Pressures in UK Healthcare: Challenges for the NHS

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Preface

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Executive summary

The recent Budget announced that the National Health Service is set to receive 'by far the largest sustained increase in NHS funding of any period in its 50-year history'.[1] The planned spending increases over the next four years, averaging some 6.1 per cent a year in real terms, are not unprecedented but are substantially higher than the 3.4 per cent average award that the NHS has received since its birth in 1949. The challenge facing the NHS is to deliver the necessary improvements in patient care to justify such a large injection of public spending.

This Commentary looks at the role of both the public and private sectors in providing healthcare in the UK. Several potential problems that would exist if the government did not intervene in the market for healthcare are examined. These market failures, and the fact that a solely private market for healthcare would lead to a very inequitable outcome, provide justification for some form of state intervention. A tax-financed NHS is not the only solution to the problems. Many countries have adopted different ways of intervening in the market for healthcare. For example, in the US, the private sector plays a much larger role, while Germany has opted for compulsory social insurance with a mixture of private and public provision. Levels of spending in different countries vary, with the US spending almost 14 per cent of GDP on healthcare compared with 10.7 per cent in Germany and just 6.8 per cent in the UK. Looking across the G7 countries, it is clear that higher levels of health spending are not necessarily associated with better health outcomes. For example, the UK achieves better life expectancies and better infant mortality rates than the US. The picture is far from clear, with the UK having much worse survival rates from many forms of cancer than either the US or many European countries. Differences such as these are likely to be caused by a range of factors in addition to the quality of healthcare provided, such as incomes, education levels, climates and cultural influences.

While the NHS remains the dominant provider of healthcare in the UK, both the number of people covered by private health insurance and the amount of private spending on healthcare have grown dramatically over the last 25 years. In 1978, just 2.4 million people were covered by private health insurance compared with nearly 7 million today. Two-thirds of private medical insurance is employer-provided. Private spending on health has increased from around 9 per cent of total health expenditure in 1975 to over 15 per cent in 1997. Looking at the characteristics of those with private medical insurance, we find that individuals covered tend to have higher incomes and higher levels of savings. They are also more likely to live in London, the South East and the West Midlands. While any increase in coverage of private medical insurance would indeed reduce the burden on the NHS, it is extremely unlikely that any subsidy to encourage take-up would be self-financing.

Waiting-lists have existed since the birth of the NHS 50 years ago but have increased dramatically over the last 25 years. This is despite increases in the number of people actually being treated. In February 2000, 1.1 million patients in England were on an NHS

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[1]The Chancellor's Budget Speech. Source: *Hansard*, 21 March 2000, column 872.

in-patient waiting-list, which is over 2 per cent of the population. There is also considerable variation across the country, with 1.9 per cent of individuals waiting for treatment in the West Midlands compared with 2.7 per cent in the North West. It is also true that the North West is one of the best-performing regions as measured by number of patients treated per bed. Actual waiting times and clinical outcomes are also extremely important. On average, NHS patients have to wait 4.3 months for an in-patient appointment, although half of patients wait less than 3 months. An analysis of some indicators of clinical outcomes also suggests that substantial variations in quality exist both across and within different NHS regions.

The NHS budget will, in future, face growing pressures from three main areas — increases in pay to ensure that public sector wages remain in line with those in the private sector, increases in public demands for healthcare, partly fuelled by advances in technology, and increases in the elderly population. The effect of an increasing elderly population is uncertain, but it is important to remember that the NHS has had to cope with a similar degree of adverse demographic change over the last 50 years to that forecast for the next 50. Under the assumption that spending per person in each age-group remains the same, spending will have to increase by some 30 per cent by 2040 just for the NHS to stand still. While this is less than the expected increase in GDP over this period, it comes on top of other pressures, such as those from the NHS pay bill.

1.   Introduction

The recent Budget set out spending increases for health for the next four years which mean that the National Health Service is now witnessing a period of relatively high and sustained spending growth. The announcement of these large funding increases, pre-empting the Spending Review due this July, came after another 'crisis' winter in which the performance of the NHS has been subjected to intense public scrutiny. The resulting debate has thrown up some fundamental questions about the system of healthcare in this country, which this Commentary attempts to address.

Chapter 2 starts by putting the spending plans announced in the Budget into the context of the history of the NHS and recent parliaments, and sets out the main areas of health spending. Following from this, some of the important issues facing the healthcare system in this country are assessed. One such set of issues has surrounded the rationale for a system such as the NHS, in which the government is heavily involved in both the provision and the finance of healthcare. The economic arguments for government intervention in healthcare are addressed in Chapter 3.

While it is common for governments to intervene in the market for healthcare, it is also clear that the form and the extent of this intervention can vary. Much political attention has also been focused on how much the UK spends on healthcare compared with other countries, and it is now widely known that this country's spending on healthcare is low by international standards. Chapter 4 sets out some international spending comparisons and places these into context by examining some of the different healthcare systems that exist around the world and by looking at how health outcomes differ between countries.

Another issue to receive much attention is the role of the private sector in the UK, which is small compared with those in other countries but has been growing rapidly over recent decades. Chapter 5 describes the growth of the private sector and examines the characteristics of those who hold private health insurance. Some of the possible policy issues surrounding these findings are also discussed. The quality of the NHS is an issue that is closely related both to the funding debate and to the growth of the private sector in recent years. In his recent Budget, the Chancellor stated that some of the additional NHS spending over the next four years was to 'address long-standing variations in efficiency performance and health outcomes'.[2] Chapter 6 looks at some indicators of NHS quality, including waiting-lists, waiting times and some important clinical outcomes. The extent of regional variations in these indicators is also examined.

A final issue that has been much debated is the degree to which the NHS of the future will be subject to increasing spending demands. A number of reasons have been put forward as to why the NHS might face considerable upward pressure on its budgets in the coming decades, including new technologies, rising incomes and demographic change. Chapter 7 focuses on one of these — namely, the likely spending implications of an ageing population. Chapter 8 concludes.

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[2]The Chancellor's Budget Speech. Source: *Hansard*, 21 March 2000, column 871.

2.   An analysis of NHS spending, April 1949 to March 2004

The recent Budget contained details of the government's NHS spending plans until March 2004. The Chancellor stated that these spending plans represented 'by far the largest sustained increase in NHS funding of any period in its 50-year history'.[3] This chapter puts these planned increases in spending in a historical context, both in terms of the real increases in resources allocated by various governments since the birth of the NHS in 1949 and in terms of the share of national income that we now devote to the NHS.

The spending plans announced in the Budget do indeed imply large real increases in the resources available to the NHS. This is shown in Table 2.1. On average, the NHS is set to receive a real increase in spending of 6.1 per cent a year from April 2000 to March 2004. This is substantially greater than the real spending increases achieved over the previous four Conservative parliaments, which averaged 3.1 per cent a year. It is also higher than the 3.4 per cent real increase in spending that the NHS has received on average over its entire history. Looking at spending increases over the entirety of this parliament, we see that, on average, spending will grow by 4.7 per cent. While this is less than the plans for the next four years, it is still higher than the historical average increase in NHS spending.

Table 2.1. Real increases in NHS spending, various periods

	Annualised average real increase (%)
Current planned expenditure: *April 2000 to March 2004*	6.1
Comparisons across parliaments	
This parliament: *April 1997 to March 2002*	4.7
Last parliament: *April 1992 to March 1997*	2.6
Conservative years: *April 1979 to March 1997*	3.1
Other periods of interest	
Five-year increase from start of first CSR: *April 1999 to March 2004*	6.2
Highest five-year increase in history of the NHS: *April 1971 to March 1976*	6.4
Last 46 years: *April 1954 to March 2000*	3.7
History of NHS (last 50 years): *April 1950 to March 2000*	3.4

Notes: NHS spending is defined here as UK National Health Service expenditure, net of NHS charges and receipts. See Appendix A for more details.

Sources: NHS spending figures from Department of Health (1997b, 1998, 1999 and 2000), HM Treasury (2000) and Office of Health Economics (1999); GDP deflators from Office for National Statistics (2000a) and HM Treasury website.

The effect of the Budget on the planned increases in NHS spending is shown in Figure 2.1. The real increases in spending planned by the Comprehensive Spending Review (CSR) in July 1998 for the financial years 2000–01 and 2001–02 are shown in light

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[3]The Chancellor's Budget Speech. Source: *Hansard*, 21 March 2000, column 872.

shading. On announcing the spending plans for April 1999 to March 2002, the Chancellor stated that 'the first innovation of the Comprehensive Spending Review is to move from the short-termism of the annual cycle and to draw up public expenditure plans not on a one year basis but on a three year basis'.[4] The Budget substantially revised these spending plans by putting additional resources into the NHS in both 2000–01 and 2001–02.[5] The Budget also set out NHS spending plans for the years 2002–03 and 2003–04. The real increases in NHS spending implied by the government's current spending plans are shown by the combined light and dark shaded areas.

Figure 2.1. Annual real increases in NHS spending, 1979–80 to 2003–04

Notes: NHS spending is defined here as UK National Health Service expenditure, net of NHS charges and receipts. See Appendix A for more details.
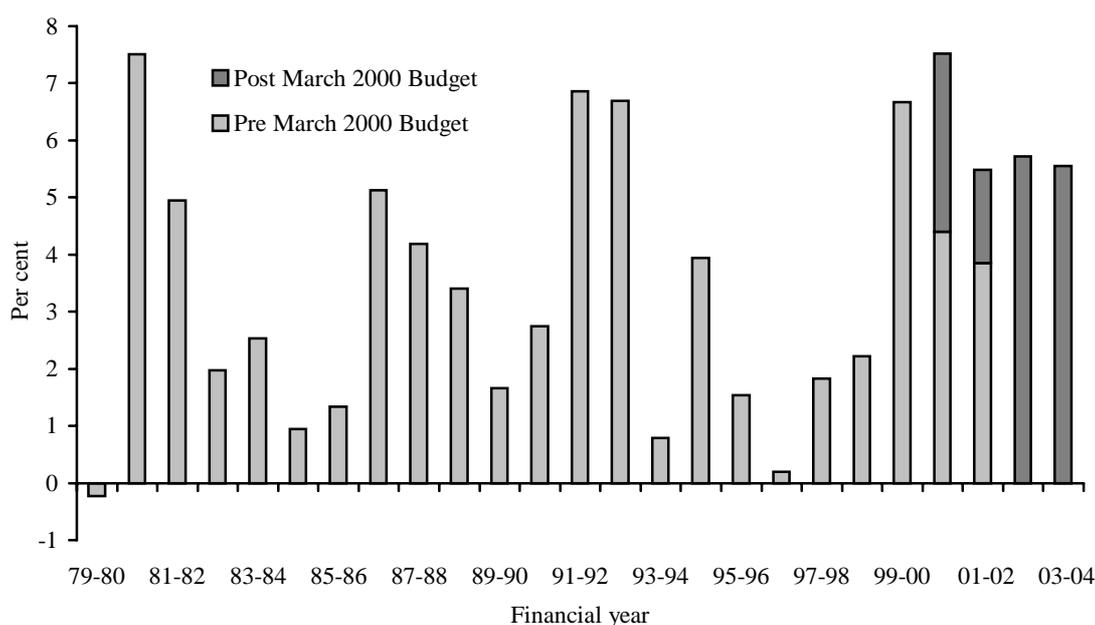
Sources: NHS spending figures from Department of Health (1997b, 1998, 1999 and 2000), HM Treasury (1999 and 2000) and Office of Health Economics (1999); GDP deflators from Office for National Statistics (2000a) and HM Treasury website.

While the spending plans for the five years from April 1999 to March 2004 do represent a period of large and sustained increases in NHS funding, averaging some 6.2 per cent, they are in fact not unprecedented. The five years from April 1971 to March 1976 saw average real increases in NHS spending of 6.4 per cent a year. The spending plans do, however, represent a break from the last 20 years, over which the NHS tended to receive extremely erratic increases in spending, as shown in Figure 2.1. The start of the Thatcher years saw two years of large real increases in NHS spending in 1980–81 and 1981–82, due to implementation of the Clegg pay awards, which were followed by much lower real

[4]The Chancellor's speech announcing the Comprehensive Spending Review. Source: *Hansard*, 14 July 1998, column 187.

[5]Education, law and order, and transport also received additional amounts in 2000–01, and the forthcoming Spending Review has given an additional £5.9 billion to be allocated to departments in 2001–02. Source: HM Treasury, 2000.

increases in spending. This pattern is seen again at the start of the Major administration in 1990 when, partly as a result of the internal market reforms, the NHS again received two years of relatively generous increases in spending followed by much lower increases. In contrast, the four years from April 1995 to March 1999 saw real increases in NHS spending averaging just 1.4 per cent a year.

2.1   How much do we spend on health?

The share of national income that has been spent on the NHS has increased considerably over the last 50 years. Figure 2.2 shows that spending as a share of GDP was just 3.5 per cent in 1949–50 and has risen to 5.7 per cent in 2000–01. The irregular nature of spending increases over the last quarter of a century is also clearly shown, with periods in which NHS spending falls as a share of GDP (1977–78 to 1979–80, 1983–84 to 1989–90 and 1995–96 to 1998–99) being followed by years of relatively large increases in spending. It should also be noted that variation in health spending as a share of national income will, in part, be caused by underlying fluctuations in GDP. The spending plans set out in the Budget imply further increases in NHS spending as a share of GDP to 6.3 per cent in 2003–04.

Figure 2.2. NHS spending as a percentage of GDP, 1949–50 to 2003–04
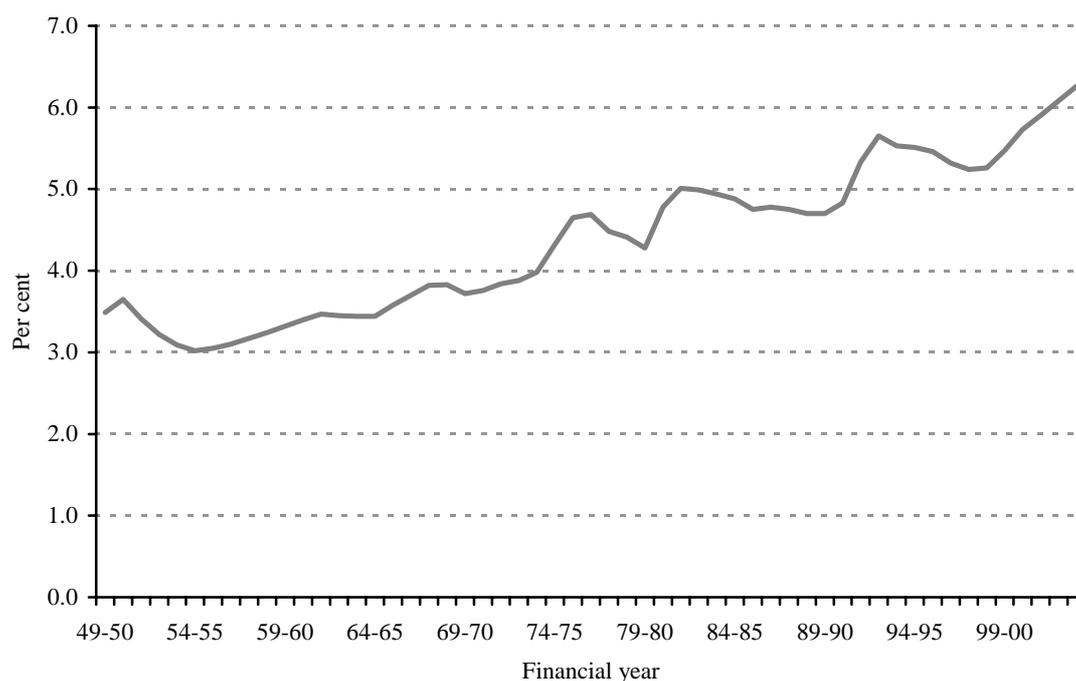
Notes: NHS spending is defined here as UK National Health Service expenditure, net of NHS charges and receipts. Projections forward from 2000–01 to 2003–04 are taken from HM Treasury (2000). This assumes trend GDP growth of 2½ per cent a year. See Appendix A for more details.

Sources: NHS spending figures from Department of Health (1997b, 1998, 1999 and 2000), HM Treasury (1999 and 2000) and Office of Health Economics (1999); GDP deflators from Office for National Statistics (2000a) and HM Treasury website.

2.2   Where does the money go?

The NHS is set to spend £54.2 billion in 2000–01, a large proportion going on Hospital and Community Health Services (HCHS). Figure 2.3 shows how this money was allocated in 1997–98, the most recent year for which figures are available, and how this compares with two earlier years (1988–89 and 1992–93). The largest part of spending goes on acute hospital treatment, and this proportion has increased over the last nine years from 45.1 per cent in 1988–89 to 53.5 per cent in 1997–98. The last five years have also seen increases in the proportions spent on mental health and those with learning disabilities, with falls in the proportions spent on the elderly, maternity care and other areas of hospital and community services. It should be remembered that the elderly receive a large portion of spending through other parts of the health budget. Hence the reduction in share of spending on the elderly is potentially due to increases in other budgets — for example, in acute care or alternatively additional support from local authorities. Central administration makes up just 3.3 per cent of the overall budget.

Figure 2.3. Composition of Hospital and Community Health Services gross current expenditure in 1988–89, 1992–93 and 1997–98
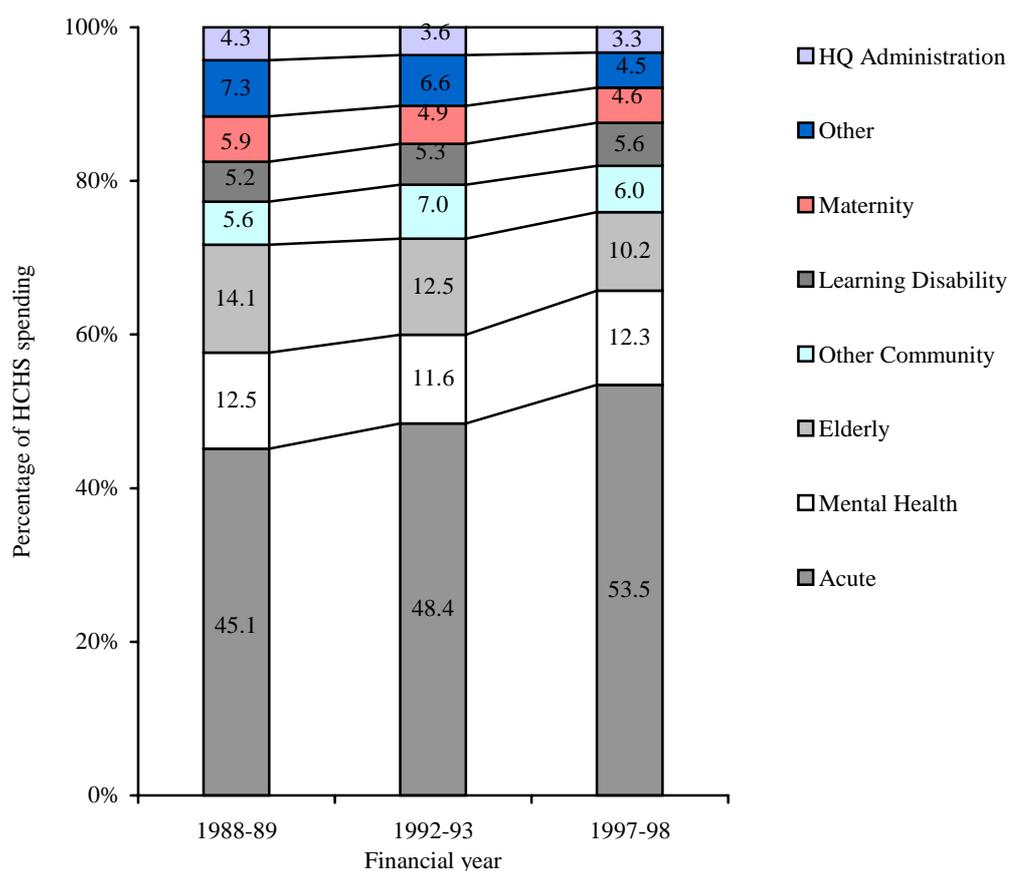
Source: Department of Health.

3. The economics of government intervention in healthcare

It is clear from the previous chapter that the UK government intervenes massively in the market for healthcare. Not just in this country, but around the world, governments are involved to varying degrees in the finance — and in many cases also the provision — of healthcare to their citizens. Although historically these systems have emerged through a variety of circumstances, there are a number of common problems that arise in the market for healthcare to which these government interventions provide a response. In order to understand more fully the role that the public and private sectors play in the UK and how other countries' systems compare, it is helpful to take a step back and examine, from the standpoint of economics, why the government is involved in the healthcare sector at all.

Economic arguments for government involvement fall broadly into two strands — those that relate to equity or some concept of fairness and those that point to the presence of market failures in the private healthcare market and so call for intervention on efficiency grounds. In this chapter, we provide a brief overview of these issues. For a fuller discussion, see Barr (1998) and Donaldson (1998).

