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The Reasons for Non-Corporate Private Health Insurance Purchase in the UK: The Results of a New Survey and an Econometric Analysis of the Determinants of Purchase

by

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Abstract

This paper presents the results of a detailed survey designed to explore the factors associated with purchase of private health insurance in England. The survey, a nationally representative survey of the population of England aged 25 to 70, was carried out in the first 4 months of 1987. The achieved sample was 1360 individuals. The survey sought detailed information on both the reasons for health insurance purchase and the reasons for non-purchase by individuals and families. The paper is in two parts. In the first part the survey is analysed in depth. Tables are presented showing the pattern of health insurance across different socio-economic groups and regions of England. These tables are compared to those from the latest General Household Survey (GHS) which asked questions on insurance (the 1983 survey). The large size of the current sample means that the results in this part of the discussion paper can be treated as a partial up date to the GHS. In addition, the paper examines the motives for self purchase, consideration of purchase and non-purchase of health insurance.

In the second part of the paper, multivariate analysis is used to examine the determinants of self-purchase and consideration of purchase. The econometric estimates indicate that actual purchase and consideration of purchase should probably be treated as two separate events.

INTRODUCTION

In this paper we examine the responses to a detailed survey of consumers' attitudes to private health insurance. Respondents were derived from a random survey of the non-institutional population of England aged between 25 and 70 years. The sampling frame was the electoral roll. The original sample size was 2125, the achieved survey size was 1360, representing a 64% response rate. The survey was designed to explore, in depth, attitudes towards health insurance purchase. In particular, the survey sought information on the reasons for the purchase of health insurance and for the consideration of health insurance purchase. For each respondent, data were collected on household composition, socio-economic characteristics, self reported health status, recent health care utilisation, present health insurance coverage, consideration of cover if not currently insured, reasons for purchase or non purchase of health insurance and attitudes towards the private health care sector. Attitudinal questions were a mixture of recorded and open-ended. The data were collected in the spring of 1987.

In the first part of the paper we examine the correlates of insurance cover. We describe the insured in the sample, distinguishing between those with self-purchased cover and those with company (employer purchased) cover. We examine the differences and similarities between the insured and the uninsured, and between those who have seriously considered health insurance purchase and those who have never considered health insurance purchase. We compare some of the results from the present survey with those from the 1983 General Household Survey (GHS). The 1983 GHS was the last in which questions on private health insurance cover were asked. As our sample is fairly large and is a representative sample of the population of England aged between 25 and 70, the results of the present survey can be

seen as a partial update to the GHS findings.

In the second part, we present a multivariate exploration of the determinants of consideration of purchase and actual purchase of health insurance. This exploration is undertaken by means of econometric estimation.

PART 1: PRIVATE HEALTH INSURANCE IN ENGLAND: THE RESULTS OF THE 1987 CENTRE FOR HEALTH ECONOMICS SURVEY

We begin in section 1 with an outline of the insurance coverage in the sample. In Section 2 we compare the insured and uninsured. In both sections we compare our results, wherever possible, with the 1983 GHS. In Section 3 we examine different groups within the insured. In Section 4 we present a detailed analysis of the reasons given by respondents for purchase and non-purchase and for consideration of purchase and non-consideration of purchase.

1. INSURANCE COVERAGE

The proportion of the sample covered by insurance was 15.5 per cent. The comparable 1983 GHS figure was 7 per cent. In part, the difference between the two figures is due to the more limited nature of the present survey sampling frame; this sample excludes the 16-25s and the over 70s while the GHS is a sample of all persons aged 16 and over. In both the excluded groups the proportion of insured is lower than the population average (GHS, 1982 and 1983). However, the difference in the total number insured also reflects the growth in the insurance market between 1983 and 1987. In 1983 it was estimated that about 7.6 per cent of the population were covered, in 1986 (Laings 1987) this figure was 9.4 per cent.

Insurance can be purchased by an individual to cover him/herself and his/her family. This type of purchase may either be made individually or through a work based scheme. Alternatively, insurance cover may be purchased by an employer for employees and their families. The first type of purchase is referred to as individual purchase, the second type as group purchase and the third as employer purchase. In Table 1 we present the

breakdown of insurance by subscriber type in our sample and compare this distribution with the GHS. Although the classification scheme of the current survey is not identical to that of the GHS, comparisons can be made across broad groups. In comparison to the 1983 GHS, the proportion of self-purchased insurance has fallen, and the proportion purchased by an employer has risen. This mirrors the change in sales of subscriptions and estimated number of subscribers covered. In 1983, for the three leading suppliers (the provident associations BUPA, PPP and WPA), 28 percent of subscriptions were individual, 22 percent group and 49 percent corporate. The estimated proportions for the same three providers for 1986 (the latest year for which figures are available) were 27, 18 and 54 per cent respectively (Laings 1987). However, it is worth noting that in our sample (and in the market) self-purchased cover, whether bought individually or through groups organised through an employer, still accounts for around 50% of purchase.

Table 1: Insured by Type of Scheme

	CHE Survey %	GHS 1983 %
Individual	55	24
Group		34
Company		
employer pays whole subscription	26	24
employer pays part of subscription	17	14
Not known		4

2. THE INSURED AND THE UNINSURED

Differences between the insured and uninsured have been examined in

the 1982 and 1983 GHS reports and by means of econometric models of the demand for health insurance purchase (Propper 1987, Smith 1988). These analyses indicate that cover is positively associated with income, employment, higher positions in the occupational ladder and household location in the South East. The extent and direction of association of purchase with health status was less well defined. The aims of the current survey were first, to explore these associations in more depth, and second, to examine the relationship between purchase and factors which are not measured in the two primary UK secondary data sets (the GHS and the Family Expenditure Survey). These factors include beliefs as to the role to be played by the private sector in health care provision and attitudes to risk.

In our comparison of the insured and uninsured, we expected to observe positive relationships between insurance purchase, income, employment status and variables positively associated with income. We expected the relationship between health status and purchase to be non-linear; the very sick and those in very good health to be less likely to purchase health insurance, the former because the private sector does not provide treatment for chronic conditions, the latter because they are not likely to require much treatment. We expected there to be a negative association between purchase and political attitudes against private sector provision of health care. Finally, previous work (Propper 1987) gave no clear indication of the expected direction of the association between attitude to risk and purchase, although the general economic framework would suggest that the more risk averse are more likely to buy insurance.

In the main, the survey results confirm these hypotheses. The factors examined are the demographic characteristics, self-assessed health status,

recent utilisation of the health services (both public and private), attitudes to the provision of health care by the private sector, housing tenure, economic activity and income of the respondents. Where appropriate, the bivariate differences between the insured and uninsured were tested statistically.

2.1 Demographic characteristics

The insured and uninsured in the sample do not differ significantly in terms of either household size (number of adults and/or number of children) or sex, although slightly more of the insured are in households with 2-4 persons and slightly more of the insured are male than female (17% compared to 15% respectively). A comparison with the distribution across sexes of the insured in the GHS indicates a similar slight difference between the proportion of men and women who are insured (8% as compared to 7% respectively). In our survey there are significant differences in the age of the insured and the uninsured. The insured are over-represented in the 35-54 age groups and under-represented in the under 35 and over-64 age groups. The distribution is as we would expect, in that the young are generally in better health and have lower income, and so are both less likely to require insurance and less likely to be able to afford it. The over-64s are in poorer health, but may face restrictions on insurance purchase. Until June 1988 no new policies were offered to persons over 64, and to date only one company offers new policies to the 65-74 age group. In addition, the private acute sector (for which insurance in available) may not provide the type of care required by the elderly. The age distribution of cover of our survey is similar to that of the 1983 GHS, though the finer age breakdown in our survey enables us to establish that for those aged between 25 and 64 coverage is highest amongst the 45-54 age group.

