2 supports a "three-tiered" relationship between pension accumulation and housing status, and provides the first indication that those individuals accumulating private pension entitlement are also more likely to be in possession of financial assets.

The data for share-based investments is analogous to that for deposit-based investments. Chi-square tests confirm that owner-occupiers are more likely to have a share-based investment than social or private renters, again at the .1% significance level. The division between social and private renters is maintained, with private renters being more likely to have a share-based investment, again at the .1% significance level. Unlike the situation with deposit-based accounts, Table 7.1 showed us that there is a large age effect with share-based investments. However this cannot explain the disadvantage of social renters given that their average age is very similar to that of the whole sample. The age effect can explain some of the gap between private renters and owner-occupiers given that outright owners, with the highest average age, are also the most likely to have share-based investments while furnished private renters, with the lowest average age, drag down the performance of the private rented group. The level to which the gap between the owner-occupiers and private renters can be attributed to age will be explored further in section C. It is clear though from analysing the prevalence of both deposit and share-based investments, that social renters are far less likely to be accumulating financial assets than other groups.

It is also useful to analyse how the prevalence to hold different types of financial asset varies with income level. We have seen from earlier chapters that the sample size for analyses involving income level is lower due to the structure of the FRS. This has a direct impact here as responses are routed so that only those with a payslip get to answer the gross income question. Those with payslips obviously have a much greater chance

of having some form of bank account, as there has to be some receptacle for their salaries to be paid into. As a result, the following table will only examine share-based investments. It would be expected that the percentage holding these would rise significantly with income level.

Table 7.3: Share-based investments by income level

		% with share-based investment
Gross Income Level (£ per week)	0-99.99	21.7
	100-199.99	19.9
	200-299.99	21.9
	300-399.99	26.6
	400-499.99	36.9
	500+	44.2
	Total	24.7
	Significance of χ^2	.00
	N	7656

As Table 7.3 shows, there is an overall relationship between gross income level and the holding of share-based investments, the appropriate chi-square test being significant at the .1% level. However this is not a smooth progression. The proportion with share-based investments is actually lower (though not significantly) in the £100-199.99 group than the lowest band. However from the £300-399.99 band onwards, the percentage with some form of share-based investment increases sharply, reaching 44.2% in the £500+ band. A chi-square test indicates that the difference in the proportions holding share-based investments in the £0-99.99 and £300-399.99 bands is significant at the 1% level, while the gap between each subsequent band and its predecessor is also significant at the 1% level.

It was pointed out in the methodology that due to the fact that the FRS collects information on financial assets by the benefit unit, straightforward analysis of financial assets by sex and marital status would be pointless. However we can gain insight into the financial asset accumulation patterns of various household types. We have seen from the pension data, that the presence of children, especially the third child, is linked with less pension asset accumulation. We have also observed that those households with children led by a single adult, are less likely to have private pension coverage than comparable households with two adults. It will be useful to see whether these results transfer to the accumulation of financial assets. As with other chapters, those household types with no children but which contain pensioners have been excluded to maintain equivalence.

Table 7.4: Financial asset accumulation by household type

		% with deposit-based investment	% with share-based investment
Number of children in household	0	89.9	19.6
	1	87.1	15.6
	2	88.4	15.2
	3+	78.3	9.7
	Total	88.1	17.1
	Significance of χ^2	.00	.00
	N	33307	33306
Number of adults in household (for households with children)	1	66.1	4.5
	2	89.8	16.6
	3+	82.9	11.4
	Total	86.0	14.3
	Significance of χ^2	.00	.00
	N	15579	15576

As Table 7.4 shows, there is a relationship between the number of children in a household and that household's propensity to hold deposit-based accounts at the .1% significance level. Households with no children are significantly more likely to hold deposit-based accounts than any other group (at the .1% level). The disadvantage of households with three children is also clear. This group is less likely than any other to hold deposit-based investments (again significant at the .1% level). The story is repeated for share-based investments. Households with no children are more likely to hold share-based investments than any other group (significant at the .1% level) while households with three or more children are significantly less likely to hold these investments than any other group (also at the .1% level).

When looking at households with children, a clear pattern emerges. Single adult with children households are at a clear disadvantage to two adults with children households with regard to the holding of deposit and share-based investments. In both cases, the large percentage gaps translate into significant results at the .1% level. It appears that the results from the pension chapters have been confirmed. The presence of children, especially a third child has a significant effect, while single adult households appear at a disadvantage to other household types.

So far, this chapter has analysed the distribution of financial assets within the population. It is useful to know what type of financial assets an individual has, but it is also vital to ascertain the value of any holding. The FRS provides useful information on the total value of savings held by the benefit unit. The first step in accessing this is to

analyse total savings with respect to the holding of deposit and share-based investments. The following table includes the category "does not wish to say" as well as savings bands. This category has been left in, as to exclude it would detract from the richness of the data. That a respondent does not wish to answer the question may be as illuminating as the answer itself.

Table 7.5: Total savings by deposit and share-based investment

		Total Savings (£)				
		0-£1500	£1500-£20000	Over £20000	Does not wish to say	Cell Size
Type of investments held	Deposit-based only	67.1%	20.8%	6.2%	6.0%	24483
	Share-based only	43.2%	21.6%	24.3%	10.8%	37
	Both	17.8%	27.3%	22.6%	32.3%	6201
	Neither	86.4%	9.2%	1.4%	3.0%	877
	Total	57.9%	21.7%	9.3%	11.1%	31600

Table 7.5 provides us with very useful information about the amount of total savings as well as the relationship between the type of financial asset held and total savings. Overall, 57.9% of the effective sample state that they have financial assets worth less than £1500. This indicates that financial assets are not adequate enough to be used as a substantial source of retirement income for the majority of the working population.

There is a clear relationship between the types of financial asset held and total saving. The group without financial assets have the lowest level of total saving with 86.4% in the lowest band and only 1.4% in the highest band. Those with deposit-based investments are in a better position with 67.1% and 6.2% in the upper and lower bands respectively. Chi-squared tests confirm that this group has significantly more savings than the "neither" group, at the .1% significance level. However, those with both deposit and share-based investments have the greatest amount of total savings. Just 17.3% of this group claim to have less than £1500 in financial assets, while 22.6% admit to having more than £20000. Chi-squared tests confirm that this group has a significantly different total savings profile to the deposit-based savings only group, again at the .1% significance level.

Table 7.5 also demonstrates the importance of the "does not wish to say" category. The percentage who refuse to divulge their level of total savings rises from 3% of those with neither deposit or share-based investments through 6% of those with

deposit-based accounts through to 32.3% of those with both deposit and share-based savings. It seems clear that the more likely a group is to have a high level of savings, the more probable it is that they will refuse to answer questions about assets. This idea can be tested further by analysing the relationship between income level and total savings. It was reported in Chapter One that richer groups in society were less likely to answer questions on wealth (Atkinson and Micklewright 1983). It will therefore be useful to discover whether this still is the case, as well as investigate the degree of positive relation between income and wealth. It is important to note that for the following table, as with other analyses concerning income, the sample size is smaller owing to the structure of the FRS.

Table 7.6: Total savings by gross income level

		Total Savings (£)			
		0-£1500	£1500-£20000	Over £20000	Does not wish to say
Gross Income Level (£ per week)	0-99.99	56.1%	24.2%	10.2%	9.5%
	100-199.99	58.5%	23.0%	9.7%	8.8%
	200-299.99	54.4%	29.1%	9.6%	6.8%
	300-399.99	44.8%	34.1%	12.5%	8.5%
	400-499.99	36.5%	31.3%	16.6%	15.6%
	500+	25.7%	30.3%	20.6%	23.4%
	Total	51.1%	27.4%	11.5%	10.0%
	Significance of χ^2	.00			
	N	7365			

Table 7.6 shows as expected that there is a positive link between income and wealth with the association being significant at the .1% level. However, as the table indicates, there is not a smooth progression. In the £100-199.99 category, the percentage claiming a financial wealth level of less than £1500 is higher than that in the £0-99.99 category, though the difference is not significant. From this point onwards, increasing income level is significantly associated (at the .1% level for each subsequent category) with greater levels of financial wealth.

The link between increasing income and refusal to answer wealth questions follows a similar course, with the percentage refusing to respond starting at 9.5% and falling to 6.8% before rising to 23.4% in the £500+ income bracket. It is important to note the dramatic increase in non-response in the final two income bands. The richest households are clearly more reluctant to answer questions about their financial affairs.

It was also reported in Chapter One that there was a positive link between age and the amount of financial assets held, with the peak being reached in the 60-64 age group. It is useful to analyse whether this is still the case.

Table 7.7: Total savings by age group

		Total Savings			
		0-£1500	£1501-£20000	Over £20000	Does not wish to say
Age Group	16-20	90.5%	8.3%	.6%	.6%
	21-25	80.6%	16.6%	2.0%	.9%
	26-30	70.1%	22.3%	4.9%	2.7%
	31-35	64.9%	23.4%	6.8%	4.9%
	36-40	61.2%	23.4%	7.7%	7.6%
	41-45	55.4%	24.9%	10.1%	9.7%
	46-50	46.1%	25.8%	12.1%	16.0%
	51-55	42.0%	23.8%	14.8%	19.3%
	56-60	38.0%	19.8%	15.9%	26.3%
	61-65	33.4%	20.4%	18.6%	27.7%
	Total	57.9%	21.7%	9.3%	11.1%
	Significance of χ^2	.00			
	N	31600			

Table 7.7 demonstrates a clear association between advancing age and an increasing level of financial assets. Chi-square tests show this is significant at the .1% level. The proportion in the lowest savings band falls without any interruptions from 90.5% in the youngest age range to 33.4% for the 61-65 band. In a similar vein, the percentage in the highest savings band rises from .6% for the 16-20 age group to 18.6% for the 61-65 group. This would seem to confirm the Financial Research Survey data results given in Chapter One. It appears that financial asset wealth rises with age until the 61-65 age band. It is also worthwhile to note that the proportion who do not wish to reveal their financial wealth also increases with age. This would seem to follow the pattern that those groups with most assets are the least likely to reveal the fact. However, the consistency of the rise, coupled with the very low levels of refusal in the younger age groups might indicate that there is some form of age effect at work, with older groups being qualitatively less likely to answer asset questions. Whatever the explanation for non-response it seems likely that a sizeable minority of the 56-60 and 61-65 age groups have over £20000 in financial assets. These assets will produce some form of income stream which can be used for retirement income purposes.

We have seen from Table 7.2 that there was a relationship between the types of financial asset held and housing status, with owner-occupiers being more likely to hold

deposit and share-based investments than private renters, who in turn were more likely to hold them than social renters. It is useful to analyse whether this relationship is maintained when looking at the total value of savings.

Table 7.8: Total Savings by housing status

		Total Savings				
		£0-1500	£1500-20000	Over £20000	Does not wish to say	Average Age
Housing Status	Rented from local authority	86.0%	9.8%	2.6%	1.6%	40.2
	Rented from housing association	87.3%	9.8%	1.6%	1.2%	37.9
	All Social Renters	86.2%	9.8%	2.5%	1.5%	39.8
	Rent privately (unfurnished)	70.5%	16.7%	6.1%	6.7%	38.4
	Rent privately-furnished	75.8%	16.9%	3.6%	3.6%	29.1
	All Private Renters	73.4%	16.8%	4.8%	5.1%	33.4
	Owned with mortgage	55.5%	26.1%	9.1%	9.2%	38.4
	Owned outright	33.0%	20.9%	17.9%	28.2%	50.8
	All Owner-Occupiers	50.1%	24.8%	11.3%	13.8%	41.4
	Total	57.9%	21.7%	9.3%	11.1%	40.4
	Significance of χ^2	.00				/
	N	31600				/

Table 7.8 indicates that the relationship discovered between the types of account held and housing status is replicated when looking at total financial wealth. Chi-square tests indicate that owner-occupiers as a whole have significantly higher savings than private renters (significant at the .1% level) who in turn have significantly higher savings than social renters (again at the .1% level). It is important to note that these results are not an artefact of pooling the data. Comparison of <u>any</u> of the six groups with another from outside its category yields a significant result at the .1% level. It is also useful to look within the cleavages of social renter, private renter and owner-occupier. There is no difference between housing association and local authority tenants, but unfurnished private renters have significantly greater total savings than the furnished group at the .1% level, while outright owners have significantly greater savings than

mortgagees. The latter result is especially interesting. A gap might be expected owing to the greater average age of owner-occupiers, but the 22% difference in those claiming savings of less than £1500 seems too great to be attributed purely to an age gap of twelve years. It could be that outright owners have much more spare income than mortgagees owing to a lack of mortgage and perhaps not being responsible for children that they have more spare income, which is being ploughed into financial assets.

Table 7.8 also yields useful information about those who do not wish to indicate their level of financial wealth. As expected, this percentage is highest for owner-occupiers, with private renters next and social renters being most likely to divulge their financial asset position. This is interesting because, given that the average age of the private rented group is younger than that of the social rented group, it would seem to confirm that any age effect is outweighed by the tendency of those groups with more financial assets to not wish to divulge the fact.

It was shown earlier in the chapter that households without children were significantly more likely to have deposit and share-based savings, and that amongst households with children, those headed by a single adult were least likely to have deposit or share-based savings. It is useful to analyse total savings with respect to household type, to observe whether these trends are replicated in total saving levels. As with previous analyses by household type, households with pensioners have been excluded to maintain comparability.

Table 7.9: Total savings by household type

		Total Savings			
		£0-1500	£1501-20000	Over £20000	Does not wish to say
Number of children in household	0	54.7%	22.9%	10.2%	12.2%
	1	64.4%	22.0%	7.1%	6.6%
	2	65.0%	21.7%	6.4%	6.9%
	3+	74.2%	16.0%	4.8%	5.1%
	Total	60.1%	21.9%	8.4%	9.5%
	Sig of χ^2	.00			
	N	28956			
Number of adults in household (for households with children)	1	90.8%	6.8%	1.2%	1.1%
	2	62.7%	23.0%	7.1%	7.3%
	3+	70.7%	18.1%	5.9%	5.3%
	Total	66.4%	20.8%	6.4%	6.4%
	Sig of χ^2	.00			
	N	13412			

Table 7.9 shows that the results for total savings by household type mirror those for the propensity to hold different types of investment exactly. Looking at the number of children in the household first, it is clear that households with no children have a significantly higher level of total savings than households with children; chi-square tests confirm this to be the case at the .1% significance level. It is also the case that households with three or more children have a significantly lower level of savings than any other group, again at the .1% level.

When looking the number of adults in the household for households with children, the pattern is even clearer. In single adult with children households, 90.8% have a total savings level of less than £1500, compared to 62.7% for two adult with children households. A chi-square test confirms that single adult with children households have significantly lower total savings than two adult with children households at the .1% level.

We have examined the distribution of financial assets throughout the working age population and its interaction with housing status. So far we have examined this interaction without accounting for the difference in the value of the properties in which people live. The FRS asks for the council tax banding of each property. This allows us to analyse any association between financial asset accumulation and standardised property values. It would be expected that there would be a positive link between increased property value, and financial asset accumulation.

Table 7.10: Financial asset accumulation by council tax band

		% with deposit account	% with share-based investment
Council Tax band	1 Band A	75.2	6.6
	2 Band B	86.5	11.5
	3 Band C	90.8	16.6
	4 Band D	94.4	23.9
	5 Band E	96.4	32.2
	6 Band F	96.7	36.7
	7 Band G	97.3	48.9
	8 Band H	96.8	56.4
	Total	88.1	18.1
	Significance of χ^2	.00	.00
	N	36084	36088

As we can see from Table 7.10, there is a clear association between council tax band and propensity to hold financial assets. The proportion holding deposit-based investments rises at a decelerating rate from 75.2% in band A, reaching a peak at 97.3%

for households in Band G. The chi-square test for the significance of the whole model is significant at the .1% level. For share-based investments, the association is even clearer. The percentage holding these investments rises from 6.6% for households in band A to 56.6% in band H. again, the whole model is significant at the .1% level.

The division of the sample by council tax band provides the opportunity to probe the association between financial asset accumulation and housing status further. Until now, analysis by housing status has focused on all social renters, private renters and owner-occupiers. However it may be the case that some of the differences between these groups in terms of pension and financial asset accumulation was attributable to the difference in the value of the property in which they lived, which can be seen as a proxy for general prosperity. However if we focus on the asset accumulation of social renters, private renters and owner-occupiers within one council tax band, then any effect due to one group tending to live in more highly valued property should be removed, as all groups are facing similar constraints. For the next table, council tax band D has been used. If the situation remains that owner-occupiers are more likely to accumulate financial assets than other groups, then it is strong evidence that financial and housing assets are complements, not substitutes.

Table 7.11: Financial asset accumulation by housing status (council tax band D)

		% with account	% with share-based investment
Housing status	Rented from local authority	75.9	7.7
	Rented from housing association	76.0	5.3
	All Social Renters	75.9	7.3
	Rent privately (unfurnished)	88.0	16.2
	Rent privately- furnished	87.6	11.9
	All private renters	87.8	14.0
	Owned with mortgage	96.8	23.6
	Owned outright	96.0	34.1
	All owner-occupiers	96.6	26.3
	Total	94.4	23.9
	Significance of χ^2	.00	.00
	N	6239	6240

Table 7.11 shows that even when we standardise for property value, there is still a clear association between housing status and financial asset accumulation in both deposit and share-based forms. Focusing on deposit-based investments first, chi-square

tests confirm that owner-occupiers are still more likely to have these forms of investment than social or private renters (at the .1% significance level). The cleavage amongst renters remains, with private renters being more likely than social renters to have a deposit-based investment (at the.1% level). These relationships are confirmed when we look more specifically at the different types of housing status. Chi-square tests indicate that a test of the propensity to hold deposit-based investments for any of the six housing status types with another from outside its immediate group (social renter, private renter or owner-occupier) is significant at the 5% level at least. This would seem to confirm the three-tier relationship between housing status and asset accumulation, for deposit-based investments.

The results for share-based investments are similar to those for deposit-based savings. Chi-square tests show at the .1% significance level that owner-occupiers are more likely to have share-based investments than private renters who in turn are more likely to have them than social renters. Chi-square tests also indicate that any test of the propensity to hold share-based investments for any of the six housing types with another from outside its immediate group is significant at the 5% level, with the notable exceptions of social renters and the furnished private renter group (group 4). That the result for these groups is not significant may be explained by the established relationship between the holding of share-based investments and age, given that the furnished private renters tend to be younger than other groups, and the low sample size for housing association renters. However this result indicates that although the three-tier relationship for housing status and accumulation holds in general for share-based investments, it does not hold in every case.

The relationship between asset accumulation and housing status (standardised for property value) can be probed further by looking at total savings levels. This should confirm whether the earlier findings that there is a three-tier relationship between total savings and housing status are accurate, or whether this was an artefact of the differential values of the property inhabited by social and private renters, and owner-occupiers.

Table 7.12: Total Savings by housing status (Council tax band D)

		Total Savings				
		0-£1500	£1501-£20000	Over £20000	Does not wish to say	Average Age
Housing Status	Rented from local authority	83.1%	11.1%	2.4%	3.3%	40.8

	Rented from housing association	86.7%	10.0%	3.3%	0%	38.0
	All Social Renters	83.7%	11.0%	2.6%	2.8%	40.4
	Rent privately (unfurnished)	64.5%	12.9%	11.3%	11.3%	41.0
	Rent privately-furnished	70.9%	13.8%	7.1%	8.2%	32.1
	All private renters	67.8%	13.4%	9.2%	9.7%	36.4
	Owned with mortgage	48.4%	31.7%	11.0%	9.0%	39.1
	Owned outright	28.3%	19.0%	20.3%	32.3%	51.4
	All owner-occupiers	43.4%	28.5%	13.3%	14.8%	42.2
	Total	47.8%	26.3%	12.3%	13.7%	41.6
	Significance of χ^2	.00				/
	N	5712				/

Table 7.12 indicates that the relationships between the types of account held and housing status are replicated in terms of total savings. Chi-square tests indicate that owner-occupiers have significantly higher savings levels than private renters who in turn have significantly higher savings than social renters (at the .1% level). It is important to note that this result is not due to the pooling of data. Comparison of any of the six groups with another from outside its category yields a significant result at the 5% level. Thus it is confirmed that even when we account for property values, there still seems to be a relationship between housing status and asset accumulation.

