

## **Public policy and saving for retirement: Evidence from the introduction of Stakeholder Pensions in the UK**

by

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### *Abstract*

Faced with ageing populations, OECD governments are searching for policies to increase retirement saving. In 2001, the UK government introduced Stakeholder Pensions – a low cost retirement saving vehicle – targeted primarily on middle earning individuals without access to an occupational pension. This paper examines the impact of this reform. Using microdata from the Family Resources Survey, we find no evidence that the introduction of Stakeholder Pensions increased the proportion of the target group with a private pension, but there seems to be an impact on those with low earnings. This surprising result is examined further using a quasi-differences of differences estimator. We argue that this finding arises from one of the less well known features of the reform.

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### **1. Introduction**

Many developed countries wish to encourage private retirement saving. People are living longer, and therefore either have to save more or retire later in order to maintain their standard of living in retirement. But there continue to be strong individual incentives to retire as early as possible within many public pension programmes (Blöndal and Scarpetta, 1998; Gruber and Wise, 1999, 2004). Consequently, encouraging greater private retirement saving remains a priority, especially in countries such as the United Kingdom where many households rely on private sources rather than public pensions for much of their retirement income and where there has been increasing concern as to the extent of any ‘savings gap’ between what working age individuals should save for retirement and what they are actually saving (Pensions Commission, 2004).

How can people be encouraged to save more for retirement? What saving policies work and do not work? There has been a substantial debate around this question, particularly in the United States (see, *inter alia*, Bernheim and Scholz, 1993; Poterba, 1994; Journal of Economic Perspectives, 1996). There is also some indirect evidence for the United Kingdom (for example, Attanasio and Rohwedder, 2003). Greater tax incentives to encourage retirement saving are an obvious policy instrument, but it is difficult to target incentives on the marginal saver, so that more generous incentives may actually reduce saving for the intra-marginal saver through a wealth effect and that the exchequer cost of providing additional incentives will add to public borrowing (for UK evidence, see Disney, Emmerson and Wakefield, 2001; Disney, Emmerson and Smith, 2004).

Another strategy therefore is to develop retirement saving instruments targeted specifically at groups in the population that are thought to be saving insufficiently. The rationale for introducing new instruments is presumably that, for one reason or another, existing instruments for retirement saving are inadequate for the purpose, at least among the target group. In this paper, we consider one such policy in the UK: Stakeholder Pensions, introduced in 2001. The Green Paper (Department of Social Security, 1998) that proposed this new instrument saw the new Stakeholder Pension

as being particularly attractive for individuals in the ‘middle’ income group earning £9,000 to £18,500 per annum. It did not expect high take-up among either higher earners (>£18,500), who were typically covered by occupational pensions or had other pension arrangements such as Personal Pensions, or by low (or zero) income earners (<£9,000), who were thought to be better off by contributing to the new Second State Pension (S2P). We consider briefly what characteristics might make Stakeholder Pensions attractive to the middle earnings group in the next section.

The paper then considers the impact of the introduction of Stakeholder Pensions on the proportion of households that have a private pension. We do not consider the impact of Stakeholder Pensions on the *volume* of retirement saving because of severe limitations in both the household and aggregate data.<sup>1</sup> Having described the reform (Section 2), we look at the aggregate data on the proportion of households with private pensions both before and after the reform.

Aggregate data provide little or no evidence that the introduction of Stakeholder Pensions has had a significant impact on the proportion of households saving for retirement. However, if Stakeholder Pensions were targeted on a particular group, this result may not be too surprising. So, when we consider the changes in the average saving probabilities across the different earnings groups specified by the Green Paper (using household data from the Family Resources Survey) differential changes in saving patterns across income groups emerges, exactly as an analysis of a targeted policy might suggest. But we show that these differential effects across income groups are not along the lines intended, at least primarily, by the 1998 Green Paper.

To pursue the issue further, Section 3 uses an estimator that is close to a differences-of-differences approach but which allows for the discrete nature of the outcome variable, following the method suggested in Blundell *et al* (2004). By doing so, we can extend the analysis beyond a simple ‘differences’ (i.e. before/after) analysis in order to separate common trends across groups from the differential effects on retirement saving within groups. Our results suggest that it is low and even zero

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<sup>1</sup> For further discussion, see Disney, Emmerson and Wakefield, 2001. In household data, it is typically not known how much is contributed to occupational pension schemes, or by employers to other forms of pension arrangement. There have been significant revisions to aggregate series on pension saving on several occasions. In addition as Table 3.3 shows in the Family Resources Survey 41.2% of individual contributions to defined contribution private pensions in the UK are made by the highest earning 5.7% of the population.

earners that have responded to the introduction of Stakeholder Pensions, offsetting an overall declining trend in the probability of retirement saving among the rest of the population. It is these conflicting trends that are concealed by the ‘no change’ in the aggregate evidence.

Given the rationale for Stakeholder Pensions, it is at first sight somewhat puzzling that increased private pension coverage among low earners that offsets the aggregate change, rather than the middle income group targeted in the Green Paper. We suggest that other changes associated with the introduction of Stakeholder Pensions, in particular changes to the contribution limits, are driving our findings. This suggests further analyses – in particular that modelling the effect of spouse’s earnings on the probability of retirement saving may be important. This is undertaken in Section 4. Our overall conclusion is that changes in the availability of saving instruments and tax incentives *do* affect saving behaviour, but that it is important to look at ‘the small print’ when examining and interpreting reforms of this type.

