THE IMPORTANCE OF MARGINAL TAX RATE ON THE DECISION TO TAKE A PRIVATE PENSION PLAN: A STUDY OF THE CHARACTERISTICS OF PRIVATE PENSION HOLDERS

CHARLES HICKSON

AND DEIRDRE Mc CLAY

The Queen's University of Belfast

ABSTRACT

Previous work in the area of pension provision in the United Kingdom has concentrated on the personal and job characteristics of holders. This paper draws on the theoretical approach of the United States literature. The study is based on the tax shelter view of pensions and, as a result, it examines the influence of wealth factors, especially marginal tax rate, on the pension decision. It concentrates on two decisions: whether or not to join an occupational pension scheme and whether or not to take a personal pension plan. The results indicate that certain wealth factors are influential to the pension decision, but labour related characteristics are also highly significant. Marginal tax rate does not appear to be a significant factor.

INTRODUCTION

There has been an enormous rise in the popularity of private pension schemes since World War II. This pattern is evident in both the United States of America (USA) and the United Kingdom (UK), where the structure of private pension provision is broadly similar. There are two distinct types of research in which we have a particular interest, firstly theoretical work on the reasons for the popularity of private pensions and secondly empirical research on the identification of the main factors which influence the decision to take a pension.

The theory on which this paper is based is the tax shelter view (Ippolito,

1986; Blinder, 1981). This is the widely held view that the driving force behind the take-up of private pensions is the tax advantage. Previous empirical work in the UK has concentrated on the impact of various personal and job characteristics on the pension decision. This paper seeks to combine the tax shelter view with an empirical study of the type of person who takes a private pension. The aim is to assess the impact of wealth factors, particularly marginal tax rates, on private pension provision.

THE STRUCTURE OF THE UNITED KINGDOM PENSION MARKET

The UK has a state pension which is funded through national insurance contributions. This can be supplemented by a private plan, either an occupational pension scheme or a personal pension.

Occupational Pension Schemes

Occupational pension schemes are generally established by employers, they are usually funded and are of the defined benefit type. Defined benefit schemes offer a fixed benefit in the form of a pension based on a percentage of final salary. These schemes are normally contributory, where the employer makes annual payments to the fund and the employees also pay a fixed percentage of salary. Membership of an occupational pension scheme cannot be made compulsory since the enactment of the Social Security Act 1988. Employees now have the option of taking out a personal pension in preference to joining their employer's scheme.

Preferential tax treatment is given to Inland Revenue approved schemes which fulfil certain conditions under ss.590-612 and Schs. 22 and 23 of the Income and Corporation Taxes Act 1988. The chief advantages are the tax deductible employer and employee contributions, the tax free accumulation of the pension fund and the commutation of a proportion of the pension fund to a tax free lump sum.

Personal Pension Schemes

Personal pensions were introduced through the Social Security Act 1988. The old regime in existence prior to this date allowed employers to make membership of company schemes compulsory. The new style plans are now available to both self-employed individuals and employees. Personal pensions are money purchase schemes: contributions are invested and the value of the scheme at maturity depends on the performance of the

individual fund. The holder cashes the fund on maturity and uses the money to purchase an annuity.

The tax treatment of personal pensions is as follows (ss.630-655 ICTA 1988): both employer and employee contributions are tax deductible, although employer contributions are unusual; income and gains of the fund accumulate tax free and a tax free lump sum may be taken on maturity, limited to 25% of the fund.

LITERATURE REVIEW

This paper draws on two areas of research described briefly in the introduction, that is, both theoretical and empirical work. The theoretical work comes from a body of literature based on US pension law. The structure of the US pension market is very similar in nature to the UK system: employer-run occupational pension schemes and personal pension accounts, supplementing a state scheme. There are five major theories which are conveniently summarised in an article by Bodie (1990). These are: the traditional view; the insurance view (Bodie, 1990); the labour view (Wise, 1986; Ippolito, 1986); the corporate finance view (Tepper, 1981; Black, 1980) and the tax shelter view (Ippolito, 1986; Blinder, 1981).

We have chosen to test the tax shelter approach which is one of the most widely held views on pension provision (Ippolito, 1986; Blinder, 1981). Proponents argue that the tax advantages of pensions are the driving force behind their popularity both from the perspective of the employer and the employee. However, it is useful to analyse the tax advantage of pensions using an example highlighted by Ippolito (Ippolito, 1986). It is argued that given an equivalent rate of taxation, both during the lifetime of an individual and in retirement, the pension decision is tax neutral. The present value of future taxes saved are the equivalent of paying those same taxes today. Ippolito illustrates this by using a simple example which highlights the differences in three different investment vehicles which he describes as a pension, a pension equivalent and no pension. These investments have similar tax treatments to three savings devices used in the UK: a pension, a personal equity plan (PEP) and a standard bank account respectively. This simple model ignored the tax free lump sum and used one rate of tax over the lifetime of the fund. Ippolito found that the pension merely deferred tax when compared to the pension equivalent (PEP), whereas a real tax saving did occur when he compared the no pension option. The example illustrated that the real tax advantage

of pensions lies in the tax free accumulation and not in the initial tax free contribution. Based on this simplistic approach, a pension would appear to have a similar tax advantage to both a PEP and the purchase and sale of an individual's principal private residence. Both forms of investment offer tax free accumulation. However, on more complex analysis one will find a two-fold tax saving through pensions: firstly the tax free lump sum, which can be drawn on maturity, and secondly the difference in tax rates between the date of deferral and future payment.