Section A: Summary

Analysis of the asset accumulation patterns for the working age population has produced some interesting results; these can be summarised as follows:

- 88.1% of the working age population has some form of deposit-based investment, this figure is broadly constant from the 26-30 age group onwards.
- 18.1% have some form of share-based investment, this proportion rises sharply with age.
- In general, there is a three-tier relationship between asset accumulation and tenure, with owner-occupiers being more likely to accumulate financial assets than private renters who in turn are more likely to accumulate them than social renters. This applies to both deposit and share-based investments.

- Single adult with children households are far less likely to have financial assets than other household types and have a lower level of total savings.
- The propensity to accumulate financial assets tends to increase with income, as does the level of total savings. However it is not a smooth progression, tending instead to accelerate from the £330-399.99 group onwards.
- 57.9% of the working population have total savings of less than £1500, 9.9% have more than £20000, while 11.1% did not wish to say. Groups with more financial assets are more likely to refuse to divulge this information.
- The level of total savings increases with age.
- Owner-occupiers have a higher level of total savings than private renters, who have a significantly greater level of total savings than social renters. This relationship holds when the effect of differing property values is removed.

The primary lesson to be drawn from the section is that asset accumulation follows patterns, which fits in with the results from earlier chapters. Older age groups are more likely to diversify into share-based investments than the young, while single adult with children households appear at a disadvantage compared to other household types. Section A has also lent credence to a three-tier notion of asset accumulation where owner-occupiers are accumulating more asset than private renters, who in turn are accumulating more assets than social renters. The next step is to investigate the linkage between asset accumulation and pension status. This will identify whether those groups with a high level of savings are also in an advantaged position in terms of pension status.

Section B: Relationship of Asset and Pension Accumulation

Section A provided an overview of the asset accumulation patterns of the working age population. Section B aims to focus more closely on asset accumulation patterns with respect to pension status. The following tables will look at the accumulation patterns of three groups: those with an occupational pension (Occupational), those with a personal pension (Personal), and those with neither an occupational nor a personal pension (Neither). There are two important points to make here. The first is that although there is a degree of overlap between occupational and personal pension holders, the decision was taken not to introduce a "Both" category.

This was primarily a presentational issue, as the introduction of a fourth category would have increased the level of complexity unduly. As a result, the "Occupational" and "Personal" categories refer to all those with an occupational or personal pension respectively. The second point is that the group with neither an occupational nor personal pension consists of those people given the opportunity to state this by the FRS. This group is not fully representative of those without private pension coverage but it is the exact corollary of the occupational and personal pension holders, which increases the validity of comparisons.

The first step is to examine the accumulation of deposit and share-based investments with respect to age group. We have seen from analysis of the whole population that there is a significant relationship between the propensity to hold deposit and share-based investments and advancing age. It might be expected that these relationships would be common regardless of pension status.

Table 7.13: Financial asset accumulation by age group and pension status

		Pension Status					
		Occupational		Personal		Neither	
		% with account	% with SBI	% with account	% with SBI	% with account	% with SBI
Age Group	16-20	97.5	6.2	100.0	2.6	91.1	2.8
	21-25	98.1	15.7	98.2	8.8	93.7	6.6
	26-30	98.6	21.9	97.7	14.2	94.3	6.3
	31-35	98.2	23.3	98.2	19.9	92.3	8.1
	36-40	97.6	25.3	97.3	19.3	91.1	9.8
	41-45	98.1	29.4	96.7	22.3	92.3	12.8
	46-50	97.9	33.6	97.6	24.8	92.5	18.0
	51-55	96.9	33.7	97.2	31.5	92.6	20.2
	56-60	97.6	40.2	98.3	39.1	94.4	22.6
	61-65	96.4	36.2	98.9	50.0	92.7	24.4
	Total	97.9	27.5	97.7	22.0	92.7	11.2
	Sig of χ^2	.18	.00	.42	.00	.14	.00
	N	10043	10048	6039	6037	7312	7308

Looking at the results for deposit-based investments first, Table 7.13 shows that the age-accumulation profiles for the occupational, personal and "neither" groups are flat. As suggested by the data, chi-square tests for all three groups were not found to be significant. This indicates that the phenomenon observed earlier in the chapter of a rapid increase in the percentage holding deposit-based investments during the twenties is confined largely to those not in the labour market. A comparison of the proportions holding deposit-based investments between the three groups shows that occupational

and personal pension holders are equally likely to have accounts with the overall proportions standing at 97.9% and 97.7% respectively. Coverage for the "neither" group is lower at each age group while the overall proportion holding an account is 92.7%.

Table 7.13 also shows us that there is still an association between age group and the propensity to hold share-based investments. For all three groups the percentage holding share-based investments starts is lowest in the 16-20 age group and rises to peak in the 56-60 group for occupational pension holders and the 61-65 group for personal pension holders and the neither group. Chi-square tests indicate that the association between increasing age and the propensity to hold share-based investments is significant for the occupational, personal and "neither" groups. A comparison of the proportions holding share-based investments shows us that, unlike the situation for deposit-based investments, occupational pension holders have greater coverage than personal pension holders, with the neither group having less coverage than either. Perhaps the most noteworthy element of the occupational group's distribution is the fact that by the 26-30 age group, over one-fifth of occupational pension holders have some form of share-based investment, a level that is only achieved by personal pension holders in the 41-45 group, and by the "neither" group in the 51-55 age range. This indicates that a sizeable minority of occupational pension holders are accumulating these assets, which historically have grown at a faster rate than deposit-based investments, from an early age.

It is possible to analyse total savings with respect to age and pension status. This might be expected to confirm that younger occupational pension members have higher levels of total savings than personal pension members and those with no private pension respectively.

Table 7.14: Total savings by age and pension status

			Total savings (% in band)			
			0-£1500	£1501-20000	Over £20000	Does not wish to say
Age Group and Pension Status	Under 35	Occupational	59.5	29.1	7.4	3.9
		Personal	64.4	26.3	5.4	3.9
		Neither	82.8	13.6	2.4	1.2
	Over 35	Occupational	40.9	29.2	14.3	15.6
		Personal	44.3	26.8	13.5	15.5
		Neither	54.5	22.5	10.0	13.0
	Total	Occupational	47.9	29.2	11.7	11.2
		Personal	52.7	26.6	10.1	10.7
		Neither	69.5	17.8	6.0	6.8

Table 7.14 indicates that occupational pension holders have only a slightly greater level of total savings than personal pension holders, with both groups having a substantial lead over those without private pension coverage. This pattern is discernible especially in the under-35 age category, with 82.8% of the neither category having less than £1500 in financial assets, compared to 64.4% for personal pension holders and 59.9% for occupational pension members. It could be that private pension coverage is associated with secure employment, which encourages private pension members to save. However it must be noted that this gap narrows when we look at the over-35 age group. It is not apparent why this should be the case.

We have seen that pension status is associated with differing levels of financial asset accumulation. At this point it is useful to compare the financial asset accumulation patterns by housing status for those in different pension positions. This line of enquiry has two purposes. It will enable us to test whether the result from section A, that a "three-tiered" relationship exists between housing status and asset accumulation, is supported when the effect of pension status is added. It will also shed light on whether financial asset coverage for each pension group is consistent across housing statuses.

Table 7.15: Financial asset accumulation by housing and current pension status

		Pension status					
		Occupational		Personal		Neither	
		% with account	% with SBI	% with account	% with SBI	% with account	% with SBI
Housing Status	Local authority renter	92.8	11.5	94.5	8.1	83.1	3.3
	Housing association renter	91.2	10.8	97.0	6.1	86.3	3.0
	All Social Renters	92.6	11.4	94.9	7.8	83.6	3.3
	Private renter (unfurnished)	97.7	21.8	95.4	19.5	89.4	7.3
	Private renter (furnished)	97.5	18.4	97.9	15.1	95.4	8.1
	All Private Renters	97.6	20.1	96.2	18.1	92.7	7.7
	Owned with mortgage	98.4	28.4	98.2	21.0	95.6	12.1
	Owned outright	98.3	35.9	97.2	35.9	94.5	20.7
	All owner-occupiers	98.4	29.5	98.0	23.6	95.3	14.0
	Total	97.9	27.5	97.7	22.0	92.7	12.2

	Significance of χ^2	.00	.00	.00	.00	.00	.00
	N	10043	10048	6039	6037	7312	7308

Chi-square tests show that for each of the three pension categories there is a significant overall association between housing status and deposit-based asset accumulation. However there is not a continuous overall relationship. For occupational pension holders, chi-square tests show that while private renters have significantly greater coverage than social renters, owner-occupiers do not have significantly greater coverage than private renters. For personal pension holders, owner-occupiers have significantly greater coverage than private renters, but private renters do not have significantly greater coverage than social renters. It is only for the group without private pension coverage that the three-tier relationship holds.

Comparison of deposit-based asset accumulation between the pension status categories shows that across housing statuses the "neither" group always has a lower percentage with a deposit-based investment than either of the private pension holding groups, though the gap narrows somewhat when looking at the owner-occupiers. Overall results show that occupational and personal pension holders have similar coverage for deposit-based investments (97.9% and 97.7% respectively). Comparison of coverage levels with respect to housing status reveals that amongst social renters, personal members have slightly higher coverage than occupational pension members whilst in the other two categories the situation is reversed.

However much the relationship between housing status and asset accumulation is evened out once pension status is taken into account for deposit-based investments, the picture for share-based investments appears somewhat different, and mirrors the results from section A. For occupational pension holders, personal pension holders and those with no private pension, owner-occupiers are significantly more likely to hold share-based investments than private renters who in turn are significantly more likely to hold them than social renters. The data also shows that the pattern of share-based asset accumulation with respect to pension status is consistent across housing statuses. Occupational pension holders are the most likely to have share-based investments in every housing status category except outright owners where they tie with personal pension holders. It is clear that private pension holders are more likely to have share-based investments than those without private pension coverage.

The next step is to measure total savings with respect to housing and pension status. This will investigate whether the findings of Table 7.14, that occupational pension holders have slightly greater total savings over personal pension holders with

both having far greater savings than the "neither" group, is common across all housing statuses.

Table 7.16: Total savings by housing and pension status

			Total Savings (% in band)			
			0-£1500	£1501-£20000	Over £20000	Does not wish to say
Housing and pension status	Social Renter	Occupational	78.2	15.6	4.3	1.8
		Personal	80.6	15.0	3.5	.9
		Neither	88.2	8.5	1.8	1.4
	Private Renter	Occupational	59.2	25.5	8.1	7.2
		Personal	60.5	24.8	7.9	6.8
		Neither	78.9	13.5	3.6	4.0
	Owner Occupier	Occupational	44.4	30.6	12.6	12.3
		Personal	49.5	27.7	10.9	11.9
		Neither	63.1	20.9	7.4	8.6
	Total	Occupational	47.9	29.2	11.7	11.2
		Personal	52.7	26.6	10.1	10.7
		Neither	69.5	17.8	6.0	6.8

Table 7.16 indicates that for all housing statuses, occupational pension holders have a slightly higher level of total savings than personal pension holders, and both groups have much higher total savings than those without private pension coverage. It appears that in terms of asset accumulation there is not a great divide between occupational and personal pension holders. However this should not be such a surprise as Chapter Three found that groups with high occupational pension coverage also had high personal pension coverage. It is perhaps to be expected that these groups would therefore have similar asset accumulation patterns.

It is also useful to note that when we account for pension status, owner-occupiers still have a significantly greater level of total savings than private renters who in turn have greater savings than social renters. For example, for the occupational pensions group, 12.6% of the owner-occupiers have total savings of more than £20000 as opposed to 8.1% of private renters and 4.3% of the social renters. This all suggests that those with pension assets are more likely to be accumulating other assets, but at this stage it is difficult to tell what the precise level of pension status influence is. This line of enquiry will be pursued in section C when logistic regression analysis will be introduced to analyse the importance of specific variables.

Further tables analysing the relationship between pension status and asset accumulation with respect to income and family status have been placed in Appendix C.

However at this point we shall focus more closely on the asset accumulation patterns of private pension holders. We have seen that private pension holders can increase the flow of resources into their pensions by the payment of additional contributions. It is therefore useful to analyse whether those paying additional contributions are more assiduous in accumulating non-pension assets than those who are not paying. This may vary between occupational and personal pension members. Chapter Four demonstrated that while additional contributions to occupational pensions were very much the preserve of a minority, almost half of personal pension members were paying additional contributions.

This analysis will begin by examining asset accumulation with respect to age group. We have seen that payment of additional contributions by occupational pension members is skewed heavily towards older age groups. Accounting for this factor allows us to obtain a more accurate picture of whether additional contribution payers are accumulating more financial assets. Given that coverage for deposit-based investments for private pension members is almost 100%, the following table will only deal with share-based investments, as more meaningful inferences can be drawn from this sector.

Table 7.17: Share-based asset accumulation by age group, pension and additional contribution status

		Percentage with share-based investment by pension type				
		Occupational		Personal		
		Paying ACs	Not paying ACs	Paying ACs	Used to pay ACs	Never paid ACs
Age Group	16-20	N/A	6.2	(5.6)	(0)	(0)
	21-25	22.5	15.4	11.1	(0)	6.8
	26-30	35.1	20.9	15.8	16.3	12.8
	31-35	25.7	23.0	23.5	17.9	16.5
	36-40	28.2	25.0	19.2	30.2	20.5
	41-45	42.1	27.1	27.0	22.2	18.2
	46-50	46.7	30.8	27.9	28.9	18.7
	51-55	43.0	30.8	33.2	40.6	26.2
	56-60	48.9	37.1	41.8	59.1	32.3
	61-65	46.8	33.3	63.3	(63.6)	48.6
	Total	39.7	25.6	23.4	26.0	17.8
	Sig of χ^2	.00	.00	.00	.00	.00
	N	1411	8633	2128	334	1913

Brackets denote a cell size of 20 or less

Looking at occupational pension holders first, it is clear from Table 7.17 that additional contribution payers are more likely to have some form of share-based

investment with almost 40% having some form of share-based investment as opposed to 25.6% of non-additional contributors. The age group- accumulation profiles show that for non-additional contribution payers, the density of share-based assets follows a gradual upward trend from 6.2% in the 16-20 age group peaking at 37.1% for the 56-60 group. The profile for additional contribution payers has two interesting features. The first is the very high level amongst the under-30 age group, which implies a high degree of financial awareness amongst the young. The second feature is that after a lull in the 31-35 and 36-40 age groups, from the 41-45 group onwards, coverage does not dip below 40%. This implies that additional contribution makers are consistently accumulating other assets rather than rushing into them shortly before retirement.

The situation with personal pensions is made more complex by the fact that out of the total not paying additional contributions, some have paid additional contributions in the past. This group has the highest density of share-based asset accumulation at 26% compared to 23.4% for the additional contribution payers and 17.8% for those who have never paid additional contributions. The three groups have similar age accumulation profiles with a gradual increase in coverage (subject to a few blips) from the 16-20 to the 46-50 age groups. However the interesting feature of the three personal pension profiles as opposed to the two occupational pension profiles is that in each case there is a massive increase in the percentages with share-based investments from the 51-55 to the 61-65 age groups. This indicates that personal pension holders are making a sudden rush into share-based investments shortly before retirement.

It is useful to follow this up by analysing total savings with respect to additional contribution and pension status. It would be expected that it follows the patterns described here, with additional contribution payers to occupational pensions having the most savings. However it is uncertain whether those who have ceased paying additional contributions to personal pensions will have a greater level of savings than the regular payers.

Table 7.18: Total savings by age group, pension and additional contribution status.

			Total Savings (% in band)			
			0-£1500	£1501-£20000	Over £20000	Does not wish to say
Age Group and pension	Under 35	Occupational- paying ACs	50.8%	34.1%	8.1%	7.0%
		Occupational- not paying ACs	60.2%	28.7%	7.4%	3.7%

status		Personal- paying ACs	62.9%	26.4%	6.5%	4.2%
		Personal- used to pay ACs	70.7%	23.3%	3.8%	2.3%
		Personal- never paid ACs	67.0%	26.1%	4.2%	2.6%
	Over 35	Occupational- paying ACs	29.3%	30.1%	17.6%	23.1%
		Occupational- not paying ACs	43.4%	29.1%	13.5%	14.0%
		Personal- paying ACs	41.8%	29.5%	12.8%	15.9%
		Personal- used to pay ACs	48.4%	22.6%	11.1%	17.9%
		Personal- never paid ACs	49.3%	27.5%	13.0%	10.3%
	Total	Occupational- paying ACs	33.5%	30.9%	15.7%	19.9%
		Occupational- not paying ACs	50.3%	28.9%	11.0%	9.8%
		Personal- paying ACs	51.7%	28.0%	9.9%	10.4%
		Personal- used to pay ACs	57.6%	22.9%	8.0%	11.5%
		Personal- never paid ACs	57.6%	26.9%	8.9%	6.6%

Table 7.18 is a complex table but important lessons can be drawn from it. It is clear that additional contribution payers to occupational pensions have the highest level of total savings, in both the under-35 and the over-35 categories. Overall just 33.5% of additional contribution payers have total savings of less than £1500. Occupational pension holders who do not pay additional contributions lag behind the additional contribution payers but seem to have a slightly higher level of total savings than personal pension holders who pay additional contributions. The group has the highest level of total savings amongst personal pension members. Table 7.18 also shows that amongst personal pension members, those who formerly paid additional contributions have a very similar level of total savings to those who have never paid extra contributions, despite having the highest level of share-based investment ownership.

Overall it seems clear that those groups making additional contributions whether to occupational or personal schemes have a greater level of total savings than their non-additional contribution paying counterparts. This indicates that those accumulating pension assets also tend to accumulate financial assets, given that it appears that the money saved in not paying additional contributions to a pension is not being ploughed into other assets.

It is important to analyse the relationship between financial asset accumulation, additional contribution payment and housing status. This might be expected to confirm that owner-occupying additional contribution payers have the greatest financial asset coverage. Given that coverage for deposit-based investment is almost 100% for private pension members, the following table will measure the percentages holding share-based investments.

Table 7.19: Share-based asset accumulation by housing, pension and additional contribution status

		Percentage with Share-based Investments by Pension status				
		Occupational		Personal		
		Paying ACs	Not paying ACs	Paying ACs	Used to pay ACs	Never paid ACs
Housing status	Local authority renter	20.9%	10.5%	9.5%	7.9%	4.2%
	Housing association renter	(0%)	12.1%	(15.8%)	(0%)	3.3%
	All Social Renters	17.9%	10.7%	10.3%	6.7%	4.1%
	Rented privately (unfurnished)	34.1%	19.9%	25.8%	(16.7%)	15.1%
	Rented privately-furnished	19.0%	18.5%	20.8%	(13.3%)	8.3%
	All private renters	29.0%	19.1%	24.1%	15.2%	12.4%
	Owned with mortgage	40.1%	26.5%	22.2%	26.4%	18.2%
	Owned outright	47.4%	33.0%	37.4%	52.3%	31.0%
	All owner-occupiers	41.5%	27.4%	24.3%	30.9%	20.1%
	Total	39.7%	25.6%	23.4%	26.0%	17.8%
	Significance of χ^2	.00	.00	.00	.00	.00
	N	1411	8633	2128	334	1913

Brackets denote a cell size of 20 or less

Table 7.19 shows that the pattern of share-based asset accumulation by pension status is generally consistent across housing statuses. Additional contribution payers to occupational pensions are the most likely to have share-based investments in the social renter, private renter and owner-occupier categories. Similarly, non-additional contribution payers to personal pensions are the least likely to have share-based investments in each category.

