Private Health Insurance and the State of the NHS

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Contents

1 Introduction

A key dimension of differentiation between health care systems concerns the relative role of the public and private sectors in delivering care. Even in countries, such as Britain, that have relied on a national health care system for 50 years, there has always been an active private sector, catering to those who do not wish to use the National Health Service (NHS). For the most part, these are individuals who also smooth their medical payments by purchasing private insurance. If they become sick, then they consume treatment in the private rather than the public sector.

This report studies the demand for private health insurance in the UK using data from the British Social Attitudes (BSA) survey. According to this, around 14% of British households have private health insurance, with a roughly equal split between individual and employer provision. Here, we are mainly concerned with determinants of demand for individual purchases. Our specific focus is on how this demand is related to aspects of NHS performance such as waiting-lists and measures of satisfaction with the NHS in the BSA data. We also look at how being privately insured is related to individuals' attitudes towards increased health spending.

While measures such as waiting-lists are frequently discussed as barometers of NHS performance, little evidence exists of their actual role in insurance demand. There are good reasons why we would expect that private insurance demand would respond to the state of the NHS. Private insurance provides a means by which individuals can reduce their reliance on the NHS as a source of health care. It is natural for them to take such a course if they are unhappy with aspects of the NHS. If the perceived or real quality of NHS provision declines, then individuals may choose to go private in greater numbers. We look for evidence that private insurance is fulfilling this function.

Our main findings are:

* There is a positive association between the purchase of private health insurance and length of local NHS waiting-lists.

* Individuals who express dissatisfaction with the NHS are more likely to purchase private insurance.

* The privately insured tend to be better off, better educated, middle-aged and more inclined to support the Conservative Party.

* The privately insured are less likely to favour increased spending on the NHS or to see health spending as a priority.

The structure of this report is as follows. The next section discusses some background issues in greater detail. Section 3 presents some background information about the supply of health services in the UK. Section 4 is the heart of the report, using the BSA data to substantiate the findings claimed above. We relate private health insurance to personal characteristics, such as economic well-being and various attitudinal indicators. We also discuss satisfaction with the NHS. We also look at the evidence on how regional variations in waiting-lists affect insurance purchase. Finally in this section, we discuss determinants of support for NHS spending as seen in the BSA survey data. The report concludes with a discussion of some of the policy implications of the findings.

2 Background Issues

Whether an individual chooses to purchase private health insurance is a multifaceted decision. The main reason for buying such insurance is to gain access to private medical care in the event of that being necessary. It is the enhanced flexibility of private sector treatment which attracts individuals, with any waiting-lists being circumvented. There are also valued 'hotel' benefits in the private sector (private rooms and telephones being examples) which may attract individuals to private insurance. Most privately-insured individuals do, however, continue to use many aspects of the NHS.

There are two main sources of private insurance: individual purchase or employer provision. The latter, which is often thought of as a perquisite, is a taxable benefit. We do not know how many people decline that option when offered. While many individuals may think of it as additional remuneration, it is natural to think that it is a substitute for higher wages viewed from the employer's perspective. Such insurance may well be cheaper than individual purchases because of the pooling of health risks that occurs at the firm level, although individually-purchased policies may afford individuals a more flexible choice to match their individual requirements. The decision of an employer to offer private insurance as part of a remuneration package ought in principle to depend on those things that affect private demand for insurance; we should only expect employers to offer things that individuals want as part of their remuneration. However, since individuals may doubt whether they will receive a compensating wage increase if they decline, they may take the insurance even if they would not have bought it individually. This makes the study of employer-provided insurance less convincing as a study of consumer demand and, for that reason, our study focuses on individual purchase.

The decision to rely on the NHS can be viewed as an indication that many individuals and households have weighed up the costs and benefits of private insurance, deciding that it is not worthwhile to purchase it. Conceptually, household demand for insurance can depend upon an array of economic and demographic information about the household. The BSA survey offers a fairly rich set of variables which can be used to explain demand. We categorise these as follows.

2.1 Socio-Economic Circumstances

Income: There is every reason to expect private health insurance to be a 'normal good', i.e. one whose demand rises with income. This would be true if the demand for the increased benefits available in the private sector rises with economic well-being as measured by income.

Employment status: Whether an individual is self-employed and the type of occupation that they are in are likely to have an impact on their insurance demand. For example, individuals with uncertain income streams may well eschew the regular payments that are required. Availability of employer-provided private health insurance is also determined by employment.

Educational attainment: Educational attainment affects both attitudes and general lifestyle concerns. It may also pick up information about economic circumstances not captured by income, such as promotion prospects.

2.2 Demographic Circumstances

Household size: Family size is likely to be an important factor. A given income level must go further in a larger household so that fewer resources are available for private insurance purchases.

Age: Age effects can be important since the probability of becoming sick changes with age. Age may also be reflective of attitudes towards private health care.

2.3 Preferences and Attitudes

Political affiliation: The way in which people vote may give us information about the way in which they view their obligations as citizens. For example, Labour Party supporters may regard it as a social obligation not to purchase private insurance, while Conservatives have fewer qualms about private insurance.

Attitudinal variables: There are a host of possible variables that pick up determinants of individuals' insurance demand. These include whether an individual is an owner-occupier and what kind of newspaper they read.

NHS satisfaction: We also have direct measures of satisfaction with the in-patient and out-patient services of the NHS and with the NHS overall.

2.4 The State of the NHS

As we have already argued, it seems reasonable to suppose that individuals care about the state of the NHS in choosing whether to insure. However, unlike the previously mentioned variables, such conditions do not vary at the household level. The regional organisation of NHS funding

does, however, result in *regional* variation in NHS variables. While, for certain purposes, it may be national rather than local conditions which matter, it seems reasonable to suppose that individuals care principally about local conditions. We have three main types of measure.

Waiting-lists: The main direct performance measure that we use concerns waiting-lists. These are kept in two different categories: long- and short-term.

Expenditure information: We use NHS expenditure per capita on diagnosis and treatment, support and administration by region.

Staffing: We put in the number of NHS staff per capita as a potential indicator of quality.

One way to think of these NHS performance measures is that individuals actually know these numbers and use them in their decision to purchase private insurance. However, this would be rather far fetched. A more accurate conception is that they should be an input into assessment of local NHS performance if the way in which individuals become informed is based on fact. It will be interesting to correlate these variables with measures of NHS satisfaction to see whether they appear to capture real views. We present evidence on this below.

3 The Supply of Health Services in the UK

3.1 Public Sector Provision

Since its inception in 1948, the NHS has been the dominant provider of medical care within the UK, providing a universal service funded through general taxation. Whilst a limited market in private medical care has always existed alongside the state provider, the range of medical treatments that are privately available has always been far from exhaustive, and the vast majority of the population rely solely on the NHS for medical care.

Whilst the NHS continues to enjoy widespread political support, its financing has become highly politicised. Despite suspicions that the Conservative government lacked a commitment to the NHS, real expenditure has been growing over the last 15 years, as shown by Figure 1.[1] In its 1992 election manifesto, the Conservative Party pledged itself to make annual increases in real NHS expenditure should it retain power. Thus far, this pledge appears to have been honoured.

The principal source of finance for the NHS is general tax revenues. In addition, user charges apply to certain services such as prescriptions and dental treatment, although various population groups such as children, students, the elderly and the unemployed are exempted. The importance of user charges and receipts from land sales has grown in recent years.

The basic organisation of the NHS is regional. During the period of time relevant to this paper, 95% of the funds for Hospital and Community Health Services (HCHS) were distributed to the 16 Regional Health Authorities (RHAs) which, in turn, allocated finance to 190 District Health Authorities which have primary responsibility for service delivery. The basic notion for allocating funds was regional equity,[2] with the allocation of funds from regions to districts left largely to the discretion of the RHAs.[3]

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[1] This is typical of OECD economies (see, for example, Besley and Gouveia (1994)).

[2] During the period covered by our sample, the recommendations of the 1976 Resource Allocation Working Party (RAWP) ensured that funds were allocated between the 14 English Regions on the basis of Standard Mortality Rates (SMRs) as opposed to measures of capacity utilisation which tended to reflect historic inequalities in health resources. Alternative methods were used in Scotland, Wales and Northern Ireland.

[3] The enactment of the 1990 NHS and Community Care Act separated the purchase and delivery of health care and introduced the notion of GP fundholders. As a result of the latter reform, district authorities have become less important and are soon to be abolished.

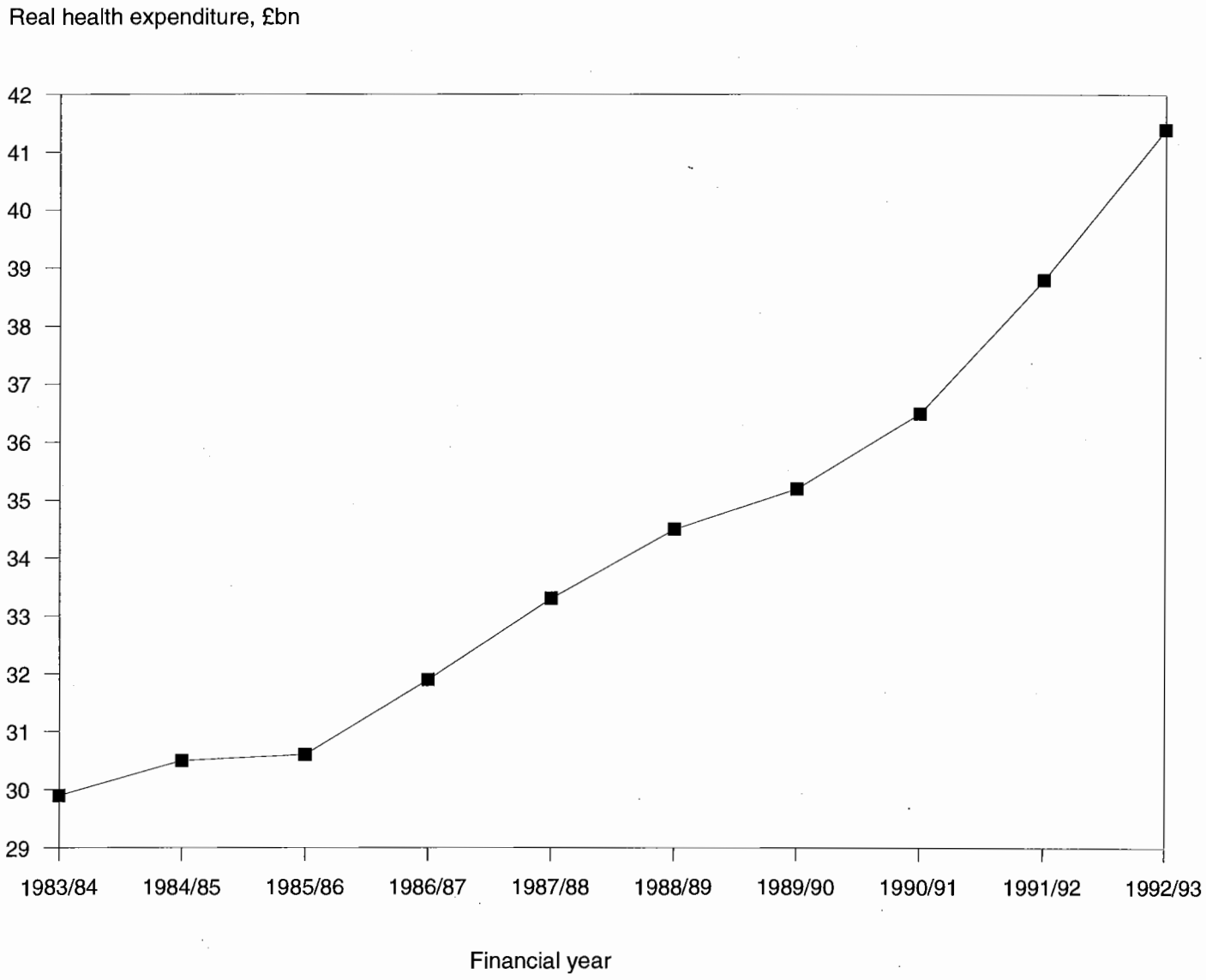

Figure 1: Real expenditure on the NHS, 1983/84-1992/93 (£bn, 1992/93 prices)