Table 2: Distribution of Cover by Age

CHE Survey		1983 GHS	
Age	%	Age	%
		0-15	7
25-34	16	16-44	8
35-44	18		
45-54	21	45-64	9
55-64	16		
65-69	8	65-74	4
		75+	3

As would be expected given the age distribution of insurance, a higher proportion of the insured are married than are single. Additionally, a higher proportion are married than are widowed, divorced or separated. Again, the marital status distribution is close to that of the 1983 GHS.

Table 3: Percentage of Persons Covered by Marital Status

	CHE Survey	1983 GHS
	%	%
Married	19	9
Single	9	5
Widowed/divorced/separated	10	3

The higher proportion in the widowed, divorced or separated category in our sample could be explained by the difference in sampling frames. Our survey excluded the over 70s who are more likely to be widowed and, from Table 2, are more likely not to have insurance.

Finally, the insured differ significantly from the uninsured in terms of regional distribution. The insured are concentrated in the South-East of England, particularly the Outer Metropolitan Area. The distribution is again similar to the GHS, indicating that with the exception perhaps of the West and East Midlands and the Outer Metropolitan Area, the rate of growth in cover has been similar across all regions. The faster growth rate of the Midlands may reflect economic growth in this area. The slower growth rate in the Outer Metropolitan Area could reflect some kind of saturation in the market. However, as the sampling frame of our survey differs from that of the GHS, this difference in regional distribution should not be given undue weight. In general, the distribution of cover across demographic characteristics is similar in the current survey to the GHS, except that cover is at a higher level in the former.

Table 4: Percentage Covered by Private Medical Insurance by Region

	CHE Survey	GHS 1983
England		
North	6	3
Yorkshire and Humberside	11	5
North West	12	6
East Midlands	19	7
West Midlands	19	7
East Anglia	15	7
Greater London	15	8
Outer Metropolitan Area	25	14
Outer South West	21	10
South West	16	8

2.2 Self-assessed health status

The questionnaire included a number of questions designed to provide measures of current health status of the respondent and other household members. The insured and the uninsured appear to differ significantly on some, but not all, of these measures.

Respondents were asked to rank their health status on a 5 point scale ranging from very good to poor. A significantly higher proportion of the insured rated their health as very good or good; a significantly lower proportion of the insured rated their health as poor. The pattern is repeated in responses to a question about frequency of worry about health; significantly fewer insured than uninsured persons rated they worried always or often about their health. However, there were no significant differences between the insured and the uninsured in terms of having a chronic medical condition, other household members having such a condition or worry about the health of other household members.

2.3 Health service utilisation

The survey provides data on GP, dental, accident and emergency and hospital outpatient visits in the last 12 months, and inpatient stays in the three years prior to the interview. The uninsured were significantly more likely than the insured to have had GP care and more likely, though the difference is not significant, to have used outpatient services. There were no significant differences between the two groups in the utilisation of inpatient services. In contrast, the insured were significantly more likely to have used dental services. Not surprisingly, if the insured used the medical services, they were significantly more likely to have used the private sector.

The questions asked about health service use in the CHE survey and the GHS are not easily comparable, as the GHS questions cover a shorter time period. We have therefore not attempted comparisons between the responses to this set of questions.

2.4 Political attitudes and education

Respondents were asked to indicate which one of three statements about the proper role for the private sector in UK health care they most agreed with. The statements were intended to reflect a range of attitudes towards private provision of health care. Table 5 shows a clear association between the responses and insurance cover. Those who saw no role for the private sector were significantly less likely to purchase insurance than those who saw either a role for the private sector outside NHS facilities, or than those who thought private provision should be allowed both inside and outside the NHS.

Table 5: Attitudes to Private Medicine by Insurance Cover

	Uninsured		Insured	
	n	%	n	%
Private medical treatment in all hospitals should be abolished.	117	11	9	4
Private medical treatment should be allowed in private hospitals but not NHS hospitals.	539	49	84	37
Private medical treatments should be allowed in both private and NHS hospitals.	449	41	135	59

Missing observations = 27

In terms of education the insured are significantly more likely to have left school later and have higher educational qualifications than the uninsured, though the latter association is only significant at the 10% level.

Table 6: Age Left School by Insurance Cover

Age left school	Insured %	Not insured %
Under 16	40	57
16-17	44	32
18 and over	19	10

Table 7: Qualifications by Insurance Cover

Qualifications	Insured %	Not insured %
None	32	57
CSE, O, ONC, City and Guilds	33	26
A, HNC, Professional Qualifications	21	12
University	14	6

2.5 Housing tenure

There appears to be a significant association between housing tenure and insurance coverage. The insured are significantly more likely to be owner-occupiers and less likely to be local authority tenants. It was found that 90 per cent of the insured are owner-occupiers and only 6 per cent are local authority tenants. The comparable figures for the uninsured are 70 and 24 per cent. An association between housing tenure and

consumption has been found for other goods, such as tobacco and alcohol although the exact role of tenure in the purchase decision is not always clear. Tenure is obviously strongly associated with current income, and may also be associated with political attitudes, life-cycle income and expectations of future income. It is also perhaps associated with the rather nebulous concept of 'life-style'. Later in this paper we shall investigate whether tenure remains significantly associated with insurance cover once some of these factors have been taken into account.

2.6 Economic activity status and income

As might be expected from the above discussion, the insured differ significantly from the uninsured in terms of economic activity. The insured are significantly more likely to be in full-time employment and less likely to be unemployed, retired, keeping house or in full-time education. More of the insured are self-employed, but fewer are in part-time employment.

Table 8: Work Status of the Insured and Uninsured

	Uninsured %	Insured %
Full time employee	40	56
Part time employee	13	9
Self employed	7	10
Waiting to take up work sick, looking for work, unemployed	9	3
Full time student	1	1
Retired	11	6
Keeping House	19	16

Missing observations = 2

The categories of economic activity status in our survey differ slightly from those in GHS, but equating our categories of 'retired' and 'keeping house' to the GHS category 'economically inactive', and our categories, 'sick', 'looking for work' and 'waiting to take up work' with the GHS 'unemployed', Table 9 indicates a similar distribution across economic activity in both surveys.

Table 9: Percentage of Persons in Category of Economic Activity who are covered by insurance

	CHE Survey %	GHS 1983 %
Working (full time & part time	19	9
Unemployed (including waiting, sick, looking for work)	5	2
Economically inactive (retired, keeping house)	12	5

As might be expected from Table 8, the insured appear to work significantly longer hours than the uninsured. Interestingly, they also are able to be away longer from work if ill without losing pay. Such an association is probably the result of the type of employment of the insured. However, this cannot be further explored in the current data set, as constraints on the length of the survey meant no details were collected on occupation or type of employment. However, there is no significant difference between the insured and uninsured in terms of the size of the establishment in which they work.

As might be expected from the above discussion, the insured have significantly higher (gross) income, both in terms of individual and, where appropriate, joint household income. Given the other differences in socio-

economic characteristics, this is not surprising. Again, we shall attempt to identify the separate effects of the various socio-economic variables, income included, later in this paper.

Table 10: Own Income by Insurance Cover

Weekly Income	Uninsured n	Uninsured %	Insured n	Insured %
Under £75	375	44	22	15
£75-149	241	28	25	17
£150-249	116	14	29	19
£250-449	111	13	48	32
£450 and over	14	2	27	18

Missing observations = 352

Table 11: Household Income by Insurance Cover

Weekly Income	Uninsured n	Uninsured %	Insured n	Insured %
Under £100	157	21	6	4
£100-199	218	30	24	17
£200-350	253	34	36	25
£350-599	99	13	58	37
£600 and over	10	1	20	14

Missing observations = 479

We turn now to two more detailed analyses of the insured in the

sample. The first is a comparison of the self-insured with those with employer-purchased (or corporate) cover. The second is an examination of the factors associated with the number of persons covered by the policy.

