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Expenditure on Health Care in the UK:

A review of the issues

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Abstract

This review examines the performance of the UK health care system. After presenting data on the level and distribution of resources, three topics are examined. The first is the lessons from international comparisons of evidence on expenditure, equity and health care outcomes. The second is the lessons from the recent internal market reforms. The third is the lessons from an analysis of the role for private finance in UK health care. The review concludes that economists and policy makers need to focus more attention on the relationship between health care inputs – expenditure – and health outcomes, and within this on the incentives facing suppliers and demanders of health care.

JEL Classification: I1, H4

Keywords: Public healthcare expenditure, equity in distribution of health care, health outcomes, international comparisons

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Summary

This review examines the performance of the UK health care system. Public expenditure on health care in the UK is large. In 2000 just under £50bn was spent by the state on health care, a sum that accounted for around 6 percent of GDP. On top of these large public expenditures, individuals buy health care and pharmaceuticals directly, and private expenditure on health care in the UK totalled about £9bn in 2000. Within the OECD and the G7 group of countries, UK expenditure per capita is low and the share that is publicly funded high.

This paper reviews key issues in the funding of health care in the UK. It begins with a summary of the recent position of UK and sets this in an international context. It then focuses on three topics. The first is the lessons from international comparisons. This reflects the debate that other forms of health service organisation may be an improvement on that currently in operation in the UK. The paper examines the relationship between the organisation of the system and three sets of outputs that are measures of first, the efficiency of the system, second, the equity of the system and third, the outcomes of the system. These are expenditure per capita, the distribution of payments for, and receipt of, health care resources, and measures of health (health outcomes).

The second topic is the lessons from the internal market reforms that were implemented in the UK in the early 1990s. These reforms are part of a general move in health care organisation towards increase competition and the review examines the implications for efficiency.

The third topic is the role for private finance in the funding of UK health care. The paper examines the extent of private finance in the UK health care system and the interrelationships between public and private finance with the aim of deriving the implications for the evolution of public health care finance in the UK system.

The international comparisons suggest the following. The lower expenditure per capita of the UK can, in part, be attributed to organisation of the health care system. Features of the UK system, such as the use of primary care gatekeepers and budgets set at a system wide level, appear to keep expenditure below what would be expected given national income. The evidence on equity in finance and delivery indicates that on the finance side the UK has one of the most progressive systems. On the delivery side the NHS is not worse, and indeed somewhat better, in terms of equity in the use of health care resources, than several other OECD countries which spend considerably more per capita on their health care.

On the other hand, the international evidence on expenditure cannot be taken as evidence of efficiency as no adjustment is made for quality. Further, the evidence also indicates that that these positive properties of the UK system may not translate into health outcomes. The UK has, on some measures, poorer health outcomes than similar countries and a poorer distribution of health. While these outcomes might be better than expected given the level of funding, the fact that little relationship between funding and mortality has been found at cross-country level makes such an inference something of a leap of faith. And the distribution of outcomes appears more related to the distribution of income than to any measures of health care spending.

What international comparisons also hint at is the importance of incentives at the level of the supplier and the demander. The funding analyses show the UK use of gatekeepers (the UK's General Practice system whereby individual's must be referred into the hospital sector for treatment and diagnosis by their family doctors) and payment of doctors by salary rather than fee-for-service mean expenditure per capita is lower than it would be with other design features. However, cross-country analyses are generally at a level at which is hard to isolate the impact of such incentives: to understand these micro-incentives it is necessary to examine data in which the incentive structures can be more clearly identified.

Examination of responses to the financial incentives embodied in the UK internal market reforms indicates that physicians and health care providers do appear to respond to financial incentives in a tax financed, predominantly public provided health care system. Referral patterns of GPs reflected financial (and other) rewards. Where competition was stronger, prices appeared to be lower. However, it is also clear that responses of agents were limited by the structures established, and the actions taken, by central government to 'manage the market'.

In terms of the type of finance, the review suggests there are no clear equity grounds for moving away from tax finance. The present tax financed system is more equitable than either social insurance or private insurance. On the other hand, there are growing pressures on the NHS, which are reflected in public attitudes. The evidence suggests that a marginal extension of private finance will not necessarily erode public support for the NHS.

Finally, the review highlights the importance of moving on from a focus on what are basically inputs - expenditure and its distribution - to an examination of outcomes and the links between inputs and outputs. The UK appears to meet its equity goals well in terms of how it spends public finance, but this is not mirrored by an increase in equity in health outputs. The existence of health inequalities raises the issue that the focus by governments on inputs and amounts of money spent is somewhat skewed. As important is a focus on what is being achieved for this money. To assess the extent to which health outcomes have much to do with expenditure on health care, greater research effort needs to be directed to looking at the impact of expenditure on health. In other words, economists need to direct effort to the study of the efficiency of production. This in turn suggests a greater focus on the responses of suppliers and demanders to incentives.