In a progressive tax system lifetime tax rates will often exceed retirement rates because income levels in the latter period will normally fall. Using a pension it is possible to defer tax at the higher working lifetime rate and to pay tax at the lower retirement rate. This gap that can arise between rates is a permanent tax saving, and individuals taxed at the higher rate during their working lifetime will have a greater tax saving from pensions. Therefore, one would expect under a tax-driven model that the marginal tax rate of an individual should be a very influential factor in the pension decision. This is the connection that is tested in this paper along with the influence of personal and job characteristics, and a number of other wealth factors. Three other wealth factors are chosen: ownership of a house (which shares some of the tax advantages of a pension), capital invested in other forms of savings and income level.

In the UK, empirical research has been carried out on the factors which influence the pension decision. Most of these studies have concentrated on the disparity of occupational pension coverage between men and women. The most common factors tested have been personal characteristics such as age, sex, marital status and dependant children. Labour-related characteristics have also been investigated using variables on hours of work, earnings level, job tenure, occupation and sector (Ginn and Arber, 1993). It is obvious from existing work on this area that men and women have entirely different work patterns and pension profiles (Davies and Ward, 1992; Joshi, 1984; Dex, 1987; Ginn and Arber, 1993). Consequently the pension decisions of men and women are analysed separately. It is important to be aware of the major issues surrounding the gender gap in pensions before attempting any analysis which seeks to take gender-based differences into account.

Women have been found to be peculiarly disadvantaged in two ways under earnings-linked private pension schemes (Ginn and Arber, 1993; Davies and Ward, 1992), that is, through both employment history and sex discrimination in the labour force. The employment history of women tends to be adversely affected by domestic responsibilities. Marriage

and dependant children increase the likelihood of career breaks, part-time employment and occupational mobility (Davies and Ward, 1992). These factors affect pension contributions and tend to decrease the likelihood of joining a scheme. Many occupational pension schemes exclude part-time workers and have minimum service requirements. In addition to employment patterns of women, it has also been shown that the average earnings of women are still only 68% of the average male earnings (Department of Employment, 1990). Even single childless women with full-time work and unbroken service will still be disadvantaged in terms of pay levels in comparison to male colleagues (Davies and Ward, 1992).

The Ginn and Arber paper concentrates on the link between family formation, labour market position and occupational pension scheme membership. It highlights the gender gap in relation to the pension decision using data from the General Household Survey (GHS) 1987. It concludes that marriage coupled with dependant children has a more significant influence on the decision to take an occupational pension scheme than gender alone. Ultimately the authors believe that the labour market position of women is the most significant factor in determining whether or not they take a pension.

Although the main impetus of this paper is the influence of wealth-related factors on the pension decision, it is impossible to ignore the differences attributable to gender. The analysis is structured in a way that highlights those differences. A study similar to this has been carried out on USA cross-sectional data (Kiker and Rhine, 1990). The authors conclude that income, gender and industry sector are stronger indicators of occupational pension holdings than marginal tax rate – they do not find tax rate to be significant at all. We wish to investigate whether the results will be similar with UK data.

DATA

The dataset chosen is the General Household Survey (GHS) 1991/92. This large national survey questions individuals living in over 13,000 households all over the United Kingdom. The variables used are described in detail in **Appendix 4**. For the purposes of this study, two types of individual within the GHS were selected: the head of the household (HOH) and the partner of the head of household (PHOH). As a result of the way in which the head of household is defined within the GHS, it is almost entirely a category of men, whereas partners of heads of household are

exclusively women. This distinction enables one to assess the impact of the chosen variables on a gender-specific basis. In addition, only employed individuals whose employer had an occupational pension scheme were chosen and analysed according to two distinctive pension decisions. The first decision is whether or not the employee joined the occupational pension scheme and the second is where the employee did not join the company scheme, whether or not s/he took a personal pension plan.

In excluding all employees whose employer has no occupational pension scheme, one ensures that most of the sample will at least be offered a company pension scheme. However, it is still possible that some employees will be excluded under the terms of their employer's scheme because of part-time work or minimum service requirements.