3. CORPORATE-COVER AND SELF-PURCHASE

As is shown in Table 1, about half the insured in the sample had purchased their own cover, just under 1/5 had part-financed their cover and the rest were covered by a policy wholly purchased by an employer. In the cases of part-purchase, generally the employer pays for the employee and the employee pays to have the cover extended to other members of his or her family. We sought to account for differences between these three groups in terms of the factors discussed in Section 1 above. Again, where possible, we compare the patterns in our survey with those presented in the 1983 GHS report.

3.1 Demographic characteristics

There are no differences between individuals with and without corporate cover in size of household, sex, marital status or region. However, type of policy is significantly associated with age. Those individuals covered by employer purchased policies tend to be younger, those with self-purchased cover older. Those with part-employer purchase tend to be concentrated in the 35-54 age range, as might be expected, given that this is the period in the life-cycle when most individuals have spouses and/or children. The different age bandings in the GHS make comparison a little difficult, but broadly the pattern in the CHE survey replicates the 1983 GHS.

Table 12: Distribution of Type of Scheme by Age

Type of scheme	CHE Survey: Age of covered individual					1983 GHS: Age of policy holder		
	25-34 %	35-44 %	45-54 %	55-64 %	55-70 %	16-44 %	45-64 %	65+ %
Individual pays all	14	22	33	25	7	46	52	91
Employer pays part	19	36	25	14	6	31	21	3
Employer pays all	29	24	35	13	-	18	13	-

Missing observations in CHE Survey = 10

3.2 Health status

There are no statistically significant differences between the three types of insured in the measures of health status collected in our data set. Additionally, there is generally no clear gradient in these measures from those with self-insurance, through part employer paid cover to full employer paid cover.

3.3 Socio-economic characteristics

There are few differences between the three groups in terms of the socio-economic characteristics measured in the survey. There are no significant differences in tenure or in political attitudes towards private health care, though respondents with full company cover are slightly less likely to agree with the statement that 'the private sector should be allowed both inside and outside the NHS'. As this group do not buy their own cover and gain nothing by opting out of a company scheme, this difference in support for the private sector is easily understood.

Individuals with self-cover are most likely to have left school prior to age 16, and those with part self-part company cover to have left school

before 18. The highest proportion of individuals who left school at 18 (or later) are in the company cover group.

The main difference between the groups is in terms of economic activity. The pattern is much as would be expected and is statistically significant. The (fully) company covered are most likely to be full-time employees, though a significant proportion of these are full-time housewives (covered by their spouse). None of those with (any) company cover are unemployed, sick or looking for work and only a very small number are retired. A similar proportion across all groups have part-time employment but a higher proportion of the self-covered are self-employed, some of whom may be part-time. However, these differences in employment status do not translate into statistically significant differences in either work hours, number of persons in place of work, length of time that can be taken from work due to illness without loss of pay (though this is slightly shorter for the self-covered) or income. However, the own income of those with company cover is higher than that of the other two groups, and there are more individuals with self or part-employer purchased cover whose joint income is in the lower categories of the income scale.

Table 13: Employment Status by Type of Cover

Employment Status	Individual pays all %	Employer pays part %	Employer pays all %
Full time employee	44	67	73
Part time employee	10	8	9
Self employed	14	6	2
Sick, looking for work	6	0	0
Retired	10	3	2
Keeping House	17	17	13

n = 205

4. NUMBER OF PERSONS COVERED BY INSURANCE POLICY

Within the sample of insured, individuals have policies which provide cover for different numbers of persons. In Table 14 it appears that most policies cover either policy holder and spouse or policy holder, spouse and children. We examined the data for significant differences between respondents with different numbers of persons covered. Number of persons covered is significantly associated with size of household, sex of respondent, age and marital status. The only suprising difference is the difference across the sexes. This is perhaps a reflection of the higher proportion of males with company cover who had cover for self-only. There were no differences in region and location, in rating of own health or worry about own health, but those with cover for families stated that they worried more about the health of other family members. There appeared to be no differences between the groups in terms of utilisation of GP, dental, outpatient or inpatient medical services. The groups did not differ in terms of political attitudes, education or housing tenure. However, there were significant differences between the groups in economic activity and income. The differences in economic status appeared to reflect demographic differences between the groups. Those with cover for self-only tend to be younger and hence more likely to be in full-time employment. However, the differences in income may reflect not only differences in demographic characteristics but also differences in ability to pay. Within those individuals with cover for more than self, those with cover for fewer persons tend to have lower income than those with cover for more. Those with cover for self only more closely resemble those with cover for all family members. This pattern of association occurs for both own and joint income, but is only statistically significant for own income.

Table 14: Number of Persons Covered by Policy

	n	%
Self only	33	13
Self and spouse	87	35
Self, spouse and children	91	36
Spouse or spouse and children only	19	8
Other	21	8

To end this description of the insured, we compared individuals who once had insurance cover but currently do not have cover with both the currently insured and the uninsured. Individuals who were once covered by insurance are more likely to be living alone and more likely to be widowed, divorced or separated than the rest of the sample. In all other respects they tend to resemble the insured rather than the uninsured, except in terms of household income. While their average own income tends to be higher than the average for the rest of the sample, their household income is similar to that of the rest of the sample. This is almost certainly because more of the once-insured tend to live alone and so, for this group own income is the same as household income. Thus their own income is comparatively higher than, but their household income similar to, that of the rest of the sample.

5. PURCHASE, CONSIDERATION, AND NON-CONSIDERATION OF HEALTH INSURANCE

5.1 Associations with demographic, socio-economic and health status variables

One of the main purposes of the survey was to study those individuals

who do not have insurance cover. The non-insured can be divided into two on the basis of attitude to insurance purchase. In the first group are those individuals who stated that they had seriously considered health insurance purchase, in the second are those individuals who stated that they had not considered purchase of health insurance. Our intention is to examine whether those individuals who have never considered insurance differ significantly either from those who have bought insurance and/or from those who have seriously considered it.

The breakdown of the sample in terms of consideration of insurance cover is given in Table 15. Of the sample, 15.3 per cent already have insurance. Of the rest, 76 per cent of the sample stated that they have never seriously considered insurance, and 23 per cent stated they had seriously considered purchase. Of those with corporate cover, 55 per cent stated that they would consider health insurance purchase were their corporate cover to cease. Of all those who had considered insurance, 22% had been considering purchase for under a year, 25% for 1 to 3 years, 20% for 3 to 5 years and 34% had been considering health insurance purchase for over 5 years. Clearly, there is a considerable gap between consideration of insurance and the decision to buy.

Table 15: Attitudes to Insurance Purchase

	n	%
Currently have cover, self purchase	116	8.5
Currently have cover, employer purchase	91	6.7
Have seriously considered cover	274	20.1
Have not seriously considered cover	877	64.5
Missing	2	0.1

We first examine the socio-economic characteristics of the three groups, and then we present a detailed analysis of the reasons given by respondents for purchase, serious consideration of purchase or non-consideration of purchase.

The three groups appear to differ significantly in terms of demographic characteristics. Those who have never considered insurance tend to be older, concentrated particularly in the over 55-age group. Those who have seriously considered insurance but not yet purchased it tend to be younger, concentrated in the under-45 age group. Finally, those with cover tend to be more highly concentrated in the 45-54 age group. Correspondingly, the covered are more likely to be married or single, those who have seriously-considered purchase to be single and those who have never seriously-considered purchase to be widowed, divorced or separated. In terms of regional location, the seriously considered appear to resemble those with cover, whilst a higher proportion of those who have not seriously considered insurance are located in the North East and North West of England. In conclusion, in terms of these demographic variables, the seriously considered appear to resemble the covered rather more than they resemble the never-seriously-considered group.