## **2. Stakeholder pensions**

Stakeholder pensions were proposed in the Green Paper *Partnership in Pensions* (Department of Social Security, 1998), and after some revisions in the light of consultation, introduced in April 2001. Targeted at people earning between £9,000 and £18,500 a year who did not already have a private pension, Stakeholder Pensions were intended to increase the level of private pension provision among this group. Like all personal pensions, and some occupational pension schemes, Stakeholder Pensions are ‘defined contribution’ schemes, in which pension benefits depend on the accumulated value of the fund. They differ from personal pensions, however, in having compulsory minimum standards, a different governance structure, guaranteed workplace access and a simpler taxation structure.

Stakeholder pensions have a simple charging structure: An initial annual cap on charges was set at 1% of the fund, with no charges either upfront or on withdrawals from the fund.<sup>2</sup> Moreover, contributors can start and stop contributing at any time and schemes have to accept all contributions of £20 or more. Compulsory minimum standards mean a greater degree of uniformity between Stakeholder

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<sup>2</sup> In 2004 the Treasury increased this charge cap from 1% to 1½% for the first 10 years that a product is held. For more details see HM Treasury (2004).

Pensions offered by different pension providers. This, it is argued, creates a greater degree of transparency in the charging structures offered by different pension providers and makes it easier for consumers to shop around, increasing the downward pressure on costs. Benchmarking would have a second effect on costs. By making all pension providers offer a relatively uniform product there will be less need for individuals to have independent financial advice before taking out a Stakeholder Pension.

Overall, these features suggested that Stakeholder Pensions might be much more attractive to individuals with some spare income for saving but who were wary of buying a Personal Pension given that product's high upfront charges. In addition, Stakeholder Pensions would not be tarnished as a result of the bad publicity that Personal Pensions had received as a result of the 'mis-selling scandal' of the early 1990s, and which led to substantial compensation to some purchasers of Personal Pensions. So, it was argued, Stakeholder Pensions would be attractive to the 'average earner' who did not have access to a company-provided pension scheme, who wanted to avoid high commission charges, and who had sufficient income to engage in retirement saving.

Evidence, however, suggests that *new* take-up of Stakeholder Pensions among even this target group has been rather limited. Although the number of holders of Stakeholder Pensions exceeded 1 million by late 2002 (Association of British Insurers, 2002), many of these new arrangements seem to have arisen from individuals switching from other schemes (notably Personal Pensions) or indeed group Personal Pensions being reconstituted as Stakeholder Pensions. Of particular interest is the impact on saving among the target group of middle earners. One explanation as to why Stakeholder Pensions may have had such a limited impact can be illustrated by an analysis of the characteristics of this group. Table 2.1, using data from the British Household Panel Survey 1992-95, confirms that, even before the introduction of Stakeholder Pensions, take-up of private pensions among the target group was substantial, with over 80% reporting having had some form of private pension in the mid-1990s. The table also confirms that private provision was very high among individuals earning more than £18,500, and very low among those earning less than £9,000.

**Table 2.1: Second tier pension coverage, by earnings, full-time employees**

	SP target group:			
	< £9,000 throughout <sup>a</sup>	£9-18.5K at least once	> £18,500 throughout	Other <sup>b</sup>
% of sample	18%	39%	18%	8%
No private pension	64%	16%	3%	40%
Occupational pension (OP)	17%	41%	55%	20%
Personal Pension (PP)	14%	21%	10%	25%
OP + PP	6%	22%	32%	16%
Total	100%	100%	100%	100%
No. observations	766	1622	742	706

Notes to Table:

a. Including periods spent unemployed

b. Comprises those who earned both less than £9,000 and more than £18,500 at least once.

Source: British Household Panel Survey, 1992-95.

Source: Disney, Emmerson and Tanner, 1999.

Further analysis reveals other evidence of limited take-up of the new scheme. Companies employing five people or more that do not offer occupational pensions are required to nominate a Stakeholder Pension provider, after consultation with employees, provide employees with information on Stakeholder Pensions and channel employees' contributions to the nominated pension provider. In fact, evidence from the Association of British Insurers (2002) suggested that 90% of employer-designated schemes had no members. Moreover, neither employees nor employers are compelled to contribute to a Stakeholder Pension and indeed firms employing less than five people were completely exempted from the requirement to nominate a Stakeholder pension provider. The exemption of small firms is significant – again, evidence from the *British Household Panel Survey* suggests that 45% of those in the target earnings range of £9,000 to £18,500 who do not have a private pension work for employers with a staff of less than 25 people, for example, and a significant number of these companies will have less than 5 employees.<sup>3</sup>

Some more recent analysis of the *British Household Panel Survey* is summarised in table 2.2. This shows that among those in the middle earning group in 2000 those who did not have a private pension in that year were more likely to have experienced a period out of employment over the previous 9 years and when in work, on average, had lower earnings. Moreover median liquid financial assets in 1995 were just £300 among those without a private pension in 2000 compared to £1,400 among

<sup>3</sup> Emmerson, C. and Tanner, S. (1999).

those with a private pension. This shows that not only was the Stakeholder Pension target group relatively small, but the characteristics of those middle earners did not suggest that if they could afford to save they would be best placed saving in a private pension rather than saving in a more liquid form.