The endogenous variable is a dichotomous variable; it takes on the value of 1 if an individual is a member of a private pension scheme and 0 otherwise. Two different pension variables are created: the first relates to occupational pension schemes and is based on the first decision described directly above. The second pension variable relates to the personal pension decision described above. Given that the dependant variable is qualitative, and that the error terms are assumed to be logistically distributed, the limited dependant variable technique of logit is chosen. This is a maximum likelihood estimation technique. The likelihood function for the entire sample is formed by multiplying together all the expressions for the likelihoods of the individuals. The likelihood for each individual is an odds ratio of whether or not the person belongs to a pension plan and is conditional upon that individual's specific characteristics.

When the individual, based on his or her characteristics, is expected to belong to a pension plan, they are assigned a 1, expectation of non-membership is assigned a 0. The reported results are odds, which in terms of this particular study are the ratio of the probability of someone with specific characteristics belonging to a private pension scheme (p), compared to the probability that they do not belong to a scheme (1-p). Three models are used in the analysis in order to highlight the effect of a combination of personal, wealth and job characteristics of pension holders. All three models are additive, and are described in **Appendix 3**. The results of the regression analysis are reported at **Appendix 1** (occupational pension schemes) and **Appendix 2** (personal pension plans).

RESULTS OF DATA ANALYSIS

General

Appendices 1 and **2** contain the results of multivariate analysis, while the percentage tables are included after the relevant text. The two most outstanding differences in the overall pattern of the results are the gender gap and the lack of personal pension cover. The ratios of head of households' results to partner of head of households' reveals the gender gap. It is clear that female pension coverage is poor in comparison to their male counterparts. However, the ratio of personal pension holdings to membership of occupational schemes is also very low. The most disconcerting aspect of this observation is the total lack of pension coverage that it highlights. Individuals who neither join their company scheme nor hold a personal plan are relying totally upon the state scheme. This lack of coverage is more significant among partners of heads of household. It is indicative of high levels of reliance by women on the state scheme or their husbands' private pension provision for retirement income security.

PERSONAL FACTORS

The percentage results (**Table 1**) and regression analysis (**Appendix 1**) on personal factors indicate similar findings to previous work on occupational pension schemes (Ginn and Arber, 1993). Age follows a lifecycle which is different for men and women, and we also find that it is different for personal pensions. The membership levels of occupational pension schemes among HOH (men) rises with age, peaking at 60 years old. On the other hand, the PHOH age profile rises to an earlier peak of 50 years old. Ginn and Arber identified a three-pronged lifecycle for women aged 20/29, 30/44 and 45/49, described as an M shaped pattern (Ginn and Arber, 1993). These agebands roughly represent pre-reproduction, reproduction and post-reproduction. They found that membership rates of occupational pension schemes among women fall during the reproductive years but rise again during post-reproduction. The results on percentage analysis show a rise in membership levels from the 20/29 to the 30/39 female age bands of 4%, which is a small increase compared to the equivalent rise among men of 23% . However, there is a steeper rise in membership levels among women from the 30/39 to the 40/49 age band of 12% which would seem to indicate an increased take-up rate among women in the post-reproductive years. The results of regression 1 in **Appendix 1** show that, on personal factors alone, age is a significant factor for males; however, the results for females are much

poorer, which weakens any comparison of regression results on a gender basis. The addition of other factors in regressions 2 and 3 (**Appendix 1**) has the effect of lowering the odds ratios on age, and also reduces the significance of the HOHs' estimates, which would tend to indicate that wealth and job characteristics lessen the impact of lifecycle alone.

The personal pension lifecycle is entirely different for HOH (men), as it peaks early at about 40 years old, and falls thereafter. This is probably due to the fact that personal pensions are a relatively new product, and they are increasingly more expensive to purchase with age. The PHOH, on the other hand, show the M shaped pattern on the percentage analysis, evidenced by Ginn and Arber (1993) in occupational scheme membership. However, the results at regression 1 (**Appendix 2**) show little difference in the odds between age 20 and 40 with a negative chance of taking a pension after 50. The ratio of female to male holdings is much lower for personal pension than company schemes. On the percentage table (**Table 1**), the highest ratio for the former is only 51% at age 20/29 compared to 75% for occupational schemes which occurs at age 30/39. However, none of the estimates for age in relation to personal pensions is significant and therefore comparison on a gender basis can only be tentatively made. It would appear that the gender gap is an even bigger problem under the new personal pension plans than under company schemes. Wealth also seems to have a different impact on personal pensions. In regression 2 (**Appendix 2**) the odds on age increase as a result of the addition of wealth factors, and PHOH display the M shaped lifecycle. Unlike company schemes, the lifecyle of an individual seems to increase in importance with the consideration of wealth factors.