3.1 Equity arguments

The most commonly heard arguments for government involvement in the market for health are, at root, arguments based on the concept of equity or fairness. The concept of equity in economics is a broad one, but in the context of healthcare the aim most frequently espoused is that treatment be available on the basis of clinical need and regardless of other issues such as ability to pay.[6] For example, the enshrining principles of the NHS set out in the 1944 White Paper, *A National Health Service*, included the aim that everyone 'irrespective of means, age, sex, or occupation shall have equal opportunity to benefit from the best and most up to date medical and allied services available'.[7]

According to such a principle, two people with identical medical profiles should be able to receive identical treatment regardless of all their other circumstances. Economics tells us that the purely private market will not ensure this result, as individuals will seek to buy healthcare only to the extent that the private benefits match the costs involved to them. Where their circumstances differ, the amount of healthcare they will consume will vary. For example, people with different incomes are likely to choose different levels of healthcare even if their medical conditions are the same.

Even with the same income, there are other reasons why people may buy different amounts of healthcare in the private health market. People may have varying preferences between spending their income on health and on other commodities, different degrees of risk aversion, with some willing to give up more income today for a certain future than others, or varying subjective discount rates, so that the trade-off between present and future consumption (and possibly health) will be higher for some than others. All these

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[6] For a discussion of other potential definitions of equity, see, for example, Barr (1998).

[7] Cited in Timmins (1995).

factors will result in different levels of treatment arising for people with identical medical need. In choosing different levels of healthcare, such people will be behaving in a manner that is rational and consistent with their preferences.

However, society may not approve of this market outcome on moral grounds. Individuals may have preferences not just over their own healthcare but also over the healthcare of others, and over how such care is distributed. Such preferences over the healthcare of others are sometimes referred to as 'caring externalities'. Where such preferences over the distribution of healthcare exist, government intervention can be designed to achieve a more equitable outcome. In the case of the UK system, this is done by providing services that are mostly free at the point of delivery and are available to all.

3.2   Efficiency arguments

There are also reasons why government intervention could be called for in the market for healthcare on efficiency grounds. There are two broad types of market failure that are likely to occur in the unfettered private market. The first of these concerns the presence of externalities in the healthcare market. Some of these are closely related to the equity arguments set out above. The second type of market failure relates to information failures of various descriptions. We consider each in turn.

Social returns to health?

The externality argument revolves around the fact that there may be social as well as private returns arising from an individual becoming more healthy. With each individual acting on the basis only of the private return to him or herself, these social returns are likely to go unrealised unless the government intervenes in some way. As already discussed, the possibility of caring externalities, whereby the well-being of others is of value to an individual, is one such example. Another obvious social return in the context of healthcare is the case of infectious diseases. The benefit of preventing or curing one person's infectious illness extends beyond the private benefit to that individual and affects the community at large.

It is often said that one of the driving factors behind some of the early welfare state reforms at the start of this century was the poor state of health revealed in the men who were conscripted in the First World War. Up to a third of conscripts were found to be medically unfit to join the forces, and as many as half of those who had volunteered to fight in the Boer War the previous decade were similarly found to be unfit.[8] This is another example of the presence of externalities in the market for healthcare. Because they were needed to fight in the war, the benefit to society as a whole of the fitness of these men would have been greater than the sum of the private benefits to each of them individually.

Further to these externalities, a number of arguments that are often made in the context of government intervention in education also relate, to some extent, to the market for

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[8]Timmins, 1995.

healthcare. To the extent that a person's health can be seen as a basic building block of their human capital, arguments about possible increased social cohesion and other externalities that are seen to arise from education can also apply, at some fundamental level, in the area of healthcare.[9]

The full state finance and provision of health services seen in the UK is, of course, not the only way a government could intervene to address the presence of such externalities. Forms of intervention could range from regulation — for example, to ensure that people are inoculated against particular diseases — to the selective provision of immunisation services, or subsidies to make prices seen in the market more fully reflect both private and social costs and benefits.

Imperfect information

In the market for healthcare, there are further arguments for government intervention on efficiency grounds, which mostly revolve around the problem of imperfect information. Purely private markets in healthcare are not able to function perfectly, both because of an inherent lack of information on the part of consumers about the product they are buying and because of an asymmetry of information in the market for insurance between insurers, consumers and providers.

Demand Conditions

In the first instance, it is often argued that consumers face imperfect information about the nature and price of the product when they seek to buy healthcare. This is because, when a person is very unwell or if treatment is urgent, he or she will not be able to shop around to compare advice or prices. The information that is required to make rational choices is often both highly technical and emotionally charged.

Similar conditions may exist in many other markets — for example, the markets for legal advice or emergency plumbing. Often the private market can step in and provide the missing information to consumers — for example, through consumers' magazines or, more recently, through the publication of information on the internet. Professionals who perform badly will soon develop a poor reputation, and repeat visits will not occur. Self-regulation, or some kind of signalling mechanism such as the provision of guarantees, can also work to ensure that consumers have the best information possible to make the necessary choices.[10]

In healthcare, this will not necessarily be sufficient to solve the problem, however. This is because healthcare needs are often one-off, unexpected and urgent. Crucially, poor choices may entail very high costs and could be irreversible. It may also be difficult to assess the quality of any treatment received. The solution is government intervention of some description: at a minimum, some form of regulation of who is allowed to practise medicine; at a maximum, much fuller state involvement.

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[9]For example, see the discussion of the economics of state education in Chapter 4 of Chennells, Dilnot and Emmerson (2000).

[10]For a discussion of the role of information in a related area (that of saving decisions), see Tanner (2000).

The Private Market for Health Insurance

A second set of mostly information-related market failures stem from the fact that people's future healthcare needs are generally uncertain. Where individuals are risk averse, and under certain 'optimal' conditions,[11] the efficient market solution will be the provision of insurance. However, it is commonly recognised that the optimal conditions required do not generally hold in the case of healthcare.

In the case of major epidemics, each person's probability of getting ill will not be independent of the community at large, and these risks will be uninsurable. People born with certain conditions, or those looking to buy insurance after they have developed a chronic condition, will also be unable to buy insurance, as they are certain to require treatment. For many people, although not certain to require treatment, the probability may be sufficiently high that it will not be economical for insurance companies to provide insurance to them (this is likely to be the case for many elderly people). Major gaps in the market will develop.

Private insurance markets are also prone to informational asymmetries, leading to the familiar problems faced by insurance markets of adverse selection and moral hazard. We discuss how these problems may affect insurance for healthcare in turn.

Adverse selection

Adverse selection arises in this context where the insurer does not have as much information about each individual's risk of requiring treatment as the individual does him or herself (see Akerlof (1970) and Arrow (1963)). If the insurance company charges a premium that is associated with the average risk amongst the community, those who face lower risks will drop out of the market because they will find that the premium charged does not represent good value for money to them, leaving behind only the riskier customers. In the extreme, this problem will cause the market to break down altogether as everyone but those at highest risk chooses to drop out and remain uninsured. In practice, it will tend to mean that gaps in the market will appear as insurance providers try to avoid losing all their low-risk customers by refusing to cover those they can identify as being at highest risk. This phenomenon is known as 'cream-skimming'.

Such problems provide the case for government intervention to prevent these kind of coverage gaps arising. At a minimum, this could involve regulation making coverage compulsory for all — preventing low risks dropping out and higher risks being refused coverage. Alternatively, it could involve a range of social interventions, from socially provided insurance to full public provision funded from taxation. Alternative private market solutions that have evolved as a response to such problems include employer-provided insurance, where risks are pooled across a range of employees. However, these schemes do not cover those who are not in work, such as the elderly, for whom gaps in coverage are most likely to arise.

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[11]For a discussion of these, see a standard microeconomics textbook such as Varian (1993, pp. 220–3).

Moral hazard

The private market for healthcare will also be subject to the problem of moral hazard, whereby insured individuals are able to influence their probability of requiring treatment or the size of the treatment bill that they run up (see Pauly (1974)). This is an informational problem again, since the insurance company does not have full a priori information about each individual's subsequent actions.

So long as the resulting condition is not expected to be too unpleasant, an insured person might take less care to prevent illness or injury, or might visit their doctor more than they would in the absence of insurance. Healthcare needs such as those surrounding pregnancy are especially uninsurable in this context, as the provision of insurance will mean that the individual is likely to make an active choice to opt in for treatment.

Another manifestation of moral hazard, known as third-party payment problems, can also arise if the financing of treatment is divorced from clinical decision-making and doctors receive fees for their services; here, doctors face the incentive to boost their incomes by the oversupply of services to patients. Again this could prompt a range of different solutions, from market-based ones commonly seen in other spheres where insurance markets operate — for example, requiring patients to pay for an initial part of their treatment, or charging on a fee-per-case basis for treatments patients are likely to choose to opt for — to government intervention on a wide scale.

3.3   Does the NHS address these issues?

The system of healthcare in the UK — which essentially involves public provision, allocation and finance through the tax system,[12] with a small private sector operating alongside — represents one way of addressing some of these equity issues and market failures. As we have seen in our discussion of each of the issues in turn, this is by no means the only way of addressing these problems, and a wide array of different healthcare systems have sprung up around the world in response, ranging from the predominantly market-based system in the US, to systems based on a social insurance model such as those of Germany and Canada, to universal tax-based systems such as our own. International comparisons are discussed in Chapter 4.

To what extent does the NHS address the key issues? Although consideration of each of the market failures in isolation would tend to suggest a series of more targeted government interventions together with private sector initiatives as a means of addressing them, some have argued that it is the presence of all these market failures operating together which justifies the more full-scale intervention seen in this country (see Donaldson (1998)).

Turning first to the issue of equity, there is some debate as to whether the equity aim is fulfilled. In particular, it is not clear whether people with identical medical conditions are treated identically on the NHS. Although the picture is a complex one, there are regional differences in the use of health services and in health outcomes themselves, leading to

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[12]For a more refined definition of the public–private mix in the UK health sector, see Burchardt (1997).

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allegations that resources are often allocated on the basis of 'postcode' rather than on need; differences also abound between socio-economic groups.[13] Some of these differences are discussed in Chapter 6, which looks at indicators of quality in the NHS. The existence of inequalities, however, is not in itself a sign that the system has failed, since the relevant question is whether the system is more equitable than in the absence of government intervention or compared with other possible interventions that could be made.

The provision of treatment that is free at the point of delivery should go some way towards addressing the possible externalities arising from social returns to health, although some social returns may remain unsecured if the cost to the individual of visiting the doctor — for example, in the form of transport costs, loss of earnings or because they find it unpleasant — outweighs the private benefit to that individual. Additionally, there are prescription costs and charges for dentist and ophthalmic services.

In principle, the NHS also scores well in addressing the other market failures outlined. Problems of imperfect consumer information may be mitigated by a system where publicly trained doctors decide what treatments to carry out. There is little scope for third-party payment problems, the bane of the US system and many others for much of the 1970s and 1980s, because doctors do not, in general, receive fees per treatment and so face little incentive to oversupply. Universal, comprehensive coverage closes gaps in the market that could arise from adverse selection and moral hazard; funding of this through the tax system abandons the problems in applying actuarial principles.

Some serious problems remain. Patients have the incentive to overconsume because the price they face for each intervention is zero. The result is rationing through waiting-lists. There is some question as to whether centrally decided health budgets, which dictate how much rationing is to take place and are often determined by short-term public finance and political imperatives, will themselves deliver the optimal allocation of resources to health.

In a pragmatic sense, the NHS's position as a near monopsonistic purchaser both of labour and of prescription drugs means that it is able to keep input costs low, although it should be noted that such a market structure will not result in the best allocation of resources across the economy as a whole.[14] There is also general agreement that internal efficiency could be improved. The introduction of the 'internal market' at the start of the last decade represented one attempt to achieve this. Evidence on the results of these reforms is mixed,[15] but the purchaser–provider split introduced is generally judged to have been a success and is being maintained, despite the abolition of the internal market, in the recent restructuring which has seen the creation of new Primary Care Groups.[16]

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[13]For a discussion of regional inequalities in health, see Independent Inquiry into Inequalities in Health (1998). For a discussion of the complex relationship between income and health, see, for example, Duncan (1996) or Backlund, Sorlie and Johnson (1996).

[14]See, for example, Varian (1993, pp. 438–41).

[15]See, for example, Le Grand, Mays and Mulligan (1998) and Propper, Croxson and Perkins (1998).

[16]See Department of Health (1997a).

# 4.   International comparisons of healthcare provision

The NHS is only one possible way of addressing the difficulties inherent in the provision of healthcare. There is much to be learned by considering how other countries address these issues, both in terms of the systems they have chosen and in terms of the level of spending they devote to health.

In the light of recent political attention placed on how UK health spending compares with that seen elsewhere in the European Union, it is now widely acknowledged that this country devotes a relatively low share of its resources to health by international standards. This chapter sets the health sector in the UK in an international context, providing a brief survey of spending variations, an analysis of how systems of funding and delivery differ across countries and some comparisons of health outcomes.

4.1   Spending comparisons

The UK's healthcare sector as a whole takes the smallest share of GDP of all the G7 countries. This is shown in Figure 4.1, which sets out OECD estimates of the share of national income taken by public health spending and total health spending (i.e. the public and private sectors combined) for these countries. These figures are for spending in 1997, which is the latest year for which data are currently available, and are calculated on a slightly different basis from the public spending figures quoted in Chapter 2.

Figure 4.1. Public and total health expenditure as a percentage of GDP in the G7 countries, 1997

Source: OECD Health Data 99: A Comparative Analysis of 29 Countries (CD-ROM).

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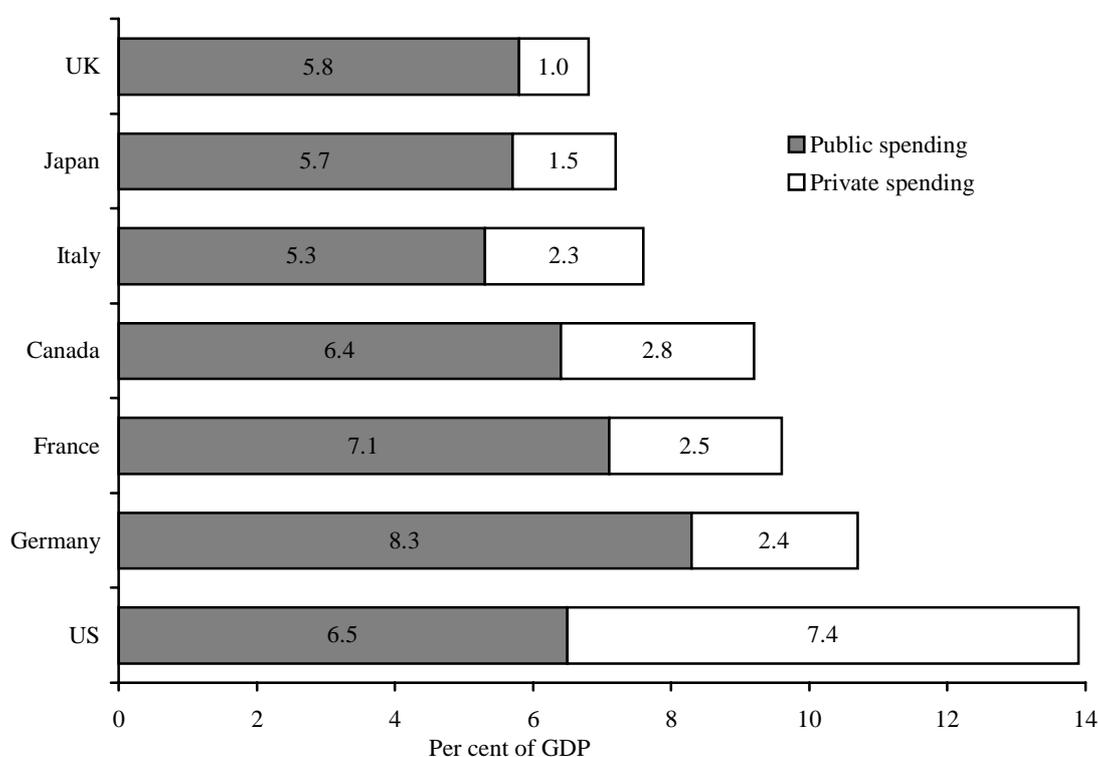
The US is the biggest health spender amongst this group, with almost 14 per cent of its GDP going to healthcare. Germany and France also have relatively large healthcare sectors, taking up 10.7 per cent and 9.6 per cent of their GDP respectively. Japan's and Italy's healthcare spending is closer to that of the UK, both with a public sector of similar size to ours but with a slightly larger private sector in each case. Looking across the European Union, it is interesting to note that only the Republic of Ireland has a smaller healthcare sector than the UK.

It is important to note, however, that a lower share of GDP spent on health compared with other countries should not necessarily be taken to imply a lower, or in some way less adequate, standard of healthcare. This is for a number of reasons, which we consider briefly below.

Different technologies of production

Cross-country comparisons are complicated because of the wide array of different healthcare systems that have sprung up around the world, ranging from the more predominantly market-based system in the US to the social insurance models followed in many European countries, and the largely tax-based systems such as those in Sweden and the UK. An outline of some of the ways in which systems differ around the world is set out in Section 4.2. Because of different methods of funding and delivery, technologies of production differ widely between countries, with some producing the same outputs more efficiently than others. This means that inputs measured in terms of money spent do not necessarily correspond to outputs in terms of the health benefits provided. Nor are comparisons based on such inputs able to take into account how the quality of the outputs produced varies.

Arguments regarding 'value for money' are often made about the UK system, which is often thought to perform well in terms of containing costs (for example, see Commonwealth Fund (1998)) and, although spending much less, achieves better infant mortality and life expectancy results than the US. However, it is also often counter-argued that, by spending a relatively low share of GDP on health in this country, it is the quality of services which suffers (for example, see Morgan (1999)). The US system, meanwhile, although operating at much higher cost, is thought to perform better in terms of the provision of quality high-technology care to much of the population. We return to a comparison of some health outcomes in Section 4.3.

Patterns of morbidity and mortality

Different countries face varying underlying patterns of illness, disability and death rates amongst their populations, which will mean that both the composition and level of health spending that they require will differ.

Reasons for these different patterns of morbidity and mortality are wide-ranging. They include: demographic factors, such as the age profile of the population (for a discussion of how demographic factors are likely to affect health spending in the UK, see Chapter

7); socio-economic factors, such as living standards,[17] housing conditions and patterns of employment and unemployment; and lifestyle issues, such as dietary and smoking habits and exercise. Other possible influences include the climate, environmental conditions and genetic factors. Many of these are interrelated, and all are likely to be major determinants of the healthcare needs of the population.

Preferences

Differences in health spending levels may also simply reflect different preferences between countries. Each population makes a choice, either through the action of individuals or collectively through the political process, about how much it wishes to spend on healthcare compared with other goods and services, and cross-country differences may be a reflection of this. Different preferences between countries may also manifest themselves in more cultural differences, such as the frequency with which different populations visit the doctor or the level of services expected during a hospital stay.

4.2   Comparison of healthcare systems

Around the world, a wide range of different healthcare systems have emerged in response to the unusual nature of the healthcare market, discussed in the previous chapter. All of these systems combine varying degrees of public and private sector involvement. Here, we attempt to provide a brief overview of some of the main systems that have evolved. It must be borne in mind that all of the systems involve what is often a complex set of interactions between different funding mechanisms, modes of provision and mechanisms for consumer choice. Layers of successive reforms by many governments and within private and voluntary sectors have meant that these systems, if anything, have tended to grow in their complexity in recent decades. However, some simple taxonomies are possible.

**Table 4.1. Share of the private sector in total healthcare spending
in the G7 countries, 1997**

	Share of private sector (%)
US	53
Germany	22
France	26
Canada	30
Italy	21
Japan	30
UK	15

Note: Countries are ranked according to share of health spending in GDP.

Source: OECD Health Data 99: A Comparative Analysis of 29 Countries (CD-ROM).

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[17]There is also a wide debate over the extent to which the degree of inequality in living standards affects health outcomes; for example, see Wilkinson (1996).

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Table 4.1 provides one summary of how the degree of private sector involvement differs in the healthcare markets of the G7 countries, by showing the proportion of total health spending in each country that is private. The US has by far the largest share of private spending amongst these countries, at 53 per cent. In Canada and Japan, the private sector accounts for 30 per cent of health spending. As we will see in Chapter 5, in the UK, private spending amounts to just 15 per cent of the health sector, or roughly 1 per cent of our GDP.

Barr (1998, p. 301) suggests that, very broadly, there are three basic healthcare models adopted by the industrialised nations — namely,

- *the quasi-actuarial approach*, where individuals and employers purchase private medical insurance, with private provision of medical services (e.g. US);

- *earnings-related social insurance contributions*, where care is financed by earnings-related employee contributions and/or an employer payroll tax; supplementation with general tax funding is possible, as are varying roles for public and private provision (e.g. Canada and Germany);

- *'universal' medical care*, where care is funded through taxation and production of services is publicly owned or controlled (e.g. UK and Sweden).