**Table 2.2. Characteristics over the period 1992 to 2000 of ‘middle earners’ in 2000, by whether or not they have a private pension in 2000.**

	No private pension in 2000	Has private pension in 2000
Sample Size	250	871
% Experiencing a period out of employment	48.4	23.8
Median earnings when employed	£13,017	£15,341
Median financial wealth in 1995	£300	£1,400
% With <£1,500 in financial assets in 1995	64.8	50.4

Source: Banks, Blundell, Disney and Emmerson (2002) using data from the British Household Panel Survey.

### 2.1. Contribution ceilings

A feature of Stakeholder Pensions that has been less discussed, but which turns out to be rather important, lies in the change in contribution ceilings, relative to existing retirement saving instruments such as Personal Pensions. Employee contributions to Stakeholder Pensions are made net of tax, with the government then contributing the equivalent basic rate tax to the individual’s scheme. Higher rate taxpayers can go on to claim more relief in line with their higher marginal income tax rate. Returns are broadly tax-exempt and pensions are then taxed at withdrawal except for the 25% tax-free lump sum. This tax regime broadly follows that for Personal Pensions, which allows contributions up to a maximum of earnings differentiated by age, depicted in Table 2.3:

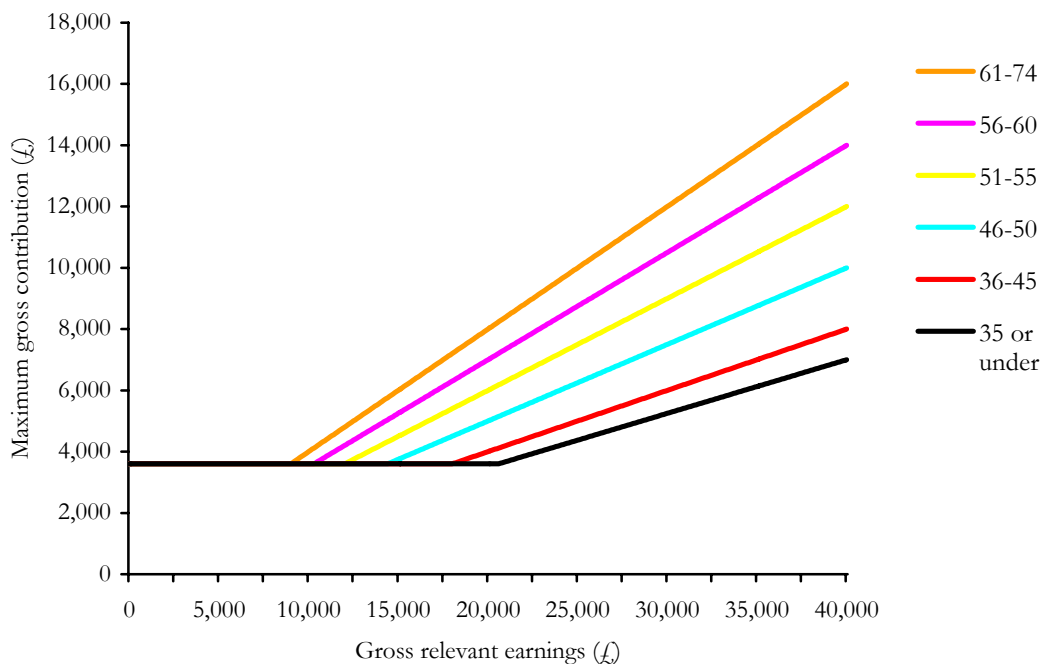
**Table 2.3: Maximum contributions as a % of earnings by age**

Age at start of tax year	Maximum contributions as % of earnings
35 or under	17.5%
36-45	20.0%
46-50	25.0%
51-55	30.0%
56-60	35.0%
61-75	40.0%

*Notes:* Contributions are subject to an overall earnings cap. In 2004-05, this has been set at £102,000. Maximum contributions include contributions by both the employer and employee.

However, an important difference of Stakeholder Pensions from the previous tax regime is that *all* individuals, irrespective of earnings, if any, are able to make gross contributions of up to £3,600 a year (which for a basic-rate taxpayer would require a net contribution of £2,808). Individuals are then allowed higher contributions in line with their earnings as in the previous regime in Table 2.3. The effect of this change is to raise contributions limits significantly for low income individuals, especially for younger age groups (since the maximum contributions as a proportion of earnings is lower). Figure 2.1 depicts the effect of the change post-2001 on the maximum gross contribution limits by gross relevant earnings for various age groups in Table 2.3. Note that individuals with zero income can also contribute up to the £3,600 maximum, and that the UK's tax system is individual-based so that each individual in a couple can contribute up to this maximum.<sup>45</sup>

**Figure 2.1. Maximum gross contribution limit, by gross relevant earnings**



<sup>4</sup> Clark and Emmerson (2003) discuss other features of the tax treatment of Stakeholder Pensions, in particular in relation to Individual Saving Accounts (ISAs).