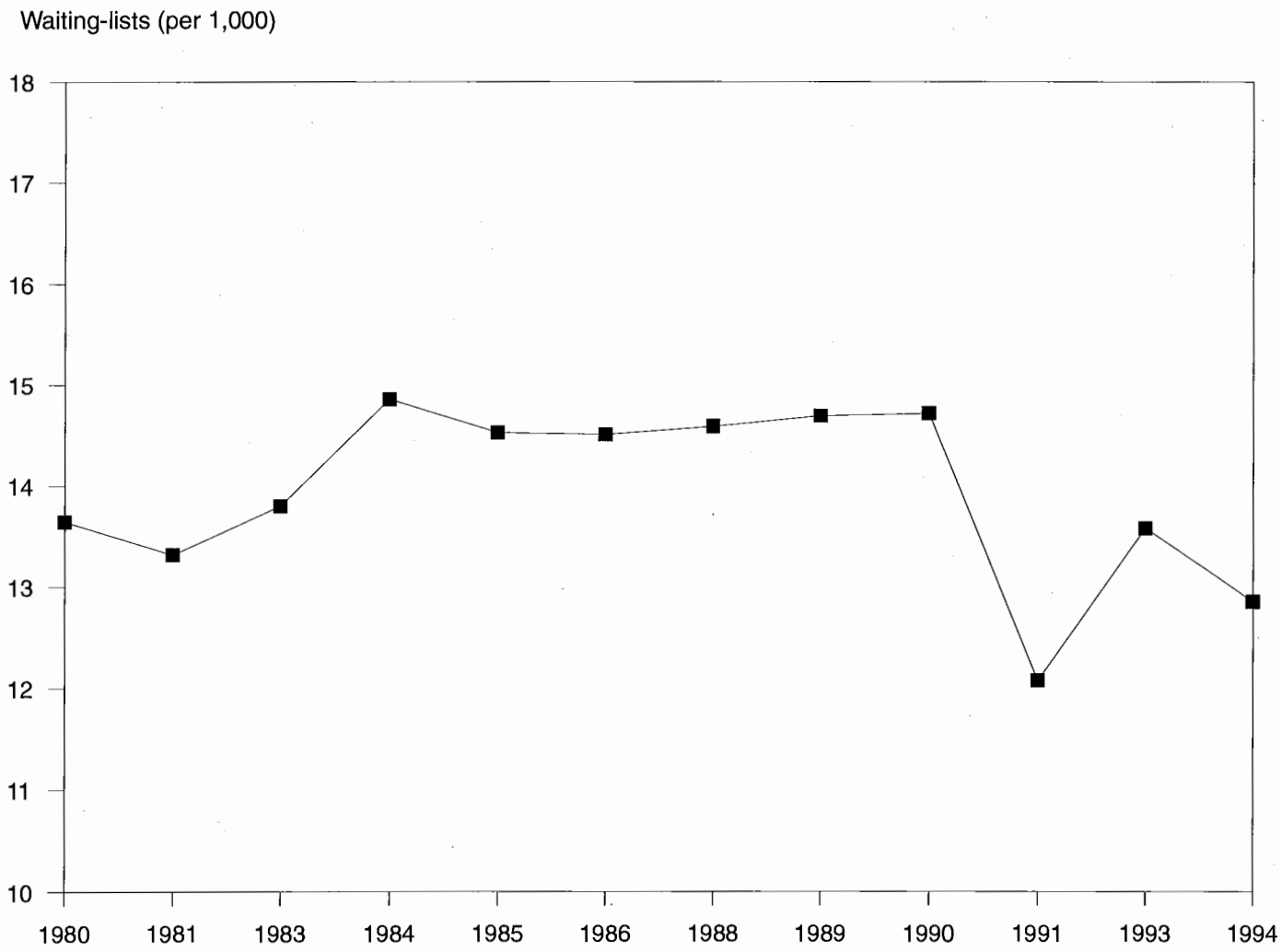

Figure 2: Waiting-lists per 1,000 population

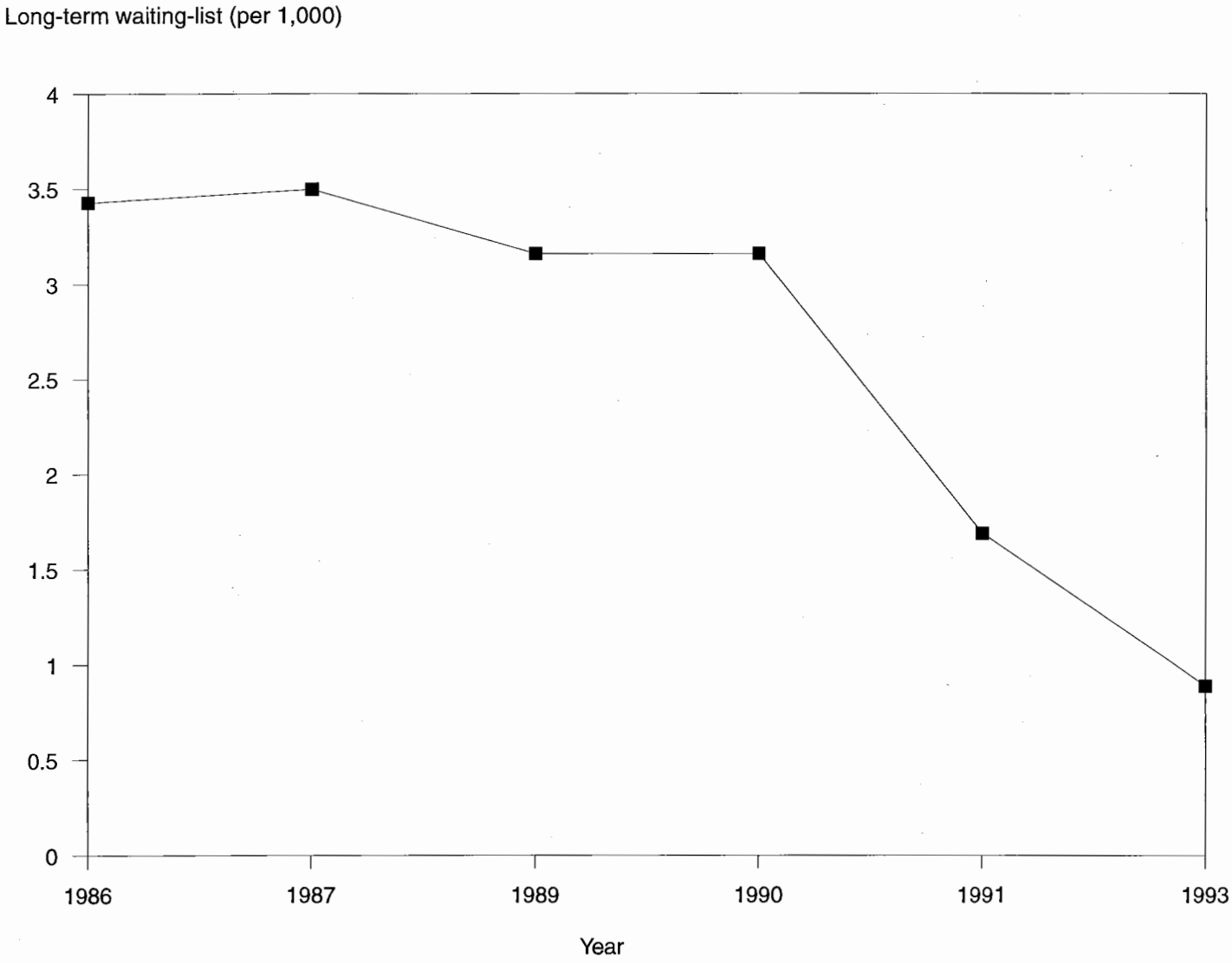

Figure 3: Long-term waiting-lists per 1,000 population

Hospital waiting-lists have increasingly come, in the public consciousness, to symbolise the current state of NHS funding. While one would be suspicious of relying too greatly on a single indicator, it is interesting to look at the trend, as displayed in Figure 2. Things are far from clear cut in this regard. However, the rise by about 1.5 persons per 1,000 population between 1981 and 1984 is fairly dramatic, as are the falls towards the end of the period. It must be borne in mind that waiting-lists are a 'snapshot' of all those individuals waiting for hospital treatment at a given point in time. Many of those individuals will be treated within a relatively short time. Indeed, roughly half of those admitted to hospital from a waiting-list have been on the waiting-list for less than five weeks.

As a result, it is likely to be 'long-term' waiting-lists which are a primary indicator of the 'quality' of public sector provision. Figure 3 shows that long-term waiting-lists (the number of individuals who have been waiting for more than 12 months for a particular medical service) have fallen steadily since the mid-1980s and more sharply towards the end of the period. This pattern can be linked to specific government initiatives to tackle the perceived problem of long-term waiting-lists dating from the launch of the Waiting-List Fund in 1987/88.

3.2 Private Sector Provision

Approximately 14% of the BSA samples in 1987 and 1989 had some form of private health insurance, up from roughly 11% in 1983 (see Figure 4). These figures are broadly comparable with those found in other work such as Eastwood and Propper (1989) and data from various years of the General Household Survey. In each year of the sample, just under half of this coverage is provided by an employer. These are typically group policies which reimburse on a fee-for-service basis, of the kind that dominate in the US. The remainder are individual policies which tend also to operate on a fee-for-service basis.