The patterns of association with health status are more complex. In terms of self-assessed health status, the never-considered are significantly more likely than all other groups to rate their health as poor. The seriously-considered do not differ significantly from those with cover. However, in terms of worry about health, the never-considered are concentrated at the two ends of the scale, whilst the seriously-considered

appear to worry more than the other groups. This worry (or lack of it) does not appear to be associated with the respondent having a condition which requires regular medical treatment or limits daily activities. In terms of worry about others' health, the never-considered again tend to be concentrated at the two poles of the scale. The rest of the sample are scattered across the five categories of the scale. In this case worry may be associated with presence of a person with a medical condition as the never-considered group are more likely than all others to have a family member with a medical condition that requires regular medical treatment.

The patterns of association with health services utilisation are once again quite complex. There is a clear gradient from the never-considered, through the seriously-considered to the insured for GP visits, the never-considered being more likely to have had a visit in the last 12 months, the self-insured least likely. However, this pattern is not repeated for outpatient visits in the last year or inpatient stays in the last three years. Those with self-cover or who have seriously considered cover are most likely to have had an outpatient visit and those with insurance most likely to have had an inpatient stay, although this latter difference is significant only at the 10% level. Finally, there is a clear gradient for dental visits, but in the opposite direction than that for GP visits. The insured are most likely to have had a visit in the last year, the never considered least likely.

Although complex, perhaps some pattern can be derived from these results. To the extent that frequent GP visits and the presence in the household of a person with a chronic medical condition are measures of poor health status, the never-considered seem to be in poorer health than other groups. This is perhaps confirmed by the poorer self-health rating of

this group and the greater worry about health shown by some members of this group. On the other hand, those who have seriously considered insurance tend to be in better health, as measured by self-rating and GP visits, but tend to worry more, perhaps because of greater recent use of hospital facilities. Finally, dental visits should be viewed as rather a different variable from the other measures of medical care utilisation because of the positive money price of dental care. The relationship between dental visits and attitudes to insurance purchase is perhaps not a reflection of the association between health status and attitude to purchase but a reflection of the relationship between income and attitude to purchase. The association between income and use of dental services is clearly positive, the respondent group with the highest income (those with corporate cover) using dental services the most, and the group with the lowest income (the never-considered) using dental services the least. In addition, the rank order of the use of dental services by the other two groups (the self-covered and the seriously-considered) is the same as the rank order of their income.

The association between attitude to purchase and education and employment factors are clear. The groups lie along a continuum, the never-considered at one end, the company-covered at the other, and the seriously-considered and self-covered lying between these two poles. The never-considered have lowest educational qualifications, are less likely to be employed and have the lowest income. Closest to this group are the seriously-considered, closest to these are the self-covered. Interestingly, in terms of work status, the seriously-considered are more likely to be in work than the never-considered, but are more frequently employed on a part-time basis than the insured.

The pattern of association between consideration of insurance and attitudes to private medicine are slightly different. As might be expected, those most against private provision are the never-considered. However, the group most positively in favour of the private sector are the self-covered rather than the company-covered. The seriously-considered again lie between the insured and the never-considered. This pattern in attitudes to the private sector is easily explained by the different costs faced by the self-covered and company-covered. Insurance cover for company-covered employees is not associated with avoidable costs. Cover is paid for by an employer and, although taxed, generally the amount paid for cover cannot be taken as income. The self-covered, on the other hand, have avoidable costs equal to their annual premium. For those who incur the greater costs, the perceived benefits of insurance must be greater, and so perhaps, attitudes to the private sector must be most positive.

The data suggest that income (and associated variables, education and tenure) are key determinants of attitudes towards insurance purchase. The relationship between health status and attitudes to purchase appears to be less linear. Those who have not considered purchase are both in better and in worse self-rated health than other groups. It is likely that the never-considered group is composed of (at least) two distinct groups; the healthy and young who do not consider health insurance because they do not currently need any care and an older, sicker and perhaps poorer group, who do not consider insurance for financial reasons. Those who consider health insurance appear to have similar health status to those who currently are covered by health insurance, but are perhaps more anxious about their health.

The results suggest a key role for income in the decision to purchase health insurance. This, however, has been shown elsewhere (e.g. Propper, 1987; Smith 1988) and it is not clear from previous analyses whether income in an 'enabling' factor or a 'trigger' factor. The present dataset was designed to allow us to explore more qualitative reasons for purchase, serious consideration and non-consideration of insurance.

5.2 Reasons given for purchase, serious consideration of purchase or non-consideration of purchase

We begin with an analysis of the reasons given for either purchase or for seriously-considering health insurance purchase. Those with self-purchased insurance were asked to select, from a list of 11 factors, the three most important reasons for their decision to purchase. Those who had seriously considered purchase were asked to select, from the same list, the three factors which had been most important in their consideration of insurance. Table 16 shows the responses to these questions. The currently insured, the company covered who would consider self-purchase and those who were not currently covered but who had seriously considered purchase all selected, in similar proportions, the same set of factors. The 'expected health status of self and/or family' was the most important first factor, 'the choice of a time to go into hospital' the most important second choice and 'avoiding waiting lists' the most important third choice. Moreover, with current health status of self and/or family, in terms of proportions, these reasons appeared to dominate all others.

It is clear that while the primary reason for purchase/consideration of purchase is related to heath status, the perceived state of the NHS plays an important part. It also appears that the lack of choice or

Table 16: Reasons for Purchase or Serious Consideration of Purchase of Health Insurance

	Self-Insured	Corporate Cover: Seriously Considered	Not Insured: Seriously Considered
	All responses %	All responses %	All responses %
State of own health at time of decision/current health	4	3	7
State of partners/childrens health at time of decision	4	8	9
Expected future health status of self and/or partner, children	15	14	16
Choice of hospital	7	4	5
Choice of consultant	7	10	7
Comforts of private hospital	4	3	4
Greater information given in private hospitals	5	7	3
Quality of medical care in private hospitals	6	7	6
Quality of medical care in NHS hospitals	2	-	2
Being able to choose a time to go into hospital	18	21	15
Being able to avoid a wait for treatment	27	22	23
Other	1	1	2

control over timing of treatment is more important than having to wait per se, although long lists are obviously of concern to those who buy insurance or who are thinking of buying it. Quality, as distinct from choice over timing of receipt of medical care, seems to be relatively unimportant.

Respondents were asked whether there were other reasons for their purchase or consideration of purchase, but few gave other reasons and the reasons given tended to be re-expressions of the pre-specified list.

Health insurance purchase gives cover for one year only. Yet interestingly, future health status appears more important than current health status. Either individuals think treatment in the private sector will result in a future health status which is better than that resulting from treatment in the public sector, or health insurance purchase is seen as a long-term action, with purchase to be repeated every year without reappraisal of the initial decision. The lack of weight given by respondents to quality of medical care in either sector perhaps casts doubt on the first hypothesis. However, the responses given to a question asking respondents to state how long they intended to keep insurance if they had already bought it, or how long they would consider buying insurance for, gives support to the second interpretation. In all, 81% of respondents who currently buy insurance stated they intended to keep it for life. Of the remaining 19%, 66% stated they would only give it up if they could no longer afford it. Of those respondents who were considering purchase, 77% stated they were considering purchase either as a lifetime decision or for as long as they could afford it. From this, it appears that health insurance purchase is perhaps not a one period decision, re-evaluated annually when the policy is due for renewal, despite the fact that policies provide cover for one year only. Rather, the decision to purchase appears

to be a decision that is not revoked until circumstances change substantially, and the most important change of circumstances appear to be financial.