The OECD has also attempted to provide a simple categorisation of the health systems of the 24 OECD countries depending on their main source of finance and the predominance of public or private providers. This is shown in Table 4.2. Here, the UK is grouped with a range of European and Scandinavian countries whose systems are financed mainly from taxation and have mainly public providers. Other European countries and Australia and New Zealand have systems that rely on some form of social insurance, while private voluntary insurance predominates in the US and in Switzerland.

Table 4.2. A simple classification of OECD countries' health systems

Broad category of health system	Country
Financed mainly by taxation with mainly public providers	UK, Ireland, Spain, Denmark, Finland, Greece, Iceland, Portugal, Norway, Sweden
Financed mainly by taxation with mainly private providers	Canada
Financed mainly by social insurance with mixed public and private providers	Belgium, France, Germany, Austria, Japan, Luxemburg, Italy, Australia, New Zealand
Financed by a mixture of social and private insurance with mainly private providers	Netherlands
Financed mainly by voluntary insurance with mainly private providers	US, Switzerland
No dominant source of finance; mixed public and private providers	Turkey

Source: OECD, 1994.

Of course, these broad generalisations encompass much divergence between countries whose health systems have been grouped together and also mask many similarities between systems placed in different groups. For example, the US has a large publicly funded healthcare system for the elderly operating alongside the private insurance market. The introduction of the purchaser–provider split in the UK system and similar reforms in other countries during the 1990s, which were intended primarily to control costs, have in some respects brought these systems closer into line with the system operating in the US, where 'managed care' arrangements have emerged in much of the private insurance market.

For a more detailed classification, see OECD (1992), which sets out seven basic models of healthcare system, based on a number of features including whether payments are compulsory or voluntary, whether the same body acts as purchaser and provider or whether these functions are split, and what types of contract exist between insurers and providers. The authors also point out that several different models can exist in any one country at the same time.[18]

4.3   Comparison of outcomes across countries

In light of our discussion about the difficulties of drawing firm conclusions from international health spending comparisons when the systems of healthcare delivery and underlying conditions within countries are subject to such variation, here we provide some international comparisons of basic health outcomes and of some other quality and performance measures.

It is worth noting that many of the outcome measures provided also depend largely on the complex underlying patterns of morbidity and mortality within each country, as well as on the effectiveness of the healthcare system, so that conclusions about health spending and how much it directly causes these outcomes must be drawn with care.[19]

Table 4.3. Life expectancy in the G7 countries, 1996

	Life expectancy at birth (years)		Rank Life expectancy		Spending
	Females	Males	Females	Males	
Japan	83.6	77.0	1	1	6
France	82.0	74.2	2	5	3
Canada	81.4	75.7	3	2	4
Italy	81.3	74.9	4	3	5
Germany	79.9	73.6	5	6	2
UK	79.5	74.3	6	4	7
US	79.4	72.7	7	7	1

Note: Spending is ranked according to share of health spending in GDP.
Source: OECD Health Data 99: A Comparative Analysis of 29 Countries (CD-ROM).

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[18]A more detailed discussion of healthcare reforms that have taken place can also be found in OECD (1994).

[19]Care should also be taken when comparing data from different countries as the figures being considered will be subject to different levels of measurement error.

Table 4.4. Infant mortality in the G7 countries, 1996

	Infant mortality	Rank Infant mortality	Spending
Japan	4.3	1	6
France	4.9	2	3
Germany	5.3	3	2
Canada	6.0	4=	4
UK	6.0	4=	7
Italy	6.2	6	5
US	8.0	7	1

Notes: Infant mortality is defined as deaths at age under 1 year per 1,000 live births. Spending is ranked according to share of health spending in GDP.

Source: OECD Health Data 99: A Comparative Analysis of 29 Countries (CD-ROM).

Although spending on healthcare is lower in Japan than in all the other G7 countries except the UK, Japan has the best life expectancy and infant mortality rates amongst these nations. By contrast, the US performs particularly badly on these summary statistics, ranking the lowest amongst the G7 nations on both these outcomes, while also being the biggest healthcare spender. These results are shown in Tables 4.3 and 4.4, which also show that the UK achieves life expectancy and infant mortality that are below average but slightly better than its position in the rank of spenders would indicate. It should be noted that these figures are averages which encompass varying degrees of inequality of outcomes within each country.[20]

Looking in more detail at some outcomes for specific illnesses and conditions, OECD data show that the UK has a very high number of deaths from heart disease compared with the rest of the G7 countries. For example, deaths from ischaemic heart disease (IHD) in the UK numbered roughly 175 per 100,000 of the population in 1995, compared with less than 150 in the US and Germany and only 35 in Japan. By contrast, we experience a smaller number of deaths from liver diseases, at approximately 6 per 100,000 of the population in the UK compared with 11 in Japan and closer to 20 in Germany and Italy, and we also compare favourably on deaths from infectious diseases, amongst others.[21]
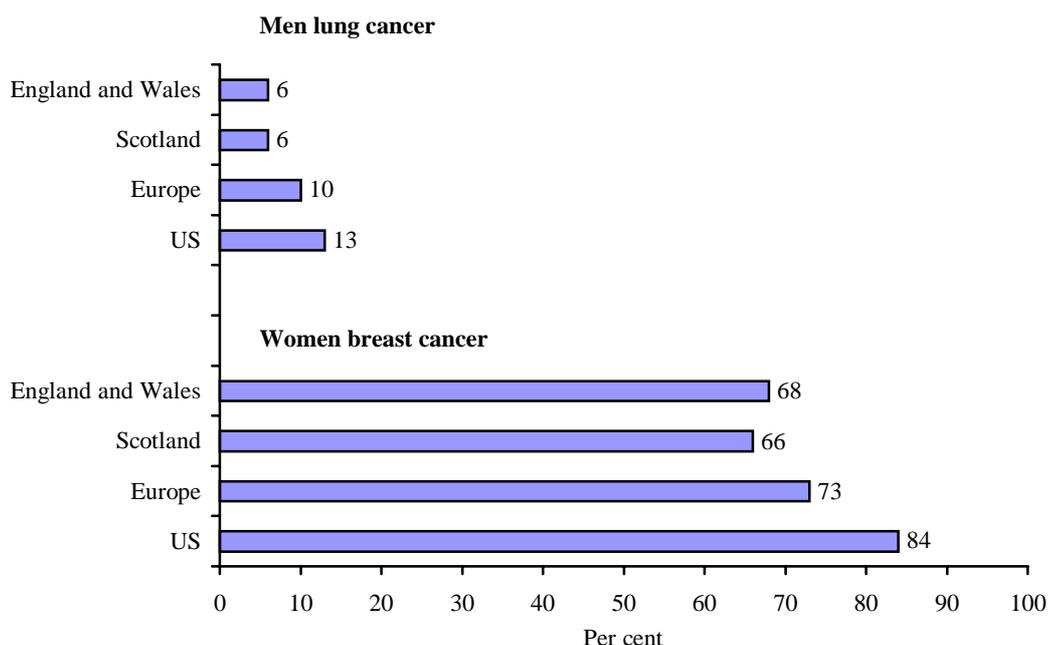
Data on survival rates for some of the most common cancers — namely, lung, breast, colon and prostate — show that Britain has performed relatively badly in comparison with the survival rates achieved in many other European countries and in the US, although outcomes are unequal between regions (as outlined in Chapter 6) and socio-economic groups (see Coleman (1999)). Figure 4.2 presents international comparisons of five-year cancer survival rates for two of the most common cancers in this country — namely, lung cancer amongst men and breast cancer amongst women. For both of the cancers shown, survival rates are considerably lower in England, Wales and Scotland

[20]For a discussion of inequality in the UK in this context, see Independent Inquiry into Inequalities in Health (1998).

[21]Source: OECD Health Data 99: A Comparative Analysis of 29 Countries (CD-ROM). Figures quoted are for 1995, except for Japan, where figures are for 1994, and for Italy, where liver disease mortality rate quoted is for 1993.

than they are in the rest of Europe, where they are in turn lower than those in the US. According to Sikora (1999), if Britain reached the European average for cancer survival rates, nearly 10,000 lives a year would be saved. For some less prevalent cancers, such as testicular cancer and skin cancer, survival rates in Britain are closer to those seen in Europe and the US.

Figure 4.2. International comparison of five-year relative survival (%), selected cancers: England and Wales (adults diagnosed 1986–90), Europe (1985–89) and the US (1986–90)

Men lung cancer

England and Wales	6
Scotland	6
Europe	10
US	13

Women breast cancer

England and Wales	68
Scotland	66
Europe	73
US	84

Per cent

Notes: Average survival rates for Europe are for those countries (including England, Scotland and Wales) covered by the EUROCARE-2 study (Berrino et al., 1999). Average survival rates for the US are for those states covered by the SEER programme (SEER Stat — cancer incidence public use database 1973–95, (1.1), 1998, National Cancer Institute, Bethesda, Md).

Source: Coleman, 1999.

4.4 Comparisons of perceived quality: waiting times and public satisfaction

Another facet of healthcare systems we discuss in the UK context in this report is measures of service quality, including hospital waiting-lists and waiting times (see Chapter 6). A cross-country comparison of the proportion of patients who have had to wait more than a month for non-emergency surgery (see Commonwealth Fund (1998)) is illustrated in Figure 4.3. More than half of those surveyed in the UK had to wait for more than one month for such surgery, compared with closer to one in three in Australia, Canada and New Zealand and just one-tenth of those surveyed in the US.

The final piece of evidence we consider relates to levels of public satisfaction in different countries. Here, we draw on Mossialos (1997), who provides analysis of a Eurobarometer survey conducted in the 15 Member States of the EU in 1996 which elicited citizens'

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Figure 4.3. Percentage of patients waiting for more than a month for non-emergency surgery, 1998
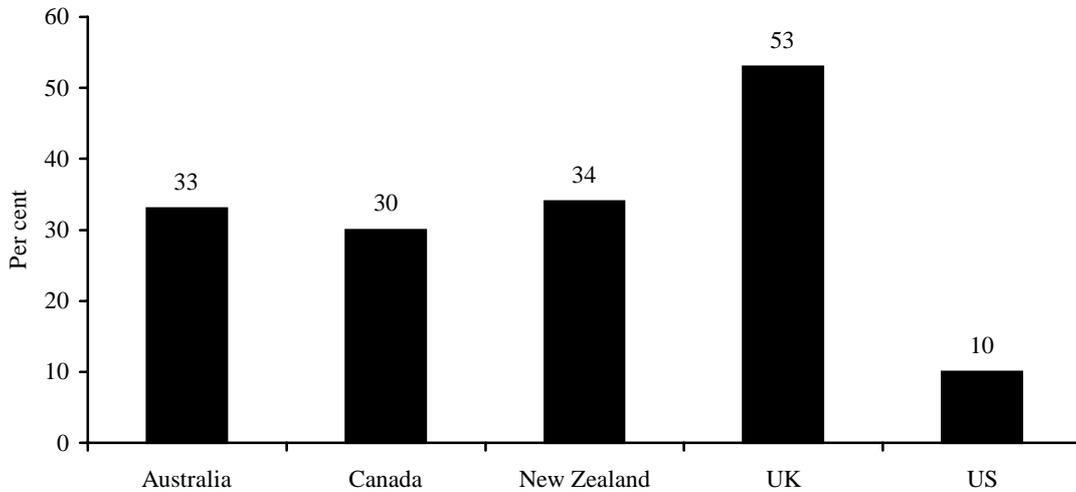
Note: Figures are based on self-reported waiting times and hence will differ from administrative data.
Source: The Commonwealth Fund 1998 International Health Policy Survey, quoted in Commonwealth Fund (1998).

Figure 4.4. Satisfaction with healthcare systems in the EU Member States, 1996
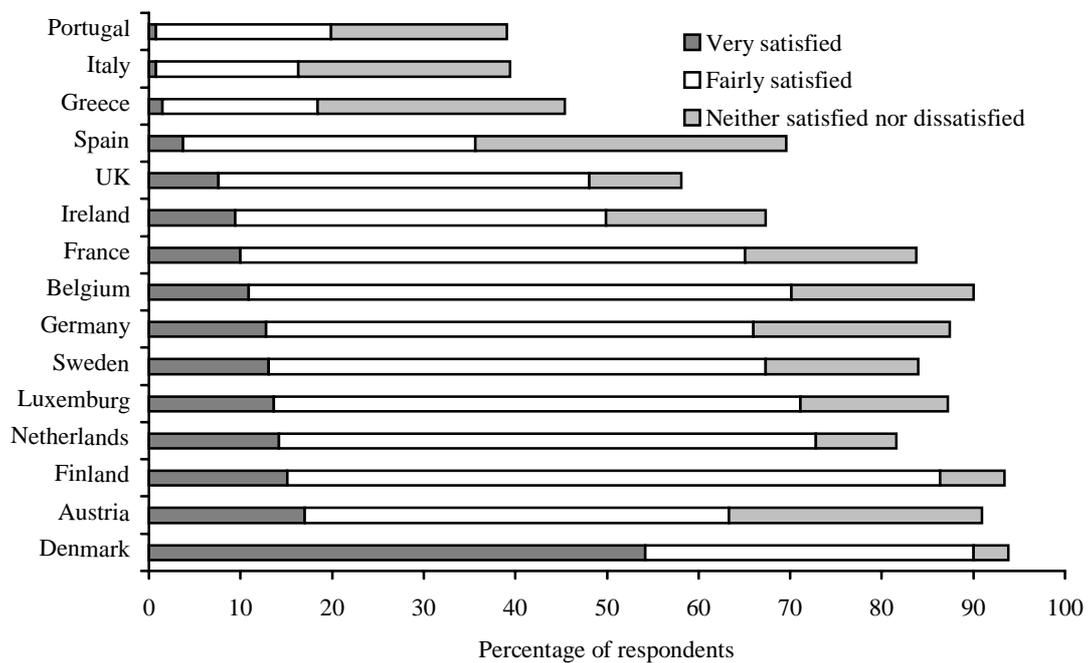
Note: The exact wording of the question was 'In general, would you say that you are very satisfied, fairly satisfied, neither satisfied nor dissatisfied, fairly dissatisfied or very dissatisfied with the way healthcare runs in our country?'.
*Source:* Mossialos, 1997.

views on the healthcare system in their country. Clearly, public opinions are likely to have changed somewhat since that time, and those expressed may also reflect both national traits and wider issues at play in each of the countries. Bearing this in mind, we present in Figure 4.4 the proportion of people in each country who reported that they were very satisfied, fairly satisfied, or neither satisfied nor dissatisfied with the way in which healthcare runs in their country. Mossialos points out an apparent 'north–south' divide in the pattern of response, with people in the northern European and Scandinavian countries reporting higher degrees of satisfaction with their healthcare systems than those in the more southern countries. Responses in the UK and Ireland show satisfaction levels lying between these two camps.

5.   Private healthcare in the UK

Compared with other G7 countries, as the previous chapter has shown, the UK has the lowest share of private spending both in total healthcare spending and as a proportion of GDP. This is largely due to the institutional set-up in the UK, where the publicly funded NHS aims to provide free medical treatment through GPs and hospitals for UK residents. In theory at least, any private spending on health is a matter of individual choice rather than need. In fact, it is no longer the case that the UK health market is completely dominated by the state sector. Instead, the growth in the market for private healthcare has meant that a hybrid of private provision alongside an extensive public sector is more characteristic of the system. For the substantial number of people who have private health insurance, combined use of private and public medical services is the norm. They are typically still reliant on the NHS for certain types of care, most notably for primary care and emergency care, which has stayed within the domain of the NHS. Recently, private providers have moved further into the primary care market, by offering GP services in the private sector, such as Medicentre's new GP services in large London train stations.[22] The growth in private use of medical services raises important policy issues concerning the structure of the health market in the future. In order to address these issues, a fuller understanding of the current situation is necessary.

Figure 5.1. Number of people covered by private medical insurance, 1955–98
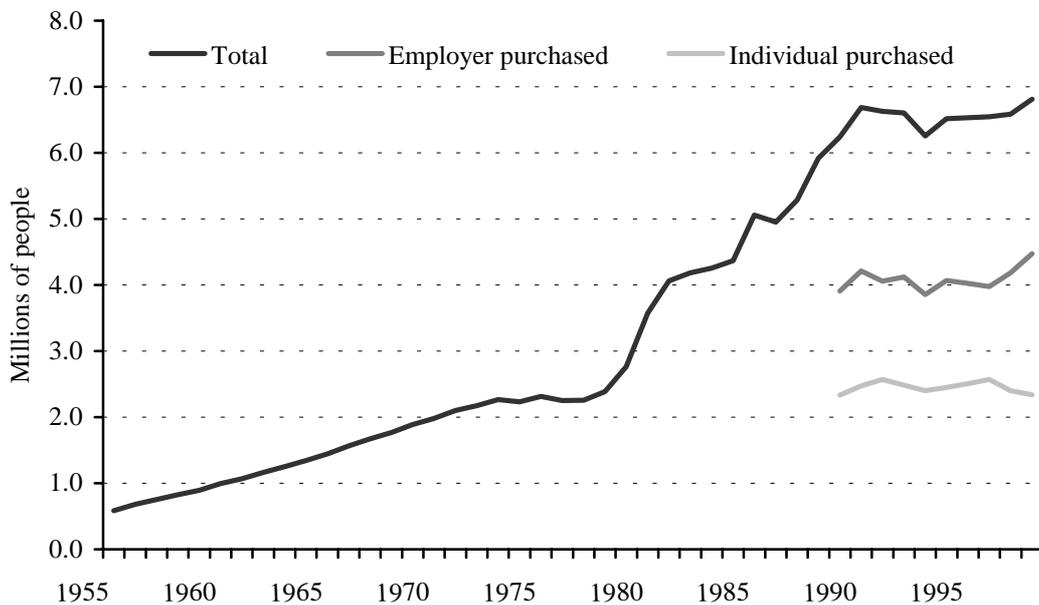
Notes: There is a small structural break in the series in 1984–85. Data for whether the insurance was an employer or individual purchase are only available after 1989.
Sources: Office of Health Economics (1999, Table 2.22) for data prior to 1984; Laing and Buisson (1999, Tables 1.1 and 1.2) for 1984 onwards.

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[22]As reported in *The Times*, 17 April 1999, Weekend Money section.

Over the last 45 years, there has been a large increase in the number of people covered by private medical insurance, as shown in Figure 5.1. In 1955, just over 0.5 million individuals were covered by private medical insurance compared with nearly 7 million in 1998. Most of the increase has been over the last two decades, with around 75 per cent of the total increase since 1955 occurring since 1979.

However, use of private medical facilities is not restricted to those who are insured. An estimated 20 per cent of patients in the private sector pay for treatment themselves (Office of Fair Trading, 1996). Direct payment for the use of private medical facilities may, paradoxically, be more advantageous than buying insurance, for certain individuals. This is due to the two market failures that may exist in insurance markets, which were discussed in Chapter 2 — moral hazard and adverse selection.

1. Individuals who have health insurance may tend to use private medical facilities more than they would if they were paying for treatment themselves. This will have the effect of increasing the insurance company's costs and hence the premiums charged. Individuals may then find it cheaper to pay for treatment directly, thus not incurring the cost of non-essential visits, either by themselves or by others. This change in behaviour induced by the purchase of insurance is known as moral hazard. One way in which insurance companies can attempt, and have attempted, to alleviate this problem is through requiring individuals to make a contribution towards the cost of any healthcare purchased.

2. Insurance is priced to cover all people within certain categories who are supposed to carry the same health risks. However, if the individual has more information about his or her health than the insurance company, then it may only make sense for those with higher risks to buy insurance. Healthier individuals may find it uneconomical to pay a premium that covers those who are likely to have higher costs than them. However, if the healthier people choose not to purchase insurance, the costs of insurance companies and hence of the premiums rise, as only the less healthy are left in the market. This problem is known as adverse selection. Adverse selection could occur in the medical insurance market even if individuals are unable to assess their own health risks. For example, individuals may buy insurance after seeing a relative become ill. This alone could, for a variety of reasons, make them more likely to be a bad risk from the insurance company's perspective.

Given the importance of direct private spending, a better picture of the relative importance of the private sector is provided by looking at aggregate private health spending. Figure 5.2 shows UK private health spending as a percentage of total health spending from 1960 to 1997. From 1964 to 1975, private health spending fell from almost 18 per cent of total spending to around 9 per cent. From then, it has risen to represent over 15 per cent of total health spending in 1997.