It is in the middle three categories that some variation occurs, with non-additional contribution paying occupational scheme members having a higher incidence of share-based investment among social renters. For private renters, additional contribution paying personal pension members have higher coverage, while for owner-occupiers it is those who formerly paid additional contributions to personal pensions. This indicates that occupational pension membership as such, and it must be remembered that 86% of members do not pay additional contributions, is not associated automatically with a higher incidence of asset accumulation than personal pension membership.

Table 7.19 indicates on the surface that for most pension statuses, the three-tier relationship between asset accumulation and housing status is maintained with the coverage for share-based investment being higher for owner-occupiers than private renters, and higher for private renters than social renters. However chi-squared tests reveal that the three-tier relationship only holds for non additional-contribution paying occupational pension members, and personal pension members who had never paid any additional contributions. In the other cases the linkage breaks down at some point. For the additional contribution payers to occupational schemes and those who formerly paid additional contributions to personal schemes, this can be attributed to low sample sizes. However for those paying additional contributions to personal pensions, the gap between coverage for private renters and owner-occupiers at .2%, cannot be explained by this factor.

The final step is to measure total savings with respect to housing and pension status. This will investigate whether the findings of Table 7.18, that AVC payers for both occupational and personal pensions have a higher level of total savings than their non-AVC paying counterparts, applies across all housing statuses.

Table 7.20: Total savings by housing, pension and additional contribution status

		Total savings (% in bands)			
		0-£1500	£1501-£20000	Over £20000	Does not wish to say
Social Renter	Occupational-AC payer	69.9%	27.4%	2.7%	0%
	Occupational- non AC payer	79.9%	14.3%	4.4%	2.1%
	Personal- AC payer	80.4%	13.8%	5.8%	0%
	Personal- former AC payer	86.0%	14.0%	0%	0%
	Personal- never paid ACs	82.6%	13.6%	2.2%	1.6%

Private Renter	Occupational- AC payer	37.9%	29.3%	15.5%	17.2%
	Occupational- non AC payer	61.5%	25.1%	7.2%	6.1%
	Personal- AC payer	60.6%	22.7%	9.8%	6.8%
	Personal- former AC payer	60.6%	27.3%	3.0%	9.1%
	Personal- never paid ACs	64.3%	25.3%	7.5%	2.7%
Owner-occupier	Occupational- AC payer	31.1%	31.1%	16.5%	21.3%
	Occupational- non AC payer	46.8%	30.6%	11.9%	10.7%
	Personal- AC payer	48.7%	29.6%	10.2%	11.5%
	Personal- former AC payer	52.2%	23.9%	10.1%	13.8%
	Personal- never paid ACs	53.8%	28.7%	9.8%	7.7%
Total	Occupational- AC payer	33.5%	30.9%	15.7%	19.9%
	Occupational- non AC payer	50.3%	28.9%	11.0%	9.8%
	Personal- AC payer	51.7%	28.0%	9.9%	10.4%
	Personal- former AC payer	57.6%	22.9%	8.0%	11.5%
	Personal- never paid ACs	57.6%	26.9%	8.9%	6.6%

The most striking finding from Table 7.20 is that there is a clear gap between the total savings level of additional contribution payers to occupational pensions and the other pension groups across all housing status types. In the social rented sector, the percentage of additional contribution paying occupational pension members with total savings of less than £1500 is 69.9%. This is 10% lower than the next figure (79.9% for non-paying occupational pension members). In the private rented and owner-occupied sectors, the respective gaps are 23.6% and 15.7% respectively. As such, additional contribution payers to occupational pensions appear to have a completely different asset accumulation schedule than the other four pension types. These other four types have more similar schedules, although non-paying occupational pension holders and additional contribution paying personal pension holders appear to have a higher level of total savings than the other two groups. This means that as around 50% of personal pension members pay additional contributions compared to 14% in occupational schemes; occupational scheme members will not necessarily have a higher level of total savings than personal pension members.

Section B: Summary

This section has provided detailed information on asset accumulation patterns with respect to pension status. These can be summarised as follows:

- Occupational and personal pension holders have similar levels of deposit-based asset accumulation, though occupational pension holders have a slight lead in share-based asset accumulation. Both groups are more likely to have both deposit and share-based assets than non-private pension members.
- Occupational pension members have a slightly higher level of total savings than personal pension members. Both groups have substantially more in total savings than non-private pension members.
- These relationships hold when the sample is split by age and housing status.
- Even when pension status is taken into account, owner-occupiers have a higher level of saving than private renters who in turn have a higher level of saving than social renters.
- Additional contribution payers to occupational pensions are most likely to have share-based investments while non-payers to personal pensions are the least likely.
- Additional contribution payers to occupational pensions have the highest level of total savings, while there is little to separate other groups.
- These relationships hold for different age groups and housing statuses.

Section B set out to investigate whether private pension coverage, and the payment of additional contributions is associated with a high level of total savings. It appears that this is so. The data indicates that private pension holders are more likely to be accumulating financial assets than non-private pension holders. It also appears that there is a cleavage amongst private pension members, with those paying additional contributions being more likely to accumulate financial assets than their non-additional contribution paying counterparts. This would imply, other things being equal, that the holding of pension assets makes people more likely to have a high level of saving. However, other things are not always equal and as such it is necessary to try to account for all relevant factors before making a definitive judgement on the linkage between pensions and other financial assets. This is the purpose of the next section.

Section C: Further Analysis and Illustrative Cases

The purpose of this section is to separate and weigh the importance of the social characteristics of each individual. As with Chapters Three and Four, logistic regression is the appropriate tool for this purpose. As before, this section will evaluate a variety of

social characteristics with respect to the dependent variable which for this chapter is total savings. However, the logistic regressions in this section are also intended to analyse the relationship between financial assets and pension assets to see whether these are complements or substitutes. It is important to note that there are two facets to this. One is the relationship between financial asset accumulation and membership of a private pension scheme. The second issue is whether additional contributions complement or are a substitute for other forms of saving. Due to the mathematics of logistic regressions it has proved necessary to separate these two issues into separate regressions. As with earlier chapters the variables emerged after a great deal of trial and error; the coding for each variable is set out in Table 7.21.

Table 7.21: Variable coding for logistic regressions

Variable	Coding and explanation
Social Renter	0=Not a social renter 1=Social renter
Private Renter	0=Not a private renter 1=Private Renter
CTBandA	0= All other bands 1= Council Tax Band A
CTBandB	0 = All other bands 1= Council Tax Band B
CTBandC	0= All other bands 1= Council Tax Band C
CTBandE	0= All other bands 1= Council Tax band E
CTBandF	0= All other bands 1= Council tax Band F
CTBandG	0= All other bands 1= Council Tax Band G
CTBandH	0= All other bands 1= Council Tax Band H
NchildH	Number of children in household 0=none 1=one 2=two 3+=three or more
Age	Age at last birthday: Interval variable
Couple Status	0=Married or Living as a Couple 1=Single, Widowed, Separated or Divorced
Gross Wage	Gross wage (£ per week): Interval variable
Occupational Pension	0=Not current occupational pension member 1=Current occupational pension member
Personal Pension	0=Not current personal pension member 1=Current personal pension member
AC-Occupational	0=Not currently paying additional contributions to occupational pension 1=Paying additional contributions

AC- Personal	0=Not currently paying additional contributions to personal pension 1=Paying additional contributions
Shares	0=No share-based investments 1=Has share-based investments

As in previous chapters two dummy variables have been included to analyse the effect of housing status, leaving owner-occupation as the reference category, and seven dummies have been included to analyse council tax band, leaving Band D as the reference category. However there are some specific points to note for the following regressions. They are intended to investigate the linkages between social characteristics and having a high level of personal saving as this may indicate for which groups financial assets could provide some form of alternative to pension saving. As a result the dependent variable coding has been set at a total savings level of under £20000 (0) and over £20000 (1). As with the rest of the chapter, these logistic regressions do not deal directly with the issues of sex and employment status due to the fact that asset accumulation data in the FRS is collected through the benefit unit. This would tend to distort the picture given that the individual asset position of women and part-time workers (predominantly female) is subsumed.

It is also useful to note that unlike the logistic regressions in Chapters Three and Four, the age group variable has been set to exclude those aged over 65. This is because, as with the rest of the chapter, we are examining the process of asset accumulation whereas the over-65 group may be running down their assets. At this point we can move on to analyse the relationship between private pension membership and a high level of total savings.

Table 7.22: Determinants of high savings level

Variable	B	S.E	Significance	R	Effect on odds
Social Renter	-1.19	.24	.00	-.07	.30
Private Renter	-.03	.19	.88	.00	.97
NchildH	-.03	.02	.14	-.01	.97
Age	.06	.00	.00	.20	1.06
Gross Wage	.00	.00	.00	.08	1.00
Occupational Pension	.07	.11	.53	.00	1.07
Personal Pension	.22	.11	.05	.02	1.25
Shares	1.49	.09	.00	.25	4.45
CTBandA	-.81	.18	.00	-.07	.45
CTBandB	-.43	.14	.00	-.04	.65
CTBandC	-.44	.13	.00	-.05	.65
CTBandE	.11	.15	.45	.00	1.12

CTBandF	.47	.19	.01	.03	1.60
CTBandG	.20	.24	.41	.00	1.21
CTBandH	1.99	.94	.04	.02	7.31
Constant	-4.95	.25	.00	/	/

Cases= 5712

The first point to grasp from this logistic regression is that the possession of an occupational pension does not affect the probability that an individual will have a high level of total savings. Although possession of an occupational pension appears to increase the odds of having a high level of total saving by *7%*, this increase is not significant. However, Table 7.22 indicates that possession of a personal pension is significantly associated with a high level of personal saving. The final column shows that the presence of a personal pension increases the odds of having a high level of personal saving by 25%. It is important to place the significance of having a personal pension in context; it can be seen from the "r" column that this variable only explains a low percentage of the variance surrounding the dependent variable.

However, analysis of the other independent variables does indicate those factors with a major influence on the probability that an individual will have a high level of total savings. It is clear from Table 7.22 that possession of share-based investments is a major indicator of this. The possession of share-based investments increases by 345% the odds that an individual will have over £20000 in total savings. The importance of this variable can be seen from the fact that it has the highest "r" rating of any of the dependent variables.

It is also important to analyse the situation with regard to housing. The first dummy variable indicates that social renters are only 30% as likely to have a high level of total savings as the reference category, owner-occupiers, this result being significant at the 1% level. However the second dummy variable, for private renters is not significant. This indicates that owner-occupiers are not more likely than private renters to have a high level of total savings, once other relevant factors are taken into consideration. However to dismiss housing position as a factor would be a mistake given that the council tax band dummy variables show there is a property value effect in the accumulation of financial assets regardless of ownership status. These show that individuals in Bands A, B and C are significantly less likely to have a high level of savings than those in Band D, while those in Bands F and H are significantly more likely. The Band H variable indicates that this group is 631% more likely to have over £20000 in savings than a Band D council tax payer.

Of the other variables, age is the most important, with the second highest "r" value of all. A one-year increase in the age variable increases the individual's odds of having a high level of total savings by 6%. Additional gross income is also significantly associated with a high level of total savings. It is worth pointing out that this last variable is perhaps not as important a factor as might be thought as it only has an "r" value of .07. This indicates that other factors such as age and share-based investment status have a greater influence than gross income. The other variable is not significant; the presence of children does not significantly affect the odds of having a high level of savings.

At this point we can move on to analyse the effect on total saving of the payment of additional contributions. We have seen from section B that additional contribution payers have a higher level of total savings than non-payers. This logistic regression will enable us to see if this result is repeated once we account for the differing characteristics of payers and non-payers. It must be noted that the following regression only includes 415 cases, due to the difficulty of finding cases with all of the relevant characteristics.

Table 7.23: Determinants of high savings level (different pension variables)

Variable	B	S.E	Significance	R	Effect on odds
Social Renter	-.10	.83	.90	.00	.91
Private Renter	-.53	.69	.44	.00	.59
NchildH	-.06	.09	.50	.00	.94
Age	.05	.02	.00	.14	1.05
Couple Status	-.28	.35	.42	.00	.76
Gross Wage	.00	.00	.26	.00	1.00
AC-Occupational	-.07	.36	.86	.00	.94
AC-Personal	.00	.29	.99	.00	1.00
Shares	1.54	.29	.00	.25	4.67
CTBandA	-1.71	.82	.04	-.08	.18
CTBandB	-1.18	.48	.01	-.10	.31
CTBandC	-.96	.39	.01	-.10	.38
CTBandE	-.04	.45	.93	.00	.96
CTBandF	-.10	.59	.86	.00	.90
CTBandG	.41	.84	.63	.00	1.51
CTBandH	6.78	22.24	.76	.00	880.05
Constant	-3.76	.83	.00	/	/

Cases= 415

This logistic regression indicates that the payment of additional contributions to either occupational or personal pensions is not a major factor in determining whether an

individual will have a high level of savings. The payment of additional contributions to occupational pensions is linked negatively to the possession of a high level of total savings, and is barely positive with personal pensions. The co-efficients are not significant in either case, and the "r" statistic indicates that neither variable has an association with high total savings.

Elsewhere we can see that the lower number of cases destroys the explanatory power of most of the variables found to be significant earlier. However, five variables maintain significance at the 5% level. These variables are council tax band dummies A, B and C, age and share-based investment status. This re-iterates that older people living in high-value property, with a variety of investments are more likely to have a high level of total savings.

Illustrative Cases

As with previous chapters we can use the findings of the logistic regressions to compute the probability that an individual will fulfil the conditions of the dependent variable. As before, this is done by feeding the coding for an individual's social characteristics into the logistic regression equation. In this case we are testing the probability that an individual will have a high level of total savings. As before, we will examine one individual with relatively positive characteristics in terms of the logistic regression co-efficients, and one with negative characteristics. In order to maximise the sample for this exercise, the co-efficients from Table 7.22 will be used.

Case One

What is the probability that a fifty-two year old owner-occupier (council tax band F), with no children under sixteen who holds a personal pension and shares, and who earns £450 per week will have over £20000 in savings?

Logit = -4.95 + .06(52) – 1.19(0) -.03(0) + .47(1) - .03(0) +.22(1) +1.49(1) + .0012(450)
= -4.95 + 3.12 + .47 +.22 +1.49 +.54
= .89

Probability = $1/ (1+ 2.718^{-(.89)})$
= 1/ (1+ .41)
= .71

Case Two

What is the probability that a thirty year old social renter (council tax band B) in a household with two children under 16, with no private pension coverage or share-based assets, and who earns £175 per week will have over £20000 in savings?

Logit = -4.95 + .06(30) –1.19(1) -.43(1) -.03(2) +.07(0) +.22(0) +1.49(0) +.0012(175)
= -4.95 +1.80 –1.19 - .43 -.06 +.21
= -4.62

Probability = $1/ (1+ 2.718^{-(-4.62)})$
= 1/ (1+ 101)
= .01

These illustrative examples show that the probability that an individual will have a high level of total savings is skewed heavily based on their social characteristics. The probability that an individual will have over £20000 in personal savings can vary from over 70% to virtually zero. As can be seen from the first example, the factors which have the greatest influence are age group, gross wage level, council tax band and whether the individual has share-based assets. Older higher-earners, living in high-value property, who own shares are the most likely to have a level of savings which can make some contribution to retirement income.

Chapter Eight: Private Pension Outcomes

Introduction

The previous five chapters have analysed the accumulation of pensions and financial assets. It is now appropriate to draw these threads together in order to analyse the implications of present pension accumulation behaviour in terms of outcomes. Chapter Eight uses a simple model to investigate potential outcomes from the different types of private pension. This is then used to investigate the adequacy of current arrangements in a relative and absolute sense.

Section A: Methodology

This chapter will use the data garnered from the 1994/5 Family Resources Survey to analyse prospective pension income for those in DB and DC occupational schemes, and personal pensions.

The first step is to isolate the appropriate sample. As this chapter deals with the level of contributions to DC and DB pensions, it is necessary to restrict the sample to those with a gross income record; those paying one-off contributions to personal pensions are also excluded.[16] This leaves a total sample of 3166 DB occupational scheme members, 741 DC occupational scheme members, and 1654 personal pension members available for analysis. It must be noted that there is a measure of overlap, 122

[16] As the outcomes from DB schemes are based on a measure of salary, it is obviously necessary to have a salary figure. There are two reasons why it is necessary for the DC cases surveyed to have a gross income reading; the first is that the foundation of private pension contributions is the government's contracted-out rebate, which is paid as a percentage (4.8% in 1994/5) of the individual's earnings between the lower and upper earnings limits (£57.60 and £430) (Social Security Statistics 1997). Thus, in order to know how much rebate to include, it is necessary to have the gross wage. The second reason is that this chapter will use scheme contributions and additional contributions in order to ascertain the individual's total pension contribution. As scheme contributions and additional contributions to occupational schemes are derived through payroll data, it is necessary to have a gross wage reading for all included cases. It must also be remembered that limiting cases to those with a gross wage reading will have the positive benefit of enabling us to analyse prospective pension income as a percentage of the individual's gross wage.

One more change brings us to the final sample. As with Chapter Six, we exclude personal pension members who pay one-off contributions. This is because, in order to calculate overall total pension contributions from an individual we need a common timeframe. The presence of ad hoc payers would tend to suggest fantastically high contributions if these contributions were purported to happen on a regular basis. The self-employed are included in the personal pension cases despite the fact that they are not members of SERPS and thus cannot attract a contracted-out rebate through leaving it.

individuals have both a DC occupational and a personal pension, while 355 people have a DB occupational and a personal pension. The overlap between DB occupational and personal pensions creates a slight problem in the calculation of overall pension outcomes because the payroll data for the "scheme contribution" element could in theory be going to either the occupational or personal scheme. This has an impact on eventual pension benefits because while payments from personal pensions are directly related to contributions paid, benefits from DB occupational schemes are not. It was decided to ascribe any scheme contribution payments made in this case to the occupational pension, as this is the more likely destination for the contributions. This does not affect the treatment of any additional contributions paid to the personal pension, as these can be valued separately, and added to the product from the DB pension.

Having determined the sample, the next step is to turn to the subject for analysis, the valuation of DB and DC pension funds. On an intuitive level, it is far simpler to work out the final payout from a DB scheme as the calculation of income from a DB pension is linked to the number of years served, and the final salary of the individual. The value of a DC pension fund is simply determined by the amount and timing of contributions made, combined with the rate of return over the years. As a result, the source of risk for DC pension holders is the capital rather than the labour market.

It is important to cut down the number of parameters that will be used, as otherwise the number of permutations would quickly become unmanageable. The major parameters to be used are pension type, years of membership, income level, real rate of return, sex and age at retirement. Pension type is clearly a vital parameter as we have seen that pension contributions tend to vary according to the type of private provision. The years of membership decides the period of time that contributions will have to compound. Income level governs the amount of contribution paid automatically to a second pension through the COR. The rate of return will be a major factor in determining the size of the fund that will be converted into an annuity. Sex is an important factor as it is important to understand how pension outcomes can vary between men and women who are making the same level of contribution through differing annuity rates. Age at retirement will also affect the annuity rate on offer.

In order to calculate the value of a DC pension, it is necessary to summate the value of the contributions together with the accrued interest. This can be done through the use of the following formula:

$Y/r\ ((1+r)^n-1)$

Where Y= yearly contribution

r = real rate of return

n= number of years

Chapters Five and Six have highlighted that the FRS provides data on the amount of contributions paid to private pension schemes. This is used as the raw material to create the "yearly contribution" figure. This consists of three parts: i) the individual's contracted-out rebate, ii) any scheme or additional contributions made, and iii) any employer contribution. The latter element has been included because employer contributions make up a substantial element of the total contribution to DC occupational schemes.