<sup>5</sup> An even more sweeping reform to the ceilings on pension contributions is contained in a pensions bill for which royal assent expected in early 2005. Under the new provisions, there will be an annual limit on contributions of 100% of earnings up to a ceiling of £200,000 (with the floor of £3,600 remaining) and a new lifetime limit on the value of the pension fund of £1.5m.

### **3. Empirical analysis**

#### *3.1. Data sources and descriptive analysis*

In this section, we investigate the determinants of the decision to engage in retirement saving using information from the Family Resources Survey (FRS). The FRS is a large scale repeated cross section of households designed to elicit information on household characteristics, income and other economic circumstances. The FRS asks individual respondents who are in work or who have ever worked (below age 65) whether they or their employer contributes to a pension scheme. The pension arrangements are delineated as a ‘personal/private’ pension, a company-run pension scheme, a stakeholder pension or some other arrangement. They are then asked whether the scheme is contributory or non-contributory, when they joined it and if it is ‘portable’, as well more detailed questions about contributions, contracted-out rebates paid into a Personal Pension (since individuals can have such a scheme without making any additional contributions) and, in the case of a Stakeholder Pension, whether it was organised by the employer or the respondent.

As a cross check, we have examined responses from the General Household Survey (GHS), which asks somewhat different questions, primarily about coverage and membership, and also looked at aggregate data on pension scheme membership and contributions from Inland Revenue sources. The FRS provides detailed information on contributions, unlike the GHS, but this emphasis of contributions tends to lead the FRS to give slightly lower coverage rates than GHS, especially for Personal Pensions where many individuals are not making contributions to their own pension arrangement. Both household surveys give significantly lower numbers for pension coverage and (more significantly, in the case of the FRS) for contributions than aggregate data from the Inland Revenue. This is something of a puzzle, perhaps reflecting under sampling in household surveys of contributors who make large contributions (i.e. the rich) and of other groups who may be contributing but are not asked about their contributions in the survey. It should however be noted that aggregate data on total pension saving has been heavily revised downwards in recent years (although this applies more to data reported by the Office of National Statistics) – see also the discussion in Disney, Emmerson and Wakefield, 2001.

Table 3.1 provides data from the Family Resources Survey for the years 1999-2000 to 2002-03 on pension holdings by type and by earnings-band, where we have matched coverage type into the earnings bands used in the Green Paper to differentiate ‘high’, ‘medium’ and ‘low’ earners (as well as the self-employed and those with no reported earnings). According to the table, overall coverage by any type of private pension has declined slightly over the period. Coverage by employer-provided plans has been constant, and a decline in coverage by Personal Pensions has been not quite offset by the introduction of Stakeholder Pensions and a slight rise in the number of people with multiple plans.

The last panel reveals the striking finding that coverage has fallen among the high and medium earnings groups over the period (these are the bands delineated by the Green Paper, of £18,500+ and £9,000 to £18,500 respectively), and the self-employed. Coverage has *risen* among low earners and even (marginally) among those reporting zero earnings (but below state pension age). At first sight, these combined findings from Table 3.1 are paradoxical, given the intentions stated in the Green Paper. They suggest that the introduction of Stakeholder Pensions has had no effect on overall coverage and indeed coverage by any kind of pension has fallen among the ‘target’ group of middle earners. Nor can these declines be explained by a decline in company pension provision, since this remains constant. Finally, despite the Green Paper suggesting that low earners might be better off in the second pillar state scheme, this is the only group to see a significant increase in coverage.

**Table 3.1: Pension coverage by type of pension and earnings band  
1999/00 to 2002/03**

<i>Year</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>Δ99-02</i>
<b>Type of pension:</b>	%	%	%	%	%
Personal Pension	11.2	10.1	9.7	8.7	-2.5
Stakeholder pension	0.0	0.0	0.9	1.4	+1.4
Occupational pension	46.8	46.6	46.9	46.8	0
<i>Combined</i>	1.9	1.9	2.0	2.2	+0.3
<b>Aggregate coverage (%)</b>	59.8	58.6	59.4	58.9	-0.8
<i>Coverage by earnings band</i>	%	%	%	%	%
Zero	3.4	3.6	3.5	3.5	+0.1
Low	34.0	34.2	35.6	35.2	+1.2
Medium	68.2	66.9	67.3	65.5	-2.7
High	86.2	85.4	84.6	83.8	-2.4
Self-employed	46.2	46.1	46.0	43.1	-2.9

*Source:* own calculations, Family Resources Survey 1999/00 to 2002/03. Coverage rates by ‘type of pension’ apply to employees only.