Approximately half of all purchasers get insurance from their employer, the remainder obtaining individual or family policies. Employer-provided private medical insurance is taxed as a fringe benefit for all those individuals earning above £8,500. Since April 1990, individuals aged over 65[4] have qualified for tax relief on individual policies.

[4] The first policy to cover this segment of the market was not introduced until 1988.

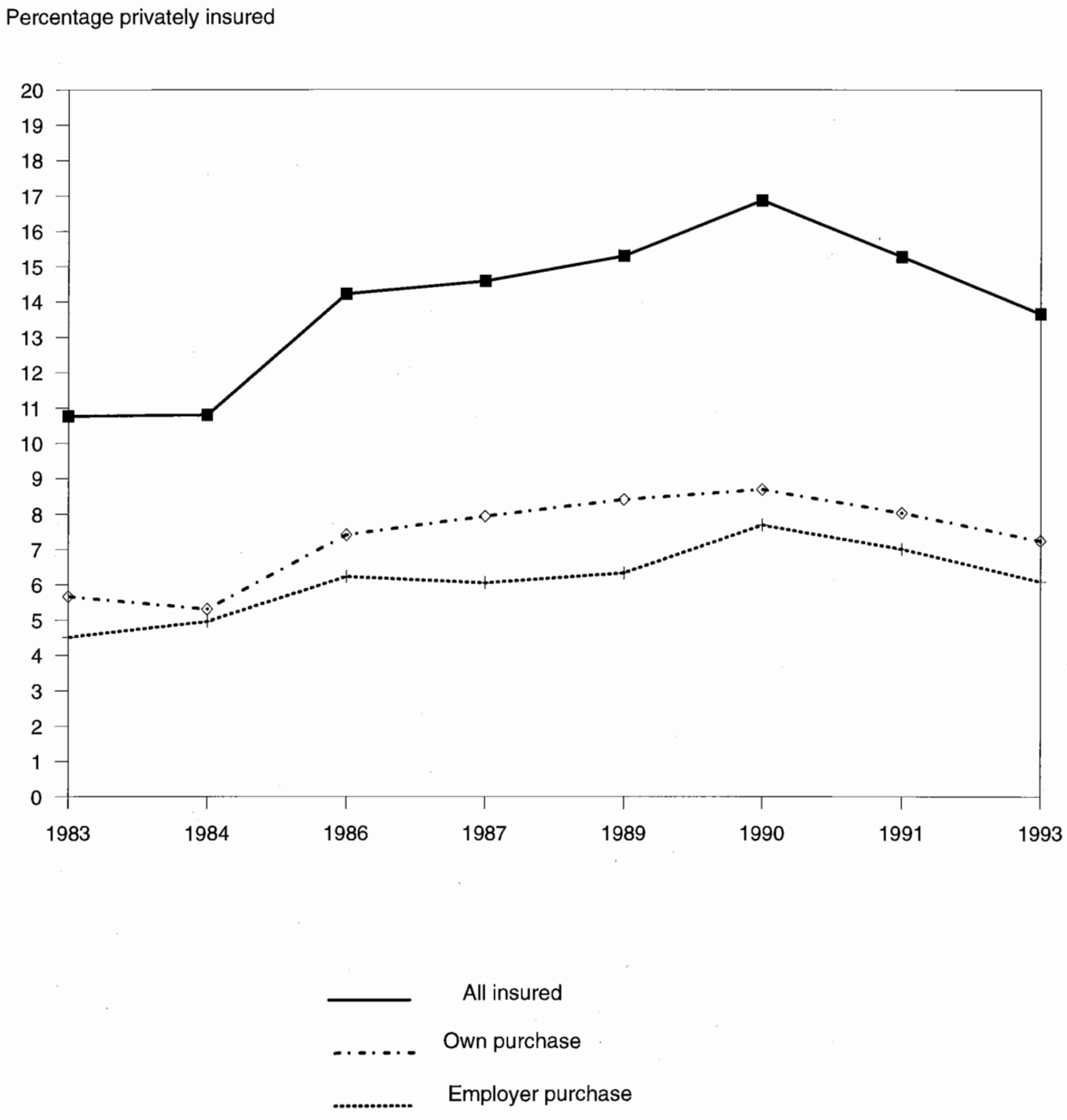

Figure 4: Private medical insurance, 1983-1993

The market for private health insurance in the UK is highly concentrated, with three not-for-profit organisations accounting for close to 90% of the market for much of the period. In the early 1980s, a single insurer, BUPA, accounted for almost 60% of the market and was largely able to dictate terms for the payment of private sector health providers for the market as a whole. BUPA's share of the market has declined since, but the three market leaders still accounted for almost 80% of the market in 1993. In all, there are presently only 24 organisations actively providing private medical insurance (Laing, 1994).

The scope of private provision remains fairly limited in the UK, being principally concerned with elective surgery. It is precisely for such non-life-threatening treatment that waiting-lists are longest. Less than two dozen procedures account for over 70% of all private operations (Propper and Maynard, 1989). Many product innovations in the late 1980s increased product affordability by restricting the conditions covered, in one case to 17 specified procedures. As a result, even individuals with private insurance depend on the NHS for some forms of medical treatment, especially for emergency and catastrophic treatment. Individuals who opt out of public provision for particular types of care are not compensated for this in reduced taxation.

4 Evidence from the British Social Attitudes Survey

4.1 The Data

The British Social Attitudes survey is an annual survey of about 3,000 households which contained modules regarding attitudes towards and use of health services in 1986, 1987, 1989, 1990 and 1991.

Questions were asked in each year concerning coverage by private health insurance. Privately-insured households are further classified according to whether the majority of the cost is met by an employer or by the respondent. Typically, employer-provided insurance accounts for slightly more than half of the market. In Figure 4, we showed the growth over the period concerned in both own and employer-provided health insurance, reaching a peak of 17% in 1990.

Data on various aspects of NHS quality are available at the Regional Health Authority level from *Regional Trends*. These data can be merged with the BSA data using the detailed locational information in the BSA which allows identification of the respondent's parliamentary constituency. Among the data investigated here are length of waiting-lists, particularly long-term lists, total staff and health spending per person.

Figure 5 shows the change over time in length of long- and short-term waiting-lists separately for the 16 Regional Health Authorities (RHAs) in Great Britain. Whilst long-term waiting-lists and overall waiting-lists tended to move in a similar direction during the earlier part of the period covered by the data, it is notable that there is a dramatic switch from long- to short-term waiting in 1991. This reflects the impact of a specific government policy initiative. By 1989/90, the Waiting-List Fund, first introduced in 1987/88, began to specifically target those District Health Authorities (DHAs) and those specialities with the severest long-term waiting-lists (see Department of Health (1991)). Figure 5 suggests that this targetting of long-term waiting-lists was, at least to some extent, at the expense of increases in waiting-lists overall.

Figure 6 shows changes in private health coverage separately for the 16 authorities. Much of the sharper variation may be attributable to sampling variation given the method of collection of the BSA data.[5] An upward drift is apparent through time. However, one or two areas, such as Trent and the West Midlands appear to have experienced a fall over time.

[5] The BSA survey has a multi-stage sampling design. The same sampling variation found in the private insurance statistics should also be reflected in the explanatory variables used.