The decline in the late 1960s and early 1970s was caused by almost constant private health spending as a percentage of GDP while public health spending increased. Since 1975, the growth in private health spending has been faster than the growth in public health expenditure, thus leading to an increase in private health spending as a percentage of total health spending. Figure 5.3 shows private health spending over the same period in 1995 prices. The amount spent privately on health was thus roughly constant from
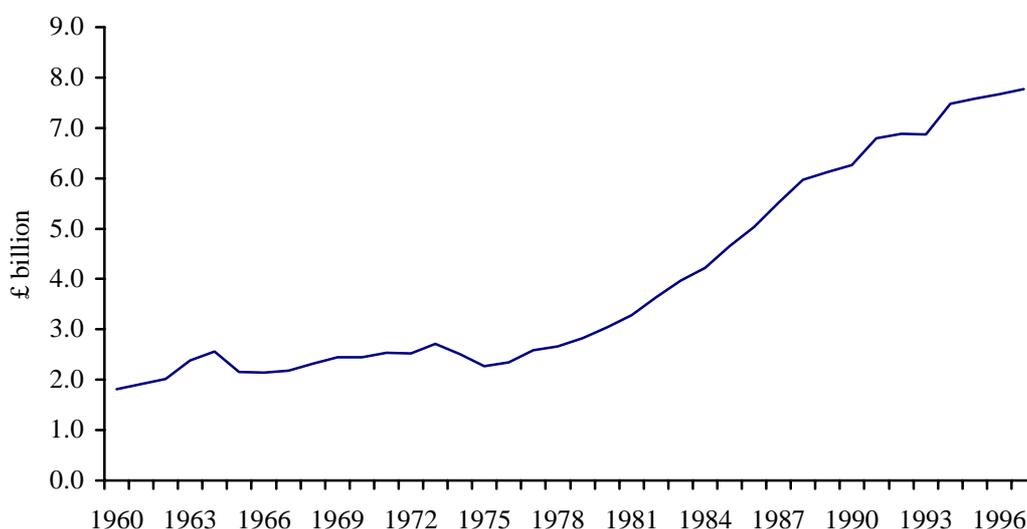
1960 to 1975, with a dramatic rise occurring afterwards. Since 1975, private spending on health has more than tripled.

Figure 5.2. UK private health spending as a percentage of total health spending, 1960–97
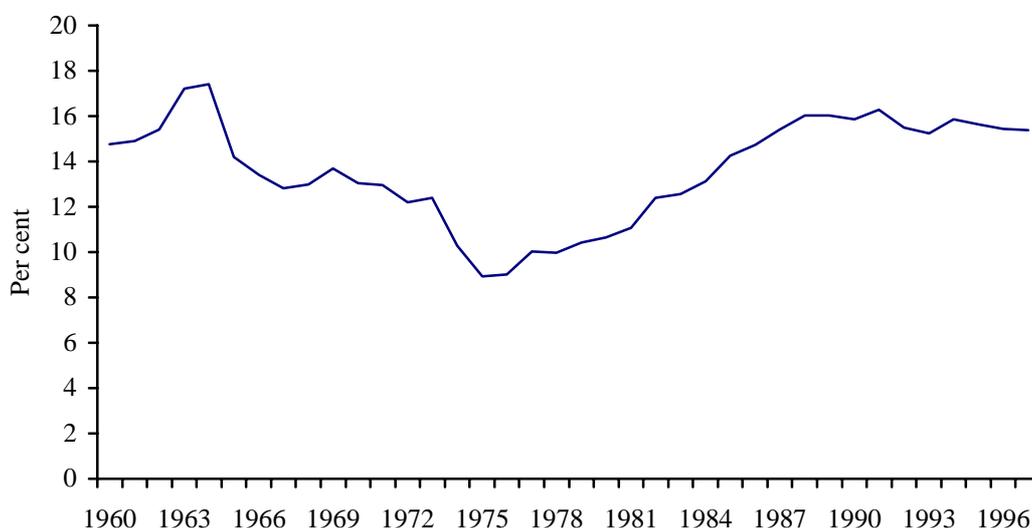
Figure 5.3. Private spending on health in 1995 prices, 1960–97

This increase in the amount of private spending on health has been the result of more widespread coverage of medical insurance (as shown in Figure 5.1) and more individuals paying for healthcare directly themselves. Some of it has also resulted from increases in patient contributions to the NHS. Over the lifetime of the NHS, charges have risen for

dental treatment and ophthalmic treatment (which is no longer provided universally free of charge by the NHS), and also pay prescription charges have increased. Figure 5.4 shows the level of NHS charges paid by patients from 1951 to 1998, as a percentage of the 1952 level. NHS income from charges in 1998 was almost four times its level in 1952.

Figure 5.4. Private spending on health in the NHS as a percentage of 1952 levels, real terms, 1951–98
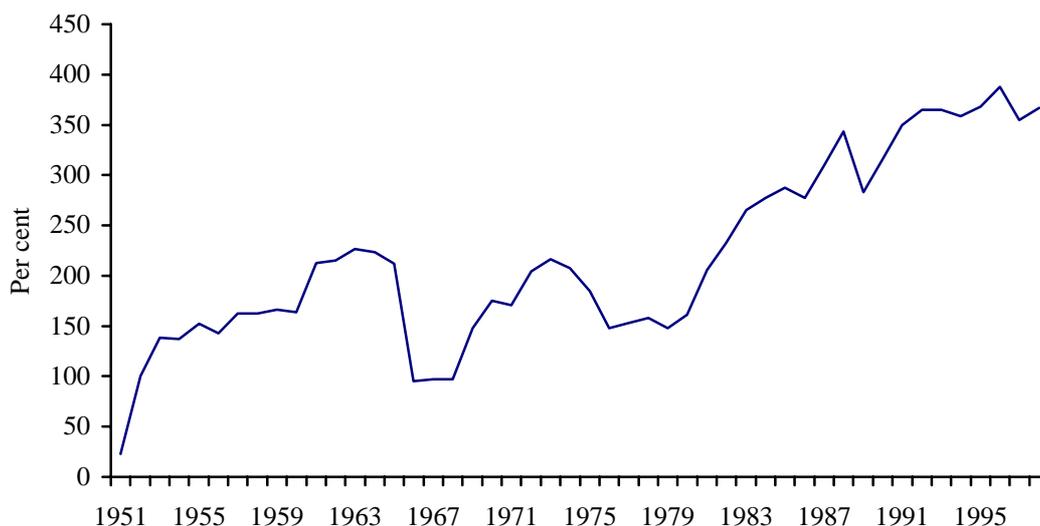
Notes: Prescription charges were abolished in 1966–68. Figures are for income from dental treatment, ophthalmic treatment and prescription charges.
Source: Office of Health Economics, 1999, Table 2.19.

5.1   Coverage of private health insurance

Using data from the Family Resources Survey (FRS), we are able to construct a clearer picture of the individuals who have private medical insurance.[23] The FRS is an annual survey of around 45,000 individuals which combines information on basic characteristics, such as family structure and employment status, with detailed income information. Although it does not contain information on direct expenditure on private medical treatment, the FRS records whether individuals are covered by private medical insurance and, if so, whether this is paid for by a member of their household or by someone else. We use this last information to determine which policies are bought by individuals and which are paid for by employers.[24] We use combined FRS data for 1994–95 to 1997–98 covering over 175,000 individuals.

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[23]See Propper, Rees and Green (1999) for a pseudo-cohort analysis of the demand for private medical insurance using the Family Expenditure Survey from 1978 to 1996. In addition, Propper (1999) looks at actual use of private and public healthcare using the British Household Panel Survey.

[24]Where an individual is covered by two policies — one paid for by themselves and one by an employer — we record them as having paid for the policy themselves. This accounts for less than 1 per cent of all individuals with private medical insurance.

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Overall, 12.5 per cent of individuals in the FRS are found to have private medical insurance. The coverage of private health insurance is strongly related to income. Richer households are more likely to have private medical insurance than poorer households. Figure 5.5 shows the percentage of individuals with private medical insurance by income decile. Thus 40 per cent of people in the richest 10 per cent of the population are privately insured, compared with under 5 per cent of those in the bottom 40 per cent. Only the very bottom decile does not fit the pattern completely, with a higher proportion of individuals in that decile having private medical insurance than in the next two deciles. This bottom category, however, contains a large number of individuals who only temporarily have low incomes, such as self-employed people whose income may fluctuate quite considerably over the year.

Figure 5.5. Percentage of adults with private medical insurance, by income decile, 1994–95 to 1997–98
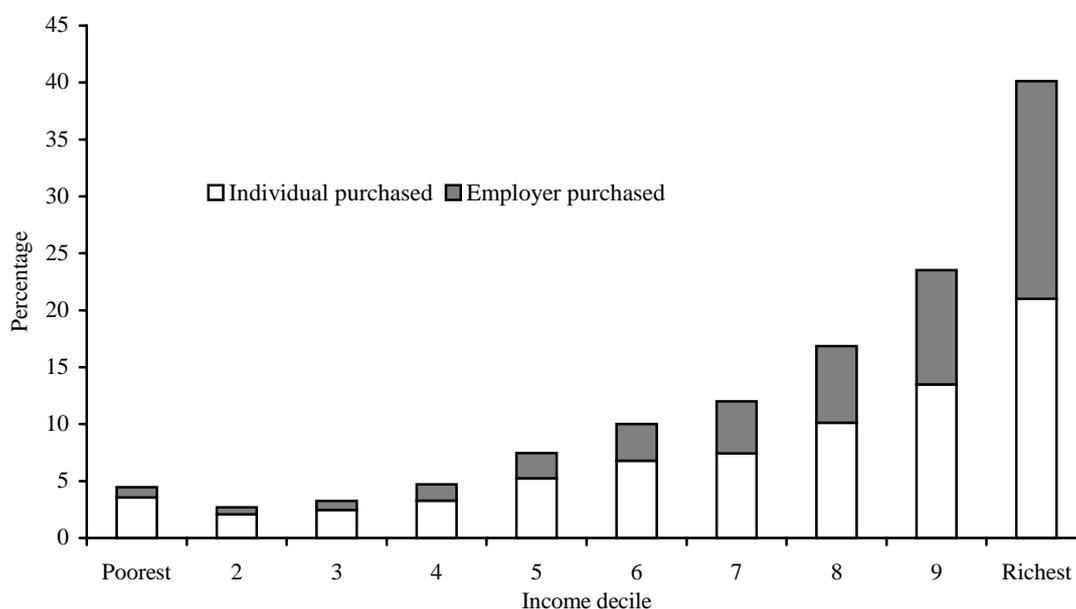
Sources: Family Resources Survey, 1994–95 to 1997–98; authors' calculations.

The lighter part of each bar in Figure 5.5 represents individuals whose insurance policies have been paid for by someone in their household, while the shaded part represents individuals whose insurance has been paid for by someone outside the household,[25] showing how the probability of buying insurance individually or obtaining it through an employer varies with income. The likelihood of insurance being paid for by an employer increases with income. Thus 48 per cent of those with health insurance in the top decile have had it bought by an employer, compared with under 25 per cent of those with health insurance in the bottom three deciles. It can also be seen that, independently of whether insurance has been bought, those with higher incomes are more likely to receive

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[25]In the latter case, we assume that this is paid for by an employer. There may, however, be situations where individuals are bought insurance by people, other than their employers, whom they do not live with (such as children or parents), although these cases are likely to be less important.

it as part of their job. Thus under 1 per cent of individuals in the bottom three deciles receive medical insurance as part of their jobs, compared with 19 per cent of the top decile. Both these results are consistent with the idea that jobs that offer better remuneration are also more likely to offer other benefits, such as free private health insurance.

Individuals with more skilled jobs are more likely to have employer-provided medical insurance and are also more likely to buy it themselves if their employer does not provide it for them. This is shown in Table 5.1, which gives the percentage of individuals with health insurance and the percentage of individuals with employer-provided health insurance, by job category.

**Table 5.1. Percentage of adults with private medical insurance,
by job category and whether paid for individually or by an employer,
1994–95 to 1997–98**

Job category	Percentage with health insurance provided by:		
	Individual	Employer	Total
Professional	15.6	13.8	29.4
Managerial & technical	12.8	13.1	25.9
Skilled non-manual	9.1	6.9	16.0
Skilled manual	5.6	3.1	8.7
Partly skilled	4.9	2.4	7.2
Unskilled	2.9	1.1	4.0
Not in work / Other[a]	5.6	1.4	7.1
Total	*7.6*	*5.0*	*12.5*

[a]Includes those working in the armed forces.

Notes: Figures count insurance purchases where the costs are shared between the individual and an employer as individual- rather than employer-purchased insurance; this will lead to a lower proportion of 'employer-provided' coverage than that suggested by industry sources such as Laing and Buisson (1999). Children are excluded from the analysis. In addition, the FRS does not make it possible to distinguish whether an individual's insurance is provided by their employer or the employer of another member of the household; this may lead to a small degree of misallocation.

Sources: Family Resources Survey, 1994–95 to 1997–98; authors' calculations.

**Table 5.2. Percentage of people with private health insurance,
by age and employment status, 1994–95 to 1997–98**

	Employment status			
Age	Employed	Self-employed	Not employed	Total
16–25	7.7	6.1	4.0	6.3
26–35	16.2	12.2	5.8	13.1
36–45	19.4	16.4	8.1	16.4
46–55	21.1	20.5	10.0	18.1
56–65	18.0	20.7	10.6	13.2
66–75	(-)	(-)	8.8	8.8
75+	(-)	(-)	4.6	4.6
Total	*16.8*	*16.7*	*7.7*	*12.5*

Note: The FRS does not make it possible to distinguish whether an individual's insurance is provided by their employer or the employer of another member of the household. This may lead to a small degree of misallocation.

(-) signifies that the cell size was less than 50 observations. All other cells are based on a minimum of 500 observations.

Sources: Family Resources Survey, 1994–95 to 1997–98; authors' calculations.

Individuals with medical insurance also differ from those without according to employment status and age, as shown in Table 5.2. Split by employment status, employees and the self-employed are more likely than those not in work to possess private medical insurance. Nearly 17 per cent of individuals in these two groups are covered, compared with under 8 per cent of those not in work. Coverage also varies by age, with those in the 46- to 55-year age category being the most likely to be covered by a policy. The percentage of people with insurance is lower both below and above that age, with the two extremes — the under-25s and the over-75s — being the least likely to possess such insurance. There are several potential reasons for this. Younger individuals may be less likely to receive employer-provided cover and, when considering whether to purchase their own insurance, they may decide that the probability that they will use such insurance is low. Older individuals are clearly less likely to be covered by an employer's scheme. Another important factor is that, due to increased health risks, the price of private medical insurance is very high for older individuals. It is also worth noting that generational effects may be important too. Indeed, evidence from Propper, Rees and

Table 5.3. Characteristics of those with private medical insurance

Characteristic	Impact on likelihood of having private medical insurance
Age	Individuals aged between 40 and 60 are found to be the most likely to be covered by private medical insurance, with those aged over 70 being the least likely.
Family situation	Those living with a partner are more likely to have private medical insurance than single people. Individuals living in households without children are also more likely to be covered.
	Individuals living in households containing either adult children or unrelated individuals are 1.1 percentage points less likely to be covered by private medical insurance than others.
Gender	Men are found to be more likely to be insured than women, by 0.9 percentage points.
Income	Income has a positive effect on possession of private medical insurance, but this effect is found to decrease at higher income levels.
Employment status	Employees are found to be more likely to have private medical insurance than either the self-employed or those out of work.
Education	Compared with those who left education at the minimum school-leaving age, those with college education are more likely to have insurance, while those with just A levels are even *more* likely to be covered.
	The group with the highest probability of being covered by insurance is those still in education. They are likely to be covered by their parents' policies.
Housing tenure	Individuals in owner-occupied accommodation are 5.8 percentage points more likely to have private medical insurance than others.
Regions	Individuals in the West Midlands, Greater London and the South East are most likely to have private medical insurance.
Occupation	Those in non-manual jobs are most likely to possess medical insurance. Managerial and technical staff are the most likely to have medical insurance, followed by professionals and skilled non-manual workers. Those in the armed forces are the least likely.
Savings	Individuals with higher levels of savings are found to be more likely to be covered by private medical insurance.

Notes: All these results are significant at the 95 per cent confidence interval. For more details, see Appendix B.

Sources: Family Resources Survey 1994–95 to 1997–98; authors' calculations.

Green (1999) suggests that, while 30-year-olds are less likely to have private medical insurance than 50-year-olds, 30-year-olds today are more likely to have it than 30-year-olds in the past.

In order to get a better understanding of the characteristics of those with and those without private medical insurance, Table 5.3 presents some multivariate analysis. This enables the role of one characteristic in determining the likelihood of an individual being covered by private medical insurance to be assessed while holding constant the impact of all other characteristics. More details are provided in Appendix B.

The multivariate analysis shows that the age pattern observed in Table 5.2 still holds after the impact of other characteristics, such as income and employment status, is taken into account. We find that individuals in non-manual jobs are more likely to be insured, independently of their income, although managers and technical staff are more likely to be insured than professionals. This is possibly due to the greater diversity of the 'professionals' group. Coverage of medical insurance also varies by region, with Greater London and the South East being the areas with the highest rates of medical insurance.

Table 5.4. Characteristics of those who purchased private health insurance directly compared with those who had it provided by an employer

Characteristic	Impact on likelihood of private medical insurance being directly purchased
Age	Older individuals with private medical insurance are found to be more likely to have purchased that insurance directly.
Family situation	Individuals with children are found to be less likely to have purchased insurance directly.
Gender	Men are 3.5 percentage points less likely to buy insurance themselves than women.
Income	Those with higher levels of income are found to be *less* likely to have bought private medical insurance directly. This is due to the fact that those with higher incomes are more likely to work in a job that provides other benefits, such as private medical insurance.
Employment status	Not surprisingly, the self-employed and those out of work are more likely than others to have paid for private medical insurance themselves.
Education	Those leaving school between the ages of 16 and 18 are more likely than those who left school at the minimum leaving age to have bought insurance directly. In addition, we find that those still in education are some 16.0 percentage points less likely to have their insurance bought by themselves or another member of their current household. This is likely to be due to some company schemes covering dependants still in education.
Housing tenure	There is no evidence of any correlation between house ownership and how any private medical insurance is paid for.
Regions	Those living in Greater London and the South East are less likely to have bought their insurance themselves.
Occupation	Those in partly skilled and unskilled manual jobs are found to be more likely to have purchased private medical insurance directly.
Savings	The level of savings does not have a statistically significant effect on whether individuals purchase health insurance directly.

Notes: All these results are significant at the 95 per cent confidence interval. For more details, see Appendix B.

Sources: Family Resources Survey 1994–95 to 1997–98; authors' calculations.

It is also informative to look at the characteristics of those receiving employer-provided private medical insurance compared with those who have purchased insurance directly themselves. Table 5.4 presents a summary, with more details being provided in Appendix B. Among individuals with private medical insurance, those who purchased it directly tend to be older, poorer, more likely to live outside Greater London and the South East, and more likely to be manual workers. Those who are still in education are much more likely to have health insurance paid for by someone outside their current household. This could be due to the fact that many are no longer in the same household as their parents, who may be paying, or that many corporate schemes cover dependants beyond school-leaving age. We find that the level of savings in a household does not have a significant effect on how health insurance is paid for.

5.2   Policy issues

The situation, then, is one of increased use of private alternatives to the NHS over the last 20 years, particularly among higher-income households. The causes and implications of this trend away from public medicine are clearly important from a public policy point of view. When considering why individuals might choose to buy health insurance, it is interesting that those with private medical insurance are more likely to be dissatisfied with the NHS than those without it (Calnan, Cant and Gabe, 1996). Specifically, there is evidence that longer waiting-lists for NHS treatment are associated with greater purchase of private health insurance. This could be an indication that waiting-lists are a particular concern or, alternatively, that they are used as a barometer for NHS performance (Besley, Hall and Preston, 1996 and 1999). The fact that the public tend to highlight waiting-lists is perhaps not surprising, given the degree to which the media and political parties have focused on them. Chapter 6 considers the causes and consequences of waiting-lists.

It is true that increased use of private facilities eases the pressure on the NHS by freeing public spending that would otherwise have gone on those who have 'opted out'. One possibility would be for the government to encourage individuals to take out private medical insurance in order to reduce the demands on the NHS. This was in fact the case prior to the July 1997 Budget, when individuals aged over 60 received basic-rate tax relief on the purchase of private medical insurance.[26] The removal of this tax relief is likely to have led to a reduction in the numbers in this age-group covered by insurance and hence an increase in demands on the NHS. However, the subsidy would have cost an estimated £135 million in 1999–2000 had it not been abolished in July 1997.[27] In fact, it is extremely unlikely that the cost of any such subsidy to private medical insurance would be less than the NHS expenditure saved. For example, at least an additional 1.9 million individuals would have to take out private medical insurance for a subsidy to all adults

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[26]This was regardless of whether they were taxpayers or not. Couples with one person aged 60 or over also qualified for the subsidy.

[27]Source: HM Treasury, 1997.

equal to the basic rate of income tax to be self-financing.[28] This is equivalent to growth in coverage of private medical insurance of some 28 per cent.