The results on marriage and dependant children once again mirror the findings of Ginn and Arber (1993). These factors increase the percentage holdings of private pensions among HOH and decrease them among PHOH (see **Table 1**). The ratio of percentage holdings of women to men is lowered by marriage and children, reflecting the impact of domestic responsibilities on women. Female partners lose pension rights through career breaks or shortened hours of employment. Marriage and children have a much more dramatic effect among HOH on the percentage holdings of personal pensions. The HOH membership rates in company schemes rise by 5% on marriage and 4% with dependant children; the corresponding figures for personal pensions are 81% and 34%. However, even these steep rises do not bring personal pension holdings into line with membership of occupational schemes. In addition, the percentage ratios of women to men is also much lower – it drops by 53% on marriage and 46% with children.

Table 1: Percentage Analysis of Private Pension Provision

	Occupational Pensions		Personal Pensions	
	HOH **	PHOH***	HOH **	PHOH***
	%	%	%	%
Personal factors:				
Age:				
20-29	66	55	46	28
30-39	81	57	61	22
40-49	85	64	54	26
50-59	87	60	33	12
60-65	75	40	18	05
Marital Status:				
Married	84	58	58	22
Single	72	61	32	26
Dependant Children:				
Yes	82	52	55	18
No	79	64	41	25
Education level:				
Under 16	78	52	33	17
16-18	80	56	59	23
19+	84	74	48	31

Key:

1 Percentage of employed individuals who have joined their employer's occupational pension scheme.

2 Percentage of employed individuals who have not joined their employer's occupational pension scheme but do hold a personal pension scheme instead.

* Under 20 observations.

** HOH 'Head of household'.

*** PHOH 'Partner of the head of household'

Source: GHS 1991/92 (authors' analysis).

Multivariate analysis reveals that dependant children have a negative impact on all four groups of individuals considered (regression 1, **Appendix 2**). The results are much stronger for PHOH (significant at the 1% level) than for HOH, which again must be taken into account when making gender comparisons. The impact of dependant children on PHOH seems to be stronger than on their male counterparts, as they are five times less likely to join a company scheme and three times less likely to take a personal pension plan. The addition of wealth factors at regression 2 raises the odds across all four groups, thereby easing the negative impact of dependant children on the take-up rate of private pensions. However, for PHOH the results are no longer significant. Regression 3 examines occupation and sector without the added wealth factors. Interestingly, the odds for dependant children reduce in comparison to regression 2. This pattern could lead one to tentatively suggest that job and wealth factors reduce the importance of personal factors such as dependant children. Ginn and Arber (1993) conclude that labour characteristics are more influential to the pension decision than personal factors alone. We would concur with that conclusion but we would add that wealth factors also have a similar impact. Income is probably the strongest influence as it shows significant results in three out of the four groups of individuals tested.

Education level is the final personal factor included; it also reveals a difference in the profile of individuals who hold personal pensions. The percentage holdings among all groups rise with education level, with the exception of HOH and personal pensions. Among PHOH in particular higher education seems to accelerate the percentage of pension holdings. Multivariate analysis confirms that a 19+ education level is influential for all individuals except the HOH taking a personal pension, where the 16-18 level is more important. This exceptional group are twice as likely to take a personal pension if they left school between 16-18, rather than after age 19.

One explanation of this result is a probable difference in the type of person who constitutes our sample of individuals in the market for a personal pension. The vast majority of individuals who do not take their company pension schemes, do not make this decision by choice, but are excluded by scheme rules. This means that a large number of our sample are in low level jobs or part-time work. The number of women educated to the age 19+ level who do not join occupational pension schemes is higher than the equivalent number of males, probably due to domestic responsibilities. The greater number of males with a 16-18 education profile within our sample is a probable influence on the regression results.

JOB FACTORS

Other work in this area has highlighted the significance of labour-related characteristics to the occupational pension decision (Ginn and Arber, 1993).Our results confirm this analysis for both forms of scheme. The one exception is job tenure, which has more of an impact on company schemes than on personal pension plans.

The variables on full-time/part-time employment and job tenure produce results which are amongst the most significant in **Appendices 1** and **2**. Full-time employment has a noticeable impact on the percentage holdings of both schemes, more especially on personal pensions (see **Table 2**). Interestingly, the ratio of PHOH to HOH percentage holdings of both schemes is higher among part-time workers, 94% (occupational pensions), 99% (personal pensions). This is one of the few examples of gender equality in our results; the other is the holding of occupational pension schemes among individuals in the 40% tax bracket. Higher rate taxpayers and part-time workers respectively represent the highest paid individuals in our sample with the best employment terms and the lowest paid workers. It would seem from our results that at the extremes of highly paid and poorly paid individuals there is no gender gap. However, a closer examination of the percentage of males and females in both groups shows that only 2% of our PHOH sample are in the higher tax bracket compared to 14% among HOH. In contrast, only 5% of HOH are part-time workers in comparison to a remarkable 41% of our PHOH sample. Inevitably we conclude that women are still disadvantaged in terms of numbers in high and low level employment. These findings are supported in the multivariate analysis by the impact of wealth factors on the gender gap in the full-time/part-time variable. The ratio of the results for HOH to PHOH under company schemes drops from 2.5:1 to 36% when wealth factors are considered (**Appendix 1**). The equivalent drop in ratio for personal pensions is 1.75:1 to 10% (**Appendix 2**), indicating that consideration of wealth-related factors lowers the impact of gender disadvantage on hours of work.