The importance of ability to pay is clearly seen in the reasons given by individuals who had seriously considered insurance, but who had not bought insurance. Of those individuals 43% stated that the cost was the most important factor against a positive decision to purchase. Cost, and/or its relationship to current personal financial circumstances, was the single most important reason given for not ever having seriously considered purchase of health insurance (Table 17). Health related issues, namely present health status and the adequacy of the NHS, were the second and third most cited reasons for non-consideration. The fourth most common reason was that the respondent was already paying for the NHS, which can either be seen as a statement of political principle (also frequently cited as a reason for non-consideration) and/or another cost related factor. The importance of cost is again apparent in responses to the question of whether individuals in this group saw themselves as likely to take out health insurance in the future. Only 15% answered in the affirmative. Of these, the highest proportion stated that the reason would be a change in financial circumstances. This group also cited health status and health service related reasons, and the catch-all reason of 'a change in family circumstances', which could subsume a financial change and/or a change in the perceived need for medical care (Table 18).

Table 17: Reasons Given by those who had not Seriously Considered Insurance for Non-Consideration

	First response %	All responses (max 3) %
Never thought about it	20	15
Cost/personal finances	28	24
State of health of self/family good	15	17
Too old/unhealthy	-	1
Stage in life cycle	1	1
NHS services are adequate	13	16
Against health insurance on principle	7	7
Already pay for NHS	10	13
Other	5	6

Total respondents = 877

Table 18: Reasons given by the Never-Considered Group for Consideration of Insurance Purchase in Future (first reason only)

	n	%
If personal finances change	51	38
If family situation changes (marriage/children)	23	17
If the NHS deteriorates	14	10
Changes in family health	10	8
Changes in own health	11	8
Later in life	18	13
Other/not answered	7	1

Total respondents = 134

5.3 Purchase and attitudes to risk

The purchase of insurance is an alternative to paying for private care if and when it is needed. As insurance premia are generally larger than expected losses, it is assumed that purchasers of insurance are risk averse. Further, the larger the sum over and above the value of expected loss the insurance purchaser is willing to pay, the more risk averse he or she is assumed to be. In order to examine whether there was such an association between financial risk aversion and health insurance purchase, we asked all groups whether they would pay for private care if and when needed rather than buying insurance. The question was phrased slightly differently for each group to allow for the fact that some had already purchased insurance, others had seriously considered it and yet others had never seriously considered it.

The responses are presented in Table 19. From these, it appears that those who are seriously considering insurance are generally more favourable to the idea of paying for private care if and when needed, than are the other groups. Those who are self-covered are least likely to be in favour, not surprisingly, as this group have actually purchased insurance. However, the extent to which the responses reflect attitudes to risk is perhaps less clear.

The reasons given for the attitudes to payment if and when needed appear to indicate that most individuals choose between insurance and paying at point of demand on the grounds of cost. The most frequently cited reason against paying at the point of demand was cost. Many of the

Table 19: Comparison of Attitudes to Paying for Private Care if and when needed by Current Insurance Status and Attitude to Insurance

Attitude to Insurance	Response to Question 'Would you consider paying for private care if and when needed rather than having insurance?'		
	Yes %	No %	Don't know %
Insured			
Self-covered	34	56	10
Company-covered			
would consider insurance	45	43	12
wouldn't consider insurance	58	19	23
Not insured			
seriously consider purchase	66	25	10
not seriously considered purchase	39	45	16

Open-ended question; first response only

already insured and those seriously considering insurance purchase stated that insurance was cheaper than paying for care when needed. In addition, many of those who stated that they would be interested in paying at point of demand gave the positive features of the private sector or the negative features of the NHS as their reasons, rather than the riskiness or lack of riskiness of the proposed action. There also appears to be a clear association between consideration of insurance and consideration of paying for private care. Thus, at least for the uninsured, it appears that consideration of paying for care if and when needed reflects attitudes to private care rather than attitudes to risk. In addition, some of the answers of this group appear to reflect a lack of understanding or consideration of the difference between insurance and paying at point of demand.

For the currently insured, it is not clear whether the citing of cost

is a reflection of risk aversion, a misperception of the cost of insurance, a misperception of the risk of using the private sector or the response of very poor risks for whom insurance is (more than) actually fair. More of the self-insured and those considering insurance cited that insurance was cheaper than paying for care at the point of demand, but the preference for the one-off payment aspect of paying at point of demand is similar across all respondents. However, the security of private health insurance was cited most frequently by the self-covered. This is perhaps some indication that those with self-purchased cover are more risk averse than other groups in the sample. Such an interpretation would be consistent with economic analysis and is not inconsistent with the justification of purchase in terms of cost.

6 CONCLUSIONS TO PART 1

This paper has outlined the distribution of private health insurance in England and examined differences within those covered by insurance and between the insured and the uninsured. The distribution of insurance purchase and the differences between the insured and uninsured in this survey are similar to that of the 1983 GHS, although the level of cover in the current survey is higher, reflecting both the growth in cover and the different sampling frame employed in the two surveys. The insured in the current survey, as in the 1982 and 1983 General Household Surveys, tend to be aged between 35 and 64, live in the South East, in employment and have higher than average income. The insured do not appear to be in poorer health, as measured either by self-health ratings or by recent utilisation of health care services.

The survey has also made it possible to examine differences within the

insured group. As might be expected, those with corporate cover are more likely to be in full-time employment and have slightly higher income than the rest of the insured, but in other socio-economic and demographic characteristics they do not not differ greatly as a group from the rest of the insured. Interestingly, those with company cover tend to be less in favour of the private sector provision of medicine than the rest of the insured. In terms of the variables measured in the current data set, the part-insured do not differ strongly from either those with full self-cover or those with full corporate-cover. The number of persons covered by a policy seems to be a function of household size (and thus also age of the respondent), but also seems to be associated with income.

The first part of the data analysis has replicated, extended and updated the findings published in the 1982 and 1983 GHS. However, the data allowed exploration, not only of the parameters of purchase, but also of the factors associated with consideration and non-consideration of insurance. In addition, the data allows exploration of the time horizon over which individuals make decisions about health insurance.

From the results it appears that certain factors influence both the decision to consider purchase and the purchase decision. Other factors, however, affect the two decisions differently. The decision to buy appears to be one taken over a long period and one which once made is not re-evaluated until circumstances change substantially.

Ability to pay appears to be a key determinant both of purchase and the consideration of purchase. A high proportion of those with low income do not consider health insurance i.e. health insurance does not appear to be a good contained in their choice set. Others in the low income group

have considered insurance, but do not buy it because of the cost. Were their income to rise then purchase might occur. Equivalently, the main reason cited by those who already have cover for not buying insurance would be a fall in ability to pay.

Changes in future health status was the single most important reason given for both consideration of purchase and for actual purchase. However, the second and third most important factors in both the purchase decision and the consideration decision were NHS related. Interestingly, the state of the NHS was also frequently given as a reason for not considering purchase. The attributes of private sector care seemed to be relatively unimportant in either the decision to consider or the decision to buy. It would appear that private sector care is derived not because of the better hotel facilities or opportunities for greater information, but simply for the absence of the negative attributes (queues, uncertain dates of admission) of NHS care.

Attitudes towards the role of the private sector in health care are associated both with the possibility of purchase and with consideration of purchase. Attitudes and income are clearly correlated. Whether attitudes merely reflect income or the two are separate determinants of consideration and/or purchase are questions which cannot be answered by the present analysis, but require multivariate analyses.

Finally, attitudes towards risk appear to have different weight in the consideration of and purchase of insurance decisions. It may be possible to distinguish between those who have bought insurance and those who have only considered insurance on the grounds of attitude to risk; those who have bought appearing more risk adverse. But, for all others in the sample, the (expected) cost of private sector care appears to be such that

few individuals can contemplate paying for care if and when needed. Therefore, if private sector care is desired, insurance appears to be the only way of paying for it. Obviously the purchase of insurance is a form of risk reduction, but the absolute difference between the premia and the (expected) cost of care make it difficult to disentangle the role of risk aversion from that of the budget constraint.