There are also potential adverse effects on the NHS from the increase in numbers covered by private medical insurance. Research shows that those with private medical insurance are less likely to support increases on public health spending, even after their other characteristics are taken into account.[29] This finding suggests that continued growth in private sector healthcare would have implications for the level of support for an NHS which is provided universally free at the point of use. It is of particular significance that those with medical insurance are likely to have higher incomes. These individuals may be more vocal in their opinions about the use of public funds and their concerns may be of particular importance as they will be paying more tax than average.

From a policy perspective, it is also important to be aware that substantial increases in NHS funding, which brought about a significant improvement in the performance of the NHS, could lead to some individuals with private health insurance increasing their demand for NHS services. It is clearly possible that the increases in NHS spending that were announced in the recent Budget could lead to some individuals choosing not to renew their private health insurance.[30] This is particularly likely if waiting-lists continue to be a crucial factor in determining individuals' demand for private medical insurance and if the government succeeds in its stated aim of reducing these over the lifetime of this parliament.[31]

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[28]See Appendix C for more details. Future work will examine the effect of the removal of tax relief for the over-60s on the take-up of private medical insurance.

[29]This is found by Brook, Hall and Preston (1997). Burchardt and Propper (1999) find evidence that actual use of the NHS is likely to reduce support for the principles of the NHS, although the level of support still remains high.

[30]See Hall and Preston (1998) for a discussion of individuals' possible preferred levels of public spending given the presence of a private alternative.

[31]HM Treasury, 1998.

6.   Measuring quality in the NHS

So far, our discussion on the state of the NHS has centred largely on the quantity of resources allocated to the NHS. While it is important to have an adequately funded health service, our ultimate concern is the quality of care delivered. Since the beginning of the NHS, there has been much discussion of indicators of NHS quality, both for the UK as a whole and across different regions. Measuring the quality of output is crucial to assessing whether the NHS is indeed delivering the level of care expected by both the public and policymakers. In addition, it is important to assess whether there is equity in the level of service between different areas of the country.

6.1   Waiting-lists

Although it is only one such indicator, a large part of the recent debate has focused on the number of people waiting for in-patient admissions. In order to be treated for a serious, non-emergency condition, an individual must, in the first instance, be referred to a specialist by his or her GP for an out-patient appointment. There is usually a wait between being referred and the actual appointment with the specialist; during this time, the individual is on the out-patient waiting-list. After seeing the specialist, the patient may be deemed to require an in-patient appointment for a clinical intervention.

Figure 6.1. Number of individuals on in-patient waiting-lists in England, December 1949 to February 2000
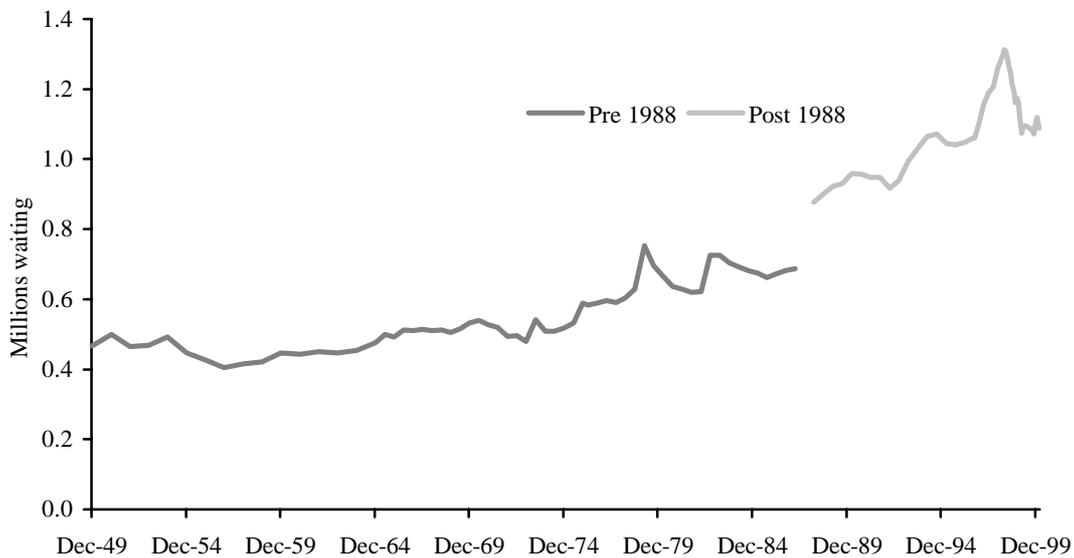
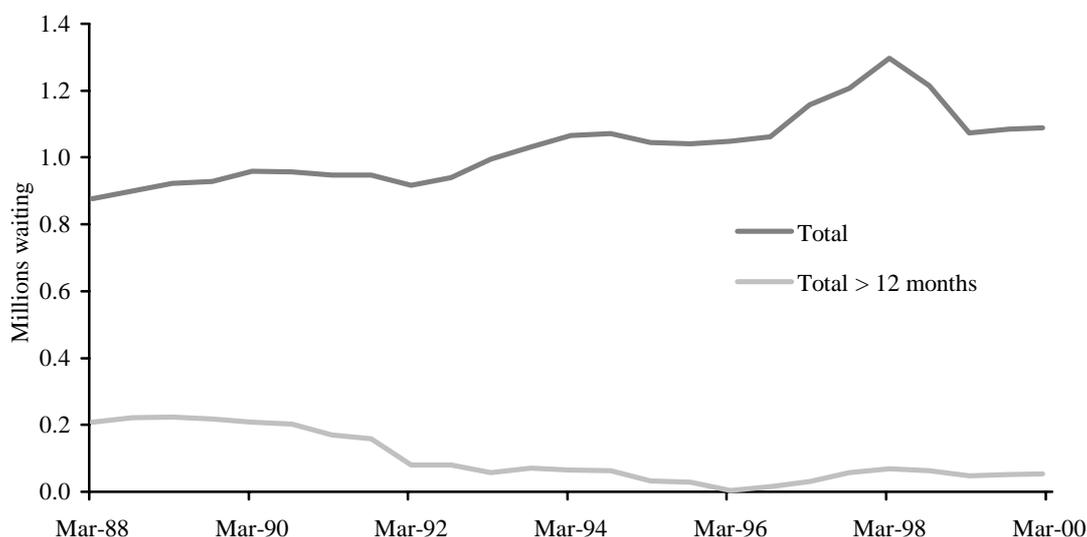*Note:* Data before 1988 do not include waiting for day-case procedures, which in 1987 accounted for around one-eighth of procedures, so there is a structural break in the series between March 1987 and March 1988.

Sources: House of Commons Library, 1999; Department of Health Press Release 2000/0203, *Statistical Press Notice: Inpatient Waiting Lists — February 2000*, 3 April 2000; Department of Health.

In February 2000, 1.1 million people in England were waiting for an in-patient appointment — over 2 per cent of the population. This had risen from under 0.5 million people waiting in December 1949. Most of the increase in waiting-lists has come in the last quarter of a century, as shown in Figure 6.1. There is a break in the series between 1987 and 1988 due to the inclusion of day-case procedures being included in the waiting-list figures from 1988 onwards. These accounted for around one-eighth of all cases in 1987. Between the birth of the NHS in 1949 and December 1973, there was a gradual increase in waiting-lists, averaging under 0.4 per cent a year. Between 1973 and 1987, waiting-lists grew at an average annual rate of 2.3 per cent. Since 1988, the rate of increase has actually slowed slightly, to an average of 1.8 per cent a year. There was still a larger absolute increase in the numbers waiting over this latter period. This is despite growth in the number of admissions, which has been rising steadily since 1988 by an average rate of 1.6 per cent a year.

Figure 6.2. Number of patients on in-patient waiting-lists in England, March 1988 to February 2000

In its 1997 manifesto, the Labour Party pledged to reduce the list to 100,000 below the level at the time of the election.[32] This pledge was reiterated in the Public Service Agreements that accompanied the Comprehensive Spending Review and augmented with an additional pledge to reduce average waiting times.[33] The numbers waiting for in-patient appointments from 1988 to 2000 are shown in more detail in Figure 6.2. In March 1997, waiting-list figures stood at 1,158,000 but they rose sharply in the period before and after the election, reaching 1,312,600 in April 1998. Since then, in-patient

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[32]Labour Party, 1997.

[33]HM Treasury, 1998.

waiting-lists have fallen and there are now 70,000 fewer people on waiting-lists than in March 1997, leaving the manifesto commitment requiring a 30,000-person reduction before the next election. If waiting-lists continue to fall at the same rate as they have been falling over the last 12 months, the government's target will be easily met. This will be the biggest absolute decrease since the beginning of the NHS, but waiting-lists will still be high by historical standards and will be higher than they were at any point before September 1996.

Figure 6.2 also shows the number of people waiting for over 12 months for admission from March 1988 to February 2000. Although the number of people waiting has fallen since the election, the number of people waiting over 12 months has increased and is currently nearly 70 per cent higher than it was in March 1997.

Why do we care about the length of waiting-lists?

Although waiting-list numbers have increased greatly in recent years, Figure 6.1 showed that waiting-lists have existed since the birth of the NHS in 1949. While it is certainly the case that any increase in resources available to the NHS could reduce the numbers waiting, it is unlikely that waiting-lists could ever be eliminated. Economic theory suggests that individuals will consume a product until the costs of additional consumption are greater than the benefits. This has important implications for the NHS since it aims to deliver healthcare largely free at the point of use. Waiting-lists, whether intentionally or not, serve the purpose of containing actual use of the NHS.

If waiting for treatment is seen as a cost to individuals, longer waiting-lists will ease the burden on the NHS as some individuals might find treatment too costly if they have to wait. This is likely to lead to some individuals choosing to purchase healthcare privately. In addition, waiting for treatment can be considered as a lowering of the benefit of such treatment.[34] Healthcare is characterised by the fact that its value is dependent on the timing of its consumption — the further away it is from when it is desired, the lower its benefit. Hence waiting for treatment may reduce the number of people desiring such treatment by lowering its value. Clearly, this is not the case for all ailments. Conversely, reducing waiting-lists would raise the benefit of healthcare, thus inducing more people to join the list in the first place. Thus, eliminating waiting altogether is much more difficult and costly than simply treating the individuals who are currently awaiting treatment.

Since the value of healthcare will depend on the time at which it is made available, the number of people waiting is clearly one indicator of NHS quality. Other things being equal, the more people waiting for treatment, the lower the quality of the system providing this care. There are other important indicators of NHS quality. Out-patient waiting-lists are often ignored in the quality debate, and clinical indicators (as discussed in Chapter 4), which are more complex and difficult to measure, are a more direct measure of the quality of service provided.

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[34]Lindsay and Feigenbaum, 1984; Cullis and Jones, 1986.

6.2   Waiting times

Although the government has argued that waiting-list numbers are a crucial indicator of NHS quality,[35] it has also targeted excessively long waiting times. While undoubtedly waiting-lists are one potential indicator of NHS quality, what an individual patient will care about is the amount of time he or she will have to wait for treatment. In March 1999, the average waiting time for an in-patient appointment was 4.3 months. The mean and median waiting times for an in-patient appointment from 1987 to 1999 are shown in Figure 6.3.[36] Looking at both these series is interesting since, if the maximum time waiting increases, we would observe larger increases in the mean waiting time than in the median waiting time.

Figure 6.3. Mean and median in-patient waiting times in England, 1987–99
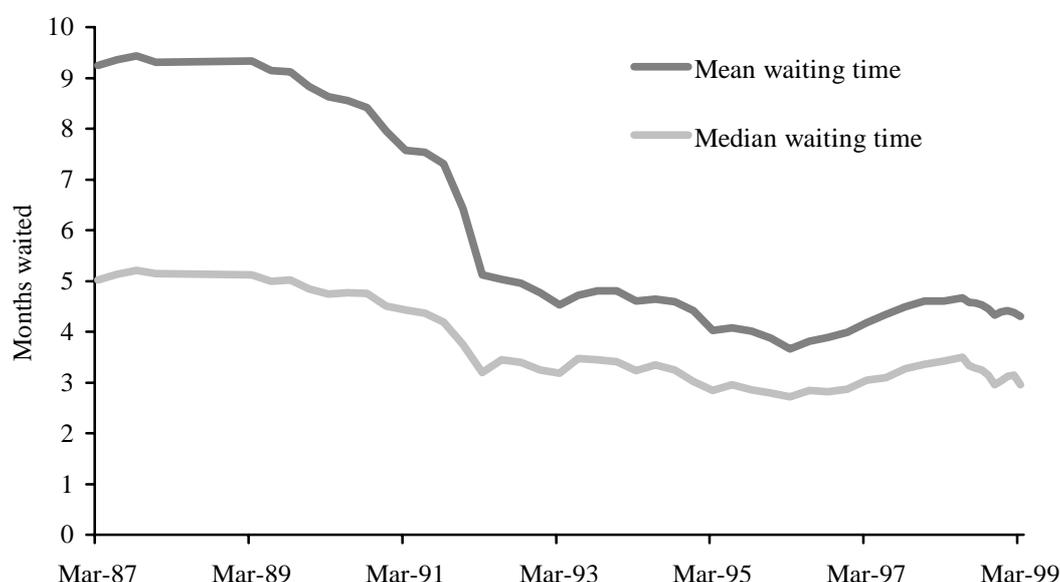
Note: Includes all individuals waiting to be admitted to NHS hospitals in England either as a day case or as an ordinary admission.
Source: House of Commons Health Select Committee, 1999, Table 4.15.3.

Since 1987, both the mean and the median waiting times have fallen. The mean has more than halved, from over 9 months in March 1987 to its March 1999 level of 4.3 months. Much of this decrease occurred between March 1991 and March 1993 when the mean waiting time fell by over 3 months. The fall in the median waiting time has not been as marked as the fall in the mean. Between 1987 and 1999, it fell from 5.0 months to 3.0. The proportional decrease was lower than the decrease in the mean and is an indication that, over these years, there has been a higher tendency to treat people who have been waiting for a long time than there had been previously. Since waiting-lists have begun to

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[35]See, for example, the article by the now Secretary of State for Health, Alan Milburn (Milburn, 1998).

[36]The median waiting time represents the time waited by the individual who has exactly as many people waiting less time than them as there are people waiting more time for their appointment.

fall under the current government, there has been little noticeable difference between the change in mean waiting times and the change in median waiting times. This means that there is no evidence, from these statistics at least, that waiting-lists have fallen at the expense of those who have been waiting longer and who may therefore be more costly to treat.

6.3   Regional variations

Waiting-lists are considered to be important as they are an indicator of whether the NHS provides healthcare at the time that people require it. When considering the concept of quality in healthcare, there are other aspects that need to be considered. Perceived problems in the service provided by the NHS are blamed either on insufficient funds or on inadequate management of resources. Differences between the results produced by different hospitals or different regions are often seen as differences in efficiency. Further, such differences are often deemed unacceptable as they are contrary to the idea of equity within the NHS — the idea that all people have the right to the same level of healthcare whatever their background. This would suggest that any additional funds should be allocated to those areas that are currently receiving a lower quality of service from the NHS. Alternatively, the government could decide that equity is less important than the

Figure 6.4. Percentage of population on in-patient waiting-lists, by waiting time and by region, 31 December 1999
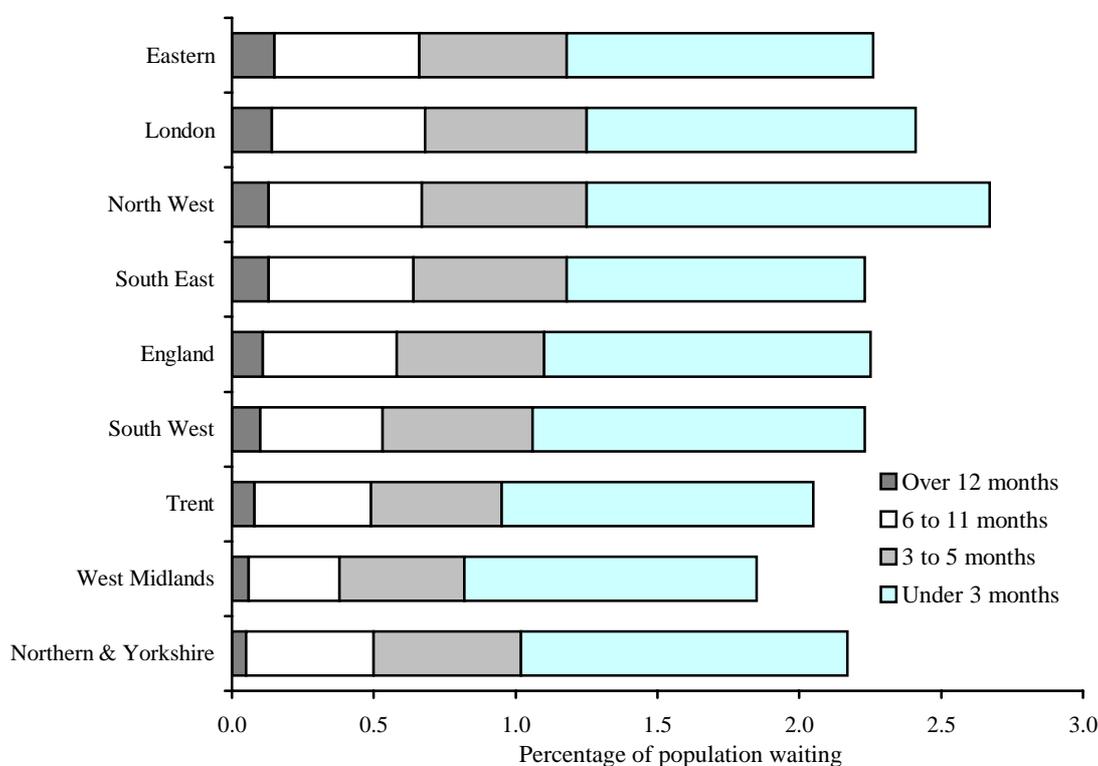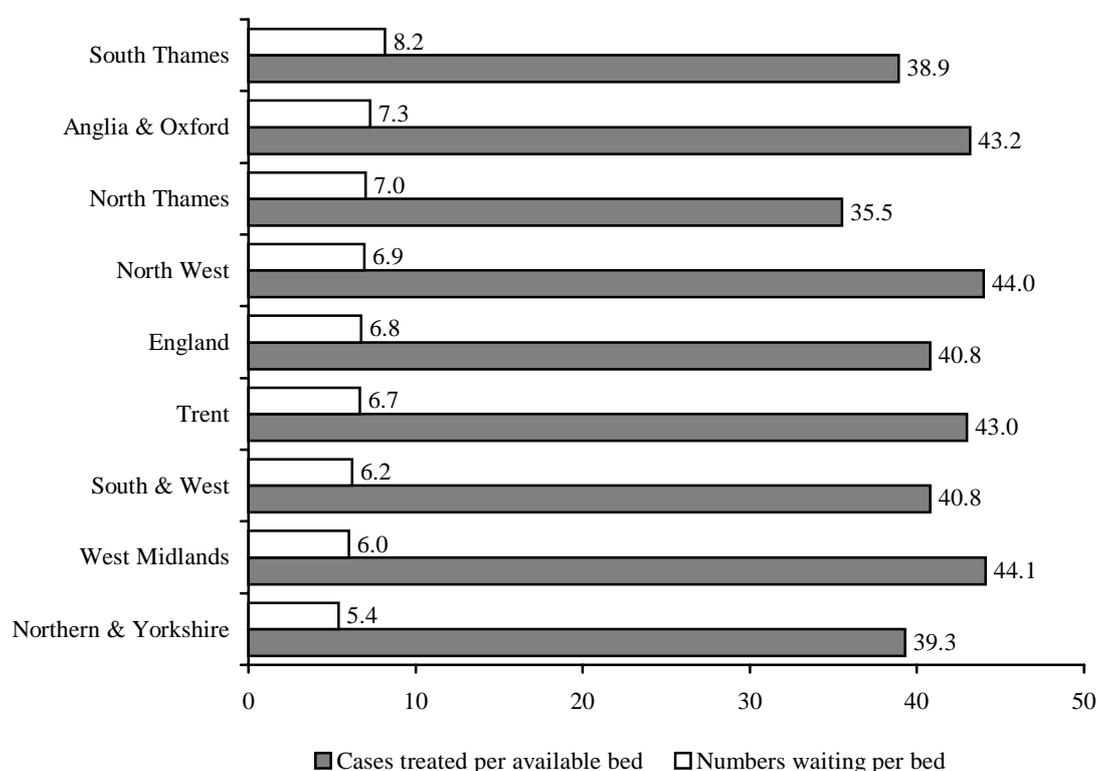

Note: The regions are the new NHS regions used after April 1999.
Source: NHS Executive, 2000.

overall level of service and hence allocate funds to the areas where they would lead to the largest improvement in health outcomes. Both these competing factors make any regional variation in quality and efficiency extremely important.