Multivariate analysis of job tenure shows that it is significant at the 1% level for all individuals apart from PHOH choosing the personal pension. These women also show a comparatively small percentage change in pension holdings before and after the two year service level (**Table 2**). Personal pensions do not have vesting provision or minimum service requirements and so we would expect that job tenure would have lesser impact on personal pension plans. The difference in profile of HOH and PHOH is due to the lack of acceleration in female pension holdings after

the two year service level. This is an important observation in personal pensions holdings: it establishes that years of service do not improve the chances of females without pension cover taking out personal plans. These results support the view that personal pensions are not the answer to lack of pension coverage among women; they do not operate as a substitute (Davies and Ward, 1992).

In order to analyse the influence of occupation and sector, we have used the standard classifications described in **Appendix 4**. Not surprisingly both multivariate and percentage analysis show that pension provision seems to be ranked closely according to the socio-economic grouping of occupation. The gender gap is apparent in all occupations but it is much more evident in personal pensions holdings. Female employer managers are over 12 times less likely than their male counterparts to hold a personal pension plan and three out of four of the PHOH occupations have negative odds. Sector analysis also highlights the usual gender difference and once again the gap in coverage is particularly apparent with personal pensions. However, the regression results on occupation and sector in relation to personal pensions are much weaker than the equivalent for occupational pension schemes, with only two estimates having a significance level below 10%. Therefore it would be unwise to rely on these estimates to provide a link between occupation, sector and personal pension coverage. On the other hand, multivariate analysis shows the top three levels of occupation to be highly significant with respect to HOH choosing occupational pension schemes, with the employer manager category significant for women. The corresponding results on sector are also strongest for HOH choosing a company scheme, as four out of nine sectors are significant. Four sectors produce negative odds for women choosing company schemes, though none of these estimates are significant below the 10% level.

From the percentage table one can see that the PHOH to HOH ratio is less than 45% in five out of the ten sectors. The percentage analysis could lend some support to the argument that pension holdings are related both to occupation and sector. In particular they would suggest that variation in pension holdings by these two factors are more extreme among personal pension holdings than company schemes. There is an 88% difference in the highest and lowest level of personal pension coverage among HOH (85% PHOH), compared to a 35% spread in occupational pension coverage (51% PHOH). This pattern is also evident in analysis by industry sector but the spread in personal pension coverage is lower around 60-65%. This gap in coverage is probably due to the lack of the employer's contribution to personal pension schemes which

Table 2: Percentage Analysis of Private Pension Provision

	(1) Occupational Pensions		(2) Personal Pensions	
	HOH **	PHOH***	HOH**	PHOH***
	%	%	%	%
Job characteristics:				
Job tenure:				
Less than 2 years	50	35	34	21
More than 2 years	86	65	55	23
Full time	83	75	54	38
Part time	34	36	13	14
Sector:				
Agriculture, fish, forest	*	*	20	*
Energy	91	75	55	17
Mineral	85	67	46	20
Engineering	78	62	57	40
Other manufacturing	73	55	48	20
Construction	72	58	55	44
Distribution	66	38	46	20
Transport & communications	87	59	56	25
Bank & finance	79	73	53	34
Other services	67	61	26	18
Occupation:				
Professional	87	73	57	54
Employer, manager	87	72	67	41
Intermediate, junior, non-manager	80	63	38	24
Skilled manual	78	66	55	29
Semi-manual	73	40	35	15
Unskilled manual	57	36	08	08

Key:

1 Percentage of employed individuals who have joined their employer's occupational pension scheme.

2 Percentage of employed individuals who have not joined their employer's occupational pension scheme but do hold a personal pension scheme instead.

* Under 20 observations.

** HOH 'Head of household'.

*** PHOH 'Partner of the head of household.'

Source: GHS 1991/92 (authors' analysis).

Table 3: Percentage Analysis of Private Pension Provision

	(1) Occupational Pensions		(2) Personal Pensions	
	HOH **	PHOH***	HOH **	PHOH***
	%	%	%	%
Wealth factors:				
Marginal tax rate:				
Nil	*	11	*	09
25%	83	61	60	24
40%	91	90	65	*
House ownership:				
Rents	66	44	29	11
Owns	83	61	55	24
Other savings:				
No	79	60	47	22
Yes	88	70	52	27

Key:
1 Percentage of employed individuals who have joined their employer's occupational pension scheme.
2 Percentage of employed individuals who have not joined their employer's occupational pension scheme but do hold a personal pension scheme instead.
* Under 20 observations.
** HOH 'Head of household'.
*** PHOH 'Partner of the head of household'

would make it less popular, particularly in low paid occupations or sectors.