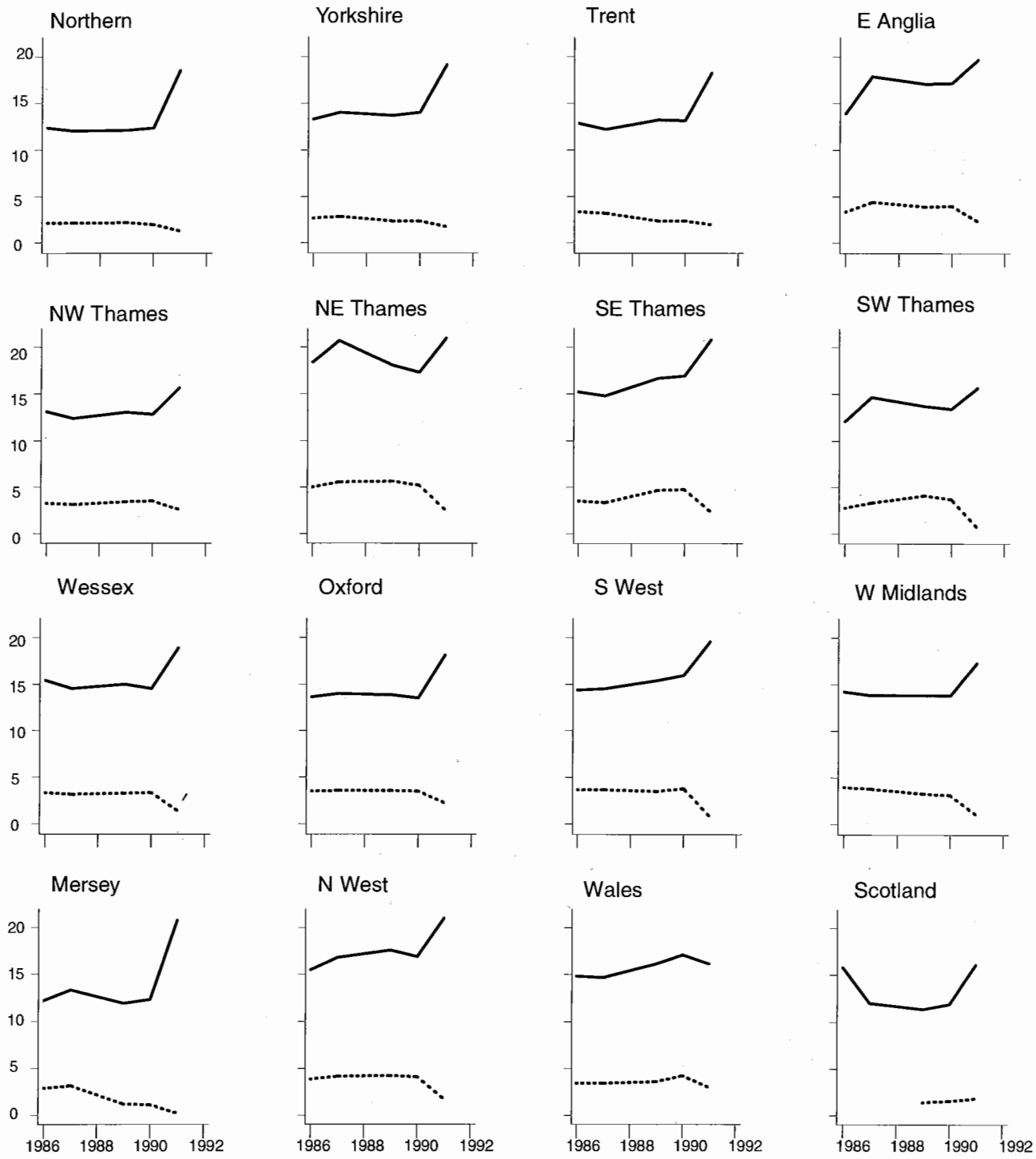

Figure 5: Length of waiting-lists by RHA

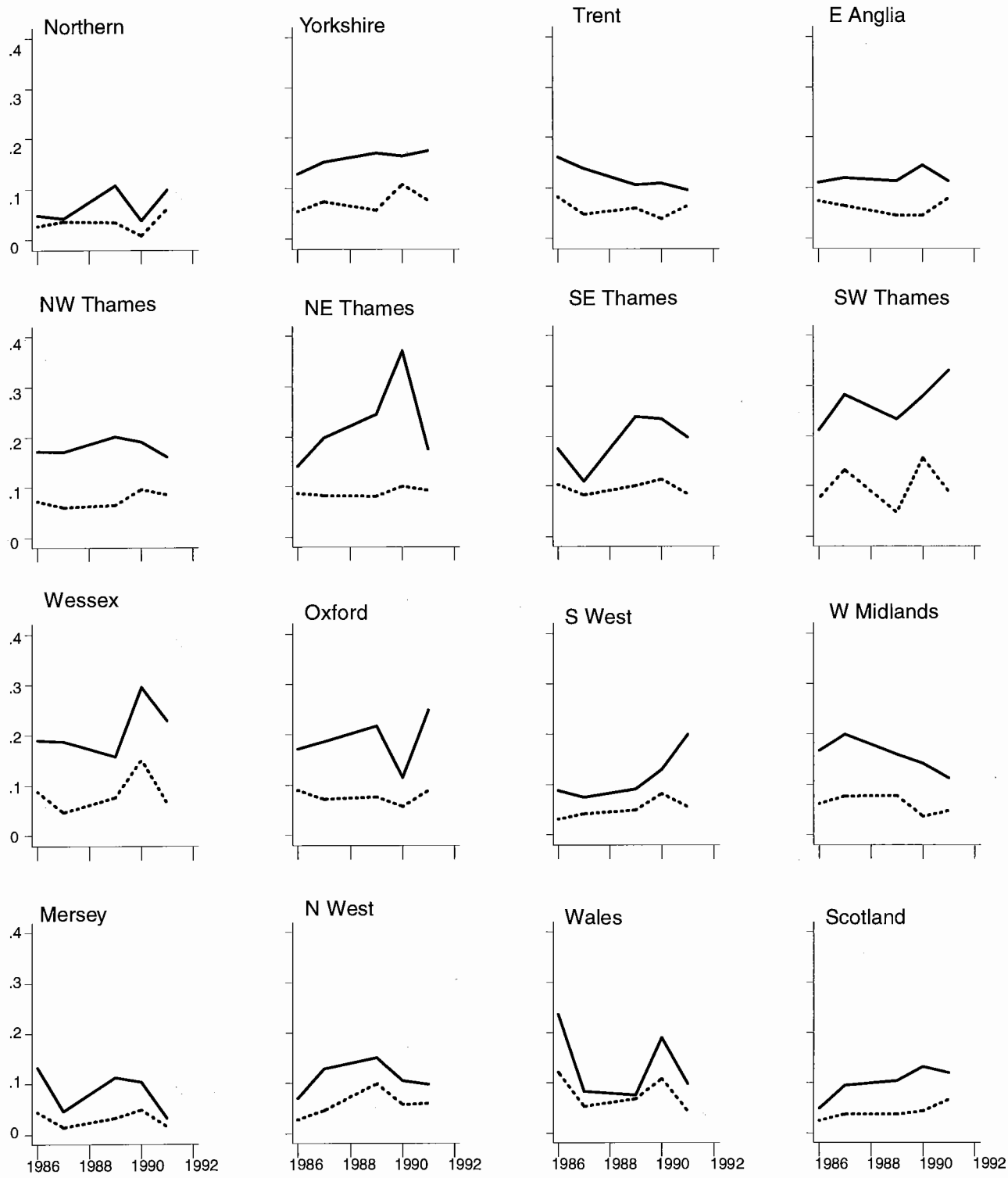

Figure 6: Private insurance by RHA

4.2 Private Health Insurance and Personal Characteristics

Data were collected in each year on a wide range of socio-economic and demographic characteristics. Tables 1 and 2 compare the characteristics of those with private insurance, provided either by themselves or by their employer, and of those without. The definitions of the variables are given in the Appendix.

4.2.1 Socio-economic characteristics

We begin by considering the income effect on the demand for private insurance. Unfortunately, we do not have an income level variable as such - income in the BSA survey is only recorded in bands which are fixed in nominal terms. This would make it misleading to compare income effects in successive years of the data by pooling the five years of data, since the economic meaning of these bands in real (i.e. inflation-adjusted) terms changes over time.[6] However, within-year comparisons, as presented in Table 1, are perfectly reasonable. In every year of the data, the privately insured are much more likely to have income above £15,000 per annum. This underlines the role of economic well-being as an important influence on the insurance purchase decision.[7] This has been noted before by, for instance, Bosanquet (1993) and Propper (1989 and 1993).[8]

House ownership is also indicative of economic status, though may best be thought of as measuring long-term economic living standard. Again in line with the view that living standards are an important determinant of private insurance, we find that owner-occupiers are more likely to purchase private insurance.

Educational attainment also appears to be associated with private insurance purchase. Those with private insurance of any sort are markedly more likely to have A levels and university degrees. This could reflect differences in occupational type, income levels and income stability,

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[6] Prices grew by slightly over 36% over the period 1986 to 1991.

[7] In Besley, Hall and Preston (1996), we consider another way of looking at income effects. We use the bands in the data to estimate an individual's position in the income distribution in that year. We then calculate income effects from an individual's position in the income distribution. As we show below, this yields a positive income effect to mirror that shown here.

[8] Bosanquet (1993) uses the BSA survey, as we do. Propper (1989) uses the General Household Survey to study the demand for insurance, finding that income is a significant determinant of insurance demand. She also finds that self-employed individuals are less likely to purchase insurance, although very little else proves to be significant in her data.

Table 1a: Proportions of insured and uninsured with household income greater than £15,000 p.a.

	Uninsured	Own purchase	Employer purchase	All
1986	17.7 %	47.5 %	64.1 %	23.0 %
1987	21.7 %	50.7 %	65.6 %	26.9 %
1989	30.2 %	59.4 %	80.8 %	36.5 %
1990	39.0 %	67.3 %	87.3 %	45.6 %
1991	36.0 %	65.3 %	87.2 %	42.4 %

Table 1b: Proportions of insured and uninsured with household income less than £5,000 p.a.

	Uninsured	Own purchase	Employer purchase	All
1986	30.0 %	5.0 %	0.0 %	26.2 %
1987	29.0 %	7.1 %	1.6 %	25.4 %
1989	25.7 %	4.5 %	0.5 %	22.1 %
1990	20.6 %	3.7 %	0.5 %	17.5 %
1991	14.7 %	4.1 %	0.0 %	12.7 %

or differences in attitudes towards the private sector. Some occupational patterns are certainly evident in the data. Those with insurance are slightly less likely than those without to be in manufacturing jobs and twice as likely to be self-employed.[9]

4.2.2 Demographic characteristics

The clearest demographic influence is from age. It is not surprising that a tiny proportion of those with employer-provided insurance are over 65 years of age, but it is also clear that the elderly are less likely to purchase private insurance for themselves, possibly because of higher premiums. It is also true, however, that old age is correlated with low incomes, which could be

[9] The distinction between respondent- and employer-provided insurance is presumably fairly arbitrary in this instance.

driving this result. In the econometric analysis reported below, we are able to control for a number of factors that might simultaneously be at work on insurance demand. We show that the effect of old age conditional on socio-economic characteristics is actually positive. This is best interpreted as the increased value from private medical care for the old who have a higher propensity to use their insurance.

There is little clear evidence in Table 2 of any impact from family size or the presence of children. Those with either type of insurance are slightly more likely to be male.

Table 2: Characteristics of the privately insured and uninsured

	Uninsured	Own purchase	Employer purchase
Highest GCSE	26.3 %	29.6 %	26.5 %
Highest A level	21.1 %	35.6 %	38.0 %
Degree	6.7 %	13.4 %	16.1 %
Woman	54.7 %	48.2 %	45.6 %
Tabloid reader	83.3 %	65.1 %	68.0 %
Conservative	32.8 %	59.0 %	59.9 %
Labour	38.0 %	16.2 %	14.4 %
Age 30s	19.9 %	17.8 %	31.6 %
Age 40s	17.7 %	25.3 %	32.0 %
Age 50 to 65	21.5 %	27.2 %	19.2 %
Age 65+	20.1 %	13.7 %	2.0 %
Number of children	0.71	0.59	0.90
Number of adults	2.10	2.21	2.24
Self-employed	6.7 %	12.7 %	7.0 %
Public sector worker	29.5 %	34.3 %	17.5 %
Manufacturing sector	29.1 %	20.9 %	27.9 %
Owner-occupier	65.4 %	88.6 %	90.1 %
Total number of respondents	**9,963**	**764**	**974**

4.2.3 Attitudinal characteristics

The main purpose of the BSA survey is to collect data on attitudes, and there is a rich variety of information on such things, including particularly politics. Table 2 shows that respondents identifying with the Conservative Party seem more inclined to take out private insurance than others. This is as noted by Calnan, Cant and Gabe (1993) and is compatible with the view advanced, for instance, by Propper (1993)[10] that ideological objection to the role of the private sector in health provision may be an important hurdle to be overcome before purchase of health insurance is even considered.

Past work on the BSA data (Preston and Ridge, 1995) has shown the possible importance of newspaper readership in influencing attitudes. The evidence of Table 2 suggests that readership of tabloid newspapers is more prevalent among those without private insurance of either sort.

The evidence of Table 2 is suggestive but incomplete. In particular, it fails to allow for the intercorrelations between variables which can confound reasoning when looking only at the relationship between any two variables taken alone. Detailed econometric analysis of the micro-data, reported in Besley, Hall and Preston (1996) and summarised below, supports the view that most of the correlations that are discussed above continue to play a role even when the effect of the other variables is taken into account.

4.3 Satisfaction with the NHS, Personal Characteristics and Private Insurance

In each of the years 1986 to 1991, the BSA survey includes questions on individual satisfaction with NHS services, either from personal experience or from general perceptions. The question is asked separately of different aspects of the health service and we concentrate on satisfaction with in-patient and out-patient care and with the NHS as a whole. In each case, respondents are asked to express their satisfaction along a five-point descriptive scale from 'very dissatisfied',

[10] Propper (1993) models the demand for private medical insurance as a two-stage process, using cross-sectional data on 1,360 individuals collected expressly for this purpose. At the first stage, individuals determine which options may be included within their choice set. Second, individuals choose between supplementary private insurance and dependence on the state sector within an expected utility framework, defined over future incomes and health states. Her results suggest that political beliefs, in addition to standard economic concerns, determine the decision to purchase private insurance. She also finds that an individual's existing health state influences their demand for private medical insurance.

through 'fairly dissatisfied', 'neither satisfied nor dissatisfied' and 'fairly dissatisfied', to 'very dissatisfied'. Most people report themselves fairly or very satisfied with the specific aspects, but there are more who regard themselves as dissatisfied with the health service in general than there are satisfied.