The percentage of the population of each NHS health region in England waiting for an in-patient appointment varies across regions. This is shown in Figure 6.4, which also shows the amount of time that people have been waiting. Overall, 2.3 per cent of the population of England is on an in-patient waiting-list, the majority of whom have been waiting under 3 months. Across the regions, however, the percentage of the population waiting varies from 1.9 per cent of the inhabitants of the West Midlands to 2.7 per cent of individuals in the North West. The distribution of those waiting across waiting times also varies, with more than 50 per cent of those waiting in the East, London and the South East having been waiting over 3 months.

**Figure 6.5. Cases treated per bed and numbers waiting per bed, per year, by NHS region**

Region	Numbers waiting per bed	Cases treated per available bed
South Thames	8.2	38.9
Anglia & Oxford	7.3	43.2
North Thames	7.0	35.5
North West	6.9	44.0
England	6.8	40.8
Trent	6.7	43.0
South & West	6.2	40.8
West Midlands	6.0	44.1
Northern & Yorkshire	5.4	39.3

■ Cases treated per available bed   □ Numbers waiting per bed

Note: Regions are as used before April 1999.
Source: Office for National Statistics, 1999, Table 7.14.

These differences between regions may occur for a variety of reasons. It is important to remember that there will always be some degree of variation due to the special factors occurring in a region at any point in time. Large or persistent variations in quality would, however, lead to concerns that the NHS is no longer offering an equitable level of service. One reason why waiting-lists might differ considerably between regions is that some regions may be more efficient at using the resources they have. Figure 6.5 shows the number of cases treated per bed, by each NHS region and ranked by the number of

people waiting for each bed. The number of cases treated per bed varies from 35.5 in the North Thames region to 44.1 in the West Midlands. The North West — the region with the longest waiting-lists and the fourth highest level of numbers waiting per bed — treats a relatively high number of cases per bed. It appears that a higher number of people waiting per bed cannot be explained by less efficient use of those beds. Of the regions with a higher-than-average number of people waiting per bed, half treat more people per bed than the English average while the other half treat less. This provides some evidence that it is not possible to simplify the problems of differential waiting-lists and waiting times to inefficient use of resources.

Figure 6.6. Highest and lowest rates of death within 30 days of surgery after non-emergency admission in each health authority, by region

Age-standardised rate of deaths per 100,000 cases
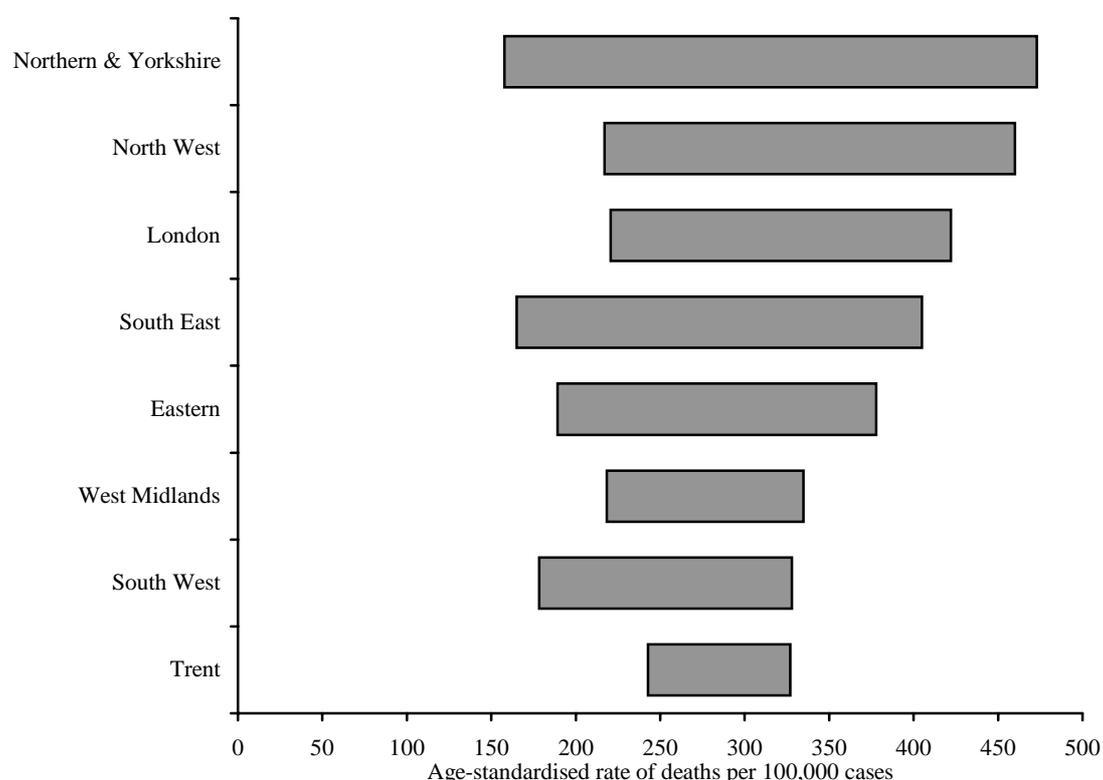
Note: The regions are the new NHS regions used after April 1999.
*Source:* NHS Executive, 1999.

Although levels of quality indicators may vary considerably between regions, within regions these variations are likely to be even more marked. Figure 6.6 shows the distribution of the age-standardised rate of deaths in hospital within 30 days of surgery after non-emergency admission, by health authority within the NHS regions. Within any region, the difference between the best-performing health authority and the worst-performing can be considerable. In the South East, the best-performing health authority had less than half the age-standardised rate of death of the worst, while Northern and Yorkshire contained both the best- and the worst-performing authority based on this measure of quality. If taken to a hospital level, these differences are even more

pronounced, although this is partly due to the different sizes, facilities and levels of specialisation of hospitals.

Differences between regions can be particularly marked when more specific indicators are considered. The 1997 NHS White Paper pledged that, by April 1999, all patients with suspected breast cancer would see a specialist within two weeks of being referred by their GP.[37] Figure 6.7 shows the percentage of women seeing a specialist within two weeks on 30 June and 31 December 1999. It is clear that, in June 1999, the pledge was far from being met, with one in five women in England not being seen within two weeks. There was also considerable regional variation, with 58.6 per cent of women seeing a specialist within two weeks in the North West compared with 98.2 per cent in the South West. By the end of December 1999, the percentage of women in England overall being seen within the government's time-scale of two weeks had risen to 91.8 per cent. The difference between the highest- and lowest-scoring regions had been reduced from 39.6 percentage points to 15.7 percentage points.

Figure 6.7. Percentage of women seeing a specialist within two weeks of being referred for suspected breast cancer
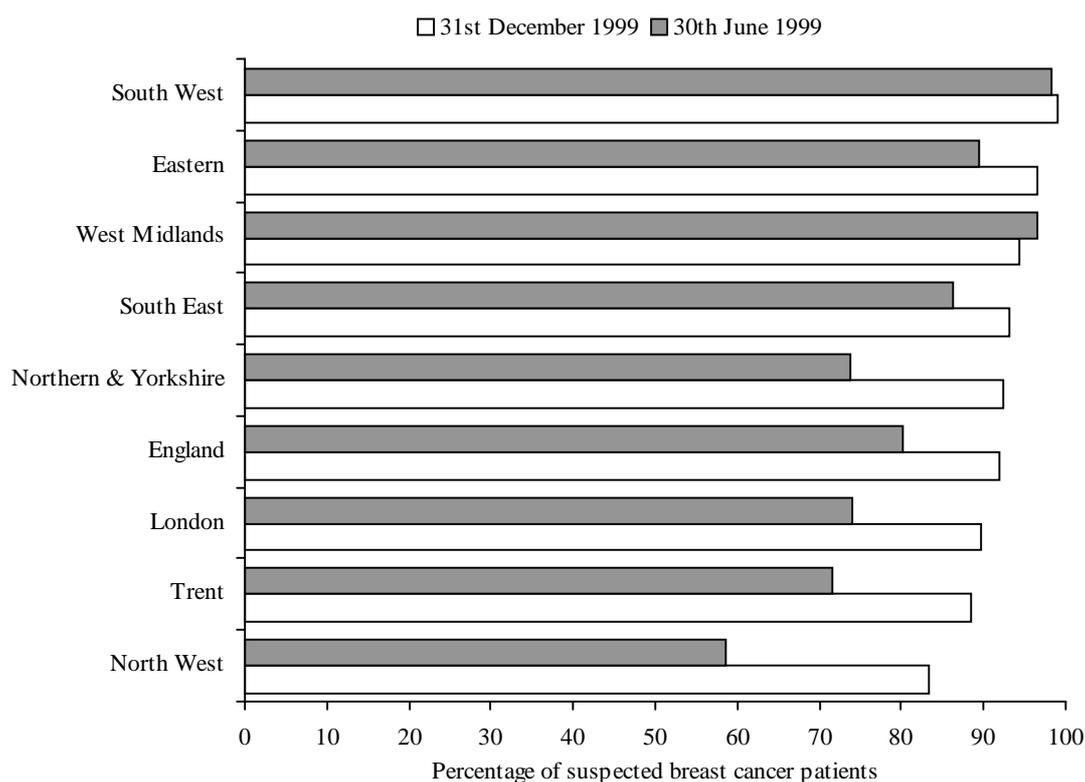
Sources: Department of Health Press Release 1999/0550, *Statistical Press Notice: Waiting Times for Suspected Breast Cancer Patients Quarter Ended 30th June 1999*, 22 September 1999; Department of Health Press Release 2000/0147, *Statistical Press Notice: Waiting Times for Suspected Breast Cancer Patients Quarter Ended 31st December 1999*, 13 March 2000.

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[37]Department of Health, 1997a. The pledge was repeated in HM Treasury (1998).

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This demonstrates that the government's targeting has been largely successful in increasing the overall standard and also in redressing the differences between regions. While shorter waiting times are preferable to longer ones, any reduction will incur costs. With a certain amount of resources, NHS trusts should provide the highest level of healthcare that they can, subject to the needs and characteristics of their particular area. Regions that previously had longer waiting times before women with suspected breast cancer saw a specialist may have had other concerns which were deemed to be more pressing. In this case, the government's targets may have been achieved at the expense of not improving another, non-targeted area. For example, in the North West, while only 58.6 per cent of women saw a specialist within the two-week period in June 1999, the authority might have benefited more from targeting resources towards reducing the proportion of the population waiting for an in-patient appointment from its currently high level. Thus, focusing on specific targets is not necessarily an optimal way of raising quality, particularly given the number of potential targets and the importance of considering the needs of different areas.

7.   Future pressures on the NHS from changing demographics

Much of the debate on the quality of the NHS is the result of concerns that, as the years pass, it will become increasingly difficult to provide sufficient quality of care because of new spending pressures that are likely to arise. Possible reasons for such concerns are well rehearsed. As the economy grows and incomes rise, people's expectations of the health services they require are likely to increase too. Since the NHS is labour-intensive, future economic growth is also likely to put upward pressure on NHS budgets as the level of wages in the economy rises[38] and hospital wage bills grow. Some new technologies are likely to be expensive, and although the cost of existing treatments may be expected to fall over time as patents expire, recent increases in the price of many generic drugs suggest that it is important not to overstate this latter effect.[39] A further reason why the NHS might require large funding increases simply to stand still concerns changing demographics. In this chapter, we address this issue in some detail.

It is well known that populations across the developed world are ageing. In the UK, as in many other countries, there has been considerable concern about the impact of such demographic change on a wide range of public policy areas, including pensions (see Banks and Emmerson (2000)) and the funding of long-term care for the elderly (see Royal Commission (1999)). The prospect of an ageing population in future decades will clearly have implications for the costs of providing healthcare too. Treating the elderly is expensive compared with treating other age-groups and already accounts for a considerable proportion of the health budget. As the number of elderly people is projected to rise, with the numbers of the oldest old rising the fastest, many commentators have predicted an escalation in the resources required to pay for their treatment.

However, as recent governments have been keen to point out (see Department of Health (1996 and 1997a)), it is important not to overstate these costs. Unlike many other countries, the UK has undergone much of its ageing already. The growth in the number of people over the age of 85 projected to take place over the 2000s and 2010s is somewhat lower than that already absorbed by the NHS during the 1980s and 1990s. In addition to this, projecting future levels of healthcare funding required to care for the elderly in years to come is not straightforward. It depends on a number of factors, such as the patterns of illness and disability amongst future generations of the old and the extent to which healthcare use amongst the elderly tends to be concentrated in the final months of life, irrespective of longevity.

A further consideration is that population projections are subject to error. There is some evidence to suggest that UK population predictions may systematically under-predict the growth in the elderly population. In this case, the demands on the public purse may turn out to be higher than otherwise supposed.

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[38]Although public sector and private sector wages do not always move in tandem with one another, large discrepancies in public and private sector pay rates that are unrelated to productivity and skill differences are unlikely to persist over the longer term. For evidence on this, see Disney et al. (1998).

[39]Department of Health Select Committee, 1999.

In this chapter, we discuss these issues in more detail and set out a range of projections of future costs due to demographic change based on this discussion.

7.1 The ageing of the population

The number of elderly people in the UK rose rapidly over the course of the last century. In 1901, there were less than 2 million people over the age of 65, with a tiny fraction of these aged over 85. The over-65s now number more than 9 million, or 16 per cent of the population, with over a million of these over the age of 85. This growth is projected to continue. By 2051, there are projected to be more than 15 million people aged over 65, and as many as one in five of these will be over 85 years old. These population trends and projections are illustrated in Figure 7.1, while Table 7.1 later shows the associated growth figures for each decade.

Figure 7.1. Numbers of people over 65 in the UK, 1901–2061
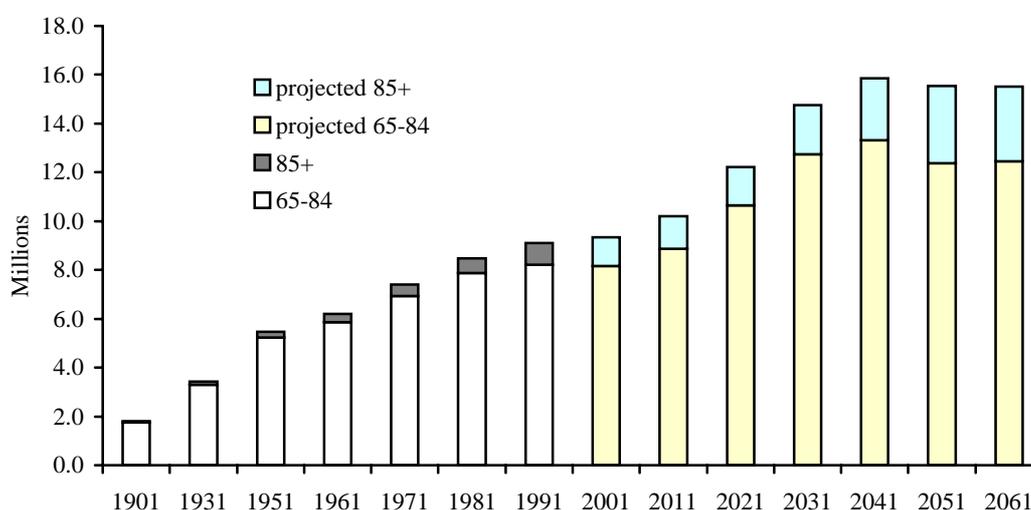
Source: 1951–91 from *Annual Abstract of Statistics* (various years); 2001–61 from Government Actuary's Department projections.

For the most part, the growth in the number of elderly people has been driven by steady increases in life expectancy, as shown in Figure 7.2. The number of old people is also determined by past trends in birth rates. Figure 7.3 shows numbers of births in the UK over the last century, with projections going forward to 2060. High birth rates at the start of the century, combined with increasing longevity, resulted in the burgeoning numbers of old people from the 1960s onwards. The dip in birth rates that occurred in the 1920s and 1930s was responsible for the gentle decline in the number of 65- to 74-year-olds seen during the 1990s, which will feed through to somewhat slower growth in the number of the oldest old over the 2000s and 2010s. The ageing of the baby boomers born after the Second World War will see the growth in numbers of elderly people start to pick up again towards the end of the 2010s.

Figure 7.2. Forecasts of life expectancy at birth, by gender, UK, 1901–2021
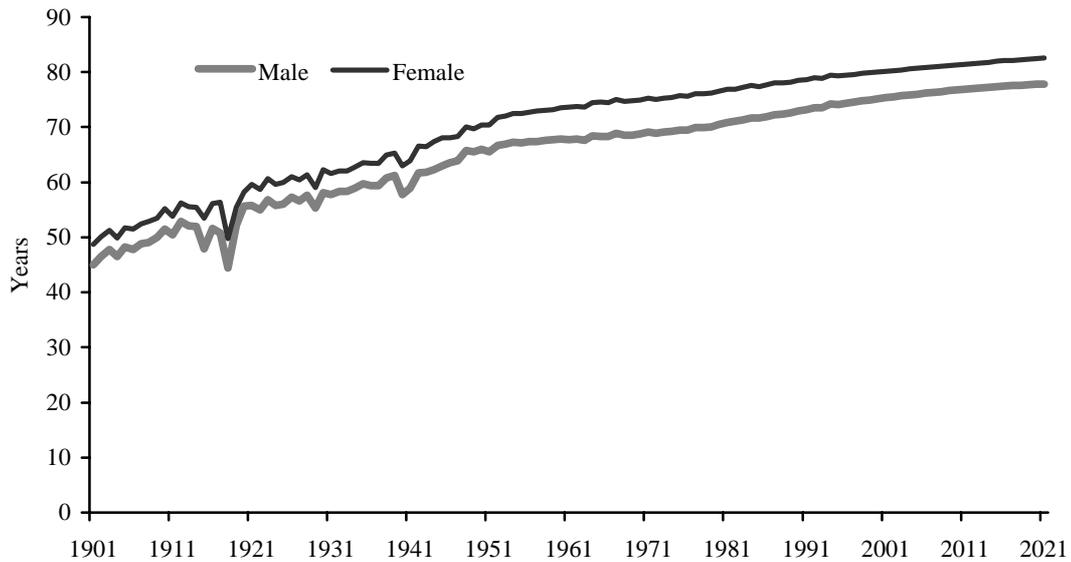
Source: Social Trends dataset, ONS website.

Figure 7.3. Actual and forecast births in the UK, 1900–2060
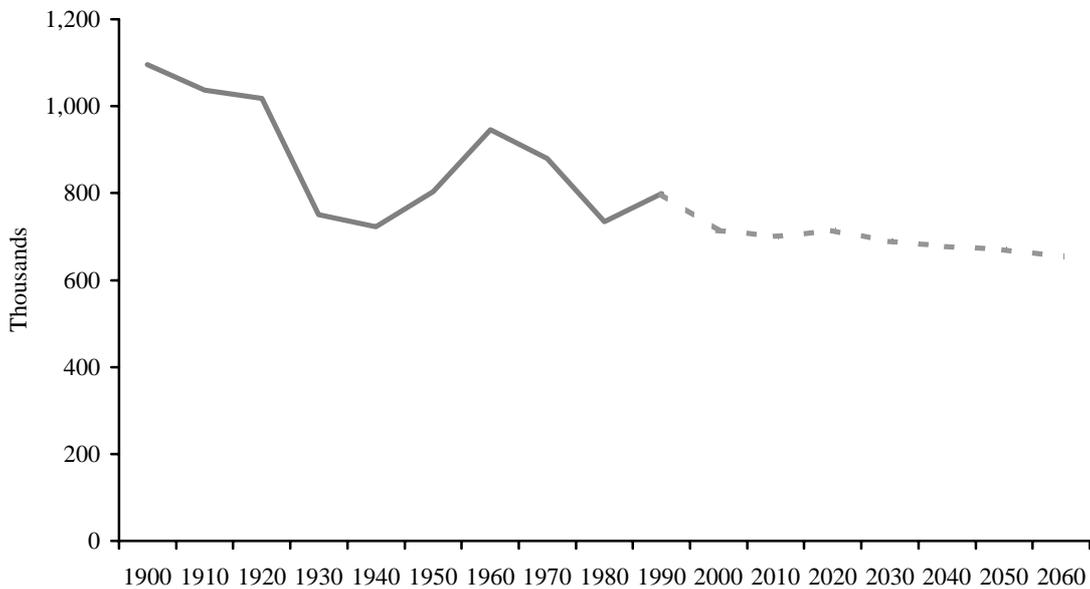
Note: Figures are for live births, at decade intervals; annual averages taken over two years are given for 1900–02 to 1980–82, single years thereafter. Forecasts for 2000 onwards.
Source: Office for National Statistics, 2000b, Table 5.13.

How does the projected growth in the elderly population compare with the numbers already absorbed in recent decades? Table 7.1 addresses this issue. Looking first at the number of 65- to 84-year-olds, the table shows that, for the reasons discussed above, the increase in numbers was relatively small over the 1980s, while numbers actually fell

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slightly in the 1990s. By comparison, the size of this age-group is expected to grow steadily again over the next 30 years as the post-war baby boomers age, before slowing in the decades that follow that. Focusing on the over-85 age-group, the table shows that growth in this section of the population over the 1980s and 1990s was higher than is set to occur over the next two decades, but thereafter the numbers will start to grow steadily again as the products of the post-war baby boom move into the latter stages of their lives. From the 2050s onwards, numbers in the oldest groups are expected to fall again as this generation dies out and is followed by a smaller one.