Table 3.2 provides some evidence on contributions by earnings band, matching published Inland Revenue bands to data from the Family Resources Survey for 2001-02. This shows that 37% of the FRS sample has earnings of zero up to £10,000 and makes 9% of total contributions to Personal Pensions and Stakeholder Pensions. The largest group in the sample lie in the range £10,000 up to £20,000, with 45% of the sample making 26% of contributions. Those earning £30,000 or more comprise less than 6% of the sample but, according to Inland Revenue data, contribute 42% of all contributions to Personal and Stakeholder Pensions. Under-representation of the most well-off in household surveys may therefore be one reason why these surveys tend to report lower aggregate saving, and also shows how aggregate saving rates are disproportionately sensitive to the behaviour of high earners. A fall in coverage by private retirement saving arrangements among high earners (as depicted in Table 3.1) therefore has a substantial effect on aggregate retirement saving.

**Table 3.2: Proportion of earners and private pension contributions by earnings band, 2001-02**

<i>Earnings band</i>	(1) <i>% of sample</i>	(2) <i>% of total contributions</i>
£0 to <£10,000	36.6	9.3
£10,000 to <£20,000	45.1	26.4
£20,000 to <£30,000	12.6	22.4
£30,000+	5.7	41.2

Sources: (2) own estimates from Family Resources Survey; (3) published Inland Revenue data.

### 3.2. *Econometric specification*

We write a linear model of retirement saving as:

$$P_{it} = \theta_i Z_i + d_t + \gamma' X_{it} + \alpha_i Z_i I + \varepsilon_{it} \quad (1)$$

where  $P_{it}$  is the probability of purchasing a private pension,  $Z_i$  is the earnings group of the individual as delineated by the Green Paper ('high', 'medium', 'low' or zero),  $d_t$  is a time dummy,  $X$  is a vector of covariates and  $I$  is an indicator variable for the period during which Stakeholder Pensions were available (from 2001 onwards). Indexing the coefficient on the 'treatment' to the earnings group,  $\alpha_i$ , permits the effect on the purchase probability (if any) to vary across earnings groups, which is what we want to test. Our counterfactual is that, in the absence of the reform, the purchase probabilities for the different groups would have followed a common trend.

In addition, we have to allow for the discrete nature of the outcome variable so that the probability of retirement saving must have a lower bound of zero (and in principle a ceiling of 100% certainty of purchase) otherwise the model might predict that, for example, those with zero earnings have a negative probability of retirement saving. The standard solution of estimating a non-linear model such as the probit (used here) is subject to the *caveat* that the calculated ‘marginal effects’ on the interaction terms that are automatically generated<sup>6</sup> do not give a ‘true’ measure of the ‘policy effect’ analogous to the coefficients from a linear model. This is because the common trends assumption may not hold for the expectations (the saving probabilities) but for a transformation of the distribution of the outcome variable: in particular for the inverse probability function,  $\Phi^{-1}$  (for the probit). In other words, the assumption of common trends is made for the index rather than for the probability itself. Following Blundell *et al* (2004) this can be written formally as saying that in the absence of any ‘treatment’ the following would hold:

$$\begin{aligned} \Phi^{-1} [E(P_{it} | X_{it}, Z=i, I=1)] - \Phi^{-1} [E(P_{it} | X_{it}, Z=i, I=0)] = & \quad (2) \\ \Phi^{-1} [E(P_{it} | X_{it}, Z=high, I=1)] - \Phi^{-1} [E(P_{it} | X_{it}, Z=high, I=0)] \end{aligned}$$

The right hand side of this equality can be estimated from observations of the control (high income) group before and after the introduction of stakeholder pensions. Using the common trends assumption as it is now formulated, this information can in turn be used to construct a counterfactual of how the index would have evolved for each treatment group had stakeholder pensions never been introduced. The impact of the policy can then be evaluated as:

$$\begin{aligned} I(X) = E(P_{it} | X_{it}, Z=i, I=1) - \Phi \{ \Phi^{-1} [E(P_{it} | X_{it}, Z=i, I=0)] + & \quad (3) \\ \Phi^{-1} [E(P_{it} | X_{it}, Z=high, I=1)] - \Phi^{-1} [E(P_{it} | X_{it}, Z=high, I=0)] \} \end{aligned}$$

Blundell *et al* (2004) propose a method for implementing this ‘difference of difference’ estimate of the effect of the policy. A different relationship between the outcome and the observables is estimated for groups of agents defined according to income group and ‘pre’ or ‘post’ the stakeholder reform. Such relationships encapsulate the behavioural patterns of each group and the impact of the stakeholder reform once it had been enacted. By predicting the outcomes for the treatment (lower income) groups using the behavioural equations for the higher income group, one

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<sup>6</sup> Here, by STATA version 8. For more details see Ai and Norton (2003).

obtains an estimate of how the behaviour of the lower income groups would have changed in the absence of stakeholder pensions. This can be used in combination with the behavioural equations for the lower income groups to construct the estimated effect (3). The final estimate of the effect uses predictions made for the actually treated groups and weighted according to characteristics ( $X$ ) in this group. It can therefore be thought of as representing the impact of treatment on the treated.

### 3.3. *Econometric results*

Table 3.3 predicts the probabilities of respondents purchasing any private pension (whether provided by the individual's employer or by an insurer), using data from the Family Resources Survey 1999-2002. We exclude self-employed from the sample to reduce the number of interactions, although the results are not altered by doing so.<sup>7</sup> The mean probability of purchasing a private pension is 44.4%.