WEALTH FACTORS

The main impetus of our paper has been the impact of wealth factors on the private pension decision, particularly the influence of marginal tax rate. The percentage analysis (**Table 3**) shows that the propensity to take a pension does rise with tax rate; however, multivariate analysis shows

weak results. It would seem that the membership rate of company schemes is already high at the 25% band, thereby reducing the impact of the marginal tax rate. This pattern is more apparent among HOH who have a holding rate of 83% in the 25% band, rising to 91% in the higher tax band. The female partners have lower levels of pension coverage at the 25% bracket thereby creating a greater overall increase, that is, 48%, to the higher rate band. As noted earlier, there is no gender gap in the 40% bracket. It could be suggested that the lack of significance of marginal tax rate on the occupational pension decision is due to the popularity of these schemes even at the lower income levels. When company schemes are offered they are normally accepted, as the employer pays a significant contribution to the fund. Most of the individuals lacking pension cover are on low level earnings or in part-time jobs and are not offered membership. Occupational pensions seem to be taken before the level of optimum tax advantage and so the reasons for membership must be more complex than the tax shelter view alone. The results on personal pensions do not prove any strong relationship to tax rate either. The overall take-up rate is poor, probably due to low level earnings or part-time jobs. Once again coverage is relatively high at the 25% band with little change in the higher rate bracket. This study lacks information on pension contribution levels. It is possible that the contribution level is linked to the tax advantage; however, it could be concluded that the initial decision to take a scheme is more complex than the tax advantage approach.

The other wealth factors of house ownership and income levels produce strong results, both being better indicators of private pension holdings than tax rate or other savings. Multivariate analysis indicates that house ownership is significant among HOH and it is more influential on personal pension holders than members of company schemes. The percentage table shows a 90% increase in HOH personal pension coverage due to house ownership, and a two-fold increase for PHOH. This is compared to a 26% increase (HOH) and a 39% (PHOH) in occupational pension scheme membership. Income levels are highly significant and, not surprisingly, the propensity to take a private pension scheme rises with earnings.

CONCLUSION

The marginal tax rate of an individual does not seem to be significant in the decision to take a private pension scheme. The take-up rate of private pensions, particularly among heads of household, seems to be relatively high in terms of the total, even at the 25% tax band. Relatively few individuals wait until the 40% tax bracket to take a pension plan. The tax

bands in the UK are comparatively generous, allowing an individual to earn up to £23,700 above their personal allowances before charging tax at the 40% rate. Many individuals paying tax at the 25% rate can afford a private pension and they make a decision to take one despite the fact that the tax advantage is not optimum. It would be interesting to investigate whether or not there is a link between contribution levels and tax rate. This study has not considered that issue. Other wealth-related factors are more important, particularly income and house ownership. These forms of wealth will reduce the negative impact of personal characteristics such as marriage with dependant children. Labour-related characteristics are also highly significant, especially full-time/part-time employment and job tenure. Pension provision also varies with sector and occupation, particularly with respect to personal plans.

The gender gap is evident throughout the results with the exception of higher rate taxpayers and part-time workers. As explained above, these two groups represent the two extremes of income level and closer examination of the numbers of each sex reveal that the latter are still disadvantaged. The personal pension has been sold to the public as flexible and portable, and yet there is no evidence of substitution for company schemes. Females who have not joined occupational pension schemes show little propensity to take personal pension plans instead. This result supports the opinion of Davies and Ward that any pension which is based on earnings will be problematic for women who lack coverage (Davies and Ward, 1992). These women tend to have low level earnings and broken service records. Earnings-linked pension cover translates low level earnings into inadequate pension income and creates poverty in the post-retirement years.

Overall personal pension provision among both men and women is significantly lower than occupational pension coverage. This result highlights a number of individuals who do not take any private pension coverage and rely totally on the state pension scheme. Interestingly, the profile of individuals who take personal pensions is also different in a number of aspects from company scheme members. These individuals tend to be younger, their chances of holding a plan are more closely related to occupation, sector, and personal details such as marriage and dependant children. Job tenure is not as important to the personal pension decision as the occupational schemes, and this is more evident among partners of heads of households. It leads us to the conclusion that years of service do not tend to improve the employment conditions of these women, and supports the argument that personal pensions are not the answer to lack of occupational pension coverage.

ACKNOWLEDGEMENTS

Material from the General Household Survey was made available through the Office of Population Censuses and Surveys and the ESRC Data Archive and has been used with the permission of the Controller of HM Stationery Office. All opinions expressed in this paper are those of its authors and the original collectors of the data bear no responsibility for analysis and interpretation contained therein.