Part 2: MULTIVARIATE ANALYSIS OF THE DETERMINANTS OF CONSIDERATION OF PURCHASE AND OF SELF-PURCHASE

Having examined bivariate patterns in the data in some detail, we turn now to more formal multivariate analysis of some of the associations explained above. The high degree of collinearity of many socio-economic variables means that multivariate analysis is often necessary to identify the effect of a single variable of interest. So, for example, multivariate analysis is required to disentangle the effect of income from regional location. We used multivariate analysis to examine three issues. The first was an examination of the differences between individuals who have purchased private health insurance and those who had not. The second was a comparison of those individuals who had either bought insurance or who had seriously considered buying health insurance with those who have never seriously considered purchase. The third was an examination of the differences between those who had bought insurance and those who had seriously considered insurance (but had not purchased it). Individuals with corporate cover were excluded from all three analyses. These analyses were undertaken to explore the issues of restricted choice sets and 'captivity' in health insurance purchase.

In modelling demand for a good, it is assumed that this good is part of the choice set of all potential demanders. Some of the potential demanders will buy some of the good and others will not, depending on the utility they derive from consumption of the good and their budget constraints. Some goods are not divisible and the consumer can only choose between buying and not buying. An example would be choice of transport mode for the journey to work. While different issues arise in the choice of any positive amount of some good and choice of some of a good versus

none of the good, extensions to choice models permit the analysis of the choice of some versus none of a good. Such extensions are generally known as discrete choice models (McFadden, 1974; Domencich and McFadden, 1975; Amemiya, 1981; Maddala, 1983).

The theory behind discrete choice models requires that the analyst, who usually has knowledge only of revealed choices, be able to specify the set of alternatives actually compared in the choice process. This set of alternatives is the choice set. However, it may be the case that some goods are not in the choice set of certain individuals i.e. the choice sets of certain individuals contain fewer goods than those of other individuals. In the limit, for certain classes of goods, only one good in the class may be part of the choice set for a subset of the decision-makers under consideration. The case in which the decision-makers' choice set contains only one alternative (of the class of goods being studied) has been called captivity. Captivity is an idea used in analysis of transport mode choice and economists working in this field held have made several studies of the problems it leads to. Stopher (1980) and Williams and Ortuzar (1982), for example, give numerical and empirical verifications of the problems that can arise when choice sets are incorrectly specified. Stopher (1980) and Swait and Ben-Akiva (1985) give empirical examples of problems arising from captivity for estimation of, and forecasting with, a binary choice model.

Restricted choice sets and captivity may be relatively easy to establish in the analysis of transport mode choice. For example, if commuters are hypothesised to choose between public and private modes of transport for the journey to work, and a certain group live in a community with no public transport, then this group is likely to be captive to a private mode of transit. Captivity may also be a useful idea in choice of

health insurance. To get health care in the UK, health insurance purchase is not necessary. Indeed, the NHS is designed to provide a full range of health care services and the private sector provides only a limited alternative. In addition, insurance is an expensive good. For these reasons some individuals may not consider health insurance to be a choice open to them; in other words, their choice set does not contain the good health insurance. In a framework of the binary choice between some and no private health insurance purchase, these individuals are captive to the no insurance prospect. Economists in transport such as Stopher (1980), Kitamura and Lam (1984) and Swait and Ben-Akiva (1985) have shown that when captivity is present, estimation of binary choice models will result in biased estimators if captivity is not taken into account. Further, it is useful for the researcher to be able to distinguish between the parameters which determine captivity and those which determine choice, conditional on no-captivity.

The aim of the current paper is to explore the issues of captivity in the demand for health insurance. We make the assumption that individuals who state that they have never considered health insurance purchase are captive to the no-insurance prospect. Having made this assumption, we explore both the determinants of captivity and the factors determining choice of insurance, conditional on not being captive. In addition, we have used the data to replicate an earlier study (Propper 1988) which estimated the demand for health insurance using the GHS as the data base. This study did not take into account captivity as there was insufficient data to distinguish the captive from the non-captive.

We sought to estimate the probability of undertaking a certain action or being in a certain state. We therefore formulated a set of different probit models. For estimation, respondents with corporate cover were

excluded from the data base, as it was felt that responses to questions about consideration of, or purchase of, insurance might be unreliable for this group. To replicate the GHS analysis, the dependent variable was defined as 1 if the individual had self-purchased cover and 0 otherwise. To estimate the determinants of captivity, the dependent variable was defined as 1 if an individual had either self purchased health insurance cover or had seriously considered insurance and 0 otherwise. To estimate the conditional decision to buy insurance (conditional on no captivity), the sample excluded all those who had not seriously considered insurance, and the dependent variable was defined as 1 if an individual had purchased insurance and 0 if he/she had seriously considered purchase.

The set of independent variables used in each of the three analyses was determined by the results of the bivariate analysis reported in Sections 2-5 above. In general, the hypotheses we wished to test were whether statistically significant bivariate associations were also significant once the effect of other, collinear factors had been taken into account. In addition, we wished to explore whether the estimation results were dependent on the specifications of income (joint household or own income) and whether interactions between income and other variables, particularly health ratings, were important[1].

1. SELF INSURED COMPARED TO ALL UNINSURED

The estimation in part replicates Propper (1987) which used the 1982 GHS as the database. The results indicated that income, work, status, class and regional location were significant determinants of the probability of purchase. From the current data set, bivariate analyses appear to confirm these results and in addition, suggest that age,

political attitudes, attitudes to risk and health status (in a non-linear manner) may be important. The estimation results using the current survey as the data base are presented in Table 20. The test statistics for normality (Bera, Jarque and Lee 1982) indicate that the model cannot be rejected on grounds of misspecification of the distributional assumptions. The parameter estimates are generally well defined, and of a priori expected sign.

Purchase is positively associated with income, education qualifications, positive attitudes towards private sector provision and age. Council house tenure makes it significantly less likely, controlling for other factors in the analysis, that purchase will be positive. Risk aversion, as measured by whether individuals would be prepared to pay for private care if and when needed rather than take out insurance, was positively associated with purchase i.e. those individuals who stated they would not consider paying if and when needed as an alternative to private health insurance were significantly less likely to purchase insurance. The presence of a person in the household with a medical condition that requires regular treatment is positively associated with purchase.

The parameter estimates for health status of the respondent and recent health care services utilisation are small and poorly defined. Interactions between health status and income did not appear to be important, nor are interactions between income and other variables except that with qualifications. The sign of the coefficient on the variable noqual*inc indicates that the negative effect of a combination of low income and no qualifications is greater than would be predicted by the separate effects of low income and no qualifications. No demographic factors other than age appear to be important. Finally, it appears that the regional imbalance in the distribution of insurance purchase can be

Table 20: Probit Estimates of Decision to Purchase Insurance : No Sample Selection

Variable	Coefficient	Standard Error	t-ratio	Mean o variab
intercept	-2.482	0.331	-7.50	1.00
alone	0.0293	0.223	0.13	0.09
age	0.113	0.049	2.31	2.72
South East	0.143	0.116	1.23	0.42
hpoor	0.254	0.203	1.25	0.10
othercond	0.398	0.128	3.11	0.24
priv.atts	0.468	0.096	4.86	2.33
LArent	-0.668	0.210	-3.18	0.22
selfemp	0.343	0.193	1.77	0.06
noquals	-0.172	0.126	-1.36	0.53
incself	0.142	0.045	3.12	1.90
noqual*inc	-0.958	0.390	-3.09	0.14
risk	-0.291	0.064	-4.53	2.02
log-likelihood	-298.15			
Normality	3.334 (5.99)			
Skewness	0.591 (3.84)			
Kurtosis	1.336 (3.84)			
n	1121			