The first model ('in Differences') simply relates this probability of purchase to underlying characteristics and a time trend. A key issue is how this probability varies across the earnings groups (zero, 'low' i.e. >£0 to <£9,000, 'medium' i.e. £9,000 to <£18,500, and 'high' i.e. £18,500+). The marginal effects can be directly interpreted as the responses to changing characteristics given that this is a model in differences.

The model shows a rising probability of having a private pension with age up to age 54. Relative to the default group (age 20-25), 25-29 year olds have a 19.3% increased probability of contributing to a private pension, and 30-34 year olds a 31.1% increased probability. Thereafter, with rising age, the probabilities remain roughly constant. Men are just under 5% less likely to buy pensions, other things being equal (a crucial *caveat*) – this may reflect the longer life time expectancy of women – and a member of a couple is more likely to buy a pension, perhaps again reflecting the possibility of receiving an inherited pension on the death of a spouse or else of self-selection by marital status. As expected, higher educational attainment is associated with greater probability of purchasing a private pension.

The next set of coefficients is of particular interest. First, the year dummies are negative (relative to 1999) and significant for 2002 suggesting, on average, a 1.7% lower probability of contributing to a private pension in 2002 relative to 1999-2001. This reflects the downward trend noted in Table 3.3, although only the fall in the last

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<sup>7</sup> Results including the self-employed are available on request.

year is significant. Second, Table 3.3 shows, as might be expected, that level of earnings is an important predictor of purchase of a private pension: relative to the high earnings group, a middle income earner is 15% less likely, a low earner 39% less likely and a zero earner 67% likely to purchase a private pension. Again, these marginal effects can be compared with the comparisons of averages in Table 3.1 Finally, the higher the partner's earnings, the more likely that the individual will purchase a private pension.

**Table 3.3: Probability of having a private pension**

Variable	Model in Differences			Quasi-differences of differences		
	Coeff.	DF/dx	Std.Err.	Coeff.	dF/dx	Std.Err.
Age 25-29	0.493**	0.193	0.020	0.493**	0.193	0.020
Age 30-34	0.800**	0.311	0.020	0.799**	0.311	0.020
Age 35-39	0.904**	0.349	0.019	0.904**	0.349	0.019
Age 40-44	0.949**	0.365	0.020	0.949**	0.365	0.020
Age 45-49	1.025**	0.391	0.021	1.025**	0.391	0.021
Age 50-54	1.011**	0.386	0.021	1.011**	0.386	0.021
Age 55-59	0.926**	0.356	0.022	0.926**	0.356	0.022
Age ≥60	0.743**	0.290	0.030	0.742**	0.289	0.030
Male	-0.047**	-0.017	0.010	-0.048**	-0.018	0.010
Married	0.155**	0.058	0.011	0.155**	0.058	0.011
GSCE or above	-0.300**	-0.114	0.012	-0.300**	-0.114	0.012
'A' Level or above	-0.083**	-0.031	0.013	-0.083**	-0.031	0.013
Year=2000	-0.017	-0.006	0.013	-0.017	-0.006	0.013
Year=2001	-0.012	-0.005	0.013	-0.079**	-0.030	0.026
Year=2002	-0.045**	-0.017	0.012	-0.111**	-0.042	0.026
Zero Earnings	-2.740**	-0.664	0.019	-2.783**	-0.669	0.027
Low earnings	-1.240**	-0.390	0.016	-1.303**	-0.405	0.023
Mid earnings	-0.412**	-0.153	0.015	-0.440**	-0.161	0.021
Partner's earnings	0.003**	0.001	0.0003	0.003**	0.001	0.0003
Zero E*StakePen	-	-	-	0.080*	0.030†	0.036
Low E*StakePen	-	-	-	0.120**	0.046†	0.029
Mid E*StakePen	-	-	-	0.040	0.015†	0.028
Log Likelihood	-52619.4			-52607.6		
No. of obs.	119162			119162		

*Notes:* Source – Family Resources Survey; Defaults are graduate aged 20-24, female, single, year 1999 with high earnings. \*\* = 1% significance, \* = 5% significance.

In Quasi-diffs of diffs model: 'Zero E\*StakePen' = individuals with zero earnings interacted with a dummy for the Stakeholder pension 'regime' (2001-02). dF/dx coefficients marked † should not be interpreted as linear 'marginal effects' as in a linear diffs of diffs model – see text.

The second set of results in Table 3.3 are labelled 'Quasi-differences of differences' in the sense that these are derived from a treatment model, using the introduction of Stakeholder Pensions as the 'treatment', subject to the important

proviso of the previous sub-section, that the treatment effects cannot simply be ‘read off’ from the marginal effects (where indicated by the daggers against the ‘marginal effects’ in Table 3.3). The object is to see whether there are differences in effects across earnings groups, and whether the ‘treatment’ effects differ across earnings groups.<sup>8</sup>

The coefficients on characteristics in the ‘differences of differences’ specification are broadly the same as before, although the marginal effects attached to earnings level are slightly higher. It is now interesting to notice that the decline in average coverage over time is larger and more significant – a 3.0% fall in 2001 and a 4.2% fall in 2002. This can be interpreted as the decline in coverage that would have occurred in the absence of the ‘treatment’: the introduction of Stakeholder Pensions primarily targeted at middle income earners. However, inspection of the ‘treatment’ coefficients – the interaction of earnings level relative to high earners with the introduction of Stakeholder Pensions – suggests that the policy had no significant impact on coverage among middle income earners. In contrast, and offsetting the apparent downward time trend, there is a significant increase in coverage among low income earners after 2001 (at the 1% level of significance) and among zero earners (at the 5% level of significance).