APPENDIX 1
Multivariate analysis of occupational pension provision

Regressions:	**1**		**2**		**3**	
Personal factors:	**HOH**	**PHOH**	**HOH**	**PHOH**	**HOH**	**PHOH**
Constant	-2.02***	-0.47	-3.82**	-4.43	-6.40*	2.60**
Age:						
20-29	2.09***	0.43	1.45	0.39	1.43	0.24
30-39	2.91*	0.84	1.53	0.72	2.06***	0.74
40-49	3.41*	1.08	2.23***	0.84	2.31***	0.95
50-59	3.63*	0.67	2.38***	0.62	2.60**	0.89
60-65	2.91*	-0.12	1.86	-0.19	2.04***	0.04
Dependant children:	-0.15	-0.80*	0.24	-0.26	-0.04	-0.19
Education level:						
16-18	0.64*	0.31*	0.31	0.16	0.29**	0.01
19+	0.89*	1.13*	0.68*	0.39***	0.35**	0.56*
Job characteristics:						
Job tenure:						
More than 2 years	-	-	1.86*	1.25*	1.61*	1.11*
Full-time/Part-time	-	-	2.06*	1.18*	2.22*	1.63*
Wealth factors:						
Marginal tax rate:						
25%	-	-	-1.32	1.21*	-	-
40%	-	-	-1.55	0.66	-	-
House ownership	-	-	0.55*	0.08	-	-
Other savings	-	-	0.33	0.25	-	-
Income			4.49E-05**	0.0001*	-	-

Regressions:	1		2		3	
	HOH	PHOH	HOH	PHOH	HOH	PHOH
Sector:						
Energy	-	-	-	-	1.91*	0.31
Mineral	-	-	-	-	1.48**	0.36
Engineering	-	-	-	-	0.99	-0.27
Other manufacturing	-	-	-	-	0.83	-0.25
Construction	-	-	-	-	0.72	-0.18
Distribution	-	-	-	-	0.49	-0.76
Transport & communications	-	-	-	-	1.99*	0.08
Bank & finance	-	-	-	-	1.21***	0.40
Other services	-	-	-	-	2.12*	0.11
Occupation:						
Professional	-	-	-	-	1.00*	0.16
Employer, manager	-	-	-	-	1.13*	0.56**
Intermediate, junior, non-manager	-	-	-	-	0.86*	0.38***
Skilled manual	-	-	-	-	0.46***	0.43
Semi-manual	-	-	-	-	0.43***	-0.36

Key:

1 Regression based on personal factors only.
2 Regression based on personal, job and wealth characteristics (excluding occupation and sector).
3 Regression based on personal and job characteristics (including occupation and sector).

*p<0.01, **p<0.05,***p<0.10 (the statistical significance of difference of odds ratio from category of reference).
Source: GHS 1991/92 (authors' analysis).

APPENDIX 2

Multivariate analysis of personal pension provision

Regression:	(1)		(2)		(3)	
Personal factors:	**HOH**	**PHOH**	**HOH**	**PHOH**	**HOH**	**PHOH**
Constant:	-2.18***	-1.66	-21.01	-8.92	-5.64*	-2.94**

Regression:	(1)		(2)		(3)	
Personal factors:	**HOH**	**PHOH**	**HOH**	**PHOH**	**HOH**	**PHOH**
Age:						
20-29	0.85	0.63	7.39	6.09	0.52	0.78
30-39	1.49	0.63	8.11	5.93	1.09	0.98
40-49	1.50	0.60	8.10	6.04	1.12	0.95
50-59	0.45	-0.66	6.71	4.99	0.32	-0.02
60-65	-0.39	-1.97	5.23	4.25	-0.57	-1.31
Dependant children:	-0.39***	-0.91*	0.01	-0.36	-0.13	-0.39***
Education level:						
16-18	1.08*	0.26	0.97**	0.02	1.11*	0.08
19+	0.62**	0.61**	0.46	-0.41	0.81**	0.16
Job characteristics:						
Job tenure:						
More than 2 years	-	-	1.17*	0.21	1.06*	0.18
Full-time/ Part-time	-	-	1.66***	0.66**	1.01*	1.12*
Wealth factors:						
Marginal tax rate:						
25%	-	-	9.75	-0.10	-	-
40%	-	-	8.42	4.33	-	-
House ownership	-	-	0.89**	0.50	-	-
Other savings	-	-	0.65	0.32	-	-
Income	-	-	5.73E-05	0.0001*	-	-
Sector:						
Energy	-	-	-	-	1.88	-
Mineral	-	-	-	-	1.72	-
Engineering	-	-	-	-	2.20***	0.70
Other manufacturing	-	-	-	-	1.93	-0.01
Construction	-	-	-	-	1.93	1.16
Distribution	-	-	-	-	1.81	0.20
Transport & communications	-	-	-	-	1.80	0.57
Bank & finance	-	-	-	-	2.09***	0.63
Other services	-	-	-	-	1.33	0.44

Regression:	(1)		(2)		(3)	
	HOH	PHOH	HOH	PHOH	HOH	PHOH
Occupation:						
Professional	-	-	-	-	0.28	-
Employer, manager	-	-	-	-	0.63	0.05
Intermediate, junior, non-manager	-	-	-	-	0.16	-0.28
Skilled manual	-	-	-	-	0.33	-0.90
Semi-manual	-	-	-	-	0.16	-1.01

Key:

1 Regression based on personal factors only.
2 Regression based on personal, job and wealth characteristics (excluding occupation & sector).
3 Regression based on personal and job characteristics (including occupation and sector).