Table 3: Characteristics by satisfaction with NHS in-patient and out-patient services

	Satisfied with NHS in-patient or out-patient services	Dissatisfied with NHS in-patient or out-patient services
Highest GCSE	25.5 %	27.4 %
Highest A level	18.0 %	28.4 %
Degree	4.6 %	11.0 %
Recently treated	50.2 %	52.6 %
Woman	55.2 %	52.0 %
Tabloid reader	83.5 %	78.4 %
Conservative	37.8 %	35.9 %
Labour	35.1 %	34.3 %
Age 30s	16.3 %	24.7 %
Age 40s	18.1 %	20.6 %
Age 50 to 65	25.3 %	18.5 %
Age 65+	24.6 %	12.4 %
Number of children	0.64	0.79
Number of adults	2.10	2.14
Self-employed	6.4 %	7.8 %
Public sector worker	27.8 %	29.7 %
Manufacturing sector	30.1 %	26.9 %
Owner-occupier	66.0 %	71.7 %
Total number of respondents	**5,570**	**6,131**

Any argument that declining NHS quality drives individuals into the private sector will be strengthened if we can show that poor NHS standards and purchase of private insurance are also linked to private expressions of dissatisfaction. We therefore investigate a number of questions. First, we look at the personal characteristics of those declaring themselves dissatisfied. Second,

we investigate whether expressions of dissatisfaction manifest themselves in actual purchase of rights to alternative care in the private sector. Third, in a later section, we consider the relationship between satisfaction and actual observable indicators of health service quality such as waiting-lists.

Tables 3 and 4 compare the personal characteristics of those expressing dissatisfaction with the NHS hospital treatment[11] with those who are either satisfied or indifferent. We see that the dissatisfied are more educated, richer and younger. In these respects, they match the picture of the typical purchaser of private insurance discussed in the previous section.

Evidence of a link between dissatisfaction and insurance purchase can be seen in Table 5. The privately insured are more dissatisfied than others both on particular aspects and with the NHS overall. This makes a lot of sense - private health insurance is a means by which individuals can isolate themselves from the NHS and is more likely to be pursued by those who are dissatisfied. Note that the link between dissatisfaction and insurance purchase is strongest with out-patient care.

Dissatisfaction with the NHS should properly be distinguished from dissatisfaction with the idea that health care should be publicly provided. This is underlined by the related work of Calnan, Cant and Gabe (1993). Their detailed interviews lead them to stress that it is dissatisfaction with the quality of service rather than with the concept of public provision which drives people into the private sector.

[11] This seems the most relevant aspect of dissatisfaction for those choosing between the public and private sector. We count an individual as dissatisfied if they express dissatisfaction with either in-patient or out-patient treatment and as satisfied otherwise.

Table 4a: Proportions of satisfied and dissatisfied with household income greater than £15,000 p.a.

	Satisfied with NHS in-patient or out-patient services	Dissatisfied with NHS in-patient or out-patient services	Overall
1986	16.9 %	28.8 %	23.0 %
1987	20.6 %	32.9 %	26.9 %
1989	27.5 %	44.9 %	36.5 %
1990	36.7 %	52.5 %	45.6 %
1991	33.9 %	50.3 %	42.4 %

Table 4b: Proportions of satisfied and dissatisfied with household income less than £5,000 p.a.

	Satisfied with NHS in-patient or out-patient services	Dissatisfied with NHS in-patient or out-patient services	Overall
1986	20.4 %	32.3 %	26.2 %
1987	20.6 %	30.7 %	25.5 %
1989	16.3 %	28.4 %	22.1 %
1990	14.1 %	21.9 %	17.5 %
1991	11.1 %	14.4 %	12.7 %

Table 5

Satisfaction with NHS in-patient care

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied
No insurance	27.1 %	43.6 %	15.5 %	10.2 %	3.7 %
Own	21.5 %	39.9 %	20.7 %	12.8 %	5.1 %
Employer	16.3 %	42.1 %	19.8 %	14.2 %	7.6 %

Satisfaction with NHS out-patient treatment

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied
No insurance	16.0 %	40.8 %	15.1 %	18.2 %	10.0 %
Own	10.9 %	35.7 %	15.5 %	24.4 %	13.6 %
Employer	8.1 %	31.4 %	17.5 %	29.2 %	13.9 %

Satisfaction with the NHS overall

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied
No insurance	6.9 %	32.6 %	17.9 %	24.2 %	18.4 %
Own	4.6 %	30.6 %	19.6 %	27.1 %	18.1 %
Employer	4.2 %	31.3 %	18.6 %	27.5 %	18.4 %

4.4 The Effect of Regional NHS Variation on Insurance Purchase

Above, we looked at the effect of individual-level satisfaction with the NHS on insurance purchases. However, expression of dissatisfaction is a subjective assessment, and need not be related to the reality of the NHS. In this section, we look for relationships between insurance purchase and observable indicators of NHS quality.

Given that any source of variation in the NHS is available at the level of Regional Health Authorities, this section begins with evidence based on regional variations. These results are displayed in Figures 7 and 8. On the vertical axis is the fraction of those respondents in a region not covered by employer-purchased insurance who are covered by individually-purchased private health insurance. Figure 7 shows clear evidence of a positive association between this and the length of waiting-lists. Hence in regions with longer waiting-lists, long- or short-term, there is more individually-purchased private insurance. Correlations with expenditure and staff numbers in Figure 8 are less convincing.

We look further at the issue with a more stringent test in which we try to associate *changes* in public sector quality and private insurance. This has the advantage of purging the association of any correlation due to unobserved fixed factors affecting both public quality and private insurance coverage. Figure 9 reveals the relation between changes in waiting-lists and private insurance for the final year of the sample, when changes were greatest, with a clear positive correlation visible. This positive relationship suggests that government policy initiatives targetted on reducing long-term waiting-lists (discussed above) may have an impact on the coverage of private medical insurance.

We now look further at the link between individually-purchased private health insurance using statistical methods that allow us to control for many different factors. We do this for regional data and then for individual decisions.