Tests are Bera, Jarque and Lee (1984) tests

Variables names and definitions

alone, 1 if live alone; under 35, 1 if under 35 years; over 64, 1 if over 64 years; age, age (categorical variable); South East, 1 if location in standard regions 7-9; hgood, 1 if health rated as good or very good; hpoor, 1 if health rated as poor; noworry, 1 if worry rarely or never about health; mworry, 1 if worry a great deal about health; nogp, 1 if no GP care in last 12 months; nodental, 1 if no dental care in last 12 months; nooutpat, 1 if no outpatient care in last 12 months; priv.atts, attitude to private provision of medical care (1=anti, 3=most pro); LArent, 1 if Local Authority tenant; selfemp, 1 if full-time self employed; noquals, 1 if no educational qualifications; incself, own income (categorical variable); risk, attitudes to pay-when-needed private care (1=no, 2=dk, 3=yes), noqual*inc, interaction between incself and noquals.

explained by other factors in the equation, chiefly income.

The parameter estimate for joint income is not significantly different from that for own income. The relatively high covariance between joint income and location in the South East reduces the parameter estimate for this latter variable when joint income is included in the estimated equation. Again, this would seem to indicate that the regional effect is an income effect, rather than perhaps the effect of greater availability of private sector facilities.

2. THE DECISION TO CONSIDER INSURANCE

To estimate the parameters of captivity the observations were divided into two, those who had either purchased or seriously considered purchase and those who had not. There were 390 observations in the first group and 877 in the second. The dependent variable was defined as 1 for the former and 0 for the latter group. The bivariate analyses suggested significant determinants of captivity might include age, location, poor health status, income, education and political attitudes to private health care provision.

The estimation results are presented in Table 21. A probit estimator was used and the model does not appear to be misspecified. Further, there appear to be significant differences between those who have never considered and those who have considered purchase or have insurance. The effect of age appears to be non-linear, both the under 35s and the over 64s being less likely to consider purchase than all other observations[2]. While the probability of consideration is not associated with either current self-rated health status or recent utilisation of the health services,

Table 21: Probit Estimates of Decision to Consider Private Health Insurance

Variable	Coefficient	Standard Error	t-ratio	Mean of variabl
intercept	-1.099	0.211	-5.21	1.00
under 35	-0.173	0.100	-1.73	0.226
over 64	-0.562	0.167	-3.37	0.098
South East	0.233	0.082	2.83	0.419
hgood	0.0388	0.091	0.43	0.304
noworry	-0.231	0.10	-2.33	0.220
nogp	0.023	0.088	0.26	0.385
nodental	-0.083	0.084	-0.99	0.511
nooutpat	-0.11	0.096	-1.18	0.735
priv.atts	0.221	0.065	3.40	2.33
LArent	-0.309	0.115	-2.69	0.22
Selfemp	0.359	0.175	2.05	0.055
Noquals	-0.394	0.091	-4.33	0.536
incself	0.095	0.034	2.83	1.91
risk	0.127	0.045	2.83	2.03
Log likelihood	-647.57			
Normality	0.621 (5.99)			
Skewness	0.443 (3.84)			
Kurtosis	0.170 (3.84)			
n	1169			

Tests are Bera, Jarque and Lee (1984) tests

Variables names and definitions

alone, 1 if live alone; under 35, 1 if under 35 years; over 64, 1 if over 64 years; age, age (categorical variable); South East, 1 if location in standard regions 7-9; hgood, 1 if health rated as good or very good; hpoor, 1 if health rated as poor; noworry, 1 if worry rarely or never about health; mworry, 1 if worry a great deal about health; nogp, 1 if no GP care in last 12 months; nodental, 1 if no dental care in last 12 months; nooutpat, 1 if no outpatient care in last 12 months; priv.atts, attitude to private provision of medical care (1=anti, 3=most pro); LArent, 1 if Local Authority tenant; selfemp, 1 if full-time self employed; noquals, 1 if no educational qualifications; incself, own income (categorical variable); risk, attitudes to pay-when-needed private care (1=no, 2=dk, 3=yes).

worry about (own) health is positively associated with consideration or purchase.

Waiting lists are a possible determinant of purchase or consideration. It is therefore important to see if there is any association between consideration of purchase and waiting lists. However, data on waiting lists given at regional level would provide a regional dummy variable, rather than a good indicator of waiting time. Rather than use waiting lists to test association between waiting and consideration, three different variables were examined. These were first, whether individuals had to wait for treatment, second, how long they had to wait and third, whether they were worried by having to wait. Since those with insurance would not have had to wait, the observations only include those individuals who had not purchased insurance. The results show no significant association with consideration of purchase of any of the three variables.

Tenure, having educational qualifications and income are all significant if associated with consideration. The effect of own and joint income are not statistically different, though the collinearity between joint income and regional location once again reduces the parameter estimate of location in the South East when joint income is used as the income variable.[3] In addition to income, the nature of employment is significantly associated with consideration of insurance. Individuals in full-time self-employment are significantly more likely to buy or consider insurance purchase. This may be due to greater uncertainty of income of the self-employed. Those in part-time self-employment are not significantly more likely to consider insurance, perhaps because their income is lower or because their earnings form a smaller part of their total income. Political attitudes are significantly associated with consideration, those who consider or buy being significantly more likely to

favour private sector health care provision. The association between willingness to purchase private health care and consideration of insurance purchase is significant, but interestingly, the parameter estimate is positive. In the estimation of the decision to purchase insurance (Table 20) this parameter was significant and negative. Separating out the decision to buy from the decision to consider insurance may explain the rather unclear bivariate pattern of association between purchase and attitude to paying for care if and when needed. For the insurance decision this variable reflects attitudes to risk (and this will be further shown below in the analysis of purchase, conditional on non-captivity). For the consideration decision, this variable represents generally favourable attitudes to the private health care sector, and thus essentially measures the same factors as the 'attitudes to private provision' variable.

Many of the factors which are significantly associated with consideration of insurance are also associated, for the whole sample, with insurance purchase. But the magnitude of these associations is not necessarily the same for both decisions. For example, age is linearly and positively associated with purchase, but has a non-linear association with consideration of purchase. Attitude towards risk is important for the purchase/non-purchase dichotomy, but less important (and perhaps not at all important) for consideration. However, in order to fully explore these differences it is necessary to analyse the decision to purchase insurance, conditional on not being captive.

3. INSURANCE PURCHASE CONDITIONAL ON NON-CAPTIVITY

The results are presented in Table 22. As before, misspecification does not appear to be a problem. Age is significantly and linearly

Table 22: Probit Estimates of Decision to Purchase Insurance, Conditional on Positive Consideration

Variable	Coefficient	Standard Error	t-ratio	Mean of Variable
intercept	-2.082	0.483	-4.30	1.00
alone	0.243	0.314	0.77	0.071
age	0.280	0.070	4.00	2.47
South East	0.017	0.159	0.10	0.52
hpoor	0.278	0.303	0.91	0.085
mworry	-0.670	0.320	-2.09	0.093
othercond	0.498	0.180	2.77	0.24
nogp	-0.045	0.179	-0.25	0.40
nodental	-0.015	0.164	-0.09	0.43
nooutpat	0.120	0.195	0.61	0.715
noinpat	-0.222	0.188	-1.18	0.745
priv.atts	0.497	0.134	3.70	2.43
o/occ	0.620	0.234	2.65	0.803
incself	0.109	0.057	1.91	2.30
risk	-0.559	0.088	-6.34	0.92
Log likelihood	-173.84			
Normality	1.832			
Skewness	0.237			
Kurtosis	1.291			
n	365			