As suggested above, the ‘true’ treatment effects of the introduction of Stakeholder Pensions cannot be ‘read off’ from the coefficients in the  $dF/dx$  column. Using the Blundell *et al* procedure described in the previous sub-section, these effects can be calculated as:

zero earnings group:	0.3% (0.4%)
low earnings group:	3.6% (1.7%) * <i>significant at 5%</i>
middle earnings group:	1.6% (1.1%)

(*standard errors in brackets, estimated by bootstrapping with 1,000 repetitions*).

This indicates that the impact of the reform on those with zero earnings is overstated from the ‘marginal effects’ in Table 3.3 – the largest and most significant impact was on low income earners (but not middle income earners, effectively confirming the descriptive results in the second panel of Table 3.1).

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<sup>8</sup> Despite the similarity to the linear case, the nonlinear assumption stated above entails two additional restrictions on the nature of the error terms: only group effects are allowed for and the groups being compared are assumed to have the same residual variance.” See Blundell *et al, ibid*, p.580.

#### 4. Further analysis: the role of spouse's earnings

The results in the previous section were consistent with the idea that some low earners have taken out Stakeholder Pensions because they were previously constrained by the effective limit on the value of retirement saving arising from the contribution ceiling. The replacement of the cap as a proportion of earnings by the single figure (£3,600) lies behind this change. At the same time the aggregate comparisons in Table 3.1 and the marginal effects in the results in Table 3.3 suggest that even zero earners may also have seen an increased probability of saving for retirement (although the calculations of the 'true' difference of difference estimator using the Blundell *et al* 2004 calculation and the assumption of common trends casts some doubt on this last finding). Nevertheless, *any* finding, however tentative, which suggests that people with no earnings can save is somewhat surprising (unless they have substantial unearned income).

The result becomes less surprising when we consider the fact that *each* individual in a household can invest up to the ceiling in a Stakeholder Pension, irrespective of their own income. So, for example, a spouse with low or even zero earnings can invest up to the limit in a Stakeholder Pension if there are sufficient resources in the household as a whole. If Stakeholder Pensions are simply used by the household as a device for engaging in tax-favoured saving (given other ceilings such as annual contribution limits on ISAs), this might be an undesirable by-product of the reform. On the other hand, it could be argued that a policy that, for example, redistributed pension resources from a rich partner to a spouse with low lifetime individual income, was socially desirable (a point recognised in a somewhat low key way in the 1998 Green Paper). This generates a specific testable prediction, however: that if we include spouse's income in the explanatory variables, the probability of a low (or zero) earner contributing to a pension in the Stakeholder Pension regime should be *positively* related to spouse's earnings.

The model where we allow for spouse's earnings is written as:

$$P_{it} = d_t + \gamma' X_{it} + \theta_i Z_i + \alpha_i Z_i I + \beta_i S_i + \alpha_i S_i I + \lambda_i Z_i S_i + \phi_i Z_i S_i I + \varepsilon_{it} \quad (2)$$

where all variables are defined before except  $S_i$  which is the spouse's income (also banded as 'high', 'medium', 'low' and zero) of individual  $i$ . We are now interested not just in the coefficient  $\alpha_i$  but also in the coefficient  $\phi_i$  which measures

the impact of spouse's income on the retirement saving probability of an individual with given income. Again, we use the Blundell *et al* method to calculate the 'treatment' effects for this more complex specification. However, because we now have many more interactions, we simplify the modelling of partner's earnings so that these are either Zero/Low (i.e. below £9,000) or Medium/High (i.e. £9,000 and above). This seems reasonable as it will differentiate inactive or low paid spouses (e.g. part-time workers) from full-time or better paid working spouses. However, we maintain the four way distinction for individual earnings.

Table 4.1 presents the results. Most of the coefficients on characteristics are similar to the estimates in Table 3.3. The coefficient on gender is no longer significant, now that we have allowed for partner's earnings. The year dummies have slightly lower coefficients but still suggest a downward trend in the aggregate probability of purchasing a private pension over time.