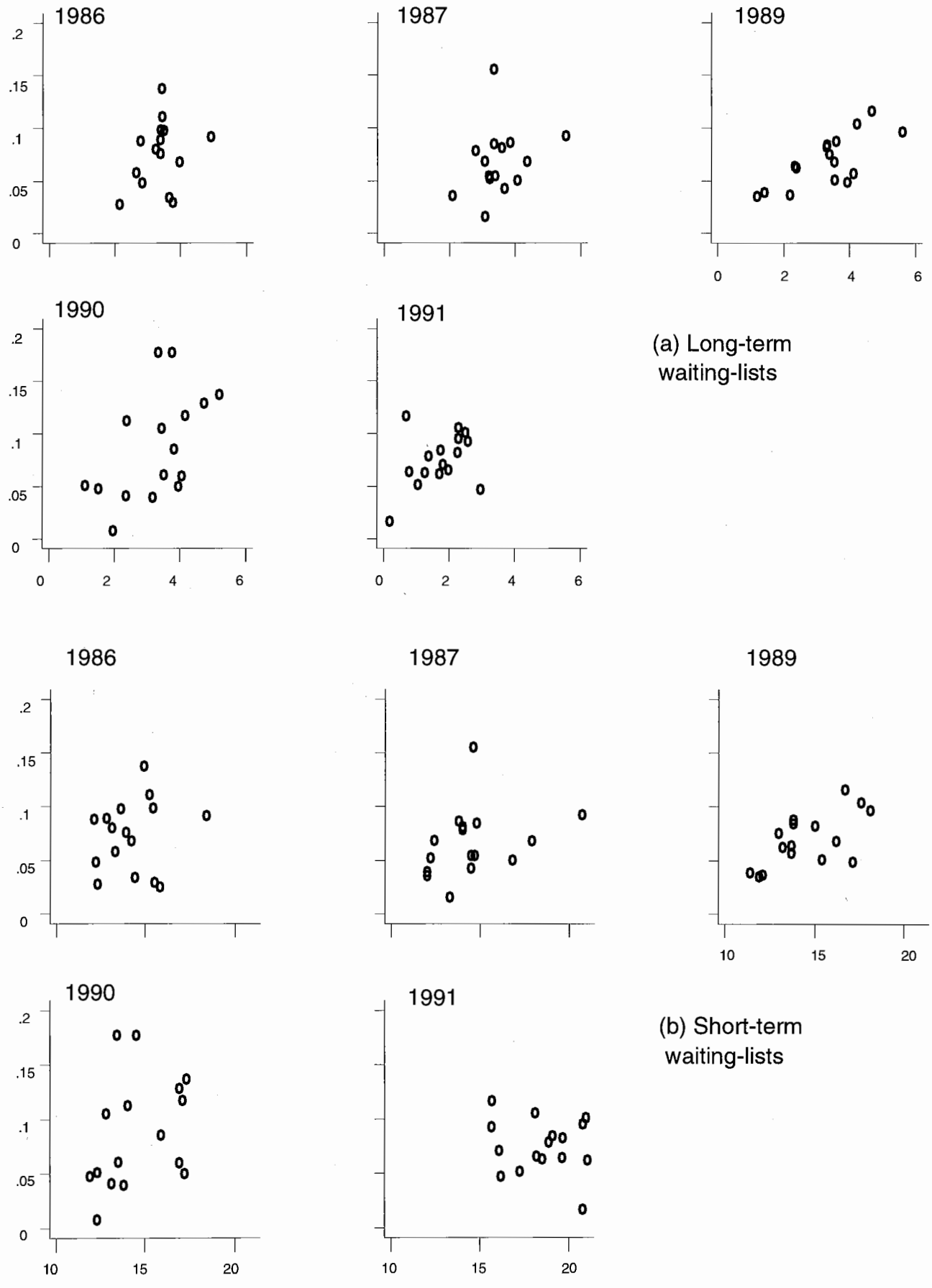

Figure 7: Proportion privately insured and length of waiting-lists

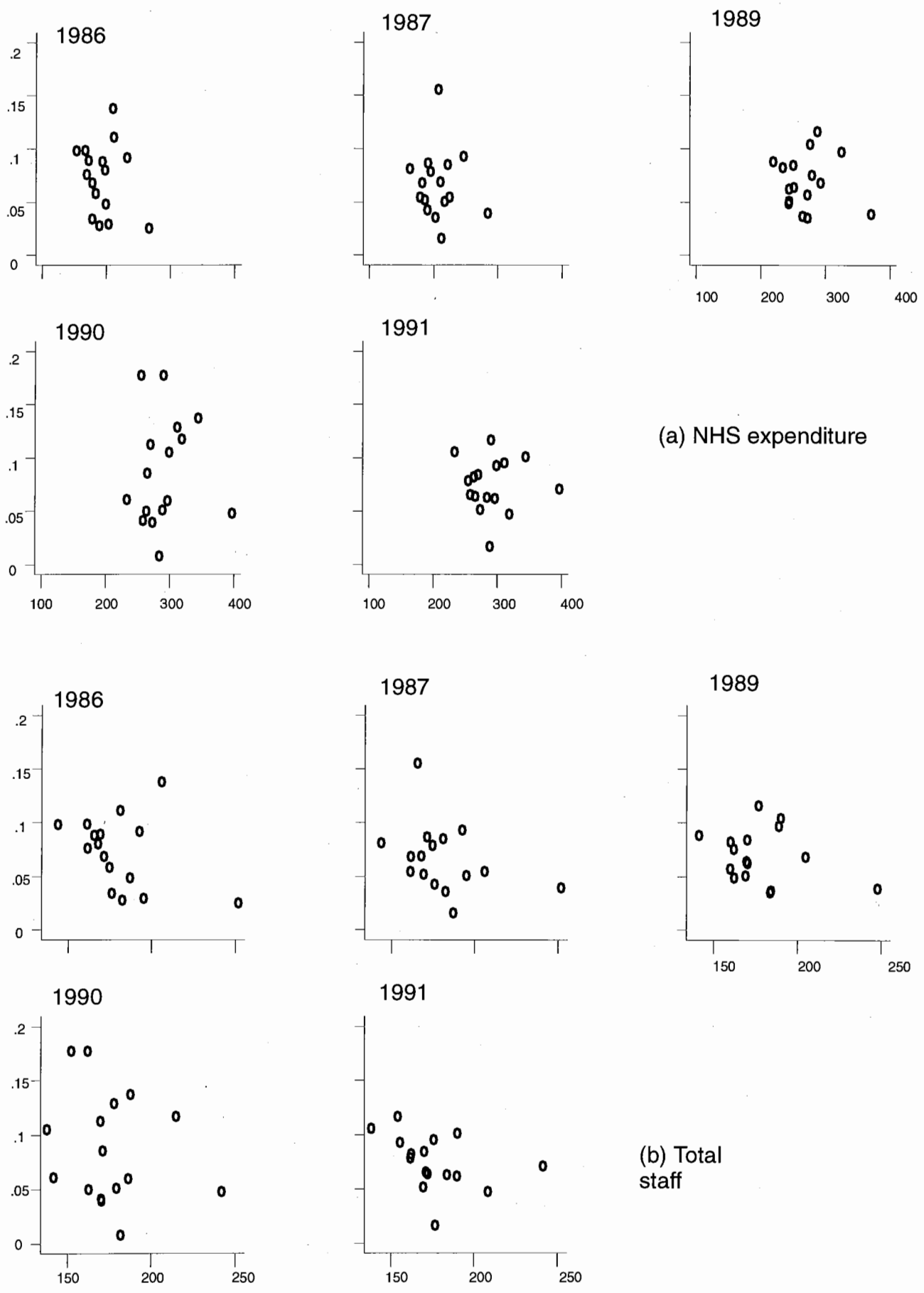

Figure 8: Proportion privately insured, spending and staff

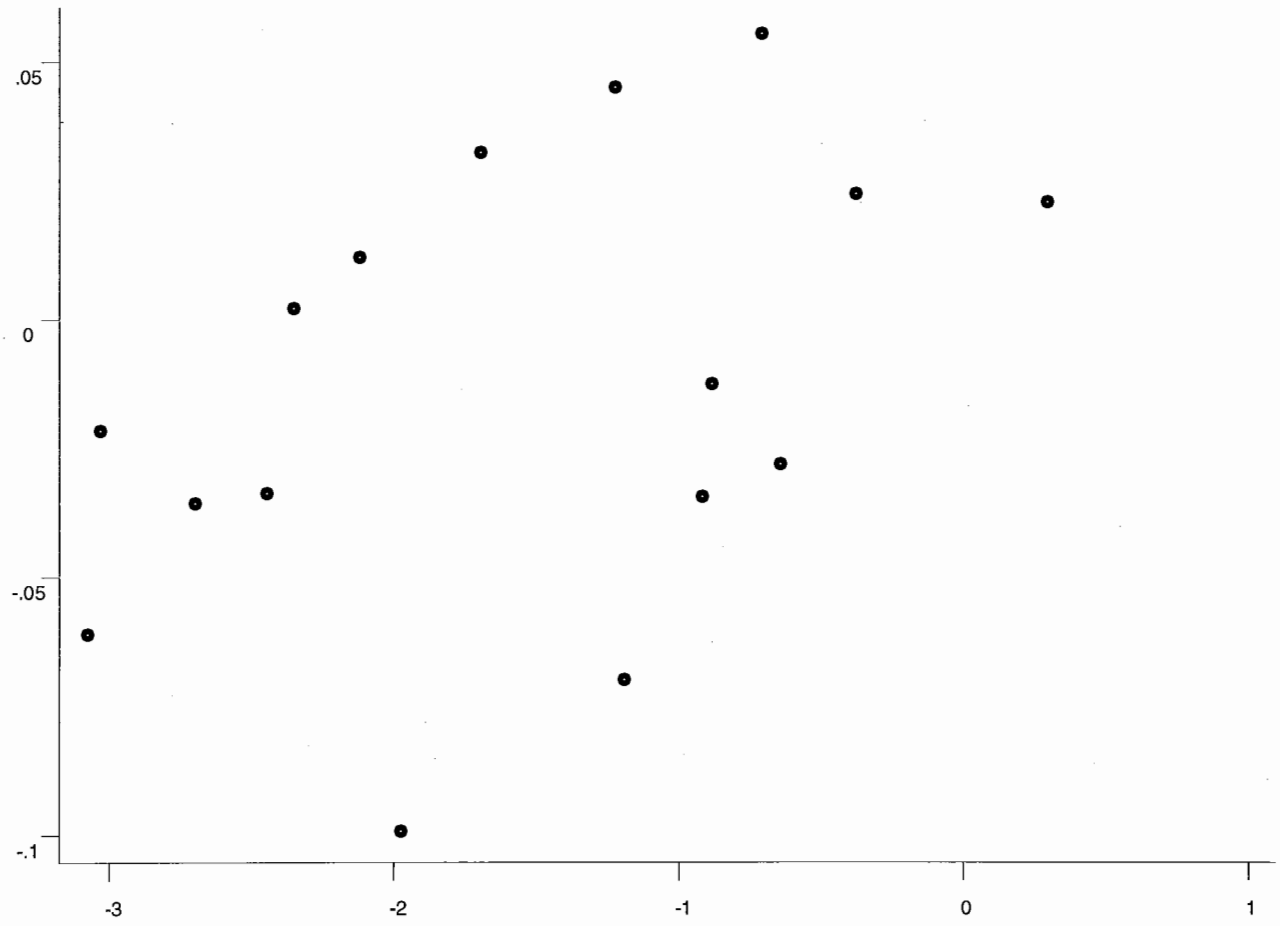

Figure 9: Change in proportion privately insured and change in long-term waiting-lists, 1991

4.4.1 Evidence from regional means

Our next step is to conduct an analysis of the data at a regional level. Since we do this in a multiple regression framework, we are able to control for an array of influences on private insurance purchase that vary regionally. We used the BSA data to compute regional (RHA-level) means of the various respondent characteristics listed in Table 2. In our regressions, therefore, each 'observation' is the average value from the micro-data for a given RHA in each year. Proceeding this way, we had 78 observations in all.[12] If the data are regionally representative, then these should be close to the true mean regional values of these variables.

Table 6 gives our preferred specification for a regression that investigates the determinants of private health insurance demand at the RHA level. The dependent variable is the fraction of those respondents in a region not covered by employer-purchased insurance who are covered by individually-purchased private health insurance, as on the vertical axis of Figures 7 and 8.[13] Explanatory variables include the regional sample means of household income information, respondent age, housing tenure and education. The right-hand side also includes expenditure per capita on the NHS and the length of the long-term waiting-lists as regressors. Finally, we include dummy variables for each year and for each region to control for macroeconomic shocks and long-term regional differences.

This regression confirms a number of results apparent in the discussion of Table 2. The variable 'low income' refers to the fraction of respondents in a region who are in a household that is earning less than £5,000 per year. As we expected from the above, this has a negative effect on insurance purchase, with a 10 percentage point increase in such respondents leading to a two percentage point reduction in health insurance purchases. The coefficient on owner-occupation is, oddly, negative, although the results from Besley, Hall and Preston (1996) reported in the next section confirm a more-expected positive effect of owner-occupation in the micro-data.[14] Compared with the respondent being under age 40, those who are middle-aged and those who are aged over 65 (controlling for income) are more likely to purchase private health insurance individually. This seems likely to reflect the value of private health insurance as individuals age. Educational qualifications in the GCSE are positively associated with insurance purchase.

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[12] There are five years and 16 regions, which suggests 80 observations. However, there are two years of missing data for some variables for Scotland.

[13] The precise choice of dependent variable seems to make little difference to the results.

[14] Such differences between regional and individual-level results are explicable if the structure of within-region variation is important.

Table 6: Cross-regional regression of proportion with individually-purchased private insurance

Explanatory variable	Coefficient estimate	t statistic
Low income	- 0.16	- 2.14
Owner-occupier	- 0.11	- 2.18
Tabloid reader	- 0.25	- 3.78
Highest GCSE	0.14	1.77
Middle-aged	0.11	1.84
Age 65+	0.27	3.14
Public sector worker	- 0.13	- 1.88
Long-term waiting-list	0.015	3.00
NHS expenditure	- 0.16	- 0.58
Constant	1.14	0.74
Number of observations	78	
F(28,49)	5.89	
R-squared	0.77	
Root MSE	0.02	

Those who work in the public sector are less likely to purchase private insurance. Finally, tabloid readership is negatively associated with private insurance purchases in these regional data. These results largely confirm the impression from the previous sections.

The striking result on NHS quality is from the coefficient on long-term waiting-lists. It shows that there is a positive effect on private health insurance purchases if long-term waiting-lists increase. This confirms the rather partial picture available from Figures 7 and 9. An increase of 1 individual per 1,000 on long-term waiting-lists is associated with a $1^1/_2$ percentage point increase in insurance purchases.

4.4.2 Evidence from micro-data

4.4.2.1 Evidence on NHS quality and insurance purchase

Regional regressions abandon valuable information in the micro-data, failing to exploit any information on differences between individuals within regions. For many personal variables, the main variation may be of this sort. Here, we present results that use econometric procedures

the main variation may be of this sort. Here, we present results that use econometric procedures (described in full in the more technical paper, Besley, Hall and Preston (1996)) which allow us to model individual decisions to purchase private insurance, studying the behaviour of individual survey respondents.