To ease the calculation of returns it is useful to make some simplifying assumptions. These are as follows:

- The individual works for a pre-set number of years until retirement at 65 (unless otherwise stated)
- Pension type remains constant throughout working life
- Income remains constant throughout working life
- There is no job change
- Employers contribute 5% of gross income to an employee's occupational pension
- Employers contribute nothing to an employee's personal pension
- Investment growth is at a constant real rate of 4% (unless otherwise stated)
- There are no charges in personal pension schemes
- Any DC pension is converted to an annuity at the moment of retirement

It is useful to investigate some of these assumptions in more detail. The model assumes as a baseline assumption that the sample will work until the age of sixty-five. This is because sixty-five is the current retirement age for men, and the retirement age for women is being raised to it. It seems logical to calculate pension outcomes based on this common retirement age. This is not to say that people are actually retiring at sixty-five. Evidence shows that only half of those men aged 60-64 are economically active, along with 30% of women aged 60-64 (HMSO 1997). As a result, this chapter will also analyse the consequences of early retirement.

The next assumption is that pension type remains constant throughout working life. This is merely a simplifying assumption for dealing with cross-sectional data such as this, as there is no straightforward method of modelling who is likely to switch their type of pension provision, and which type they would switch to. The model also assumes that income remains constant throughout working life. This is obviously not the case, but recent evidence using longitudinal data shows that income mobility over time is relatively limited (Hills 1998). In a similar vein the model assumes no job change. This is again not the case, but it is necessary to assume this as otherwise further assumptions have to be made about the valuation of preserved pensions, which cannot be done in a simple model of this type.

The next assumption is that employers contribute 5% of the employee's gross wage to their DC pension, as this is the median contribution paid by employers to employees' DC schemes (Government Actuary 1994). It is assumed that employers contribute nothing to an employee's personal pension. This is due to the evidence presented in Chapter One that only 32% of employees receive a contribution (Inland Revenue Statistics 1999). As there is no straightforward method of deciding who would receive the contribution, it was decided to assume that no employee would receive it. The next assumption concerns investment growth, which is assumed to be a real rate of 4% per annum. The primary reason for choosing this is that this is a benchmark assumption in academic exercises. It was the amount chosen by the Pension Provision Group (1998), and only slightly higher than the 3.5% used by Disney and Whitehouse (1992). The assumption that there are no charges in personal pension schemes is chosen purely to simplify the calculation process, as is the assumption that DC pension holders buy their annuity at the moment of retirement. This avoids using more than one set of annuity statistics.

These conditions are not precise representations of reality but they do provide a framework within which private pension values can be calculated. There are two points to note with annuities. The first is that the annuity payable depends on prevailing long-term interest rates at the time; the second is that there are many types of annuity available. It is necessary therefore to pick a type of annuity to be bought by all retirees and an annuity rate. It has been decided for the purpose of practicality that all DC pension holders choose a single life annuity. The choice of annuity rate is complicated by the fact that there are around thirty providers. There is the further problem that annuity rates will vary between men and women due to women's longer life expectancy.

The differences between the rates offered by various providers for single life annuities are shown in Table 8.1.

Table 8.1: Annuity rates per £100,000 of pension fund (2/6/00)

		Annuity payable and ranking of provider			
		First	Fourth	Seventh	Tenth
Annuity Recipient	Male, age 55	£7469	£7215	£7176	£6670
	Female age 55	£7155	£6871	£6707	£6156
	Male age 65	£9408	£9132	£8816	£8668
	Female age 65	£8576	£8198	£7889	£7486

Source: The Annuity Bureau Limited

Table 8.1 shows that there is a great deal of variation between the rates available from different providers for the same type of annuity, with the percentage difference between the first and tenth ranked providers ranging from 8.53% (male, age 65) to 14.56% (female, age 65). It is unclear why there should be this amount of variation as all DC pension holders have the right to take the "open market option" and accept an annuity from any provider. It would be expected that if they did this, annuity rates would quickly converge. The fact that this variation exists indicates that there is a large element of inertia, with personal pension members accepting annuities from their own provider.

This leaves the question as to which annuity rate should be chosen. Ideally, it would be best to pick the median rate, which given the number of providers would be around the fifteenth ranked. However, the existence of the open market option means that some funds at least will gravitate to higher paying providers. As a result, the rate used will be the tenth ranked as it avoids an over-generous interpretation whilst acknowledging that some mobility of funds does take place. The rates found on the date in question (2/6/00) imply a rate of 8.67% for men and 7.49% for women[17] for those retiring at 65.

Section B: Base Scenario

DB occupational members

The first group to be analysed is members of DB occupational schemes. The vast majority are only members of an occupational scheme, though 355 members also have a

personal scheme, and 157 of these pay additional contributions to it. The product of these additional contributions is calculated with a 4% real rate of return, over the length of scheme membership. The product from a DB scheme will not differ between men and women, but the product from DC elements (additional contributions or personal pensions) will due to different annuity rates. Due to this, the results for men and women must be separated.

The results will first be calculated for a base case of forty years' membership of a DB scheme that accrues at 1/60 per year. This accrual formula has been chosen because it is the most common. Casey et al (1996) note in their survey of employers' pension provision that it is used in 58% of all DB schemes in the UK.

Table 8.2: Base case outcomes for DB pension holders (£ per week)

		Percentile of Distribution				
		25th percentile	Median	Mean	75th percentile	N
DB Formula	Male	£102.05	£172.09	£201.70	£268.90	2525
	Female	£134.29	£185.97	£205.17	£259.93	641

Table 8.2 suggests that on current patterns, the women surveyed will receive higher DB pensions than men. The median pension received by women with 40 years' membership in a scheme with a "60ths" formula is £185.97 compared to £172.00 for men. It is important to note that the pension distribution for women is far flatter than for men. The expected pension for the 25th percentile of women is 31% higher than that of the 25th percentile male. Both the median and mean figures reflect higher female pensions. It is only at the 75th percentile level that expected pensions for men exceed those for women.

It is important to note that these results make the major assumption that there is an equivalent length of scheme membership between men and women. This is explored in Table 8.3.

Table 8.3: Mean length of DB scheme membership by age group and sex

		Mean length of service by age group (years)		
		26-30	41-45	56-60
Sex	Male	5.69	14.81	18.70
	Female	5.52	11.14	14.00

[17] Source = The Annuity Bureau Limited: Male rate provider = NPI, Female rate provider = NPI

Table 8.3 shows that while mean length of membership in DB pensions is similar for men and women at younger ages, by the 41-45 age group, men have clearly longer average membership, a trend which continues until the end of working life. This means that it is doubtful that women will receive higher median DB occupational pensions than men, as they have shorter job tenure. The wider point is that analysis of tenure brings into question the large pension values assumed by the model for either sex. If even the average male in the 56-60 age group has only 18.7 years of service with the current employer then it is clear that preserved pensions from other employers will play a key role in determining retirement income.

DC Members- Occupational and Personal

Analysis of DC pensions permits a greater choice of parameters than DB pensions where the only parameters that can be easily assumed are years served, gross wage and the accrual formula. With DC pensions the age of retirement, the sex of the retiree, and the rate of return on the fund can all be varied in order to analyse possible outcomes.

The first step is to set out the results for the base case. This assumes that the individual is a member of a DC scheme for 40 years, and retires at 65 with their pension fund having grown at a real rate of 4%. It must be remembered that DC occupational pension holders are assumed to have an employer contribution of 5% of gross wage.

Table 8.4: Base case outcomes- DC pensions (£ per week)

		Outcomes from DC pensions (£ per week)			
		25th percentile	Median	Mean	75th percentile
Pension type	DC Occupational (N = 741)	£120.30	£225.55	£268.78	£368.63
	Personal (N =1654)	£70.23	£129.41	£178.81	£220.44

Table 8.4 demonstrates that under the simple assumptions of this model, DC pensions can provide very high pensions. DC occupational pensions provide the median pensioner with a weekly pension of £225.55, while even the 25th percentile has an income of £120.30. The outcomes from personal pensions are lower in part due to the absence of the 5% employer contribution, but even in this case the median pensioner receives £129.41 per week.

A comparison with Table 8.2 shows that the payout for DC occupational pension members is greater than that for DB members. This is in part due to the model, which assumes no job changes and well managed pension funds. However it is important to note that we are not comparing like with like. The returns from a DB pension will be indexed to inflation in most cases, the most popular method being indexation to inflation up to 5% (Pension Law Review Committee 1993). However the single life annuities assumed for DC pension holders are not increased to cover inflation, so their purchasing power will erode over time. It is worthwhile to highlight just how damaging inflation can be to a level annuity.

Table 8.5: Effect of inflation on level annuities

		Value of annuity over time (as a percentage of its original value)		
		5 years	10 years	20 years
Inflation rate	2%	91%	82%	67%
	5%	78%	61%	38%
	10%	62%	39%	15%

Table 8.5 shows that even under a low inflation environment, the value of an annuity will be significantly damaged over time. If we assume a 2% rate of inflation, a level annuity will retain only 82% of its purchasing power in 10 years, and 67% in 20 years. However it must be remembered that the current low inflation environment is a comparatively recent phenomenon. If inflation was to return to 5%, then the effect would be more pronounced, with an annuity keeping only 61% of its purchasing power after ten years. The consequences of a return to the 10% inflation seen as recently as the early 1990s would be extremely severe for DC pension members. It is important to note that those retiring in the current low inflation and low long-term interest rate climate have most to fear from an inflation upsurge. Retirees from earlier cohorts would have received higher annuities in part to account for the higher inflation rate.

The model can also be used to produce outcomes in terms of the individual's own gross wage. Presentation of outcomes in terms of gross income is important, as it enables us to analyse the distribution of rewards in various types of pension scheme.

Table 8.6: Replacement ratios- DC pensions (base scenario)

	Outcomes from DC pensions (as % of own gross income)			
	25^{th} percentile	Median	Mean	75^{th} percentile

Pension type	DC Occupational (N = 741)	81%	93%	102%	115%
	Personal (N = 1654)	40%	64%	96%	98%

Table 8.6 shows that under these assumptions, the returns from DC occupational pensions replace a very high percentage of previous salary, with the mean outcome actually being greater than the amount gained through work, at 102% of gross wage. It should be noted that the distribution of the replacement ratios for DC occupational pensions is relatively even, with the 25th percentile in the distribution receiving 81% of previous salary, the median receiving 93% and the 75th percentile receiving 115%. This is a far more even distribution than that which exists for personal pension members. The difference can probably be explained by the greater role of additional contributions in personal pensions, which would tend to increase the dispersal of the results. The median personal pension member receives a pension worth 64% of their gross wage, however the mean is 96%. This indicates that very large contributions are being made by, or on behalf of, a few members.

Section C: Beyond the Base Scenario

DB Occupational Members

Table 8.2 showed the outcomes for DB members if we assume a 60ths formula and forty years of scheme membership. It is possible to vary the accrual formula and the number of years served in order to show outcomes under the changed circumstances. Table 8.7 examines the effect of an accrual formula of 1/80 per year, and the effect of 30 years scheme membership for both men and women.

Table 8.7: Pension outcomes for DB pension holders

			Percentile of distribution			
			25th percentile	Median	Mean	75th percentile
DB Formula and sex	Male (N = 1525)	30 years (80ths)	£57.41	£96.75	£113.53	£151.27
		40 years (80ths)	£76.92	£129.00	£152.38	£202.96
		30 years (60ths)	£76.35	£128.05	£150.45	£200.68

	Female (N = 641)	30 years (80ths)	£75.50	£104.56	£115.54	£146.14
		40 years (80ths)	£100.90	£139.45	£155.44	£195.35
		30 years (60ths)	£100.67	£139.41	£152.75	£193.50

Table 8.7 shows that if we keep the 60ths accrual formula but reduce the years of scheme membership then we find that the mean falls to £150.45 for men and £152.75 for women. It should be noted that this is slightly more than the proportionate decrease (25%) in years of scheme membership. This is because of the outcomes from those members who also have personal pensions. As the personal pension has had ten fewer years in which to compound, it plays a lesser role, leading to proportionately lower retirement incomes.

If we assume the individual is a member of an occupational scheme accruing at 1/80 per year, then the rewards are correspondingly less generous. In this case, the mean payment for an individual with 40 years of membership is just over £150 per week for both men and women while the median is £129.00 and £139.41 respectively. Membership of a "80ths" plan for forty years results in a distribution of rewards that is very similar to thirty years membership of an "60ths" plan, the difference of course being due to the personal pensions of members contributing less. It should be noted that this model is based on the simplest formula and thus assumes a proportional return for high and low earners. However, the integrated benefit formulas highlighted by Ghildarducci (1992) that account for state pension income in deciding pension benefits result in lower earners receiving a lower proportionate return.

DC Members

Table 8.4 displays the results for the base scenario of a 4% real rate of return. However the real return over time is inherently unpredictable, and could turn out to be either higher or lower than the 4% stated. Accordingly, it is useful to analyse the consequences of a higher and lower real rate of return.

Table 8.8: Pension Outcomes (£ per week) with a 2% or 6% real rate of return

		Outcomes from DC pensions (£ per week)			
		25th percentile	Median	Mean	75th percentile
	DC Occupational (6%)	£195.92	£367.34	£437.75	£600.36

Pension type and real rate of return	DC Occupational (6%)	£195.92	£367.34	£437.75	£600.36
	DC Occupational (2%)	£76.47	£143.37	£170.85	£234.81
	Personal (6%)	£114.42	£210.83	£291.29	£359.11
	Personal (2%)	£30.60	£56.38	£77.90	£96.04
	N	1654			

Table 8.8 shows just how far the returns from DC pensions are at the mercy of variation in rates of return. If over the lifetime of a 40-year pension, the real rate of return is 6%, then we can see that there will be little need to worry about absolute pension adequacy for those in schemes, whether occupational or personal. The median return from a pension built up over a 40-year period is £367.34 for DC occupational pension members and £210.83 for personal pension members; even at the 25th percentile, the outcomes are £195.92 and £114.42 respectively.

If on the other hand, the real rate of return for a pension accumulated over 40 years is only 2% then it is clear that DC pensions will produce low outcomes even under the generous assumptions of this model. This will impact especially on those with personal pensions. With a 2% real rate of return, the 25th percentile will receive £30.60 and the median personal pension holder only £56.38 after 40 years of saving. It must also be remembered that this amount will be whittled away by inflation. The outcomes for DC occupational pension holders are higher due to the 5% employer contribution but the 25th percentile still only receives a pension of £76.47 per week.

The outcomes for DC pensions using different rates of return can also be expressed in terms of individual replacement ratios.

Table 8.9: Replacement ratios (assuming a 2% or 6% real rate of return)

		Outcomes from DC pensions (as % of own gross wage)			
		25th percentile	Median	Mean	75th percentile
	DC Occupational (6%)	132%	151%	166%	183%
	DC Occupational (2%)	51%	59%	65%	73%
	N	741			
	Personal (6%)	64%	105%	156%	160%
	Personal (2%)	17%	28%	42%	43%
	N	1654			

Table 8.9 demonstrates that under the assumptions of the model, with a 6% real rate of return, all DC occupational pension holders can expect a pension worth more than their gross wage. Even with a 2% real rate of return, three-quarters of DC pension

holders can expect a pension worth more than half of their working income, though it is important to remember that this will be eroded by inflation. A 2% real rate of return will by contrast have extremely serious repercussions for personal pension holders. In this case, a personal pension accumulated over forty years will provide the median pensioner with just 28% of previous salary, while even the 75th percentile will receive just 43%. The 2% real rate of return case can be seen as the result of poor returns in the economy generally, but it could also be visualised as an indirect representation of poor fund performance, or a high level of charges in personal schemes. It is clear that the lack of an employer contribution makes personal pension holders vulnerable to low investment returns.

Until now we have assumed that individuals accrue their pension over a term of forty years. This assumption must be seen in the light of evidence from Chapter Three, where total private pension coverage was still growing strongly in the late twenties and thirties. When this is combined with the trend towards early retirement then it seems unlikely that most individuals will accrue a pension over 40 years. Tables 8.5 and 8.6 have already showed the consequences for DB pension holders of accruing a pension over a shorter period of time; the next step is to demonstrate the outcomes for DC pension holders. For the following table, we assume thirty years of scheme membership with a 4% rate of return and the individual retiring at 65.

Table 8.10: Pension outcomes (£ per week) with thirty years' membership

		Outcomes from DC pensions (£ per week)			
		25th percentile	Median	Mean	75th percentile
Pension type	DC Occupational (N = 741)	£71.00	£133.12	£158.64	£217.57
	Personal (N = 1654)	£41.46	£76.40	£105.56	£130.14

It is clear from Table 8.10 that there is a different relationship between the pension payout and the length of scheme membership for DC than DB pension holders. With DB schemes, the effect of the extra years served is proportional; while DC Members who have contributed for 30 years receive a payout which is only 59% of the pension accrued by those who have contributed for 40 years. This is due to the effect of compound interest and illustrates just how much more valuable contributions paid at an early stage in the working life really are.

A comparison with Table 8.9 shows that 30 years membership gives slightly lower pensions than 40 years' membership at a 2% real rate of return. This indicates, for personal pension holders in particular, that the number of years served is extremely important. The median outcome from a personal pension accrued over thirty years is £76.40, compared to a median of £129.41 for policies accumulated over forty years. We have seen from Chapter One that only 57.2% of personal pension policies are being persisted with four years after purchase (PIA 1999). A succession of small preserved personal pensions is not going to provide an adequate retirement income.

We can also use the assumption that DC pensions are built up over thirty rather than forty years to estimate replacement ratios.

Table 8.11: Replacement ratios (assuming 30 years' scheme membership)

		Outcomes from DC pensions (as % of own gross wage)			
		25th percentile	Median	Mean	75th percentile
Pension type	DC Occupational (N = 741)	48%	55%	60%	68%
	Personal (N = 1654)	23%	38%	56%	58%

Table 8.11 shows that if we make the more pessimistic assumption of thirty years' scheme membership rather than forty, the median pensioner receives 55% of previous salary in a DC occupational scheme, and 38% in a personal scheme. Due to the relatively even distribution of DC occupational pensions, the 25th percentile still receives a pension comprising almost half of their gross wage, while the 75th percentile receives 68%. With personal pension holders, the 25th percentile only receives 23% of previous salary.

The last two tables assumed thirty years of scheme membership, but that the individual retired at 65. We must also take into account the possibility of early retirement, which will result in the pensioner retiring at an earlier age, and thus receiving a lower level of annuity payment. Table 8.1 illustrates that the rates to be used are 6.67% for men and 6.16% for women[18]. The following table will represent the outcome if the sample retires at 55, with 30 years' scheme membership.

[18] Source = The Annuity Bureau Limited: Male rate provider = Scottish Widows, Female rate provider = Standard Life

Table 8.12: Pension outcomes (£ per week) with early retirement

		25th percentile	Median	Mean	75th percentile
Pension type	DC Occupational (N = 741)	£55.90	£104.18	£123.60	£170.13
	Personal (N = 1654)	£32.58	£60.00	£81.88	£100.65

Table 8.12 shows that early retirement has a damaging impact on the retirement income that DC pensioners can expect. DC pension holders who retire at 55 receive around 27% less than those who retire at 65. This is entirely due to the difference in annuity rates. This is a large gap, but it may represent an under-estimate of the loss to retirement earnings of retiring early. It should be remembered that if these people had continued to work, then they would be accumulating greater pension entitlement. In terms of numbers, median pension income is reduced to £104.18 to DC occupational scheme members, and £60 for personal pension members. This indicates that occupational scheme members will still obtain substantial benefit from their private pensions, but with personal pension holders, there are dangers of interaction with some means-tested elements of state assistance. This problem is heightened at the 25th percentile, where personal pension members can expect just £32.58 per week, with occupational scheme members receiving £55.90.