Tests are Bera, Jarque and Lee (1984) tests

Variables names and definitions

alone, 1 if live alone; under 35, 1 if under 35 years; over 64, 1 if over 64 years; age, age (categorical variable); South East, 1 if location in standard regions 7-9; hgood, 1 if health rated as good or very good; hpoor, 1 if health rated as poor; noworry, 1 if worry rarely or never about health; mworry, 1 if worry a great deal about health; nogp, 1 if no GP care in last 12 months; nodental, 1 if no dental care in last 12 months; nooutpat, 1 if no outpatient care in last 12 months; priv.atts, attitude to private provision of medical care (1=anti, 3=most pro); LArent, 1 if Local Authority tenant; selfemp, 1 if full-time self employed; noquals, 1 if no educational qualifications; incself, own income (categorical variable); risk, attitudes to pay-when-needed private care (1=no, 2=dk, 3=yes); o/ooc, 1 if owner occupant.

associated with purchase. As for the other analyses, while recent health utilisation does not appear to influence the decision, worry about health and presence of another person in the household are significantly associated with purchase. However, in contrast to the decision to consider purchase, worry is negatively associated with purchase. This perhaps indicates that individuals who are worried about their health consider insurance, whilst those who have purchased insurance cease to worry. The presence of another person in the household with a condition that requires regular medical treatment is positively associated with purchase. Regional location is unimportant, unsuprisingly, since both those who consider insurance and those who purchase insurance are more likely to be located in the South East. Income is only associated with purchase at the 10% level, though the coefficient, as expected, is positive. This is not unexpected given that those who are not captive have higher incomes than the rest of the sample. Tenure (the dummy indicating owner-occupancy) and attitudes to private sector medicine are positively associated with purchase. Finally, the association between purchase and risk aversion appears to be negative; those who would be prepared to pay for care if and when needed being significantly less likely to purchase health insurance.

The estimation results suggest that the set of factors which is associated with consideration of purchase is not identical to the set associated with (conditional) purchase. This suggests that it is important to distinguish between the effect of a factor on the determination of choice sets and on the determination of choice. It also suggests that a model which does not consider the issue of choice set generation will be less robust, in terms of stability of parameters, than one which does. Further, it has been shown by researchers in the economics of transport mode choice literature that ignoring restricted choice sets may result in biased parameter estimates (Williams and Ortuzar (1982), Stopher (1980)).

Stopher (1980) examined, empirically, the impact of inclusion of observations who are captive on estimation of a binary choice model. He found that if consumers who are deemed captive to a given choice (according to a deterministic set of rules) are assumed not captive and included with non-captives in the data used to estimate the choice model, the estimated coefficients for all variables in the model were smaller and less well determined than in the model estimated excluding the 'captives'. In our model, a test of captivity is therefore a comparison of the parameter estimates of the insurance purchase model of Table 22 estimated with and without those observations that have never seriously considered purchase.

The conditional purchase (excluding captives) model of Table 22 was respecified excluding variables with insignificant parameters. This model was then re-estimated using both the data set excluding captives and using all observations (respondents with company cover were excluded from both estimations). The dependent variable in both cases was defined as 1 if the observation had self-purchased cover and 0 otherwise. The comparison is presented in Table 23.

In general, the results appear to conform to the pattern suggested by Stopher (1980). Assuming that the model excluding non-considerers is the appropriate non-captivity model i.e. is the 'true' model, then the parameter estimates for the variables in this model are generally higher and the parameter estimate of the intercept term lower than for the model estimated including those observations defined as captive. However, the coefficient on income is significantly higher in the model estimated on data which includes observations which are 'non-considerers'. This difference is easily understood; the non-considers have significantly lower income than either the seriously-considered or the insured, and the

Table 23: Decision to Purchase Insurance estimated using only individuals who have seriously considered insurance and estimated using whole sample

Variable	Data set excludes not-considered and corporate cover		Data set excludes corporate cover only	
	Coefficient	Standard Error	Coefficient	Standard Error
intercept	-1.862**	0.394	-2.777*	0.328
alone	0.234**	0.060	0.047	0.205
age	0.229	0.257	0.062	0.044
hpoor	0.250	0.254	0.135	0.196
mworry	-0.568**	0.273	-0.32	0.248
othercond	0.439**	0.152	0.309**	0.117
priv.atts	0.439**	0.118	0.434**	0.093
o/occ	0.527**	0.20	0.434**	0.155
incself	0.087*	0.049	0.214**	0.0427
risk	-0.478**	0.077	-0.242**	0.060
n	365		1121	

* $p < 0.10$
** $p < 0.05$

Tests are Bera, Jarque and Lee (1984) tests

Variables names and definitions

alone, 1 if live alone; under 35, 1 if under 35 years; over 64, 1 if over 64 years; age, age (categorical variable); South East, 1 if location in standard regions 7-9; hgood, 1 if health rated as good or very good; hpoor, 1 if health rated as poor; noworry, 1 if worry rarely or never about health; mworry, 1 if worry a great deal about health; nogp, 1 if no GP care in last 12 months; nodental, 1 if no dental care in last 12 months; nooutpat, 1 if no outpatient care in last 12 months; priv.atts, attitude to private provision of medical care (1=anti, 3=most pro); LArent, 1 if Local Authority tenant; selfemp, 1 if full-time self employed; noquals, 1 if no educational qualifications; incself, own income (categorical variable); risk, attitudes to pay-when-needed private care (1=no, 2=dk, 3=yes); o/ooc, 1 if owner occupant.

seriously-considered and the insured are relatively more homogeneous in terms of income. Hence we would expect a larger income coefficient for the 'incorrect model'.

CONCLUSION

This paper has examined the determinants of, consideration of, and choice of, health insurance purchase. The paper has shown that the set of factors which determine consideration are not necessarily the same as those that determine (conditional) purchase. When the same factors do influence the two decisions, the impact of these factors on the two decisions is not necessarily the same. Income, as a measure of ability to pay, is a major determinant of both decisions. In the main, it does not appear to be important whether the income is that of the respondent only or that of the household. The effect of attitude to risk, or at least the particular measure of attitudes used in this data set, is different for the two decisions. The effect of age is similarly different. In the decision to consider purchase, both the young and the old are less likely to consider insurance, but the association with (conditional) purchase is positive. Health services utilisation does not appear to affect either decision, but health status is significantly and differently associated with both. Worry about health is positively associated with consideration but appears less important for the (conditional) purchase decision. Perhaps worry is assuaged by purchase. The presence of another person with a condition which requires regular medical treatment does not appear to influence consideration, but does influence purchase. Education and positive attitudes to private sector health care provision are positively associated, and local authority tenure is negatively associated with both consideration and purchase, but the strength of these factors differs between the two decisions.

In summary, the analysis presented here suggests that it is inappropriate to ignore the effect of restricted choice sets and captivity. It is therefore inappropriate to estimate the demand for insurance using all observations. Instead, it is necessary to separate the decision into a decision to consider purchase and a conditional decision to buy insurance.

FOOTNOTES

1. The results of the first part of this paper suggested that there would be little to be gained by using econometric analysis to examine the determinants of either comparate purchase or the number of persons covered by a policy. The corporate/non-corporate analysis requires occupational data which was not collected as part of the survey. The bivariate analysis of Section 2 suggest that the primary determinants of the number of persons on a policy are number of persons in household and income, and that other factors measured in the data set are relatively unimportant.

2. As age is a categorical variable to explore non-linearities we had to construct dummy variables defined as

$$d_{is} = 1 \text{ if observation i was in age category s}$$
$$= 0 \text{ otherwise}$$

where s was the age category of interest

3. As income was measured as a categorical variable, we could not create a household income per capita variable.

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