* p<0.01, **p<0.05, ***p<0.10 (the statistical significance of difference of odds ratio from category of reference).
Source: GHS 1991/92 (authors' analysis).

APPENDIX 3
Description of models

The basic model is as follows:

$$\frac{p}{(1-p)} = a + bx_1 + cx_2 + dx_3 + \text{.....etc}$$

Where
p = the probability of holding a private pension.
(1-p) = the probability of not holding a private pension.
X_1 ..... Xi = coefficients to be estimated.
a, b, c, d, ... = independent variables.

Model 1
The independent variables are personal factors alone, that is, age, dependant children and education level.

Model 2
The independent variables are personal factors as in model 1 with the

addition of job and wealth characteristics, that is, job tenure, full-time/ part-time work, marginal tax rate, house ownership, other savings and income level.

Model 3
The independent variables are personal, job and wealth characteristics as in model 2 with the addition of occupation and sector.

A detailed explanation of all variables is available at **Appendix 4**. Each model is used twice.

1 The occupational pension scheme variable is the dependant variable, that is, whether or not an employee joins the company pension scheme
2 The personal pension scheme variable is the dependant variable, that is, where an employee does not join the company pension scheme, whether or not they take a personal pension plan.

APPENDIX 4
DESCRIPTION OF VARIABLES

Pension
Employed individuals were asked whether or not they belonged to either form of private pension scheme.

We derived two variables on the pension decision.

Marital Status
Single, widowed, divorced, separated and cohabiting individuals are all treated as single.

Dependant Children
A variable disclosing the number of children in the household was used to identify individuals with dependant children.

Terminal Age of Education
Information on school leaving age was used to develop three categories, that is, under 15, 16-18 and 19+.

These ages broadly correspond to the following levels of education:
(i) Secondary level (excluding GCSE or equivalent level)
(ii) Secondary level with GCSE or equivalent level
(iii) Third level education.

Full-time/Part-time
Employees were classified as full-time if they worked more than 30 hours a week, and part-time below the 30 hour level.

Occupation
Each individual was classified according to their present occupation based on the Standard Occupational Classification compiled by the OPCS.

Sector
Sector is classified according to the industry sector of the individual's present occupation. It is based on the Standard Classification compiled by the CSO.

Marginal Tax Rate
Information was available on the GHS on an individual's income and family circumstances. We used this data to estimate each person's marginal tax rate.

Income
The derived variable current net weekly income was used to create an annualised income for each individual.

House Ownership
We have included under the category of ownership those individuals who co-own and share-own their accommodation.

Other Savings
This category includes all forms of savings other than basic bank and building society accounts, for example, shares, securities or personal equity plans.

REFERENCES

Black, F. (1980). 'The tax consequences of long run pension policy', *Financial Analysts Journal*, July/August, 36(4), pp.3-10.

Blinder, A.S. (1981). 'Private pensions and public pensions: theory and fact', *W.S. Woytinsky Lecture No. 5*, University of Michigan, Ann Arbor, December.

Bodie, Z. (1990). 'Pensions as retirement income insurance', *Journal of Economic Literature*, Vol. XXVIIII (Mar.), pp.28-49.

Davies, L. and Ward, S. (1992). 'Women and personal pensions', *Equal*

Opportunities Commission Research Series, London: HMSO.
Department of Employment (1990). *New Earnings Survey 1990: Part E analysis by age group*, London: HMSO.
Dex, S. (1987). *Women's Occupational Mobility: A Lifetime Perspective*, Basingstoke: Macmillan.
Ginn, J. and Arber, S. (1993). 'Pension penalties: the gendered division of occupational welfare', *Work Employment & Society*, Vol.7, No. 1, pp.47-70.
Ippolito, R.A. (1986). *Pensions: Economics and Public Policy*, Homewood, Ill: Dow Jones-Irwin.
Joshi, H. (1984). 'Women's participation in paid work: further analysis of the Women and Employment Survey', *Department of Employment Research Paper No. 45*, London: HMSO.
Kiker, B. F. and Rhine, S.L.W. (1990). 'Income, taxes and employer pension contributions', *Applied Economics*, 22, pp.639-651.
Office of Population Censuses and Surveys (1992). *General Household Survey 1991/92*, London: HMSO.
Tepper, I. (1981). 'Taxation and corporate pension policy', *Journal of Finance*, Mar. 36(1), pp.1-13.
Wise, D.A. (1986). *Pensions, Labour, and Individual Behaviour*, Chicago: University of Chicago Press.