An important point to note is that an early retiree's income will be affected to a much greater extent by inflation than those who retire at 65. A 4% average annual rate of inflation causes an annuity to halve in value every 18 years. This means that by the age of 73, scarcely old by modern standards, private pension income may have halved in value for early retirees. The next step is to translate income levels for early retirees into replacement ratios.

Table 8.13: Replacement ratios for early retirees

		Outcomes from DC pensions (as % of own gross wage)			
		25th percentile	Median	Mean	75th percentile
Pension type	DC Occupational (N = 741)	37%	42%	47%	55%
	Personal (N = 1654)	18%	30%	44%	45%

Table 8.13 illustrates a fundamental truth about DC pensions, that pensions are solely determined by contribution level, rate of return and annuity rates. Even under the generous assumptions of the model, it is doubtful that early retirees will manage to obtain a pension that comprises a high proportion of previous salary. For personal pension holders, the 25th percentile receives only 18% of previous salary, while the median pensioner gets 30%.

Due to the narrow distribution for DC occupational scheme holders, half of all pensioners will receive an income in the 37-55% range, with the median at 42%. This is broadly comparable to the outcome from 30 years of DB scheme membership where under an "80ths" scheme the member would receive 37.5% of previous salary, while with a "60ths" scheme it would be one-half. However there is the major difference that DB schemes in payment will be indexed at least to inflation, while the purchasing power of single life annuities will erode. Early retirement is an important issue for DC schemes, as it works against the modus operandi of DC schemes by limiting the time that a fund has to compound, and leading to a lower annuity rate for the retiree. The current trends towards earlier retirement, and a greater role for DC schemes may well lead to a lower retirement income for this group.

Section D: Outcomes for different groups

The previous tables have analysed the outcomes under varying assumptions concerning the real rate of return and age at retirement. The next step is to analyse outcomes with respect to some of the parameters used in earlier chapters.

The first area to be addressed is income level. For the purposes of this exercise we will concentrate on the base case of forty years membership of a scheme with a "60ths" accrual formula for DB members and forty years of contributions, retirement at 65 and a real rate of return of 4% per annum for DC pension holders. The first area to be examined is how expected pensions vary with respect to income level. It is of course going to be the case that individuals with higher gross wages will have higher expected pensions; but the interesting element is how the replacement ratio varies. It must be remembered that as with Table 8.6 these replacement ratios are calculated directly with respect to the individual's own gross wage, and are not the product of crude averaging in any way.

Table 8.14: Pension outcomes (£ per week and replacement ratio) by income level

			Pension outcomes			
			Median (£)	Mean (£)	Median (%)	Mean (%)
Pension type and income level	DB Occupational (N = 3166)	£0-99.99	£45.02	£45.88	67%	80%
		£100-199.99	£105.99	£107.43	67%	70%
		£200-299.99	£165.22	£169.26	67%	69%
		£300-399.99	£234.18	£238.53	67%	68%
		£400-499.99	£296.29	£301.91	67%	68%
		£500+	£406.27	£476.08	67%	68%
		Total	£175.93	£202.40	67%	70%
	DC Occupational (N = 741)	£0-99.99	£59.78	£62.25	81%	100%
		£100-199.99	£139.74	£148.83	81%	98%
		£200-299.99	£252.98	£260.42	106%	106%
		£300-399.99	£368.46	£381.79	111%	111%
		£400-499.99	£456.02	£468.79	102%	107%
		£500+	£606.10	£696.64	87%	86%
		Total	£225.55	£268.78	93%	102%
	Personal (N = 1654)	£0-99.99	£39.60	£85.53	61%	167%
		£100-199.99	£97.07	£127.26	64%	85%
		£200-299.99	£158.29	£184.68	65%	76%
		£300-399.99	£232.45	£275.28	67%	79%
		£400-499.99	£308.56	£402.18	71%	92%
		£500+	£291.65	£368.18	49%	55%
		Total	£129.42	£178.81	64%	96%

Table 8.14 shows that the results for DB occupational schemes follow a narrow distribution of outcomes with little difference between the mean and median outcomes at low and middle incomes. It is only when at the £500+ income band that a sizeable gap between the mean and median emerges. If we look at the outcomes in terms of individual replacement rations then we can see for all groups the median replacement is 67%. This is simply due to the accrual formula used, and the fact that not enough members are paying additional contributions, or are members of personal pensions, to change it. Lower earners seem to have higher mean replacement ratios; this indicates that these groups are paying more in additional contributions, or that they are more likely to have a personal pension.

If we compare the outcomes for DC and DB occupational scheme membership, we can see that under the assumptions made in the model, DC members at all income levels can expect higher pensions. Looking beyond this we can see that the pattern of outcomes for DC occupational members is very similar to that for DB members. The gap between the mean and median statistics is very small at low and middle-income

levels indicating that additional contributions, which would tend to unbalance the distribution, are of relatively little importance. In the top income bracket, a sizeable gap emerges between the mean and the median. It may be that this is due to a few large contributions pulling up the mean, but this explanation can be challenged if we look at replacement ratios. The highest income bracket has a median replacement of 87% of gross wage, while mean is only 86%, the one instance where the mean is less than the median. This indicates that it is the lower earners in the £500+ band who are paying additional contributions. Elsewhere we can see that median replacement ratios are lowest for low earners, indicating that this group is the least likely to pay additional contributions.

The story is quite different for personal pension holders. As expected, outcomes are lower than for DC occupational schemes at all income levels. If we compare outcomes from personal pensions to those for DB occupational schemes, we can see that at most income levels the median is higher for DB members, but the mean is higher for those in personal schemes. The vastly uneven distribution is the most striking element of the personal pension outcomes. This is best illustrated at the lowest income level; the median outcome is only £39.60, but the mean outcome is more than double this at £85.53. This indicates that a few large contributions made by (or on behalf of) low earners have a vast impact on the mean statistic. This can be demonstrated by analysis of the replacement ratios from personal pensions. At the lowest income level, the mean statistic is almost three times greater than the median. If we look at the median replacement ratios at each level, we can see that there is a general slight upward trend from 61% in the £0-99.99 income band to 71% in the £400-499.99 before subsiding to 49% at the £500+ level. This could be due to higher earners making alternative retirement provision through occupational schemes or other savings. It could even be due to higher earners in personal pensions taking an absolutist view of retirement adequacy. The next step is to analyse the outcomes for men and women in DC schemes. We have already seen from analysis of DB pension holders that the outcomes are broadly comparable, given the assumption of equal scheme tenure.

Table 8.15: Pension outcomes (£ per week and replacement ratio) by sex

			Pension outcomes			
			Median (£)	Mean (£)	Median (%)	Mean (%)
Pension type and sex	DB Occupational (N = 3166)	Male	£172.09	£201.70	67%	70%
		Female	£185.97	£205.17	67%	69%
		Total	£175.93	£202.40	67%	70%

	DC Occupational (N = 741)	Male	£224.98	£273.15	93%	104%
		Female	£235.23	£251.12	95%	94%
		Total	£225.55	£268.12	93%	102%
	Personal (N = 1654)	Male	£137.79	£188.95	68%	102%
		Female	£102.49	£128.18	52%	64%
		Total	£129.42	£178.81	64%	96%

Table 8.15 shows that the pattern of outcomes varies between men and women in occupational and personal pension schemes. In DB schemes, women have a higher mean and median expected pension than men. This changes slightly for DC occupational schemes where women have a slightly higher median outcome, but a lower mean. This indicates that a few men are boosting their eventual pension payout through the payment of large additional contributions. This is borne out if we look at replacement ratios. The median outcomes for men and women are broadly equivalent, but the male mean replacement level is 10% higher than the female equivalent.

The pattern of outcomes for personal pensions is different to that for occupational schemes. In personal schemes, men have significantly higher mean outcomes than women (at the .1% level), and a clearly higher median. As with occupational schemes there is a greater gap between the mean and the median for men than for women, a story which is repeated if we look at the replacement ratios. The gap between median and mean is 12% for women, but 34% for men. This would indicate that some men are paying very large contributions indeed.

It is useful to investigate pension outcomes with regard to employment status, as this will give us information on the relative position of the self-employed (in personal pensions) and the part-time employed in comparison to the full-time employed. The self-employed do not have the contracted-out rebate as a base for their pensions, so other things being equal we would expect them to have lower pension outcomes. Part-timers might be expected to earn less than full-timers and so have lower pensions, but the important issue here is the replacement ratio. This will indicate whether part-timers heading for smaller pensions as a proportion of their gross wage.

Table 8.16: Pension outcomes (£ per week and replacement ratio) by employment status

			Pension outcomes			
			Median (£)	Mean (£)	Median (%)	Mean (%)
Pension and employment	DB Occupational	Full-time employed	£177.83	£204.50	67%	70%

employment status	(N = 3133)	Part-time employed	£130.60	£150.95	67%	71%
		Total[19]	£176.43	£203.02	67%	70%
	DC Occupational (N = 733)	Full-time employed	£232.14	£271.84	93%	102%
		Part-time employed	£135.11	£214.21	97%	94%
		Total	£227.50	£269.48	93%	102%
	Personal (N = 1639)	Self-employed	£120.55	£173.65	74%	109%
		Full-time employed	£135.07	£185.70	63%	94%
		Part-time employed or self-employed	£87.76	£128.94	56%	79%
		Total	£129.93	£179.25	65%	96%

Table 8.16 shows that, as expected, the full-time employed can expect a higher pension from their occupational schemes, whether DB or DC, than part-time workers. A point to note is that there is a vast gap between the mean and median for part-time employees in DC occupational schemes, where the mean is £214.21 compared to the median of £135.11. This could be due to the payment of additional contributions, or a very skewed distribution of earnings. This is quite likely given the comparatively low (30) number of cases in this cell. The replacement ratios show that there is little difference between full and part-time employees, with part-timers having a slightly higher mean replacement rate in DB schemes, but a lower one in DC schemes.

The data for personal pensions tells a different story. As with occupational scheme members, full-timers can expect a higher pension than part-timers, but this also applies to the pension as a percentage of the individual's own work income. On these assumptions, the median full-time employee can expect a pension comprising 63% of gross income, compared to 56% for the part-time employee. The most important facet of the data is the position of the self-employed. Although the data shows that in absolute terms they can expect a pension which is slightly lower than that for full-time employees, it shows that, as a percentage of their own income, they can expect higher pensions. The median self-employed worker will receive 74% of previous salary under these assumptions, compared to 63% for the median full-timer. It must also be remembered that the self-employed do not have the contracted-out rebate as a basis for their contributions, so the good relative position of the self-employed is entirely due to

voluntary action. It is important not to be carried away by this result. The model assumes that the personal pension will be held for 40 years until retirement, though we have seen that this may not be a realistic assumption. It is possible to argue that income is more variable for the self-employed, and because their pension rely exclusively on additional contributions, that they would be more vulnerable to accumulating a series of small preserved pensions. On the other hand, it is clear that those self-employed people with private pension position are more aware of its value and thus would be less likely than an employee to let the policy lapse.

Previous chapters have analysed elements of pension accumulation with respect to marital status. This will be pursued here by analysing outcomes.

Table 8.17: Pension outcomes (£ per week and replacement ratio) by marital status

			Pension outcomes			
			Median (£)	Mean (£)	Median (%)	Mean (%)
Pension type and marital status	DB Occupa-tional (N = 3151)	Married	£154.50	£188.72	67%	71%
		Single/ never married	£175.40	£187.77	67%	68%
		Living as a couple	£214.70	£239.74	67%	68%
		Widowed	£166.53	£208.86	67%	68%
		Separated	£221.73	£254.32	67%	69%
		Divorced	£201.41	£220.68	67%	69%
		Total	£175.45	£202.12	67%	70%
	DC Occupa-tional (N = 741)	Married	£189.98	£254.35	81%	102%
		Single/ never married	£204.41	£241.74	93%	98%
		Living as a couple	£290.87	£312.46	101%	101%
		Widowed	(£161.69)	(£212.57)	(101%)	(113%)
		Separated	£276.58	£346.27	109%	100%
		Divorced	£297.54	£304.19	105%	104%
		Total	£268.78	£225.55	93%	102%
	Personal (N = 1651)	Married	£132.25	£188.66	71%	112%
		Single/ never married	£133.84	£169.73	71%	76%
		Living as a couple	£130.49	£165.79	53%	59%
		Widowed	£70.94	£114.21	40%	63%
		Separated	£93.49	£107.47	37%	46%
		Divorced	£123.67	£156.16	56%	63%

[19] Table 8.16 omits the "unemployed" and "not working for any other reason" categories for. As a result of this, totals differ from the overall level.

		Total[20]	£129.10	£178.91	64%	96%

Brackets denote a cell size of 20 or less

As with other areas, Table 8.17 shows patterns of pension outcomes differ markedly between occupational and personal pension holders. For DB scheme members, the separated group has the highest mean and median outcomes, followed by the co-habitees. The married group has the lowest median outcome. Further analysis using t tests shows that the married group is heading for significantly lower pensions than the co-habiting, separated and divorced groups.

A similar pattern also applies to DC occupational scheme holders. In this case, the highest median pensions can be expected by the divorced group at £297.54 and the lowest by the widowed group at £161.69. It appears that as with DB schemes, the married group is heading for significantly lower outcomes than the divorced, separated and co-habiting groups, t tests indicates that the difference in the mean outcomes is significant at the 5% level in all cases. This also applies when we look at outcomes in terms of individual replacement rates. The married group has the lowest median replacement rate, whilst the divorced group has the second highest. When this is linked with the high outcome for the separated group, it would appear that divorce or separation does not render people less likely to contribute to a private pension.

However the situation is reversed somewhat when we examine outcomes for personal pension holders. In this case the single group has the highest median pensions at £133.84, followed by the married group with £132.25. The divorced group can expect median personal pensions of £123.67 while the separated group is heading for just £93.49 under these assumptions. These patterns are repeated when we look at outcomes in terms of personal replacement ratios, the married group has a median replacement ratio of 71% compared to 56% for the divorced group and 37% for the separated group. There is no clear reason as to why outcomes from occupational and personal pensions should vary in this way.

The next area to investigate is outcomes with respect to housing status. We have seen throughout this thesis that owner-occupiers have tended to have higher pension provision than renters, though regressions have shown that this is not due to housing status per se. It will be interesting to see how far these patterns are repeated when we

[20] Table 8.17 omits the "Married, spouse not in household" category (15 cases for DB occupational scheme members, 0 cases for DC occupational scheme members, 2 cases for personal pension members). Totals may therefore differ slightly from the overall statistics.

look at housing status. To maximise cell sizes, housing statuses have been grouped under the three headings of social renters, private renters and owner-occupiers.

Table 8.18: Pension outcomes (£ per week and replacement ratios) by housing status

			Pension outcomes			
			Median (£)	Mean (£)	Median (%)	Mean (%)
Pension type and housing status	DB Occupational (N = 3166)	Social Renter	£140.01	£141.47	67%	69%
		Private Renter	£175.93	£193.98	67%	68%
		Owner Occupier	£181.43	£207.52	67%	70%
		Total	£175.93	£202.40	67%	70%
	DC Occupational (N = 741)	Social Renter	£175.22	£194.11	97%	99%
		Private Renter	£255.16	£256.41	100%	105%
		Owner Occupier	£235.28	£280.44	92%	102%
		Total	£225.35	£268.78	93%	102%
	Personal (N = 1654)	Social Renter	£88.32	£103.24	40%	59%
		Private Renter	£112.20	£157.39	54%	74%
		Owner Occupier	£137.79	£180.42	68%	102%
		Total	£129.42	£178.71	64%	96%

Table 8.18 shows that in terms of absolute outcomes, the results for DB occupational schemes seem to follow a consistent pattern, with owner-occupiers heading for higher outcomes than private renters who in turn can expect higher outcomes than social renters. Closer analysis shows that the gap between the means for the owner-occupiers and private renters is not significant. However, the gap between the means of both groups compared to the social renter group is significant at the 1% level, emphasising the extreme disadvantage of social renters.

This pattern of outcomes does not transfer wholly to DC occupational schemes. In this case, private renters can expect a higher median pension at £255.16 than owner-occupiers with £235.28, though the situation is reversed when we look at the mean, indicating that a few owner-occupiers are paying large additional contributions. Social renters are left far behind with median pensions of £175.22, and t tests show that the gap between the mean outcomes for social renters and the other two groups are significant at the 1% level. If we change the focus to analysing the results in terms of individual replacement ratios, then we can see that private renters have the highest median and mean results, owner-occupiers have the lowest median at 92%, but have a higher mean than social renters. This would seem to confirm that a minority of owner-occupiers are making large pension contributions.

Analysis of the results for personal pension holders gives a more consistent picture. In terms of absolute outcomes, owner-occupiers can expect the highest median

pensions at £137.79. This group also has the highest level of mean pension. Private renters have the next highest level of median and mean pension, with social renters lagging behind. Further analysis shows that the gap between the means of owner-occupiers and private renters is significant at the 5% level, while the gap in the means of social and private renters is significant at the 1% level. Analysis of individual replacement ratios shows that these differences cannot simply be explained by gross income differentials between the groups. Owner-occupiers have a median replacement ratio of 68% compared to 54% for private renters and 40% for social renters. For each group, the mean is around 50% higher than the median. This would imply that the fact that some personal pension holders pay large additional contributions cannot be attributed solely to owner-occupiers who have paid off a mortgage. This is probably to be expected with personal pensions, as around 50% of members pay additional contributions. This is in contrast to the situation for occupational pension holders, where the payment of additional contributions is very much a minority pursuit.

The final area to be examined is the association between pension outcomes and number of children in the household. To avoid this becoming a proxy for age, the data will, as with other chapters, omit households containing pensioners in order to maintain equivalence between the groups.

Table 8.19: Pension outcomes (£ per week and replacement ratio) by number of children in household.

			Pension outcomes			
			Median (£)	Mean (£)	Median (%)	Mean (%)
Pension type and number of children in household	DB Occupational (N = 3053)	0	£185.79	£210.65	67%	70%
		1	£156.64	£187.07	67%	70%
		2	£157.26	£196.63	67%	72%
		3+	£164.88	£184.91	67%	72%
		Total[21]	£175.93	£202.37	67%	70%
	DC Occupational (N = 711)	0	£243.54	£280.97	97%	101%
		1	£185.99	£240.84	81%	99%
		2	£195.00	£252.35	81%	109%
		3+	£185.90	£262.19	81%	94%
		Total	£224.21	£267.06	93%	102%
	Personal (N = 1604)	0	£142.27	£190.70	67%	97%
		1	£107.83	£156.46	66%	88%
		2	£122.61	£162.46	61%	95%
		3+	£108.08	£191.74	60%	131%
		Total	£130.13	£179.80	65%	97%

[21] As Table 8.19 omits households with pensioners, totals will differ from the overall results

Table 8.19 shows that there is a similar relationship between the number of children in a household and likely future pensions for occupational and personal pension holders. The data DB members indicates that those with no children are heading for higher median and mean pensions than those without. Further analysis shows that the t tests of the difference between the means are significant between those with one or three children, and those with no children. The difference in outcomes can be seen as a function of income levels, given that the replacement ratios indicate that those with two or more children may have a slightly higher pension, expressed as a percentage of their own income.

Analysis of DC occupational pension holders also shows that individuals with no children in the household are heading for a considerably higher median pension at £243.54 per week than those with children; all three groups of households containing children are heading for median pensions of under £200. This pattern also applies to the mean, where those with no children have a higher mean expected pension than other groups, though t tests indicate that the gap is not significant. Analysis of personal replacement ratios show that those with no children have a median personal replacement ratio of 97% compared to 81% for the other three groups. This is because in these cases, a large number of people are not making scheme contributions to their occupational schemes.