**Table 4.1: Probability of having a private pension: impact of partner's earnings**

<i>Variable</i>	Quasi-differences of differences		
	<i>Coeff.</i>	<i>DF/dx</i>	<i>Std.Err.</i>
Age 25-29	0.486**	0.190	0.020
Age 30-34	0.797**	0.309	0.020
Age 35-39	0.906**	0.350	0.020
Age 40-44	0.951**	0.365	0.020
Age 45-49	1.029**	0.392	0.021
Age 50-54	1.022**	0.390	0.021
Age 55-59	0.945**	0.363	0.022
Age ≥60	0.767**	0.299	0.030
Male	-0.015	-0.006	0.010
Married	0.091**	0.034	0.012
GSCE or above	-0.295**	-0.112	0.012
'A' Level or above	-0.083**	-0.031	0.014
Year=2000	-0.016	-0.006	0.013
Year=2001	-0.071*	-0.027	0.032
Year=2002	-0.105**	-0.039	0.031
Zero Earnings	-2.780**	-0.669	0.032
Low earnings	-1.313**	-0.405	0.028
Mid earnings	-0.474**	-0.161	0.025
Partner's earnings M/H	0.010*	0.037	0.039
Zero E*StakePen	0.051	0.020†	0.044
Low E*StakePen	0.081*	0.031†	0.036
Mid E*StakePen	0.031	0.012†	0.034
Zero E*Partner's earnings M/H	0.088	0.034	0.057
Low E*Partner's earnings M/H	0.030	0.012	0.045
Mid E*Partner's earnings M/H	0.102*	0.039	0.044
StakePen* Partner's earnings M/H	-0.015	-0.006†	0.052
Zero E*StakePen*Partner's earnings M/H			

Low E*StakePen*Partner's earnings M/H	0.077	0.029†	0.079
Mid E*StakePen*Partner's earnings M/H	0.093	0.036†	0.061
	0.020	-0.008†	0.060
Log Likelihood	-52503.7		
No. of obs.	119162		

*Notes:* Source – Family Resources Survey; Defaults are graduate aged 20-24, female, single, year 1999 with high earnings, partner has zero or low earnings.

\*\* = 1% significance, \* = 5% significance.

In Quasi-diffs of diffs model: 'Zero E\*StakePen' = individuals with zero earnings interacted with a dummy for the Stakeholder pension 'regime' (2001-02). Other interactions have similar interpretations. M/H = 'Medium or High'. dF/dx coefficients marked † should not be interpreted as linear 'marginal effects' as in a linear diffs of diffs model – see text.

The coefficients on the interactions are of most interest. First, only the low earnings 'treatment' appears to be significant, confirming that this effect is not very robust' at least without consideration of partner's earnings. Second, there is some evidence that middle income earners are more likely to purchase a private pension if they have a partner with medium or high earnings. Finally, there are positive effects of having a partner with medium or high earnings on the probability that an individual with zero or low earnings will purchase a private pension – exactly the hypothesis put forward at the beginning of this section. Whether these are significant coefficients depend on the computation of the 'treatment' effects.

These additional 'treatment' effects are computed as follows:

zero earnings group with zero/low earning partner:	0.1% (0.3%)
zero earnings group with medium/high earning partner:	1.1% (0.8%)
low earnings group with zero/low earning partner:	2.6% (1.6%)
low earnings group with medium/high earning partner:	5.2% (2.3%)*
medium earnings group with zero/low earning partner:	1.7% (1.3%)
medium earnings group with medium/high earning partner:	1.4% (1.4%)

*(standard errors in brackets, estimated by bootstrapping with 1,000 repetitions).*

The calculated effects confirm a significant and sizeable effect (at 5% significance) among the low earnings group with a spouse with middle/high earnings. This result is therefore compatible with our hypothesis that the change in the contribution limits has had a significant impact on the household decision to purchase a private pension.

## 5. Conclusions

Our starting point was the policy debate concerning the best ways of encouraging people to save for their retirement. Stakeholder Pensions, introduced in 2001, were targeted by the government on middle earners as a means of filling a perceived gap in retirement saving products. The introduction of Stakeholder Pensions was also associated with a change in the contribution limits which, essentially, allowed lower income earners to increase their contributions to retirement saving schemes.

Aggregate data suggest that the introduction of Stakeholder Pensions had little impact on the overall propensity to save for retirement. Two reasons for this finding might be that the ‘target group’ already had extensive private coverage, and that the exemption of small firms from the requirement to nominate a pension provider in effect limited the scope of the provision to run the scheme through companies.

However, exploiting a differences of differences estimator which allows for the discrete nature of the saving decision, we show that these aggregate trends conceal a more complex picture. Our results show that there was a downward trend in saving for retirement in 2001 and 2002 that was partially counteracted by the introduction of Stakeholder Pensions. In contrast to the Green Paper, the impact of the innovation seems to have been greatest on low earnings individuals (earning less than £9,000 annually), especially those married to higher earning spouses. We interpret these results as suggesting that the change in the contribution limits associated with the reform, rather than the targeting of specific groups, had the real impact.

What does this imply for policy? First, there is a concern that there appears to have been a downward trend in the probability of saving for retirement in 2001 and 2002 that was only partially reversed by the introduction of Stakeholder Pensions. With increasing concern over the adequacy of retirement saving, this trend needs explaining and rectifying. Second, a by-product of the apparent sensitivity of the purchase of saving products to contribution limits (incidentally confirming much of the US literature on the impact of contribution limits on saving in Individual Retirement Accounts – see again *Journal of Economic Perspectives*, 1996, and the literature cited therein) is that couples where one member earns most of the income may end up with a more equitable distribution of pension rights as a result. Finally,

the results suggest that it is important to understand all the consequences of a given policy, rather than just the ‘headline’ target, to understand how the policy works in practice.

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