Table 7.1. Changes in the elderly population over different decades, 1951–61 to 2061–68

|	Change in number of 65- to 84-year-olds		Change in number aged 85+	
	Thousands	Per cent	Thousands	Per cent
1951–61	618	11.8	122	54.5
1961–71	1,061	18.1	139	40.2
1971–81	947	13.7	117	24.1
1981–91	333	4.2	294	48.8
1991–2001	−30	−0.4	274	30.6
2001–11	687	8.4	178	15.2
2011–21	1,781	20.1	221	16.4
2021–31	2,089	19.6	454	28.9
2031–41	589	4.6	518	25.6
2041–51	−954	−7.2	637	25.1
2051–61	82	0.7	−114	−3.6
2061–68	28	0.2	−176	−5.7

Source: Authors' calculations.

7.2 Healthcare costs and age

In order to understand how these demographic trends will affect healthcare spending, we first examine the costs of treating the elderly in the NHS today. Typical healthcare costs vary across the life cycle, but the elderly are particularly expensive. Figure 7.4 shows how average NHS health costs per head vary with age. There are considerable costs associated with birth; throughout childhood and much of adult life, average costs per person are relatively low, but then they rise steeply above the age of 65. The oldest groups are by far the most costly. The average treatment cost per person amongst the over-85s amounts to more than five times that of the 45–64 age-group.

This high relative cost of treating the elderly reflects the greater intensity of healthcare use amongst older people. Older people make more visits to NHS GPs, attend more out-patient hospital consultations and stay more in hospital as in-patients than younger members of the population. This is illustrated in Table 7.2, which reports figures from the 1998 General Household Survey. Older people were more likely to have consulted an NHS GP in the 14 days prior to interview, and they showed considerably higher rates of in-patient and out-patient hospital use.

**Figure 7.4. The cost of health services by age-group:
Hospital and Community Health Services gross current expenditure per head,
1997–98**
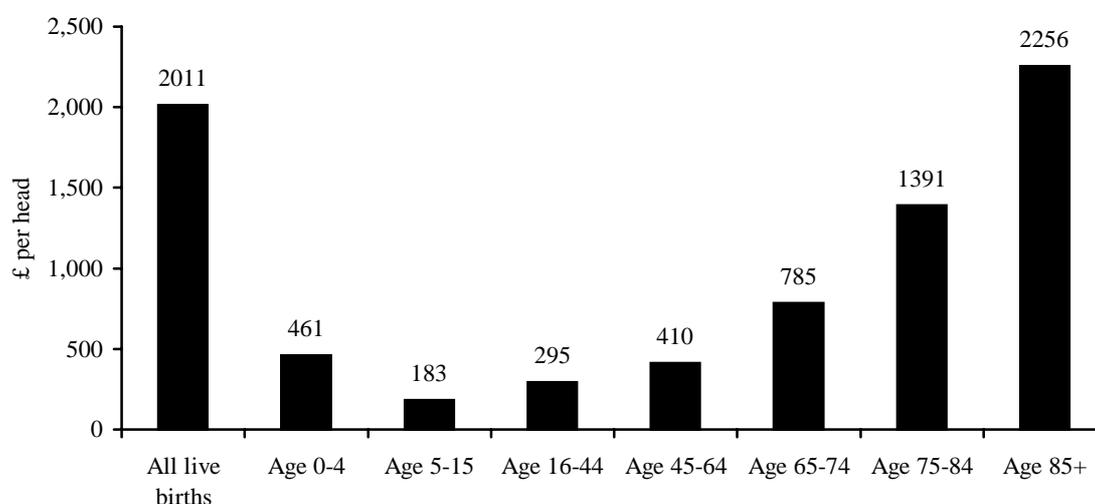
**Table 7.2. Visits to GP, in-patient stays and out-patient attendances, by age,
1998 General Household Survey**

Age	Percentage of people reporting consultation with NHS GP in the 14 days before interview		Average number of in-patient stays per 100 persons in a 12-month reference period		Average number of out-patient attendances per 100 persons per year	
	Males	Females	Males	Females	Males	Females
0–4	18	18	12	13	92	74
5–15	8	10	7	5	81	81
16–44	9	17	6	8	108	118
45–64	14	18	13	11	151	152
65–74	17	19	21	12	246	186
75+	21	20	28	20	240	206

7.3 Demographic change and its impact on health spending

As we saw in Section 7.1, the structure of the UK population has already changed considerably during the life of the NHS. The profile of the population it now treats is markedly older than the one it treated 50 years ago. In this section, we examine how the costs required to accommodate population changes that have already taken place compare with those projected for the coming decades. We then consider, in subsequent sections, why such cost predictions are inherently uncertain and we set out a range of future projections under some different scenarios.

Our baseline projections calculate the spending required to accommodate population change by holding costs per head in each age-group constant at 1997–98 levels (the most recent year for which figures are available) and applying these costs to the population structures of the past and of the future.

On this basis, the cost to the NHS of treating the population of 1951 would be just 75 per cent of the amount it will cost to treat the 2001 population, simply because of demographic change. Similarly, treating the population of 2051 would cost just under one-third more in real terms, just because of changes in the age of the population. These calculations are set out in Figure 7.5, where calculated costs in each year are expressed as a percentage of 2001 costs. As can be seen from this figure, demographic change will mean that the population will start to become less expensive to treat after 2051.

Figure 7.5. Baseline estimate of the cost of Hospital and Community Health Services expressed as a percentage of 2001 costs, 1951–2068
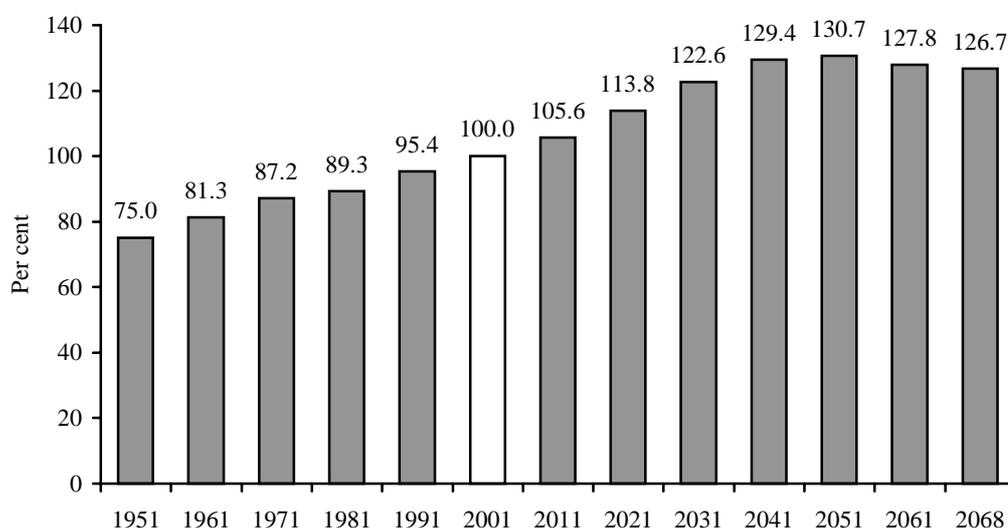

Note: Calculations are based on average costs per head in 1997–98 multiplied by UK population figures for each year. The costs figures are based on costs in England only; for the purposes of these calculations, we assume that UK average costs per head are the same.

Source: Costs per head by age from Department of Health (2000); historical population trends from Office for National Statistics (2000b); population projections from Government Actuary's Department.

The cost calculations in Figure 7.5 show the spending changes over 10-year intervals. More relevant for how annual budgets will be affected is the average annual health spending growth that they imply for each decade. This is set out in Figure 7.6. Under the same assumptions as above, population change will require additional spending averaging 0.6 per cent in real terms per year over this decade, 0.8 per cent in the two decades following and 0.5 per cent in the 2030s, before dropping off to be close to zero in the 2040s. After the 2040s, demographic change will start to work in our favour in this respect. The figures up to the 2040s are similar to those seen in previous decades, with the 1950s, 1960s and 1980s seeing relatively high costs due to population change compared with the 1970s and 1990s.

Figure 7.6. Baseline estimate of real annual average increases in HCHS spending due to demographic change, 1951–2068
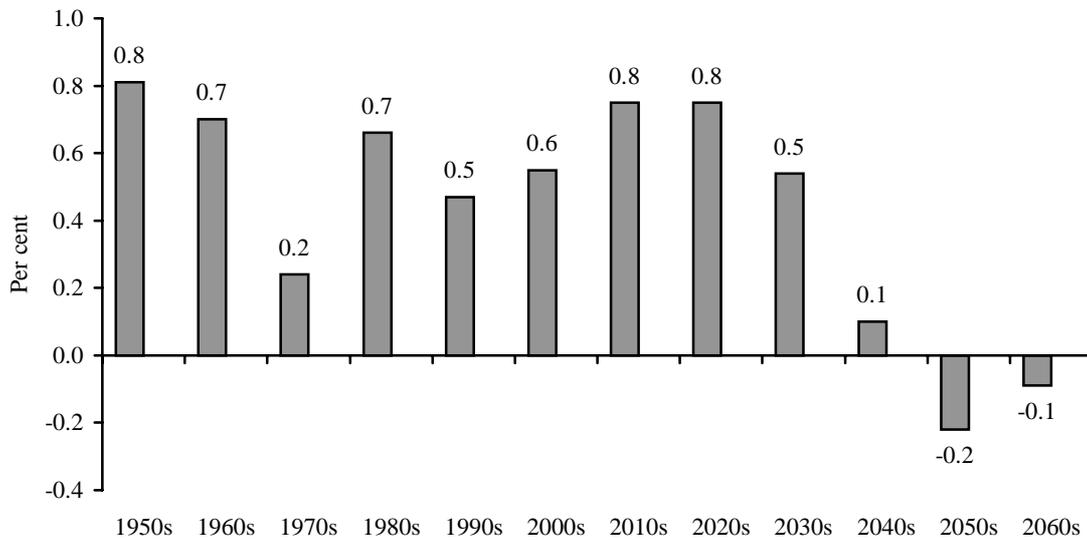
Note: The 1950s covers the years 1951–61, and so on until the 2060s, which just covers the period 2061–68.
Sources: Same as Figure 7.5.

Setting these projected spending requirements in context, the 0.6 per cent real growth per year required this decade amounts to about one-tenth of the additional annual allocation to health for the next four years that was announced in the Budget, or roughly one-fifth of the annual average seen over the history of the NHS. Clearly, these spending increases are much less than the real rate of growth of GDP in the economy. If demographics were the only spending pressure that the NHS faced, this would imply that these figures could be easily met. In fact, the spending increase of 30 per cent over the next 40 years comes on top of the impacts of wage pressures in the NHS and of increasing public demands fuelled by technological improvements.

7.4   More optimistic projections: does life expectancy matter?

The above costs may be overestimates of the actual resources required to pay for future demographic change. One reason for this is that, unlike in the area of pensions, increased longevity in the population need not necessarily translate directly into increased health costs. There is some evidence to suggest that the greatest proportion of healthcare spending amongst the elderly tends to be incurred in the final six months to a year of an individual's life, regardless of the length of that life.

In the UK, this has been seen in a detailed 23-year study of hospital utilisation amongst a cohort in Paisley and Renfrew, two towns in West Central Scotland. Amongst this group, 55 per cent of all hospital-bed-days amongst those who died took place in the 12 months before death (Hanlon et al., 1998). In a study of healthcare use amongst a segment of the Swiss population, Zweifel, Felder and Meier (1999) found that increased healthcare expenditure amongst those over the age of 65 was explained by length of remaining lifetime and not by calendar age. Similar analysis of healthcare expenditure amongst the

elderly in the US also found that much of the increased health spending associated with advanced age was also explainable by the length of an individual's remaining lifetime rather than by age itself (Cutler and Meara, 1999).[40]

It is interesting to note that, on this understanding, the age–cost profile observed in Figure 7.4, with higher spending associated with older age-groups, would be largely explained by the differing composition of the age-groups in terms of decedents (costly) and survivors (less costly) rather than by the ages of those in each group *per se*. Moving up the age distribution, average spending per head rises because the proportion of each age-group's members who are in the final stages of life is larger. Some of the figures presented in Table 7.2, showing healthcare use amongst the elderly, may also bear this out. For example, the rate of in-patient hospital activity amongst the group of 65- to 74-year-old men is similar to that of women aged 75+. Since men, on average, tend to die younger than women, it is likely that these two groups have a similar composition in terms of the length of life remaining to its members, explaining the similarity in their rates of in-patient hospital use.

If this description of the pattern of healthcare use amongst the elderly is correct, then the projected growth in the number of elderly people that is due to expected increases in life expectancy might not have as large an impact on health spending needs as would otherwise have been supposed. According to the authors of the Swiss study cited, 'The limited impact of age on healthcare expenditure suggests that population ageing may contribute much less to future growth of the healthcare sector than claimed by most observers' (Zweifel et al., 1999, p. 485). This is not to say that the demographic changes discussed above will have no effect. In the first instance, increasing longevity will at least affect the timing of healthcare needs since, for those living longer, the costly final stages of life will occur later. Second, the projected growth in the number of elderly people in coming decades is not entirely due to increasing life expectancies, but is at least in part due to the large cohort of baby boomers of the 1950s and 1960s maturing into old age. A further consideration is how patterns of illness and disability will change as lives become longer. We turn to this last issue in Section 7.5.

In order to assess the future impact on health spending of demographic change under the extreme assumption that increased longevity has no effect whatsoever on healthcare expenditure, we attempt to strip the effect of increasing longevity out of our estimates of the future costs to the NHS of accommodating demographic change. To do this, we calculate the changing costs of future healthcare provision using unofficial population projections produced for the Institute for Fiscal Studies by the Government Actuary's Department for use within this Commentary. Unlike mainstream population projections, which assume increasing life expectancy over time, these alternative projections estimate what the size and age profile of the population would be if life expectancies remained exactly the same as they are today.

Applying the average healthcare costs per head from Figure 7.4 to this 'no change in life expectancy' population provides an estimate of future spending requirements to pay for

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[40]These authors also found an individual's level of disability to be an important determinant of health spending as well as time from death. These two factors together eliminated the explanatory power of age in their regressions.

demographic change, stripping out the effects of increased longevity. Note that these alternative population projections are indicative of cost implications only and are subject to some problems themselves. In particular, they will not be accurate with respect to the timing of future spending needs, since in order to remove the effects of increased longevity from predicted spending needs, they impose 'earlier death' on the elderly population rather than a 'delayed costs of death' scenario, which would provide more accurate estimates. Unfortunately, we do not have sufficient information about the relative costs of survivors and non-survivors from UK data on health costs to calculate a future age–cost profile, which is what would be needed to provide more accurate estimates on this basis.

Bearing this caveat in mind, the cost implications of this alternative projection are set out in Figure 7.7, which shows that the increases required under this assumption cut by half the original baseline projections made on the basis of steadily increasing life expectancy.

Figure 7.7. Alternative estimate of real annual average increases in HCHS spending due to demographic change: life expectancy changes do not affect future health spending
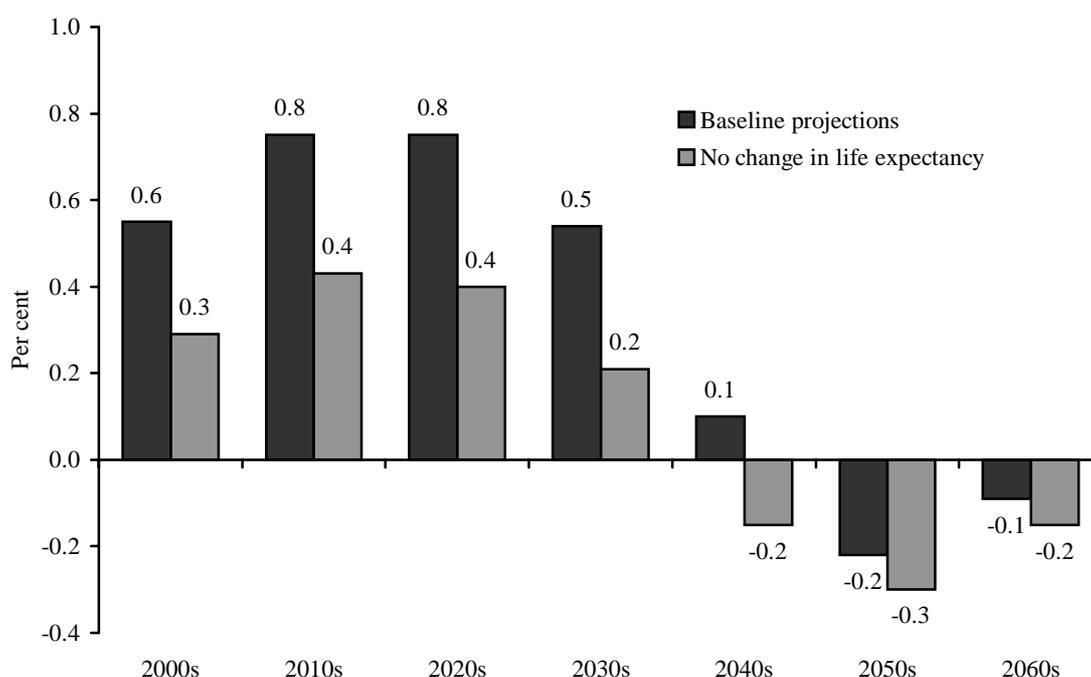
7.5 Future patterns of disability and illness: health expectancy

The above discussion has been based on evidence about patterns of treatment amongst today's older population. Another source of considerable uncertainty is how patterns of disability and illness and consequent healthcare use will change amongst future generations of the old. This is an important issue, not just for healthcare but also for

anticipating the demand for other services, such as social services and long-term institutional care for the elderly.

It is not clear, a priori, whether the extra years of life experienced by the ageing population in decades to come will be ones characterised by more or less ill health. As medical advances allow more people to survive serious health crises, such as strokes and heart disease, it is possible that there will be increasing numbers of people coming through these conditions but living sicker, more dependent lives thereafter. On the other hand, it is possible that the same factors that contribute to the lengthening of lives, such as healthier diet and lifestyles and rising incomes, may also mean that extra years are healthier ones during which the elderly have less recourse to medical services. Indeed, it is likely that both of these factors will have some role to play, but the balance that will be drawn between them is not clear.

Evidence from the US suggests that disability rates amongst the elderly have declined in recent years, particularly for those over 80 (Cutler and Meara, 1999). According to these authors, 'not only are Americans living longer, but they are living with fewer diseases and functional limitations' (p. 8). It is interesting to note that concurrent with these falls in disability have been large increases in medical spending on the old, especially on post-acute medical care. One possible explanation is that these large spending rises have in fact been responsible for the improvements in disability rates witnessed.

In the UK, the evidence is less conclusive. Trends over time revealed in the General Household Surveys (GHSs) of 1972 to 1998 show that there has been some rise in the numbers of people of all age-groups reporting both longstanding illness and restricted activity in the 14 days before interview. Such self-assessed measures of health status need to be treated with caution, however, reflecting as much changes in society and expectations as actual changes in objective health state. There is also some increase in the number of people in the GHS reporting in-patient and out-patient hospital attendance over the period. For example, 10 per cent of all men aged 75 or over appearing in the 1972 GHS reported having attended an out-patient or casualty department in a three-month reference period; by 1998, this figure was 29 per cent. For women, this proportion rose from 13 per cent to 26 per cent. However, these changes in healthcare use may reflect a number of factors besides changes in underlying disability rates — for example, the willingness with which people seek out treatment for their ailments.

On the basis of data from the GHS, Bone et al. (1995) have constructed estimates of how the number of years of healthy life expectancy, or so-called 'health expectancy', has changed between 1976 and 1992. These estimates show that, as life expectancies have grown, the number of years a person can expect to live free from limiting longstanding illness has remained roughly the same, so that additional years have tended to be iller ones. This trend is shown in Figure 7.8. Despite this pattern, the authors also show that the number of years characterised by more severe aspects of disability has fallen over the same period.[41]

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[41]More recent research into health expectancy amongst the elderly (Mezler et al., 2000) has examined the relationship between disability and socio-economic status, using the Cognitive Function and Ageing Study. This research found considerable divergences in disabled life expectancy for men of different social class (although not for women).