A very similar story applies to personal pension holders. Those without children have higher median and mean expected pension levels than those with one or two children. Further analysis shows that the gap between the means is significant at the 5% level in both cases. The group with three or more children has a slightly higher mean than the group without children, but has a far lower median, indicating that a few large contributors are pulling the mean up. This is borne out by examination of individual replacement ratios, where the 3+ children group has the lowest median replacement rate, but the highest mean. Elsewhere those without children have a slightly higher median and mean replacement ratio than those with one or two children.

Conclusion

This chapter has outlined the outcomes that might be expected from DB and DC pensions using a simple stylised model. We have seen that outcomes from DB schemes are totally dependent on the assumptions made about the length of membership and the

accrual formula of the scheme. The calculation of DC pensions by contrast depends on the level and timing of contributions paid to a scheme, and the rate of return. Results from this chapter show that DC pensions with a high contribution rate can provide good outcomes and indeed may be more suitable for large chunks of the population than DB schemes due to their bias in favour of long-stayers.

However, Chapter Eight casts doubt upon the likelihood that a pension scheme that just utilises the current COR as the contribution rate is going to produce a good retirement income. This means that members of personal pension schemes, or DC occupational schemes which are solely based on the COR and thus do not attract an employer contribution may not secure an adequate income in retirement. This is because DC pensions are built around the principle of compound interest. As a result, if we assume a 4% real rate of return, the value of the pension will almost double in the last ten years. We can see from Table 8.3 that it is unlikely that occupational pensions will be accrued over a full forty years, while just over half of personal pension plans are being contributed to after four years (Personal Investment Authority 1999). This means that the results for pensions accumulated over 30 years can be seen as nearest to the "real" picture, and may even be too generous. If we decrease the assumed real rate of return, or recognise that job changes do occur, then the consequences of merely contributing the COR are far worse.

In addition to examining the parameters which affect pension outcomes, Chapter Eight has also focused on outcomes for various groups in the population. It has found that women have slightly higher prospective outcomes than men in occupational schemes, but lower outcomes in personal pensions. It has found that the separated and divorced groups are heading for higher pensions than the married group when looking at occupational schemes, but lower in personal pensions. Private renters could expect higher median pensions than owner-occupiers in DC occupational schemes, but this was reversed in personal and DB occupational schemes, where owner-occupiers could expect higher pensions than other groups in absolute terms. In the case of personal pensions, owner-occupiers could also expect higher pension expressed as a percentage of their own work income. With respect to the number of children in the household, those with no children could generally expect higher pensions than other groups.

Perhaps the most important result is that the self-employed are heading for a higher replacement ratio than full or part-time employees. This is especially noteworthy because the self-employed were not included in SERPS and thus could not attract a contracted-out rebate through leaving it. That they are heading for a higher replacement

ratio than employees indicates that it is possible for groups in the population to make a high level of provision voluntarily. The question is, would it be wise to generalise from this group to the rest of the population?

Chapter Nine: Conclusion

Introduction

The aim of this chapter is to present the conclusions of the research in terms of the aims set out in Chapter Two. In addition to this, it is also the time to take a wider perspective both in terms of an evaluation of the research itself and its implications for UK pension policy.

This Chapter will be split into three parts. The first part will address the major questions set out in Chapter Two in terms of the findings produced by this research. The second part will evaluate the research itself, and suggest future directions, both quantitative and qualitative. The final part will concentrate on the implications of this research for current UK pension policy.

Section A: Lessons from the Empirical Evidence

The purpose of this section is to relate the findings of the data analysis to the thematic questions set out in Chapter Two in order to draw out some overall conclusions.

It is important to recognise before we attempt to answer these questions, that there is tremendous uncertainty in attempting to make predictions from observations of current behaviour. This is for three reasons. The first is due to the factors inherent in the pension scheme, whether DB or DC. With DB schemes this involves labour market uncertainty, as the benefits of DB schemes are back-loaded. Individuals cannot guarantee that they will be in the best position at retirement as job changes may be beyond their control, as may be their retirement date. All DC members face the disadvantage of capital market uncertainty while DC occupational scheme members also face the uncertainties of occupational schemes.

The second source of uncertainty is changes over the life course. Chapter Eight has illustrated the outcomes in DC schemes if we summate contribution levels over a year and project them over a working life. This was a simplifying assumption in a stylised model, but obviously does not include the costs of childbearing, or a period of unemployment. This can be estimated if we use model cases, but the impact on the

individual will always be unpredictable. Changes over the life course will also affect the type of private pension that people have. The fact that an individual has a personal pension at the age of twenty-five does not mean that it will be their major form of retirement provision at fifty-five. For example, job changes may bring access to occupational provision. As a result, patterns of coverage will change, and changes in the type of pension coverage will have an impact on the level of contributions being made.

The third reason is uncertainty in the institutional environment. There have been major reforms to the UK pension system in 1945, 1961, 1975, 1986 and now, 1999. In all likelihood there will be major changes made over the next forty years. This means that the base contribution to private pensions may vary. A prime example of this is the current government's proposals. At first, the rebate structure for the SSP envisages a continuation of the earnings-related rebates, but the second stage would involve a transition to a flat-rate rebate. This would have a significant impact on private schemes, especially DC ones, as rebates would be worth considerably less for middle and higher earners. If we cannot predict whether a change like this will happen perhaps five years from now, there must be vast uncertainty over what may happen over the next forty years.

These three areas show that uncertainty is an issue to be considered and that the relationships found in this thesis may change. Recognition of this should make us circumspect as we draw conclusions from what people are doing at the moment, in the institutional environment they face. However uncertainty should not make us timid; although the future is inherently unpredictable, current behaviour is the best guide that we have.

1. How is private pension coverage in the UK distributed amongst different groups in the population?

This question, addressed in Chapter Three, showed that private pension coverage varied to a great extent according to three main factors: income, sex and age.

a) Income

Income has an impact both on the likelihood of an individual having private pension coverage, and on the type of private pension scheme of which the individual is likely to be a member. The logistic regressions in Chapter Three show that increasing

income makes an individual significantly more likely to be a member of an occupational pension scheme, with each increment in gross income band making it 33% more likely that an individual will have occupational pension coverage. The situation is reversed for personal pensions, with each increment making the individual 8% less likely to have personal pension coverage. The consequences of this are obvious from looking at Section B of Chapter Eight. A personal pension with the COR as the base contribution will produce a lower return than other pension types, especially if the pension is held for less than 40 years.

b) Sex

The data also indicates that men and women have differential access to private pensions, with men having greater occupational and personal pension coverage. The logistic regressions in Chapter Three show us that the odds that a woman in the workforce will have occupational pension coverage are 85% of those for a man, while for personal pension coverage it is 74%. It must be noted that people chose whether or not to acquire a personal pension, while the terms of an occupational pension scheme may or may not allow an individual to join. That women in the workforce are less likely to be members of an occupational scheme could be due to occupational segregation if firms that employ a high proportion of women are less likely to have an occupational scheme. This approach is supported by the position for part-timers, who are only 16% as likely to be members of an occupational scheme as full-timers. Whether differences in coverage are caused by overt discrimination or occupational segregation, it is clear that women and especially part-time women workers have a lower likelihood of having private pension provision. This indicates that they are more likely to be reliant on state provision, which as we have seen will be set at around the income support level, or they will be reliant on a spouse. This thesis has looked at pension entitlements on an individual rather than a household basis. This is simply because, with rising divorce rates and uncertainties surrounding intra-household allocation, the only income that one can be sure of is one's own. This would indicate that most women are not in a secure position.

c) Age

It is clear that private pension coverage varies by age. Occupational pension coverage increases sharply to peak in the 41-45 age group at 58.3% of the employed workforce, and remains above 50% until the 56-60 age group. Logistic regression

analysis shows that age is by far the dominant factor in assessing whether or not an individual has occupational pension coverage. Age is less important when looking at personal pension coverage. In this case it reaches a peak in the late twenties and declines slowly thereafter. Logistic regression analysis indicates that age is still a significant factor, with older workers being less likely to have a personal pension.

It is important to note that these patterns of coverage are not in themselves evidence of differential access to the different forms of private pension It may be that over time younger people will be as likely to have occupational pension coverage as older workers today. It is also useful to consider the type of occupational provision on offer. As shown in Chapter One, DC occupational schemes are growing in importance, and now cover 20% of all occupational members. This trend is likely to continue in future, so new entrants are more likely to spend time in a DC occupational scheme.

To conclude, it appears that the likelihood of having accumulated substantial private pension rights is not shared evenly. Coverage is highest amongst male full-time employees. There is even a cleavage amongst this group, with older higher income males being more likely to have occupational pension coverage while younger poorer males have personal pension coverage. It is important to remember the consequences of not having private pension coverage. If people are not building up pension assets on an individual basis, then it is likely that they will be dependent on provision from another agent in retirement, whether that is the state, or a spouse.

2. Does the current behaviour of private pension members indicate that they will have an adequate income in old age?

To answer this question it is necessary to examine whether private pension members will have an adequate level of income in old age. This will be done by using the data from Chapter Eight, but first, we need to set an adequacy standard. Chapter One shows that people view the adequacy of their retirement income in a relative manner, so we need a relative income standard. For the purpose of this exercise this will be set at 50% of current gross income, a target used in many reform proposals. As with Chapter Eight, this will be measured at the individual level.

Earlier we noted that uncertainty will affect future pension outcomes. We can simulate this by varying the real rate of return, (between the benchmark of 4% and a lower variant of 2%), the number of years spent accumulating pension provision, (between thirty and forty) and the level of the state pension. For the latter, two options

have been presented. The first is that the basic pension keeps its current (1994) value of £57.60; in effect it is linked to earnings. The second that it is linked to prices, which lag earnings by 2% per year. The effect of this for forty years is to reduce the real value of the basic pension to £26.09 expressed in 1994 prices.

The first step is to analyse the percentage of members in DB occupational schemes who reach the absolute and relative standards.

Table 9.1: Percentage reaching adequacy standard in DB pension schemes

			% reaching adequacy standard	
			Basic pension linked to	
			Prices	Earnings
DB formula type	40 years-60ths	Male	100	100
		Female	100	100
		Under £300pw	100	100
		Over £300pw	100	100
	30 years-60ths	Male	100	100
		Female	100	100
		Under £300pw	100	100
		Over £300pw	100	100

The message to be taken from Table 9.1 is that everyone reaches the relative standard. This is inevitable given the assumption of thirty or forty years' service. The clear lesson can be drawn that continued membership of a DB occupational scheme will lead to an adequate retirement income. This exercise can be repeated for DC occupational scheme members.

Table 9.2: Percentage reaching adequacy standard in DC occupational schemes

			% reaching adequacy standard	
			Basic Pension linked to	
			Prices	Earnings
DC pension assumptions	40 years member ship, 4% real rate of return, retirement at 65	Male	99.7	100
		Female	100	100
		Under £300pw	100	100
		Over £300pw	99.2	100
		Total	99.7	100
	40 years membership, 2% real rate of return, retirement at 65	Male	97.1	97.8
		Female	98.6	100
		Under £300pw	100	100
		Over £300pw	92.1	94.6
		Total	97.4	98.2

	30 years membership, 4% real rate of return, retirement at 65	Male	96.3	100
		Female	94.6	100
		Under £300pw	100	100
		Over £300pw	87.6	100
		Total	96.0	100
	30 years membership, 4% real rate of return, retirement at 55	Male	81.2	94.8
		Female	74.1	96.6
		Under £300pw	88.1	100
		Over £300pw	62.5	84.8
		Total	79.8	95.1

Table 9.2 shows that in DC occupational schemes, high percentages will reach the relative adequacy standard. If we link the basic pension to earnings and assume that the sample retires at 65 and a real rate of return of 4%, then whether there is 30 or 40 years' membership of the scheme, everyone reaches the relative adequacy standard. It is only when we examine early retirement or a lower real rate of return, that some people fall short. Examination of income bands for these groups reveals that all those earning less than £300 per week reach 50% of previous earnings, but only 84.8% of the early retirees and 94.6% of the group with a lower real rate of return do. This can be explained by the diminishing importance of the basic pension as income rises.

If we assume that the basic pension is linked to prices for the next forty years, then we can see that the percentages reaching the relative adequacy standard are lower. If the sample accumulates its pensions over 40 years with a real rate of return of 4%, then almost all reach the relative income target. Lowering the rate of return or the number of years worked has little impact, with the percentages achieving the relative standard remaining above 95%. It is only when early retirement is considered that the percentage heading for above 50% of their pre-retirement salary drops to below 80%. As the data shows, this is due primarily to the actions of those earning over £300 per week. This is important as it shows that even under the generous assumptions of this model (a 5% employer contribution, no job changes etc), early retirement means a far lower chance of reaching the adequacy standard.

The final group to investigate is personal pension holders. It would be expected that a lower proportion of this group reach the adequacy standard.

Table 9.3: Percentages reaching adequacy standard in personal pension schemes

	% reaching adequacy standard	
	Basic pension linked to	
	Prices	Earnings

Personal pension assumptions	40 years membership, 4% real rate of return, retirement at 65	Male	86.6	96.0
		Female	75.5	97.5
		Under £300pw	89.2	98.4
		Over £300pw	69.7	89.2
		Total	84.7	96.2
	40 years membership, 2% real rate of return, retirement at 65	Male	41.7	72.3
		Female	26.2	62.3
		Under £300pw	44.4	80.8
		Over £300pw	21.6	36.4
		Total	39.1	70.7
	30 years membership, 4% real rate of return, retirement at 65	Male	60.4	83.1
		Female	42.8	76.4
		Under £300pw	62.1	89.7
		Over £300pw	42.1	56.1
		Total	57.5	82.0
	30 years membership, 4% real rate of return, retirement at 55	Male	43.9	74.5
		Female	31.6	67.8
		Under £300pw	47.0	83.1
		Over £300pw	24.5	40.3
		Total	41.8	73.3

Table 9.3 shows that it is less likely that personal pension members will hit the relative adequacy standard than occupational pension members whether their pensions are DB or DC-based. The percentage that reach 50% of previous earnings varies from 96.2% if we assume forty years' service to 73.3% if we assume retirement at 55 and 70.7% if there is a fall in the real rate of return. The major reason for the drop as we relax the assumptions is that higher earners no longer meet the relative standard. If we assume a 2% real rate of return, only 36% of those earning over £300 per week could expect a replacement ratio of half of their previous salary, even within the generous assumptions of the model.

If we link the basic pension to prices, then an even lower percentage can expect to achieve the relative adequacy standard. It is important to note how the percentage reaching it varies according to the assumptions made. If we assume the fund grows for 40 years at a real rate of 4%, then 84% make the standard, if we cut this to 30 years, then only 57% do. However if we assume a real rate of return of 2% or that the sample retires at 55, then the proportion hitting the relative adequacy standard falls to around 40%, i.e. less than half even on these generous assumptions. This means that early retirement does not seem to be a practical option for most personal pension holders, and that a fall in the rate of return would have serious consequences.

To conclude, these tables have shown that any assessment of future outcomes is influenced heavily by the assumptions made; however it is possible to make some general points about outcomes. We are left in a position where long-term members of occupational pension schemes with high employer contribution levels, and long-term personal pension holders who have consistently paid additional contributions should accrue adequate pensions. The position is less favourable for those with shorter periods of service, and early retirees. The data also indicates the importance of the basic pension. If an individual has anything other than an unblemished work record, the basic pension is vital in securing a relatively adequate retirement.

3. Is voluntarism sufficient?

Before answering this question, it is worthwhile to step back and consider what voluntarism means in the context of UK pension policy. As we have seen from Chapter One, the UK system is derived from the Beveridgean model of a national minimum provided by the state and supplemented through voluntary action, in other words through private pension coverage and contributions. In these terms, people make choices about whether they wish to join an employer's pension scheme or a personal scheme and whether they choose to pay additional contributions at some point. These actions will be conditioned in part by the views that people have concerning the adequacy of the state-provided minimum. It may well be that if this minimum was raised or lowered, people would react (however imperfectly) to it.

Some of these decisions require more voluntary action than others, for example joining a personal pension scheme requires more activity than joining an occupational scheme. In a sense this makes the current system a lottery. If you imagine two people with equal levels of interest in pension provision, earning the same amount in the same industry, the pension outcomes they can expect will differ according to the options they are presented with when they join a particular company. This may be mitigated by the introduction of stakeholder pensions. However even this is not a complete solution as we do not know what level of employer contributions stakeholder pensions will attract, if any. The voluntary nature of the system also applies with respect to the payment of additional contributions, though this time it is the occupational pension holder who has to expend more effort.

This leads us back to the question- whether voluntarism will produce sufficient outcomes, and if not, what should be done about it. It is worth remembering the genesis

of this question as laid out in Chapter Two. The compulsion issue cannot be answered definitively, because it requires a value judgement as to whether individual choice should be over-ridden in order to achieve a relative adequacy standard for individuals in old age. Nevertheless, this thesis has provided a comprehensive examination of pension accumulation behaviour in the UK and is well placed to comment on the consequences of current actions.

We have seen that private pensions do not cover the whole of the working population, never mind those outside the labour market. These groups are in effect being consigned to the state-provided minimum, which may not provide an absolute level of adequacy. It is difficult to see how this can be avoided for those outside the labour market, but middle and high earners who chose not to have private pensions could be compelled to do so.

If we move to examining contribution behaviour for those with private pensions, we can see that the average employee contribution to DB occupational schemes is around the 5% mark, with at least the same being added by the employer. Any shortcomings with these schemes are not caused by the contribution levels, but the distribution of rewards. It would only be if the distribution of rewards is equalised between short and long-servers, perhaps by means of an average earnings formula, combined with higher transfer values and full indexation of accrued pension benefits, that the overall level of contributions would come into play as a major factor.

The situation is more complex with DC occupational schemes. There is a major difference between those schemes which have an employer and employee contribution, and those that just rely on the contracted-out rebate. Chapter Eight shows us that DC schemes with an employer contribution are perfectly capable of producing an adequate income in retirement. The problem with these schemes, as with the DB type lies with the consequences for short-stayers, not the level of contributions. For members of DC schemes that are just based on the COR, the level of contributions is certainly an important factor. The base contribution is at present 4.8% of earnings. Overall, 16% of DC occupational pension members pay additional contributions, and Chapter Four shows us that high earners are significantly more likely to make additional contributions than low earners within this group. It would seem that DC occupational scheme members who just contribute the COR are following the additional contribution patterns of other occupational scheme members, rather than the personal pension members that their schemes have more in common with. If it were decided that current voluntary provision is insufficient, this group would certainly be affected.

There are obvious similarities between the position for DC occupational members just contributing the COR and personal pension members. However personal pension members are more likely to react to their circumstances by paying additional contributions, with almost 50% paying them, while another 16% have done so at some time. The charging structure of personal pensions may work against those who wish to re-start additional contributions after a stoppage. This problem could be remedied by the introduction of stakeholder schemes, but even then, there will be some personal pension holders who are not making additional contributions. It must be remembered that the UK pension environment is uncertain at the moment given the recent government reforms. These reforms provide a solution through the State Second Pension for the people who cannot pay additional contributions. Higher earners who choose not to pay additional contributions provide a different challenge. They will not be catered for by the SSP, and may even find their future pension income reduced if the contracted-out rebate becomes flat-rate in the long-run.

In conclusion, if we ask whether voluntarism will produce sufficient outcomes, then the answer is probably no. The only group that can be more or less certain of an adequate income in retirement are long-term members of DB and DC occupational schemes that attract employer contributions. This is not due to voluntary action on their part, but through being employed by a firm with a generous scheme. The major problem lies with personal pension holders and those in DC occupational schemes with no employer contributions. The current contracted-out rebate is not sufficient to deliver an adequate income in retirement for anyone with less than an unblemished career record. Additional contributions can mitigate this, but they have to be paid over the long term. If we look at the wider policy context it is clear that the amount of private pension income needed to offset the disincentive effects of the growing gap between insurance and means-tested state support is increasing year-on-year. As this gap increases, others may end up supporting those who "chose" a lower level of pension benefits in retirement by contributing nothing beyond the minimum. It is society's choice whether or not to accept this.