The coefficients from our preferred specification are given in Table 7[15]. The interpretation of the reported coefficient is as the effect of a change in the right-hand-side variable on the probability that the respondent is covered by individually-purchased private insurance. These results differ mainly in the sophistication of the method and not in the substance of the findings. The influences that we have discussed above in terms of economic well-being, age and education all continue to hold.

Additional results of interest concern political affiliation. Respondents who identify with the Conservative Party are more likely to have individually-purchased private insurance, with the converse holding for Labour Party identifiers. Newspaper readership also enters, as above, with tabloid readership predicting a negative effect on insurance purchase. The variables reflecting dissatisfaction with NHS hospital care show the predicted signs, reinforcing the conclusion that private insurance purchase reflects dissatisfaction with the NHS. Household size effects are also evident.

Most importantly, our main result that long-term waiting-lists have an effect on insurance purchase is also found here and the estimated effect appears similar in size to that obtained in Table 6.

[15] The specification also included year dummy variables whose coefficients are not reported.

Table 7: Individual-level regression of private insurance decision

Explanatory variable	Coefficient estimate	t statistic
Waiting-lists	-0.0020	-0.838
Total NHS staff	-0.0000	-0.175
HQ expenditure	0.0032	1.139
Long-term waiting-lists	0.0133	2.849
Expenditure on support	-0.0003	-0.623
Expenditure on diagnosis	0.0000	0.073
Overall NHS dissatisfaction	0.0075	1.332
Dissatisfaction with in-patient services	0.0148	2.627
Dissatisfaction with out-patient services	0.0125	2.249
Age 30s	0.0319	3.520
Age 40s	0.0537	6.512
Age 50 to 65	0.0519	6.265
Age 65+	0.0330	2.811
Number of children	-0.0064	-2.260
Number of adults	-0.0139	-4.073
Household income	0.0022	12.752
Self-employed	-0.0128	-1.165
Public sector worker	-0.0206	-2.680
Owner-occupier	0.0303	4.183
Highest GCSE	0.0282	3.933
Highest A level	0.0350	4.899
Degree	0.0241	2.444
Tabloid reader	-0.0296	-4.811
Conservative	0.0392	6.458
Labour	-0.0323	-4.557
Number of observations	11,213	

4.4.2.2 Evidence on NHS quality and satisfaction

The micro-data can also be used to investigate the influence of both NHS quality and personal characteristics on satisfaction with NHS treatment. As explanatory variables, we use those personal and regional characteristics that we used to explain insurance purchase. Table 8 reports the outcome of a probit regression with dissatisfaction with NHS hospital treatment[16] as the dependent variable.[17] The estimated effects are fairly similar to those in our insurance demand equation (Table 7) underlining the connection between dissatisfaction and insurance demand. On the whole, it is the better-off and better-educated respondents who are least happy with the NHS. It is interesting that, in this specification, there is also a significant effect suggesting that higher long-term waiting-lists and also lower NHS expenditure reduce satisfaction.[18]

Put together, we have three sets of results that seem to find evidence of a link between long-term waiting-lists and individually-purchased private insurance. The first came from inspection of the raw data, the second from regressions based on regional means and the third from regressions based on analysis of the micro-data. All in all, we are satisfied that there is a positive link in these data between the decision to individually purchase private health insurance and long-term waiting-lists. Furthermore, patterns evident in the BSA data on satisfaction with the NHS are compatible with the view that this link operates via satisfaction with the NHS.

The best way to interpret this effect is as 'perceived' quality in the NHS. Thus private insurance is responding to a perceived fall in the quality of NHS provision. It is notable that long-term waiting-lists stand out in our study as the main variable that affects decisions. Our attempts to correlate private health insurance purchase with expenditure and staffing measures did not yield anything clear cut. However, waiting-lists are probably not the only concern among NHS users. None the less, there is widespread publicity on such numbers, and it is a rather direct measure

[16] We count the indifferent as satisfied, as above.

[17] The interpretation of the reported coefficient is as the effect of a change in the right-hand-side variable on the probability that the respondent is dissatisfied. As above, year dummies are included but estimated coefficients not reported.

[18] It should be noted that these results on NHS quality (unlike those on insurance purchase) are somewhat sensitive to exactly which measures of dissatisfaction and NHS quality are used. In most specifications, however, there is a significant positive influence on dissatisfaction from either short- or long-term waiting-lists.

of service as compared with data on expenditures and staffing levels. Perhaps the reason that they get so much publicity is that they are an easy-to-grasp and relevant measure of service. However, in the absence of waiting-lists, it would appear likely that other signals would be used.

Table 8: Individual-level regression of dissatisfaction with either in-patient or out-patient services within the NHS

Explanatory variable	Coefficient estimate	t statistic
Long-term waiting-lists	0.023	4.14
NHS expenditure	- 0.088	- 2.13
Household income	0.002	7.30
Age 30s	0.004	0.24
Age 40s	- 0.060	- 3.72
Age 50 to 65	- 0.143	- 8.79
Age 65+	- 0.185	- 9.91
Owner-occupier	- 0.019	- 1.56
Tabloid reader	- 0.022	- 1.62
Conservative	- 0.054	- 4.35
Labour	- 0.001	- 0.07
Highest GCSE	0.058	4.43
Highest A level	0.139	9.89
Degree	0.189	8.83
Public sector worker	- 0.004	- 0.36
Self-employed	- 0.005	- 0.27
Number of children	- 0.008	- 1.52
Number of adults	- 0.024	- 3.56
Number of observations	11,213	

4.5 Support for NHS Spending

One might expect those taking out private sector insurance to feel less inclined to pay for spending on public care. Hence, although use of the private sector by the better off might leave more resources for health care of the rest of the population given a fixed budget, the growing private sector might still generate political concern if it were to undermine support for public spending. Of course, even the privately insured retain an interest in emergency cover and in other operations unavailable in the private sector. They may also continue to express a willingness to pay for health care because of concern for family or some broader social concern.

The BSA data also include responses to two sets of questions on support for public spending on a variety of government programmes including health. First, respondents were asked in 1990 and 1991 to express preferences for more or less spending on health. Unfortunately, the tax consequences were not made completely clear, respondents being told only that they may need to pay extra in taxes if they express a preference for much more spending. Second, an alternative question, which is included in the BSA survey every year, asks respondents to choose their top priority for additional public expenditure from a range of spending programmes including health, education and defence amongst others.

Table 9 shows that the great majority of individuals, whether insured or not, would like to see public health spending increased. (The numbers wanting spending reduced are so small as to be negligible.) None the less, the privately insured do show a greater tendency than do others to want no increase in health spending, with 15% rather than 9% falling in this category. Calnan, Cant and Gabe (1993) find a similar difference which they contrast with the findings of Taylor-Gooby (1991).

Table 9: Public spending preferences of those with and without private insurance

	Want more public expenditure on health	**Want less or the same public expenditure on health**
Uninsured	91.3 %	8.7 %
Insured	85.1 %	14.9 %

Table 10a: Proportions of those wanting more/less health spending with household income greater than £15,000 p.a.

	Want more public expenditure on health	Want less or the same public expenditure on health	Overall
1990	46.4 %	49.7 %	46.7 %
1991	42.3 %	54.5 %	43.7 %

Table 10b: Proportions of those wanting more/less health spending with household income less than £5,000 p.a.

	Want more public expenditure on health	Want less or the same public expenditure on health	Overall
1990	16.3 %	16.2 %	16.3 %
1991	13.4 %	5.9 %	12.6 %

We are unable to conclude from this that purchasing private insurance itself discourages support for public expenditure on health. It could be that other characteristics correlated with private insurance are the reason for the lower support. The insured are more likely to be rich, for instance, and would therefore pay a higher proportion of the tax cost of increased health services, given the progressive nature of the tax system. As can be seen from Table 10, those respondents whose household income exceeds £15,000 per annum also show a greater tendency than do others to want no increase in health spending. Table 11 presents a range of other characteristics of the respondents, grouped according to whether they do or do not want more public expenditure on health.

The alternative question asks respondents to rank priorities for public spending. Here, respondents are being asked to make a comparison with other spending programmes such as education or defence on the assumption that the spending will be made (and presumably taxes adjusted as required), so any pattern should at least not be a consequence of differences in rates of tax on respondents. Table 12 shows that those with private insurance are less likely than others to rank health spending as their top priority for additional public expenditure, although

Table 11: Characteristics by preference for more/less health spending

	Those who want more public expenditure on health	Those who want less or the same public expenditure on health
Highest GCSE	29.4 %	24.1 %
Highest A level	25.0 %	35.0 %
Degree	8.6 %	13.5 %
Woman	55.7 %	45.3 %
Tabloid reader	81.3 %	71.5 %
Conservative	31.9 %	71.2 %
Labour	41.3 %	10.9 %
Age 30s	21.7 %	17.5 %
Age 40s	20.3 %	19.7 %
Age 50 to 65	20.9 %	21.5 %
Age 65+	16.5 %	26.6 %
Number of children	0.69	0.50
Number of adults	2.10	2.00
Self-employed	7.3 %	13.5 %
Public sector worker	28.1 %	24.5 %
Manufacturing sector	26.8 %	22.3 %
Owner-occupier	71.2 %	83.6 %
Total number of respondents	**2,554**	**274**

Table 12: Public spending priorities of those with and without private insurance

	Regard health as top priority	Regard health as lesser priority
Uninsured	54.2 %	45.8 %
Insured	47.6 %	52.4 %

the difference is not quantitatively large. Several comments need to be made, however, before concluding that preferences are little affected. Privately-insured people may be more likely to use the private sector also for education or other competing programmes, or may be less likely to have any personal interest in education at all because of their demographic characteristics. They are also, as we have pointed out, more likely to be dissatisfied with the quality of the health service and could be inclined to prioritise health spending for that reason. The implications of Table 12 may be misleading for such reasons. There is a need for more research on this issue.

5 Discussion

Our results on views taken about NHS spending and the decision to purchase private insurance emphasise the political economy behind our results. As we discussed above, individuals who have purchased private insurance seem less likely to want more NHS spending. The link between party identification and private health insurance purchase (whether cause or effect) also underlines the political dimension. Thus the extent of private insurance can potentially change political support for the NHS. It is true that a comfortable majority of the population are still not privately insured. However, we would still expect the nature of support for NHS spending to respond to increases in private insurance. Thus cuts in real services that precipitate an increase in private insurance may actually result in more pressure for lower spending and hence deeper reductions in service quality. This suggests the possibility of a downward spiral in which support for the NHS is eroded, until it loses its universal character. Of course, this scenario is purely speculative. However, it is an issue that the substitutability between public and private health insurance manifested in our results suggests could be important.