Figure 7.8. Life expectancy and healthy life expectancy from age 65, England and Wales, 1976–92
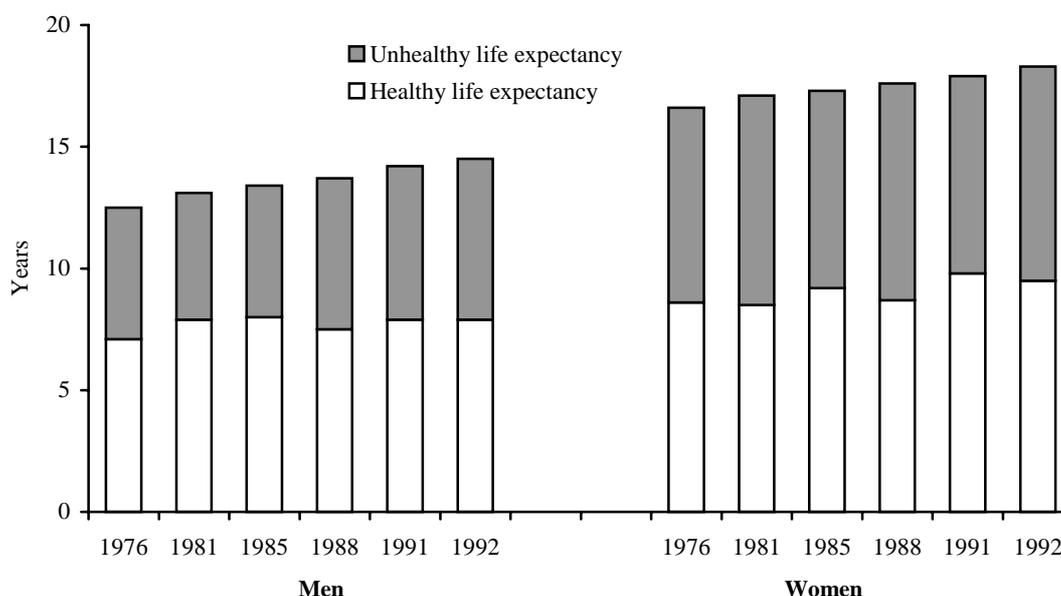
Notes: Complete column measures number of years overall life expectancy from age 65. Healthy life expectancy is defined here as years without limiting longstanding illness, and unhealthy life expectancy as years with limiting longstanding illness.
Source: Bone et al., 1995, Figure 6.2, p. 25.

These findings, taken at face value, would have mixed implications for predicting future demands for healthcare as the elderly live longer. Costs of treating long-term chronic illnesses might be expected to increase, while the overall costs of treating severe disabilities might stay the same or fall. In the light of these findings, the Royal Commission on Long-Term Care for the Elderly (1999) took the decision to assume that future years spent with disability will 'remain roughly constant in proportion to total life expectancy'. However, there are problems in drawing firm conclusions about the future healthcare needs of the elderly on the basis of these results. In particular, their reliance on self-reported measures of health status makes them difficult to interpret. The use of longitudinal data following the health status of the same group of people over time, rather than a repeated cross-section such as the GHS, would also improve the quality of the estimates.[42]

7.6 Do population projections underestimate the growth in the elderly population?

Another area of uncertainty in predicting the pressures on the NHS arising from demographic change is that population projections are subject to error. As pointed out by Disney (1998), successive population forecasts have shown a 'significant creep upwards' in the projected numbers of people above pensionable age. This pattern is

[42]For a fuller discussion, see Bone et al. (1995).

borne out by a comparison of the most recent official statistics. Table 7.3 shows projected numbers of people above the age of 75 in the UK for the years 2041 to 2066 on the most recent official estimates (1998-based) and the previous version (1996-based). They show consistent upward revisions for all years; for example, for the years 2061 and 2066, the population aged over 75 has been revised upwards by more than 600,000.

Table 7.3. Successive official projections of the population aged over 75 in the UK, 2041–66

| | Projected numbers over age 75 (thousands) | | | |
	1996-based	1998-based	Difference	Higher life expectancy scenario
2041	8,066	8,456	390	9,151
2046	8,482	8,939	457	9,794
2051	8,211	8,740	529	9,714
2056	7,799	8,383	584	9,432
2061	7,627	8,247	620	9,332
2066	7,725	8,369	644	9,471

Note: 'Difference' column shows the difference between the 1998-based and 1996-based projections.

Sources: 1996-based projections from Government Actuary's Department (1999). 1998-based population projections from Government Actuary's Department website. Higher life expectancy scenario is based on unofficial 1998-based projections produced for IFS for use within this Commentary.

As all of these future pensioners have been born already, the current size of the relevant population is already known and such forecast errors must therefore be the result of systematic under-prediction of life expectancy amongst the old. In order to take into account possible cost implications of a larger pensioner population than is forecast within the main population projections, we use unofficial Government Actuary's Department estimates, produced for the Institute for Fiscal Studies for use within this Commentary, of the UK population under a 'higher life expectancy' scenario.[43] These alternative projections are shown in the final column of Table 7.3. They allow for approximately 700,000 more people above the age of 75 by 2041, rising to over a million more by the end of the 2060s.

The cost implications of this additional pensioner population are not large, however. Figure 7.9 shows that it would be slightly more expensive to accommodate population change on this scenario over the coming decades, setting aside the issues we have discussed regarding the extent to which extra longevity adds to health demands and the uncertainty in future patterns of morbidity amongst the old. Accumulating these changes, by 2051, the cost of treating the population would be 38 per cent more in real terms than in 2001 simply because of demographic change (compared with 31 per cent in our baseline scenario), with smaller savings due to favourable demographic change setting in after this.

[43]See Government Actuary's Department (1999) for details of the assumptions about changes in mortality underlying this projection.

Figure 7.9. Alternative estimate of real annual average increases in HCHS spending due to demographic change: higher life expectancy scenario
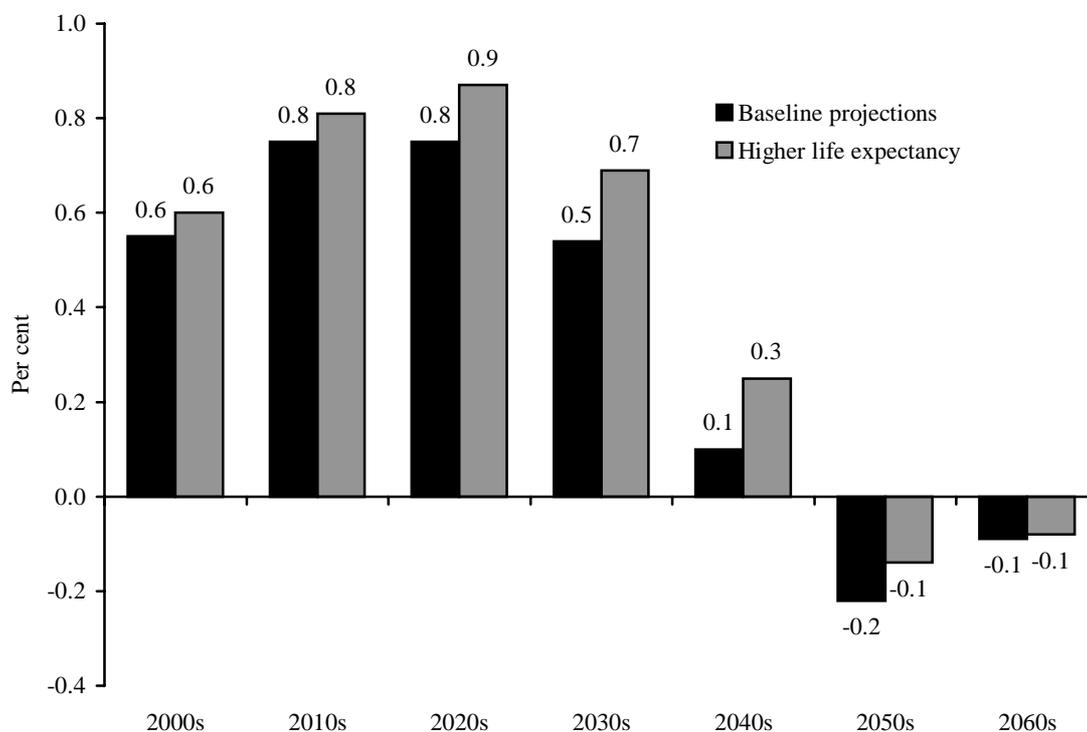
Note: See notes to Figures 7.5 and 7.6.

Source: Alternative population estimates are unofficial projections produced for IFS by the Government Actuary's Department for use within this Commentary.

7.7   Conclusions

Although inherently uncertain, demographic change will entail average spending increases in the region of 0.1–0.9 per cent per year up until the 2050s on our range of estimates. Thereafter, demographic change will start to have a favourable impact on health spending requirements. If demographics were the only pressure on the NHS budget to grow in real terms, then it is clear that these increases could be easily met, since the increases required are well below the expected trend rate of growth in the economy. In fact, the NHS also faces pressures from ensuring that increases in public sector pay keep pace with pay increases for comparable private sector jobs and that additional public demands, partly fuelled by improvements in technology, are delivered. Our baseline forecast suggests that adversely changing demographics may require a 30 per cent increase in spending over the next 40 years. If wage pressures meant that, for example, spending on the NHS needed to rise by as little as 1 per cent per year in real terms over this period, then the impact of demographics would increase this required increase to 1.7 per cent a year without meeting any additional demands from the public. Alternatively, if 2½ per cent real increases in spending were required to meet the growing wage bill each year, the impact of this together with demographic change would require as much as 3.2 per cent additional funding in real terms without meeting any additional demands.

8. Conclusions: the future of the NHS

This Commentary has looked at some important issues facing the National Health Service. Under intense scrutiny for its health policies during the course of this year, the government has reasserted that it is 'committed to the founding principles of the NHS'[44] and that it believes the relatively large and sustained spending increases from April 1999 to March 2004 will deliver sufficient improvements in patient care to meet public expectations. The wider debate has started to look to alternative means both for finance and for provision of healthcare — possibly driven by the fact that, on an international basis at least, the UK has a low level of private sector involvement in healthcare.

This Commentary has examined the economic rationale for government involvement in the market for healthcare, citing reasons of equity and of economic efficiency for expecting that the private market on its own would not deliver the optimal allocation of resources to health in the economy. A system such as that seen in the UK, which is financed mainly by taxation and with mostly public provision of healthcare services, represents one way of addressing the problems that the purely private market faces. As has been seen, this is by no means the only method possible, with countries around the world adopting a variety of different healthcare systems as a response to the healthcare needs of their citizens.

Measuring the relative effectiveness of these systems is difficult, not least because healthcare needs vary across different populations. Although the UK has the lowest spending on healthcare of the G7 countries, its outcomes in terms of basic indicators, such as life expectancy and infant mortality, are slightly above the lowest in this group. The picture is not straightforward, however. The UK fares less well on other indicators, such as cancer survival rates. Cross-country comparisons of average cancer survival rates show that the UK lags considerably behind much of Europe and the US on the most prevalent cancers. Other indicators, such as the length of time people have to wait for treatment, suggest that the UK performs relatively badly compared with many other countries.

These international comparisons show that the UK lags behind on some indicators of quality. It is important to remember that there is no single measure of quality. In the UK, much of the debate has centred on long waiting-lists. This Commentary has shown that waiting-lists are symptomatic of any system delivering healthcare free at the point of use. However, the number of people on waiting-lists has grown substantially over the history of the NHS. Another issue within the NHS is the extent of the wide regional differences that exist both in waiting-lists and waiting times and in other indicators, such as death rates and number of cases treated per hospital bed. The government intends to use some of the additional funding to tackle these variations. It is important to remember that a degree of difference will always be present and that focusing additional resources on specific problems will not necessarily maximise overall standards of healthcare.

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[44]Department of Health, 2000.

For a growing number of people, the solution to perceived problems in the quality of healthcare provided by the NHS has been to buy private health insurance or to purchase private services directly. Employers are also increasingly providing private insurance as part of remuneration packages. Those covered by private health insurance tend to be those in higher income groups, many with managerial or professional jobs. Regionally, London and the South East see a higher rate of private insurance coverage than elsewhere in the country. To some extent, this growth of the private sector may take some of the burden off the NHS, freeing up resources for the treatment of others. However, subsidising the purchase of private medical insurance through tax relief in order to encourage a heavier reliance on the private sector is unlikely to pay for itself. Moreover, there is evidence to suggest that those with private medical insurance are less likely to support increases in public health spending, so that further growth of the private sector could serve to undermine the NHS rather than support it.

Whether subsidised or not, it is likely that, in the absence of significant improvements in NHS patient care, the private sector in the UK will continue to grow. As incomes rise, more people are likely to choose higher levels of healthcare for themselves and, given the relationship between income and private health insurance coverage, it is likely that the private sector will meet at least some of this additional demand. The NHS is also likely to be facing additional pressures from a number of different areas, which could lead to an expanded role for the private sector if centrally dictated NHS budgets are limited.

This Commentary has considered in detail the potential spending pressures due to an ageing population in decades to come. Although the costs of paying for the healthcare of future generations of the old are inherently uncertain, on the assumption that spending per person within each age-group remains the same, health spending will have to increase by some 30 per cent in real terms by 2040 to pay for the age structure of the projected population at that time. This is much less than the expected real rate of growth in the economy and so in itself does not present an overwhelming pressure on the health budget. It is also true that similar spending pressures due to demographic change over the last 50 years have already been accommodated by the NHS. Taken together with other factors such as upward pressure on the wage bill as average earnings in the economy grow and the availability of new treatments, however, the NHS will continue to require significant real increases in spending in the future if public demands are to be satisfied.

Appendix A. Spending on the NHS from 1949–50 to 2003–04

Table A.1. Spending on the NHS in real prices, real increases in spending and spending as a share of GDP

	Real terms, 1997–98 prices (£ bn)	% real increase	% of GDP		Real terms, 1997–98 prices (£ bn)	% real increase	% of GDP
1949–50	8,764		3.55	1977–78	23,854	–2.09	4.56
1950–51	9,454	7.87	3.71	1978–79	24,236	1.60	4.49
1951–52	9,089	–3.86	3.47	1979–80	24,181	–0.23	4.36
1952–53	8,615	–5.22	3.28	1980–81	25,996	7.51	4.86
1953–54	8,587	–0.32	3.15	1981–82	27,282	4.94	5.10
1954–55	8,737	1.75	3.07	1982–83	27,822	1.98	5.08
1955–56	9,095	4.10	3.10	1983–84	28,527	2.54	5.03
1956–57	9,336	2.65	3.15	1984–85	28,797	0.94	4.97
1957–58	9,726	4.18	3.23	1985–86	29,181	1.33	4.83
1958–59	9,966	2.47	3.29	1986–87	30,676	5.12	4.87
1959–60	10,656	6.92	3.38	1987–88	31,960	4.18	4.84
1960–61	11,497	7.89	3.46	1988–89	33,047	3.40	4.79
1961–62	12,025	4.59	3.53	1989–90	33,594	1.66	4.78
1962–63	12,124	0.82	3.51	1990–91	34,517	2.75	4.92
1963–64	12,665	4.47	3.51	1991–92	36,886	6.86	5.33
1964–65	13,348	5.39	3.50	1992–93	39,353	6.69	5.65
1965–66	14,238	6.67	3.65	1993–94	39,665	0.79	5.53
1966–67	15,007	5.40	3.77	1994–95	41,229	3.94	5.51
1967–68	15,840	5.55	3.89	1995–96	41,861	1.53	5.46
1968–69	16,530	4.35	3.90	1996–97	41,942	0.19	5.32
1969–70	16,399	–0.79	3.79	1997–98	42,708	1.83	5.24
1970–71	17,163	4.66	3.83	1998–99	43,655	2.22	5.26
1971–72	17,868	4.11	3.90		*Estimated out-turn / Forecasts*		
1972–73	19,064	6.69	3.95	1999–00	46,567	6.67	5.48
1973–74	20,292	6.44	4.05	2000–01	50,069	7.52	5.73
1974–75	21,978	8.31	4.40	2001–02	52,813	5.48	5.90
1975–76	23,446	6.68	4.73	2002–03	55,833	5.72	6.08
1976–77	24,363	3.91	4.77	2003–04	58,932	5.55	6.26

Notes: NHS spending is defined here as UK National Health Service expenditure, net of NHS charges and receipts. Projections forward from 2000–01 to 2003–04 come from HM Treasury (2000) and assume inflation of 2½ per cent a year and trend GDP growth of 2½ per cent a year. An adjustment for years prior to 1990–91 is made to ensure consistent real increases in spending over time.

Sources: NHS spending figures from Department of Health (1997b, 1998, 1999 and 2000), HM Treasury (1999 and 2000) and Office of Health Economics (1999); GDP deflators from Office for National Statistics (2000a) and HM Treasury website.

Appendix B. Multivariate analysis of the characteristics of those with private medical insurance

Table B.1 gives the results of multivariate analyses on the characteristics of those with private medical insurance and of those who have bought insurance themselves given that they are covered by a policy. The results are based on data from the Family Resources Survey from 1994–95 to 1997–98.

Table B.1. Individuals with private medical insurance and individuals with private medical insurance who pay for it themselves

Characteristic	Probability of having private medical insurance		Probability of having paid for private medical insurance given that person is covered	
	Coefficient	t-statistic	Coefficient	t-statistic
Aged between 30 and 39	0.017	6.93	0.038	3.03
Aged between 40 and 49	0.023	9.13	0.114	9.31
Aged between 50 and 59	0.025	9.33	0.175	13.85
Aged between 60 and 69	0.011	3.54	0.311	21.65
Aged between 70 and 79	−0.007	−2.07	0.342	19.86
Aged over 80	−0.034	−7.87	0.341	11.72
Living with a partner	0.038	8.32	−0.013	−0.37
Male	0.009	6.68	−0.035	−4.54
Other adult in household	−0.011	−6.37	0.022	2.30
Person has child	−0.009	−5.10	−0.038	−4.35
Income / 1000	42.340	47.99	−46.23	−10.53
Income squared / 1000	−0.970	−19.48	1.73	7.84
Income cubed / 1000	−0.030	−28.32	0.050	9.04
Employee	0.016	5.85	−0.052	−3.49
Self-employed	−0.003	−0.92	0.218	12.92
Owns home	0.058	33.07	−0.006	−0.51
Educated to A level	0.041	21.09	0.020	2.22
College educated	0.036	16.92	0.009	0.97
Still in education	0.117	13.75	−0.160	−4.27
Professional	0.044	9.33	−0.077	−3.72
Managerial/Technical work	0.051	14.79	−0.100	−5.96
Skilled non-manual work	0.032	9.43	−0.035	−1.98
Skilled manual work	−0.006	−1.68	0.013	0.65
Partly skilled work	−0.007	−2.07	0.048	2.34
Unskilled work	−0.032	−6.90	0.073	2.01
In armed forces	−0.044	−3.50	0.148	1.49
Other information included	*Chi-squared*	*p-value*	*Chi-squared*	*p-value*
Regional dummies[a]	1742.05	0.000	186.39	0.000
Household savings	676.37	0.000	8.13	0.087
Interaction of savings with having a partner	72.05	0.000	10.68	0.030
No. of observations	177,648		21,974	
Pseudo R-squared	0.1868		0.1272	

[a]Greater London and the South East being the areas with the highest rates of coverage.

Note: A full set of results is available from the authors upon request.

Appendix C. Would a subsidy to private medical insurance be self-financing?

Let the cost to the government from subsidising insurance be

$$t \times P_1 \times (N_1 + N_2),$$

where t is the rate at which any subsidy is given, P_1 is the cost of buying private medical insurance per person (before any subsidy), N_1 is the number of people with private insurance already and N_2 is the number of additional people induced into purchasing private insurance as a result of the introduction of tax relief.

The additional saving to the NHS is given by

$$P_1 \times N_2 \times p,$$

where $0 \le p \le 1$. If $p = 1$, this implies that insurance is fairly priced and that there is only one private medical insurance product which offers the same service as the NHS, i.e. there is no possibility of getting better standards of service. At the other extreme, $p = 0$ assumes that there is no saving to the NHS.

For the policy to be self-financing,

$$t \times P_1 \times (N_1 + N_2) = P_1 \times N_2 \times p.$$

Therefore

$$N_2 = t \times N_1 \ / \ (p - t).$$

If a subsidy were given equal to the basic rate of income tax (as was the case with tax relief for the over-60s prior to July 1997), so $t = 0.22$, and given that $N_1 = 6.8$ million, then

$$N_2 = 0.22 \times 6.8 \ / \ (p - 0.22).$$

Assuming that $p = 1$, this would need an additional 1.9 million to take out policies for the subsidy to be self-financing. Smaller values of p (i.e. if it is assumed that insurance is not fairly priced or that the product offered by private medical insurance companies is not the same as provided by the NHS) would require even more individuals to take out insurance.

We can also work out the minimum required price elasticity for the subsidy to be self-financing.

$$\text{Elasticity} = - \ (P_1 \ / \ N_1) \times (t \times N_1 \ / \ [p - t]) \ / \ (t \times P_1) = - \ 1 \ / \ (p - 0.22).$$

Assuming that $p = 1$, this requires the elasticity to be at least -1.28. Smaller values of p would require demand to be even more responsive to changes in price.

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