4. Does current accumulation behaviour indicate that people are following a rational economic calculus?

Before beginning to answer this question it is worthwhile to re-iterate the point made in Chapter Two that rationality in pensions is a complex area. It is difficult to

prove that a given behaviour pattern is irrational because we do not know individual time preference rates. It may well be that certain people see their future standard of living in old age as very unimportant. This could be for a variety of reasons; they may have a family history of people dying before retirement age, or they may wish to enjoy a higher standard of living while they are "able to enjoy it", whether or not this is the case. Parfit's argument that if the "future selves" of this individual were given a voice, more emphasis would be placed on future needs is compelling, but unfortunately cannot be proven as we cannot see inside the heads of the sample. This means that we are left with trying to examine rationality based on the observable behaviour of the sample. In other words, this question is asking whether current accumulation behaviour can be justified given that we do not know individual time preference rates. With this criterion in mind, irrationality could manifest itself in two ways. The first example is where an individual is obtaining an inferior deal than that which could be achieved with another form of provision at the same contribution level. The second is where an individual selects an option whereby there is little or no likelihood of gain.

A prime example of the first form of irrationality is personal pension coverage with respect to age. As mentioned in Chapter One, Disney and Whitehouse (1992) mapped the marginal increment to SERPS and a personal pension and found that given a real return of 3.5%, a white-collar male would be better-off contracting out of SERPS until the age of 50. Due to their better return from SERPS, women should contract back in to SERPS at 35. As Chapter Three makes clear, patterns of personal pension coverage by age bear absolutely no resemblance to this. The age-membership profiles for men and women are very similar with the peak for both sexes occurring in the late twenties with a slow decline thereafter for men, but a decline followed by a mini-peak in the early forties for women. There is no sign at all of a sharp dip in personal pension coverage for men at 50 or women at 35. This implies that a rational economic calculus cannot explain current pension behaviour.

However, before accepting this fully, it is worth considering why an individual might undertake this apparently irrational behaviour. Imperfect information is the most likely reason. It is very unlikely that the broad mass of personal pension members know the optimum point to transfer back in to SERPS, or even that such a point exists. However, even if personal pension holders were perfectly informed and knew that they would receive a theoretically superior deal if they transferred back in to SERPS, it is by no means certain that they would chose to do so. Individuals may well feel that they have greater control over a private scheme than a state scheme. Consider the changes to

SERPS over the past five years, an arcane formula change initiated by the 1995 Pensions Act retrospectively lowered the returns from SERPS. It is difficult to encourage people to enter a scheme where they may be affected by retrospective changes.

The second form of rationality highlighted is where an individual is following a course of action that promises little or no identifiable gain. An area in which it is possible to question whether people are following a rational economic calculus is the payment of additional contributions as we can analyse the likely benefit from a particular set, or sets, of action. An example comes from Chapter Four. We have seen that the benefit from additional contributions is far greater if they are undertaken over a long time period. Yet the predominant model of additional contribution payment to occupational pensions involves a late dash to accumulate extra retirement income. These contributions will not have a great deal of time to compound and the proceeds will be locked into an annuity. This means that this course of action is questionable whether or not there is any likelihood of interaction with means-tested benefits as the gain from making late contributions is very small. If there were any likelihood of interaction with means-tested benefits then making additional contributions would seem especially questionable. With personal pensions there is a greater chance that the proceeds from additional contributions will be eaten away by interaction with means-tested benefits due to the lack of an employer contribution. This should make additional contribution payment an especially questionable option for the low paid, unless they are made consistently over a long period. However, Table 4.3 shows that almost half of the £100-199.99 earnings bracket is making additional contributions along with 40% of the £0-99.99 group.

There is an additional point which will affect both occupational and personal pension holders; SERPS itself is due to be replaced by the flat-rate State Second Pension, which envisages that all those earning under £9000 per year will be members. However, we have seen that low earners are members of private pension schemes. The government aims to surmount this problem by bringing up low earners' pensions to the level that would be attained under the SSP. In this case, there would seem to be little point in low earners having private pension provision, especially as the presence of scheme contributions in occupational pensions mean that this group would be paying a higher level of contribution than those in the SSP to be brought up to the same level of pension. It is very possible that the rational short-term decision will be to abandon

private provision in favour of the new scheme, but it seems very unlikely that private pension coverage in low-income groups will fall drastically.

To conclude, it seems that whether the issue is coverage or contributions, current pension behaviour does not seem to follow a rational economic calculus, whether with respect to selection of options, or with reference to the likelihood of gain. Imperfect information probably lies at the root of this, but it is worth considering just how much information is necessary to make decisions about pensions. For example, in order to consider whether or not to contract back into the government's second pension alternative, it would be necessary to consider the objective mathematics of the decision, but also estimate the risk factors inherent in each scheme. With government schemes this would include the likelihood that the scheme would survive, or whether it could become more or less generous over time. Occupational pension members would have to consider the odds that they would stay with their current employer. Personal scheme members would have to decide whether there was any chance that they would abandon their scheme; it might also be necessary to have a view on future investment returns. Given the complex calculations necessary it is no wonder that inertia takes over and the individual decides to take no action.

5. How does the acquisition of pension assets interact with that of non-pension assets in terms of allocation of lifetime income?

This question recognises that pension assets are not the only means by which an individual can save for retirement. Chapter Seven analysed the build-up of financial assets throughout the population. It showed that although the population is accumulating financial assets, it is not doing so on any thing like a large enough scale to make a sizeable contribution to retirement income. Table 7.5 shows us that 58% of the sample states that they have financial assets worth less than £1500.

Another key finding is that there is a strong link between the holding of financial assets and advancing age, but even amongst the 56-60 age group, 38% still had financial assets worth less than £1500 with 20% in the £1500- £20000 band. It must be noted that 42% either had over £20000 or were unwilling to say, an outcome that was linked with a high level of total savings. This indicates that a large minority of older age groups does have a high level of saving which could make a contribution to retirement income, but this cannot be said for the majority. The level of benefit that will be derived from non-pension saving is also uncertain due to possible interaction with means-tested

benefits. It is also important to note that the FRS measures asset data at the benefit unit level rather than for each individual. It is not certain that each individual within the benefit unit has equal access to these financial resources.

It is clear from Section B of Chapter Seven that groups which are accumulating private pension assets possess a higher level of financial assets than those without private pension assets. It also demonstrated that for both occupational and personal pension holders, additional contribution payers had a greater amount of financial assets than non-additional contribution payers. However the logistic regression analysis in Section C shows that the only statistically significant relationship is that personal pension holders have a significantly higher level of saving than non-personal pension holders, with the payment of additional contributions having no impact. This shows that pensions and other asset forms cannot be considered as complements in all cases, but they are certainly not substitutes. This is important as it disproves the crude hypothesis that those not saving for retirement through pensions are doing so by other means.

To put the role of pension accumulation into context, we can see from the logistic regressions that many variables are significant in influencing whether an individual has a high level of total saving, with share-based investment status, age and council tax band being the most important. This last factor is especially important when we consider the links between financial, housing and pension assets as it indicates that control over housing resources and not ownership is the most important factor.

The data indicates that there is little interaction between pension and non-pension assets in the allocation of lifetime income. This all emphasises the disadvantage that those without private pension coverage face. As they are very likely to have a low level of financial wealth, and have no private pension coverage to rely on, it is probable that they will have to rely on means-tested benefits in retirement.

Section B: Research-based Conclusions

Evaluation of Research

The first step is to look at what this research has actually done. Before this thesis, in empirical studies in Britain, the elements of private pension accumulation were treated separately. There was limited overall information on private pension coverage and scheme contributions. However this overall data had not been broken

down other than with regard to age, sex and income level. Chapters Three and Five demonstrate that breaking down the overall data further provides a much greater wealth of understanding, which can be extended by using regression-based tools.

The subject of additional contributions to private pensions had been almost wholly neglected, apart from the overall Retirement History Survey data for occupational pensions, and a small-scale survey by Williams and Field (1993) for personal pensions. Again, where additional contributions had been mentioned, they had not been broken down in a detailed way. With the drift towards DC pensioning, both occupational and personal, it is clear that additional contributions will become a much more important element of pension policy in the future. It is therefore important to understand patterns of additional contribution payment in depth. Chapters Four and Six have done this, both with regard to who is paying additional contributions, and the amount being paid.

Chapter Seven deals with financial asset accumulation, an area that had been comparatively neglected. It was necessary to investigate financial asset accumulation, as otherwise it could be alleged that individuals not accumulating pension assets, were accumulating other assets to compensate. This thesis has found this not to be the case; people without an occupational or personal pension are less likely to have a level of financial assets that could make a significant contribution to retirement income. Chapter Eight uses a simple model to project the outcomes from present pension behaviour based on a series of stylised assumptions. The outcomes produced by this model are useful, but perhaps even more importantly, Chapter Eight shows how these outcomes can vary with slight changes in the underlying assumptions.

As has been seen, this research has provided a great deal of new information on the disparate elements of private pension and financial asset accumulation. However, it has gone beyond this by attempting to put this information together in order to obtain overall information regarding the major themes of coverage, adequacy, compulsion/voluntarism, rationality and asset accumulation. This is important because in an era of uncertainty regarding the nature and extent of future pension provision, both state and private, it is essential that any decisions taken be based on evidence. Grouping and evaluating information on the elements of pension provision may aid policy-makers in understanding the consequences of their actions.

This is what the research has done, but there should be a closer focus on the research itself. It is a large-scale quantitative exercise, using a comparatively new data set, the Family Resources Survey. The Family Resources Survey collects data for over

47000 individuals; this has provided huge cell sizes at times, especially for Chapter Seven. In quantitative research it is very useful to deal with cell sizes of thousands rather than tens, as it almost makes it inevitable that a great number of significant associations will be found.

However, with such a new survey, it is almost inevitable that it will have limitations. This has been touched on many times in this thesis, but is worth spelling out again. Not all those with occupational or personal pensions had the opportunity to answer questions on contribution levels. This was due to the information on pensions and deductions from earnings being collected from separate question blocks, with some features of the deduction from earnings block serving to reduce the number of respondents. Those respondents who remained were not an entirely representative sample of the whole population, tending to be higher earning and more male than the average. The consequence of this is that Chapters Five and Six, which deal with scheme contributions and the amount of additional contributions respectively, are not dealing with an unbiased sample of their relevant populations. The same considerations apply to the logistic regressions in other chapters, as gross income is an important variable for these regressions. An option would have been to avoid these lines of enquiry and omit income from any regressions, however the decision was taken to accept the sample, analyse the data, but be aware of how the sample was constituted.

A great problem was that information on employer contributions to occupational or personal pensions was not available through the FRS. This is an important factor as it would allow the compilation of the total pension contribution, both voluntary and through the scheme, for each individual. This would permit a far more accurate assessment of what an individual could expect in retirement. Data of this sort is available in other countries, for example, the Australian Superannuation Survey provides data on employer and employee contributions to their compulsory occupational schemes. Data on employer contributions to personal schemes would have been especially useful, as only a minority of personal pension holders receive this. This would have permitted analysis of whether the groups likely to receive an employer contribution were "valued employees", as stated by Casey (1993).

Future Directions

This research project has created many avenues for future research, both through quantitative and qualitative methods. This is perhaps a predictable consequence of investigating an area which has been little studied.

In terms of quantitative research the most straightforward step would be to repeat the exercise to see if the patterns hold. The most obvious time to repeat would be in about seven years time, using the Family Resources Survey for 2003-4 or the nearest equivalent. The reason for this particular time scale is that it will allow investigation of the contribution patterns surrounding stakeholder pensions, which are expected to be introduced in 2001. It is wise to use a dataset from after 2001 to allow contribution patterns a little time to coalesce. A delay would also allow a greater investigation of cohort effects between the two samples. We have seen for example that additional contributions to occupational schemes are influenced greatly by the age of the individual. It would be interesting to analyse whether this effect was as strong for those retiring ten years later, given that the need for retirement planning has been stressed more heavily to those in their thirties than it was for the previous cohort.

It must be noted that had the Welfare Reform and Pensions Act 1999 not been passed, the system of flat-rate contracted-out rebates from SERPS would have been replaced by age-related rebates. These would have allowed for the greater value of a flat-rate rebate to younger cohorts than old due to the greater available time for contributions to compound. It would have been extremely useful to compare additional contribution patterns under an age-related rebate regime to that under a flat-rate regime, as this would this would allow scrutiny of how older age groups reacted, if at all, to a larger amount of money being devoted to a pension. It may be, that due to problems with flat-rate rebates, the idea of age-related rebates may return. In this case, there is sufficient scope for a comparative exercise.

There may be scope for cross-national research. As we have seen, the Australian Superannuation Survey provides a great deal of information on pension accumulation behaviour in a different policy environment, in this case, one with compulsory occupational provision. A comparative study would be relevant because the two countries may be moving towards a similar position in terms of the public/private split of pension responsibilities. In both cases the poorest would have their retirement income paid for through the state, leaving the rest to build their entitlement through the private sector. The difference between the two systems lies in the fact that the Australian system is based upon a high, compulsory level of pension contributions (around 7% of gross salary from both employer and employee), while the British system is built on a

lower level of compulsory contribution. This provides clear opportunities for comparison in terms of total contribution rates to private pensions, and the amount and extent of additional contributions.

The ideas outlined above are based on a continued use of cross-sectional data. However, the development of this thesis's research agenda would benefit if suitable longitudinal data could be found. Longitudinal data would allow analysis of the accumulation behaviour of the individual over time, which would shed even more light on the major themes. We have seen that personal pension membership is skewed slightly towards the young. Longitudinal data would allow investigation of whether people move from personal to occupational schemes as they get older, and if they do, what form the occupational provision takes. This is important because the FRS deals with a static worldview. It is possible that a large proportion of those people with personal schemes will move to occupational provision in future, which as we have seen, tend to have a higher overall contribution rate. This would tend to negate worries over contribution levels in personal pensions. However if there appears to be a large amount of rigidity, with members of personal pensions tending to stay with this form of provision or move to stakeholder schemes, then this may strengthen the argument for a higher level of compulsory saving.

Longitudinal data would also permit an even more through analysis of additional contribution payment by collecting data on additional contribution patterns over time. We have seen for occupational and personal pension schemes that the amount paid in additional contributions is associated with increasing age. Longitudinal analysis would provide evidence of how this works in terms of the life cycle of specific individuals, and will also aid the dissection of different additional contribution patterns within and between cohorts. It must be noted that the collection of this research could take many years or even decades if the aim is to analyse individuals over part of the lifecycle. This renders longitudinal data of this type an impractical proposition.

The ideas mentioned above would all involve future exploration of the topic using quantitative methods. However, benefit would also be gained from taking the results so far obtained and using qualitative methods to explore them in more detail. This thesis has provided a great deal of detail on the private pension provision being made in the United Kingdom and has attempted to explain the patterns discovered. As has already been mentioned, the use of a large data set and the use of sophisticated statistical techniques does provide insight into what is happening. The use of qualitative techniques allows the focus of enquiry to move beyond asking "which groups are doing

what" to enquiring why and how these pensions decisions are being made. At the start of this thesis, there was very little qualitative information of this type, but the last two years have seen a considerable advance in qualitative research. The studies by Hedges (1998) and Thomas, Pettigrew and Tovey (1999) have to some extent plugged the gap in the literature by examining what people think about different forms of pension and investigating issues surrounding pension planning.

However, despite these advances, there are specific questions that qualitative research could answer which emerge from the quantitative research in this thesis. The first is to develop the information agenda set by Williams and Field (1993) and Hedges (1998) in the light of the broad understanding of pension coverage and contributions gained from this thesis. This would investigate what people think the contribution level of their pension is, and what they think it will produce for them in old age. As we saw in Chapter One, Ghildarducci (1992) identified "cognitive dissonance" with respect to pension outcomes. It would certainly be useful to find which groups are most likely to over, or under-rate their future pension entitlement, and to link this to the contribution patterns from these groups.

This line of enquiry could be linked to the following, which was one of the most noteworthy conclusions from Chapter Four. It was found that older men seemed much less likely to pay additional contributions to personal pensions than older women. It was postulated that this might be due to this group being isolated from the "normal" occupational provision of other men in their age group, and in a fatalistic way, seeing little point in paying additional contributions. Of course, the explanation may lie in cognitive dissonance, with if older men are more likely to think that they do not need to pay additional contributions. However it is impossible to be certain which explanation, or if indeed another, is closest to the truth, without asking them.

Another possibility would be to investigate how the levels of additional contribution to occupational and personal pensions are set. This would involve some analysis of the role of advisers in the process, and would look at whether people understand the consequences of their actions in terms of what their contributions are likely to produce. We have seen that personal pension holders tend to pay more of their income in additional contributions than occupational pension holders. This could due to advisers pushing them to make greater contributions by producing statistics which show the wonders of compounded contributions, whether factually accurate or not, or it could be a genuine recognition that due to the lack of an employer's contribution, a greater percentage of income has to be devoted to pension provision.

Section C: Lessons for UK Pension Policy

We have seen that analysis of the private pension accumulation patterns had implications in terms of the major themes of coverage, adequacy, rationality, compulsion/ voluntarism and lifetime income allocation. It is time to apply the lessons learned from this thesis to the UK policy environment.

Firstly, it is important to be clear about the policy environment as it stands. The UK system is built around the Beveridgean concept of the state providing a national minimum, and anything above this to be provided by voluntary action. Whilst in the 1960s and 70s there was a drift away from this blueprint with the implementation of earnings-related state second-tier pensions, current reform proposals mean that we are heading straight back. The only difference is that the state itself will only be the provider for low earners and carers, but will act as a regulator for middle and upper earners, for whom the private sector will be the actual provider of the bulk of their retirement income.

This set up has major implications for high and low earners. For low earners there is the important point that the state is in effect assuming that they will have no private pension provision. However, this thesis provides evidence that people earning under £9000 do have private provision. Table 3.3 shows us that around 30% of workers earning less than £200 per week have personal provision, and around 50% have occupational provision. It appears that the government is going to take this private provision into account in calculating entitlement to the State Second Pension. This is certainly a necessary step, as otherwise there would be the invidious position whereby those making private provision for retirement would receive less than those who do not. What this approach ignores is that private pensions are not costless endeavours for the employee. Chapter Five shows that in addition to the NI Rebate, private pension members contribute on average 5% of their salary to their pension. If low earners could receive exactly the same pension without paying this 5% contribution, many will eventually ask the question- why bother?

We have seen already that there is an "occupational pensions trap" (Walker, Hutton and Hardimann 1988) whereby pensioners gain little from the first £50 of private pension income due to the loss of means-tested benefits. If the policy of indexing the basic pension to prices, and the MIG to wages is continued, this trap will become steeper in future. It means that people will need more income from pensions or

other sources to bridge this gap, or any private provision they will have made will be of no use whatsoever. This will have a disproportionate impact on the incentive patterns that low and middle earners face. Low earners, or those with broken work records may be wasting their time with private provision, especially DC occupational schemes that do not attract an employer's contribution or personal pensions, as they will not secure enough private pension income to offset the loss of means-tested benefits. This problem may worsen in future due to a self-fulfilling prophecy, as government policy is now assuming that low earners will not have non-state provision, which may in turn lead to a worsening of the occupational pensions trap.