Whatever the political complexion of future governments in the UK, health policy will impose increasing dilemmas. Given that the UK is now a low-tax economy, by OECD standards, it may be that a significant tax-financed inflow of resources will be forthcoming. This being so, and assuming that such an inflow of resources raises perceived NHS quality, then our results suggest that this will result in fewer purchases of private insurance.

This has two important implications. First, any increased utilisation of the public sector by individuals who previously had private insurance could reduce the benefit to existing users of any additional resources. This makes it harder for any government to raise real service standards in the NHS. Second, the individuals who may switch back to using the NHS will tend to be relatively well off, according to our results. Hence, on the margin, more of the increased expenditures may effectively accrue to the well off. This highlights an interesting dilemma. When NHS quality is lower, more of its resources may be targetted towards low-income individuals. Quality is like a surrogate means test. Providing truly high-quality coverage will attract high-income individuals to use the public sector and makes the NHS more regressive.

There are, however, good reasons to suppose that being able to sustain real service levels in the NHS in future may actually require increased per capita expenditures. While, as we showed above, the current government is spending more per capita on the NHS than any previous British government, this does not appear to result necessarily in higher satisfaction. Indeed, overall

satisfaction with the NHS, as measured by the BSA data, fell between 1983 and 1990 (see Rentoul (1990) and Bosanquet (1993)), and we would point to the increase in private insurance coverage over this period as being similarly motivated.

There are three main forces at work.[19] First is the increasing cost of new medical technology. There are more and more sophisticated interventions available to cure individuals, but these come at a price. How to ration access to the latest and best technologies creates considerable dilemmas for any kind of health system. However, for a tax-financed system where government takes responsibility for delivering care, rationing is an acutely political business. It seems unlikely that any government will sign on to the resource implications of an open-door policy for all new medical technologies. Second is the fact that labour-saving technological progress in medical care delivery is rare. Given that workers must be attracted from other productive sectors of the economy to produce health care, it is more expensive to produce a given quantity of medical services in a high-productivity economy. Productivity growth in other sectors of the UK economy raises the cost of producing the same level of medical care as we have enjoyed historically. The third force at work is the demographic implications of populations that live longer, coupled with the fact that individuals consume more medical care as they age.

These three influences combine to make any kind of stationary state in the medical sector unavailable. Hence, governments that want to keep real service provision constant, with some modest adoption of new technologies, will almost certainly have to pay more in future. We believe that this will imply a greater role for private insurance as the distance between services available publicly and privately grows. Our results present some evidence that the link between public sector service quality and private insurance is real and that a scenario in which the NHS struggles to maintain service quality will involve larger amounts of private insurance. We do not offer that scenario as inevitable. However, the effects that we have underlined here are an essential dimension to bear in mind in understanding responses to government health policy.

[19] See Besley and Gouveia (1994) for further general discussion of these issues and international evidence.

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Data Appendix

The data used in the research were derived from two sources. Individual-level data were obtained from the British Social Attitudes (BSA) surveys in 1986, 1987, 1989, 1990 and 1991. Corresponding data on the 'quality' of NHS provision at Regional Health Authority (RHA) level were obtained from *Regional Trends* (1986 to 1993). This appendix provides further details of the variables discussed in the text, arranged by source.

1 Variables Derived from the British Social Attitudes Survey

The actual questions in the BSA survey from which each of the variables was derived are included in bold. Further details can be obtained from the Technical Reports that are published annually.

Coverage of private medical insurance

The number of individuals covered by private medical insurance for which they paid the majority of the costs themselves was determined from the following two questions which were asked in each year:

> Are you covered by a private medical insurance scheme, that is an insurance scheme that allows you to get private medical treatment? **PRIVMED**
>
> If covered by private health insurance:
> Does your employer (your husband's/wife's employer) pay the majority of the cost of membership of this scheme? **PRIVPAID**

Personal characteristics

We include a number of variables concerned with age and gender:

Woman	(0,1) dummy. Respondent is female. **RSEX**
Age 30s	(0,1) dummy. Respondent is aged between 30 and 39. **RAGE**
Age 40s	(0,1) dummy. Respondent is aged between 40 and 49. **RAGE**
Age 50 to 65	(0,1) dummy. Respondent is aged between 50 and 65. **RAGE**
Age 65+	(0,1) dummy. Respondent is aged over 65. **RAGE**
Middle-aged	(0,1) dummy. Respondent is aged between 40 and 65. **RAGE**

We include three variables on educational attainment:

Highest GCSE	(0,1) dummy. Respondent's highest educational attainment is GCSE or equivalent. **HEDQUAL**
Highest A level	(0,1) dummy. Respondent's highest educational attainment is A level or equivalent. **HEDQUAL**
Degree	(0,1) dummy. Respondent's highest educational attainment is degree or equivalent. **HEDQUAL**

Household characteristics

We include a number of variables that reflect characteristics of the respondent's household:

Number of children	The number of children (aged under 18) living in the household. This variable is derived from information about the ages of individuals within the household. **P1AGE, P2AGE, ..., P10AGE**
Number of adults	The number of adults (aged over 18) living in the household. This variable is derived from information about the ages of individuals within the household. **P1AGE, P2AGE, ..., P10AGE**
Owner-occupier	(0,1) dummy for whether the household own the property in which they live. This variable is derived from **TENURE1**.
Household income	Position of the household in the income distribution. Question **HHINCOME** in the BSA asks respondents to indicate which of a range of gross income bands their household income falls into. Unfortunately, the exact number of these bands has varied from year to year. Since the real value of any given income (in terms of the goods and services that can be bought with it) is eroded over time by inflation, this makes comparisons of income between years rather difficult. We chose to assign the households in each income band to the average position of that group of households in the income distribution for that year. For example, households in a band that covered the 85th to the 95th percentile in the income distribution for a given year were given a ranking of 90.

Employment status

We include a number of dummy variables concerning the respondent's employment status:

Self-employed	(0,1) dummy. Individuals who are self-employed, whether working full- or part-time. Derived from **RECONPOS**.
Public sector worker	(0,1) dummy. Individuals who work in the public sector. Derived from **RINDSECT**.
Manufacturing sector	(0,1) dummy. Individuals who work in manufacturing industry whether in the public or private sector. Derived from **RINDSECT**.

Political and cultural variables

We also include a number of variables relating to the individual's political views and the newspaper that they read. Political affiliations were determined from answers to a number of questions:

> Generally speaking do you think of yourself as a supporter of any one political party?

Of those who do not support any party in particular:

> Do you think of yourself as a little closer to one political party than to the others?

Of those who do not feel closer to any party:

> If there were a general election tomorrow, which political party do you think you would be most likely to support?

The composite variable combined all strengths of feeling for a political party (support, feeling closer to or willing to vote for) into a single variable. From these, two dummy variables were created:

Conservative	(0,1) dummy. Those who identify with, feel closer to, or would vote for the Conservative Party. **PARTYID2**
Labour	(0,1) dummy. Those who identify with, feel closer to, or would vote for the Labour Party. **PARTYID2**
Tabloid reader	(0,1) dummy. Whether the respondent regularly reads a tabloid newspaper. Derived from a combination of two questions:

Do you normally read any daily *morning* newspaper at least three times a week? **READPAP**

and, depending on whether the respondent reads one or more:

Which one do you normally read?
Which one do you read most frequently? **WHPAPER**

The 'tabloid reader' dummy variable was created for those respondents who regularly read a tabloid newspaper (*Sun*, *Daily Star*, *Daily Mirror*, *Daily Express*, *Daily Mail*, *Today* and their Scottish equivalents).

Preferences for public expenditure

We used a number of questions that asked respondents about their priorities concerning public expenditure programmes and their attitudes towards increasing expenditure on particular programmes, bearing in mind possible consequences for tax bills. The variables used in the results are:

Health is top priority	(0,1) dummy, with a value of one for those respondents who chose health as their top priority for increased public expenditure from a range of government expenditure programmes that included education, law and order, social security and defence amongst others. Derived from **GVSPEND1**.
More health expenditure even if taxes rise	(0,1) dummy. Those individuals who wanted 'more' or 'much more' health expenditure, even if this required a tax increase to pay for it. Derived from **GVSPEND2**, which was asked in 1990 and 1991 only.

Satisfaction with the NHS

We include a number of variables that convey respondents' satisfaction with the services provided by the NHS. This set of questions were phrased as follows:

All in all, how satisfied or dissatisfied would you say you are with the way in which the National Health Service runs nowadays?

Respondents then had to choose a phrase from the list of options: 'very satisfied', 'quite satisfied', 'neither satisfied nor dissatisfied', 'quite dissatisfied' and 'very dissatisfied'.

Dissatisfaction with the NHS overall	This variable was derived from question **NHSSAT** which asked respondents about their dissatisfaction with the NHS overall. In some cases, it is transformed into a (0,1) dummy, with a value of one assigned to those individuals who were dissatisfied with the quality of service.
Dissatisfaction with NHS in-patient services	This variable was derived from question **INPATSAT** which asked respondents about their dissatisfaction with NHS in-patient services. In some cases, it is transformed into a (0,1) dummy, with a value of one assigned to those individuals who were dissatisfied with the quality of service.
Dissatisfaction with NHS out-patient services	This variable was derived from question **OUTPASAT** which asked respondents about their dissatisfaction with NHS out-patient services. In some cases, it is transformed into a (0,1) dummy, with a value of one assigned to those individuals who were dissatisfied with the quality of service.
Dissatisfaction with NHS in- or out-patient services	(0,1) dummy, with a value of one for those respondents dissatisfied with the quality of either in-patient or out-patient services (or both). Derived from **INPATSAT** and **OUTPASAT**.

2 Variables derived from *Regional Trends*

Regional Trends contains a range of data that might be taken as indicative of the 'quality' of NHS treatment within a given Regional Health Authority (RHA). This could be merged with the individual-level data obtained from the BSA survey since the survey provides ward-level information on each household's address. The indicators of service quality used are as follows:

Waiting-lists	The number of individuals (per 1,000 individuals living within an RHA area) who are on a waiting-list for an NHS operation in the respondent's area.
Long-term waiting-lists	The number of individuals (per 1,000 individuals living within an RHA area) who have been on a waiting-list for an NHS operation for 12 months or more in the respondent's area.
NHS expenditure	The overall level of expenditure (per capita) of the RHA operating within the respondent's area. This variable is included in the regressions in log form.

HQ expenditure	The overall level of expenditure (per capita) at the relevant RHA's headquarters.
Expenditure on support	The overall level of expenditure (per capita) on support services by the RHA operating within the respondent's area.
Expenditure on diagnosis	The overall level of expenditure (per capita) on diagnosis and treatment by the RHA operating within the respondent's area.
Total NHS staff	The number of staff per 10,000 population employed by the RHA operating within the respondent's area.