We have seen that the proposed system for low earners has problems. However, this pre-supposes that it is politically sustainable. The fundamental question to be answered is that if the Conservative party was willing to cut back the last second pension scheme set up by a Labour government, why would the current proposals be any more likely to escape? There are two major lines of criticism. The first stems from its affordability. The major argument used against SERPS was that it represented an intolerable burden on future generations. Given that the original terms of SERPS were 25% of pensionable earnings for the best 20 years of working life, it seems inevitable that as the SSP promises at least 40% of pensionable earnings to the low paid, it will come under fire. The other line of criticism is that the proposals will be vulnerable to the self-interest of the majority. This is because only the low paid and carers will receive their retirement income from the state, middle and higher earners will receive the majority of their retirement income from funded pensions. This lack of connection to the SSP will give middle and high earners no interest at all in preserving it. Cutting back the parts of the system aimed specifically at low earners would be comparatively simple as they include a MIG indexed to earnings and the SSP with an accrual rate of at least 40%, the bands for which are also indexed to earnings. If it was politically possible to change the indexing of the basic pension from earnings to prices, it will certainly be possible to amend the indexation of the SSP and the MIG. This makes low earners very vulnerable to a cut in state-delivered retirement income.

It is important to be aware of the consequences of any cut. If both the MPG and SSP are cut back by indexing them to prices, then we have a situation whereby the minimum pensioner income will slip back as a percentage of average earnings. This raises the spectre of increasing pensioner poverty. If the SSP is cut back or abolished, then the contributory element of state provision as represented by the basic pension will fall further and further behind the means-tested element. This will increase still further

the disincentives to make non-state provision amongst this group and will have an especially harmful effect on the proportion of low earners making private provision for retirement. In effect the only reason for a low earner to make private provision will be if they have a higher-earning partner or other income source.

We have seen that current system envisages that the low paid will have their retirement needs met by the state, and may even be penalised by making private provision. The next step is to examine the regime for middle and high earners, and the implications of this research for them. The first point is that although in the long term it is the intention for middle and higher earners to have funded pensions, in the short term they will be allowed to stay in the SSP. It is important to note that the SSP will be more generous than at present. For a worker earning £12000 per year, SSP will accrue at the rate of 3900/12000= 33% of lifetime earnings. It is clear that when middle income earners are forced to leave the SSP in favour of funded pensions, they will have to be given much higher rebates than at present to provide sufficient compensation for leaving the state scheme. These higher level rebates to middle income earners may be the foundation for pensions which are a high percentage of former incomes. A higher level of rebate will take them a greater distance towards this goal. It is ironic that a set of policy proposals which decry greater "compulsion", may achieve their greatest end through compulsory increases in the revenue paid into second pensions.

This prospect of high level rebates as compensation for being outside the SSP may be thwarted in the medium term. The "second stage" of the recent reforms involves the State Second Pension being changed to a flat-rate payment. As such there will be no increment in the contracted-out rebate above the level that can produce 40% of £9000. If we are heading for this position then the voluntary provision made by individuals will become all important, as otherwise they will certainly be covered by means-tested benefits in retirement, regardless of previous earnings. Political pressure from middle and higher earners may stop the transition to this second stage.

Whatever rebate structure emerges in the long-term, voluntary saving will remain a key plank in securing an adequate retirement. The aim is to "help and encourage" (DSS 1998b) people to make higher pension provision, but not to force them. This approach is unlikely to succeed. We have seen in Chapter One that people with the SSP and basic pension are likely to run into a poverty trap whereby any additional savings are negated by the loss of means-tested benefits. Low earners with private provision will gain little despite their contributions, while middle earners will be

affected by the "occupational pensions trap" whereby they will gain little from the first tranche of occupational pension income.

The more serious threat to this approach has been identified throughout this thesis, which is that it is very unlikely that voluntary saving can be the basis of a policy due to people's unwillingness to make additional contributions. It is clear that the current COR is insufficient to provide an adequate retirement income, a mere 32% of personal scheme members receive a contribution from their employer yet the percentage of personal pension holders making additional contributions to their schemes is less than half. Similar considerations apply with DC occupational schemes. Chapter One indicated that the modal employer contribution was the contracted-out rebate, and yet only 15.6% of members are making additional contributions. Contributions to DC occupational schemes are lower as a percentage of income than those to personal schemes, with the median being 2.75% of gross income. It is important to be clear, not all DC occupational pension holders need to pay additional contributions, but the percentage needing to pay them is greater than 15.6% doing so currently. DC coverage is expected to expand further in future with the introduction of stakeholder pensions to fit alongside DC occupational schemes and personal pensions. It is clear at the moment that contribution levels from these pensions are not high enough to secure a retirement income set at a high proportion of previous earnings. The "help and encouragement" approach may have a role to play in increasing voluntary savings, but it is doubtful that it can increase them by enough to give these groups the retirement they expect.

Chapter Eight indicates that long term pension holders, whether DB or DC, will secure a good retirement income, due primarily to the employers' contribution. However it is unwise to assume that employees will spend their entire working life with a single employer. Frequent job changers are punished by low transfer values while personal pension holders may surrender their policies. Stakeholder pensions may be useful for the occupationally mobile or those who would otherwise have chosen personal pensions, but it is vital to recognise their limitations. Stakeholder, like all DC plans is reliant on the amount of contributions. If stakeholder pensions become a substitute for occupational schemes and attract no employer contribution, then this will reduce the eventual pension outcome for the young.

In addition to analysing the current system, it is useful to consider the wider problems of pension policy. Williams and Field (1993) have demonstrated that the public does not have anything like perfect information about second pension provision in the UK. If people are to have a choice of second pension arrangements, some of

which may need voluntary contributions, then it is essential that the flow of information be improved so that the quality of decision-making is improved. It is difficult to see how this could be done. Perhaps if personal finance becomes a National Curriculum subject then pensions should be a part of it.

It is important to note that a vital part of the pension system itself may be part of the reason that people do not wish to pay additional contributions. This is the requirement that for DC schemes, the pensioner has to purchase an annuity with the bulk of the sum that has been accumulated. There are various problems with this. The first is that a pension annuity is non-bequeathable. People may have built up a large capital sum, but will not be able to leave this to descendants. There is the additional disadvantage that individuals recognise that they may die a year after retirement and lose the entire capital sum, and have little income to show for it, which may make them reluctant to invest in pensions. The second problem, which has been in evidence recently, is that the return from an annuity is based on long-term interest rates at the time that it is taken out. A pensioner retiring in a period of low interest rates will get less income for the same capital sum as a pensioner who retired when interest rates were higher.

It is important to note that the annuity market has provided solutions to some of these problems. Annuities can be bought that will pay out for a set number of years whether or not the recipient dies. There are also "draw-down" policies available whereby the purchase of the annuity can be deferred until the age of 75, while the individual lives on money drawn from the fund, although these policies have been criticised for high charges. However it is a central fact of annuity provision that an annuity is a gamble with an insurance company based on how long the individual lives after retirement. The fact that some individuals die shortly after retirement counter-balances those who live longer than the median, and may receive pension income for thirty or forty years.

If individuals are unwilling as to make pension provision because of this fundamental point of the annuity system, then some thought must be given as to how to amend it so that it encourages pension contributions. Pension provision has its tax advantages purely because the money is set aside to give the individual a better standard of living in old age, therefore it should not be possible to withdraw money from the pension before retirement. It should also not be possible for a pensioner to withdraw all the money from the fund to be able to bequeath it, while leaving themselves in abject poverty. Perhaps the solution is to permit the use of drawdown policies more widely by

introducing CAT standards to avoid high charges and scrapping the requirement that an annuity has to be bought at a certain age. This will provide the maximum flexibility, but must be coupled with a requirement that once the fund reaches a certain level, an annuity must be bought to give the pensioner a level of income which will provide a comfortable retirement. This may not be a perfect answer, but it combines a solution to the problem that an individual with a large capital sum built up may lose it all, with a requirement that a capital sum built with the tax advantages reserved for pensions, be used to provide income for that pensioner. It may be in future, that to avoid problems associated with annuities, more people will save for retirement using ISAs or similar vehicles. However, Chapter Seven shows us that very few people are doing this at the moment. As such it appears that pension saving will remain the primary vehicle for providing income in retirement.

If we summarise the UK pension environment as it stands, then it seems that low earners are not heading for a prosperous retirement. Chapter One shows that the SSP and basic pension combined will fail to exceed the MIG. Low earners will almost certainly be caught in this position, especially as they will gain no benefit from private provision. Pension outcomes for middle earners will be conditioned by their employment record, whether their employer contributes to their schemes, and the amount of voluntary contributions that they make. It is only higher earners, who are likely to have good occupational provision that can guarantee a high income in retirement. This seems to imply a sharp polarisation in retirement between those who live on or just above the means-tested threshold and those with a high income. This is Titmuss's "Two Nation" theory of retirement writ large. In a way this is not surprising; if the policy agenda is heading back to Beveridge with the state providing a national minimum and leaving everything else to individual action, then the patterns of inequality produced should be those predicted by Titmuss.

The fundamental question to be answered is whether the voluntaristic system is ever going to work, with people choosing a level of saving high enough to clear the means-tested level of state support. If we decide that any amount of government persuasion will not produce a higher level of voluntary contributions, then we must decide what type of pension system we want. A vastly higher level of state provision is not a feasible option as it would require a lasting political consensus which is simply not going to happen. Legitimate pension expectations, such as those built up by SERPS, can be blown away by an act of political will. The returns from private pensions can be

affected by political machinations such as changes in taxation, but there is far less direct threat than to state schemes.

If we decide to pursue with the voluntaristic system, then we must accept the consequences, because even with the obvious uncertainty they can be sketched now. This will mean allowing large numbers of people to retire at or just above the MIG level, and perhaps to fall into it over time as the value of their pensions erode. It will mean continuing with a system where pension outcome is determined by whether an individual is fortunate to have high level DB or DC provision. The alternative is higher compulsory contributions, designed either to satisfy the Jupp criterion of not being a burden to others, or to meet the paternalist criterion of a high replacement ratio. This would "force" middle and higher earners to have a significantly higher pension than that necessary to lift them clear of the means-tested benefit threshold in retirement. This would interfere with individual freedom, but perhaps the retired generations of the future will be thankful for it.

Appendices

Appendix A- Bibliography

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Appendix B- Relevant questions from the Family Resources Survey 1994/5

This thesis has noted that data on pensions is derived from two separate parts of the FRS questionnaire. This appendix contains relevant variables from these two sections.

Benefit Unit Questionnaire

Block O: Pensions

EmpPens- Thinking of your present job, do you currently belong to a pension or superannuation scheme run by your employer which will give you a pension when you retire?
1: Yes
2: No

EpPres- May I just check, have you ever belonged to a pension scheme or superannuation scheme run by your present employer?
1: Yes
2: No

EpKeep- Have you kept the right to a pension from your present employer, which you are either drawing now or will be able to draw in the future?
1: Yes
2: No

EpLong- How long have you belonged to your present employer's pension or superannuation scheme?
ENTER YEARS TO NEAREST WHOLE YEAR

SERPS- Are you/ is your pension scheme... READ OUT (RUNNING PROMPT)
1... contracted into
2... or, contracted out of "SERPS" (i.e. the State Earnings Related Pension Scheme)

EpEnd- When you draw your pension from this scheme, will it be based on-
READ OUT (RUNNING PROMPT)
1... Your final salary
2... or, the amount of money invested in the scheme on your behalf- that is, a so-called "money purchase" scheme

Ep1Avc- Some people who are members of their employer's pension scheme pay extra contributions, known as Additional Voluntary Contributions or AVCs, in order to increase their final pension.

Do you pay Additional Voluntary Contributions?
1: Yes
2: No

EpDes- SHOW CARD P
Which one of these best describes the pension you will receive from your employer at retirement?
1: A pension that does not increase after retirement
2: A pension that may increase after retirement, but not necessarily every year
3: A pension that increases every year, but not necessarily in line with price increases
4: A pension that will increase in line with price increases, that is, an "inflation-proof" pension

EpPrev- Some people receive a pension from a previous employer when they retire, as well as a state pension. Have you ever belonged to a pension scheme or superannuation scheme run by a PREVIOUS EMPLOYER?
1: Yes
2: No (inc if no previous employer)

EpTran- Did you transfer any pension rights from your previous employer's scheme
READ OUT, CODE ALL THAT APPLY
1... into your present employer's scheme
2... into some other, independent, pension provision which you will be able to draw on in the future
3... or neither of these?

EpTran2- Did you transfer any pension rights from a previous employer's scheme into a personal pension scheme?

1: Yes

2: No

PerPen- (Now I'd like to ask you about personal pension schemes rather than employers' pension schemes.) Some people arrange pensions for themselves, for which the contributions are tax-deductible and which in most cases are paid for from part of their N.I. (National Insurance) contributions. These schemes are sometimes called "personal pensions" or "self-employed pensions" or "Section 226 Retirement Annuities"

Have you ever contributed towards any of these kinds of pension?

1: Yes

2: No

PPNum- How many such pensions have you contributed to?

1: One

2: Two

3: Three or more

PPCont- Have you contributed towards such a pension in the last 12 months?

1: Yes

2: No

PPExt: Have you made any EXTRA contributions to such a pension in the last 12 months: by "extra" I mean in addition to your regular National Insurance Contributions?

1; Yes

2: No

PPPay: How much did you pay last time?

CODE POUNDS. PENCE

PPPd: How long did this cover?

1. 1 week
2. 2 weeks
3. 3 weeks
4. 4 weeks
5. Calendar month
6. 3 months (13 weeks)
7. 6 months
8. Eight times a year
9. Nine times a year
10. Ten times a year
11. A year
12. One-off/ lump sum
13. None of the above (explain in a note)

PPEv- Have you EVER made any EXTRA contributions to such a pension?

1: Yes

2: No

PPLast- When did you last contribute to such a pension?

ENTER NUMBER OF YEARS AGO TO NEAREST YEAR

PPAge- At what age do you expect to start drawing this pension?

ENTER AGE

INTERVIEWER: YOU CANNOT NORMALLY DRAW SUCH PENSIONS BELOW THE AGE OF 50

Benefit unit Questionnaire- Blocks E-J: Questions asked to employees

PayAmt- What was your wage/salary including overtime, bonus, commission or tips, AFTER all deductions, the last time you were paid?

INTERVIEWER: SUGGEST RESPONDENT CONSULTS PAYSLIP

PayPd- How long did this cover?

1. 1 week
2. 2 weeks

3. 3 weeks
4. 4 weeks
5. Calendar month
6. 3 months (13 weeks)
7. 6 months
8. Eight times a tear
9. Nine times a year
10. Ten times a year
11. A year
12. One off/lump sum
13. None of the above (explain in a note)

NIPay- Do you usually pay National Insurance Contributions?

1: Yes

2: No

OthDed- Were there any other deductions from your wage/salary such as...

READ OUT: PROMPT EACH ITEM INDIVIDUALLY

1. Pension or superannuation/
2. AVCs (Additional Voluntary Contributions)?
3. Union fees?
4. Friendly societies?
5. Sports clubs or specialised pastimes?
6. Any other deductions we have not mentioned so far?
7. None of these

Deduc- How much was deducted for $TEXT40

DedOth: OPEN A NOTE AND DESCRIBE THESE OTHER DEDUCTIONS WITH AMOUNTS.

THEN ADD THEM UP AND ENTER THE TOTAL AT THIS QUESTION

Payslip- INTERVIEWER CODE WHETHER RESPONDENT IS USING PAYSLIP

1: Payslip consulted

2: Payslip not consulted

GrWage- What was the GROSS wage/salary i.e. the TOTAL, BEFORE ANY DEDUCTIONS- as shown on this payslip?

Appendix C- Additional Financial Asset Accumulation tables

Appendix C contains tables that could have been included in Section B of Chapter Seven. These cover the relationship between financial asset accumulation and pension status, with respect to gross income level and household type. They have been included in this appendix because they contain interesting material.

Table C.1: Financial asset accumulation by income and pension status

		Pension status					
		Occupational		Personal		Neither	
		% with account	% with SBI	% with account	% with SBI	% with account	% with SBI
Income level	£0-99.99	97.3	29.6	97.4	19.1	93.1	11.6
	£100-199.99	98.2	28.5	97.4	19.2	94.1	10.3
	£200-299.99	98.4	25.4	98.0	23.5	95.0	14.2
	£300-399.99	98.9	29.7	98.9	21.6	95.8	23.3
	£400-499.99	99.4	39.3	99.2	31.5	100.0	27.9
	£500+	100.0	47.3	99.1	42.0	96.8	16.1
	Total	98.6	31.3	98.0	22.6	94.5	13.3

Table C.1 bears out the lessons of comparable tables in Chapter Seven, that occupational and personal pension holders are more likely to have deposit or share-based investments even when we standardise for income. Occupational pension holders are more likely to have share-based investments than personal pension holders at every level of earnings.

Table C.2: Total savings by income and pension status

			Total savings (%) in band			
			0-£1500	£1501-20000	Over £20000	Does not wish to say
Income and pension status	Under £300 per week	Occupational	50.7	29.4	11.1	9.0
		Personal	55.3	27.4	10.6	6.7
		Neither	70.9	16.3	6.5	6.3
	Over £300 per week	Occupational	35.8	33.2	16.5	14.5
		Personal	40.6	33.1	15.2	11.1
		Neither	49.7	26.5	12.6	11.6
	Total	Occupational	44.8	30.9	13.1	11.1
		Personal	51.5	28.8	11.8	7.9
		Neither	68.1	17.7	7.3	7.0

Table C.2 bears out the lesson from the last table by showing that private pension holders have a higher level of total savings than those without pensions. If we compare the two private pension groups, we can see that at both income bands, occupational pension holders have a slightly greater level of total savings than personal pension holders.

Table C.3: Financial asset accumulation by household type and pension status

		Pension Status					
		Occupational		Personal		Neither	
		% with account	% with SBI	% with account	% with SBI	% with account	% with SBI
Number of children in household	0	97.9	28.6	97.9	22.9	93.4	12.1
	1	97.7	27.6	97.6	19.4	91.8	8.8
	2	98.5	26.0	97.8	19.6	93.2	9.5
	3+	96.8	21.2	95.6	17.5	89.2	8.3
	Total	97.9	27.5	97.7	21.3	92.7	10.6
Number of adults in household (households with children)	1	96.6	16.5	96.3	13.0	86.0	5.1
	2	98.3	26.6	97.6	20.2	92.9	10.3
	3+	96.2	26.1	96.7	15.2	91.3	6.6
	Total	98.0	26.0	97.4	19.2	91.9	9.0

Table C.3 shows that across all pension statuses, adults in households with three or more children seem to be less likely to have deposit or share-based investments. If we exclude this group then it seems that there is no relationship between the number of children in the household and deposit-based asset accumulation. It is a different story for share-based assets, where children seem to have a negative effect.

If we look at asset accumulation with respect to the number of adults in the household, we can see that single adult with children households generally have the lowest coverage for both deposit and share-based savings, while two adult with children households tend to have the highest coverage.

Table C.4: Total savings by household number of children in household and pension status

			Total savings (% in band)			
			0-£1500	£1500-20000	Over £20000	Does not wish to say
Number of children in household and pension status	0	Occupational	44.4	29.9	13.0	12.7
		Personal	48.0	28.5	11.6	11.9
		Neither	67.3	18.3	6.8	7.7
	1	Occupational	49.7	30.9	10.4	8.9
		Personal	57.3	26.1	8.8	7.8
		Neither	75.6	15.7	4.4	4.2
	2	Occupational	53.9	27.8	9.7	8.6
		Personal	60.9	25.1	6.3	7.8
		Neither	71.9	18.9	4.1	4.7
	3+	Occupational	61.4	24.4	7.1	7.1
		Personal	66.9	17.5	7.9	7.7
		Neither	78.4	12.9	3.9	4.7
	Total	Occupational	48.4	29.3	11.5	10.8
		Personal	53.4	26.7	9.8	10.0
		Neither	70.7	17.4	5.6	6.3

Table C.4 indicates that for each number of children in household, occupational pension holders have the highest level of total savings, followed by personal pension holders, with those without pension coverage having least.