Introduction

Public expenditure on health care in the UK is large. In 2000 just under £50bn was spent by the state on health care, a sum that accounted for around 6 percent of GDP. On top of these large public expenditures, individuals buy health care and pharmaceuticals directly, and private expenditure on health care in the UK totalled about £9bn in 2000. Nor is high public and private expenditure on health care just a British phenomenon. Governments and private individuals throughout the OECD contribute large sums for health care expenditure. In fact, within the OECD and the G7 group of countries, UK expenditure per capita is low. The UK spends around 7 percent of GDP per capita, while the G7 average is 9% and the OECD average is 8%. However, in comparison to both the OECD and G7 countries, the share of expenditure accounted for by the public sector is high. The UK share is 85 percent, while the average for the G7 group is 70% and for the OECD is 75%.

The large scale of public intervention is justified on both efficiency and equity grounds[1], but while it is common for governments to intervene in the market for healthcare, it is also clear that the form and extent of this intervention varies considerably across countries. This raises questions of whether the UK spends sufficient sums of either public or private finance on health care, whether the balance between public and private finance is optimal, and whether the way in which those sums are spent achieves either the efficiency or equity goals of the population. To answer such questions is beyond the scope of a single review. Instead this review focuses on a set of topics that are both relevant to current debates about the financing of UK health care and shed light on theses broader questions.

The first topic reflects the debate that other forms of health service organisation may be an improvement on that currently in operation in the UK. I examine the relationship between the organisation of the system and three sets of outputs that are measures of first, the efficiency of the system, second, the equity of the system and third, the outcomes of the system. These are expenditure per capita, the distribution of payments for, and receipt of, health care resources, and measures of health (health outcomes). This examination is based on comparison of performance across comparable countries, which has its strength and weaknesses, and are explored below. The second topic examines the lessons from the internal market reforms that were implemented in the UK in the early 1990s. These reforms are part of a general move in health care organisation towards increase competition and the review examines the implications for efficiency. The third topic examines the role for private finance in the funding of UK health care. I examine the extent of private finance in the UK health care system and the interrelationships between public and private finance with the aim of deriving the implications for the evolution of public health care finance in the UK system.

The organisation of the paper is as follows. Sections 1 and 2 examine the performance of the current system. Section 1 presents the trends in health care expenditure in the UK and compares the UK, in terms of financing and organisation of the health care system, with other OECD countries. Section 2 presents the performance of the UK

[1] See Barr (1998) and Emmerson *et al* (2000) for a review of both efficiency and equity arguments for government intervention in health care markets

system in terms of the distribution of resources. Section 3 presents evidence from recent international comparative studies to examine the relationship between organisational design and the performance of the health care system in terms of per capita expenditure. Section 4 examines the relationship between system design and equity in the payment for, and in the receipt of, resources. Section 5 examines the relationship between system design and health outcomes and the distribution of these outcomes. Section 6 examines the internal market reforms and Section 7 examines the role of private finance and issues in the dynamics of UK health care expenditure. The final section draws out the lessons for the finance of UK health care expenditure and for future research.

1. The UK level of expenditure on health care

Trends in UK health care expenditure

UK health care expenditure can be broadly divided into public expenditure, which is mainly spent on the National Health Service, and private expenditure, which is defined as expenditure by the household and corporate sector on health care (including dentistry and over-the-counter medicines). Estimates of public expenditure are somewhat more reliable than estimates of private expenditure, but whichever estimates are used, the bulk of expenditure in the UK (around 85 percent in 2000) is public.

Figure 1 presents real spending on the NHS as a proportion of GDP from 1960 to 1999. The chart shows that the share of the NHS in national income has grown from under 3.5 to just under 6 percent in 40 years. But it is also clear that this increase has not been constant and that there have been years in which the share has fallen, to be then followed years in which expenditure has increased faster than the long run trend. Figure 2 presents the percentage year on year increase in real NHS expenditure. This shows considerable variation around the average of 3.4 percent annual growth for the period. There were periods of negative growth during the mid 1950s, the early and late 1970s, and there have been periodic large increases of a size comparable to, or even slightly larger than the settlements made by the Labour Administration for 2000 to 2001 and forecast through to 2004.

Figure 3 presents private expenditure as a share of GDP. The scale indicates the smaller share of private expenditure and the graph also shows that private spending remained small, and indeed even fell upto the mid-1970s. Figure 4 presents the percentage growth year-on-year in private expenditure in real terms and the large falls first in the mid-1960s, and then again in the mid-70s are apparent. The 1980s show a pattern of strong growth, but this tailed off during the early 1990s, and there has been considerable volatility in growth rates in the second half of the 1990s. Figure 5 presents private expenditure as a percentage of total expenditure on healthcare from 1960 to 1999. This shows that the share that was private rose in the early 1960s, fell from a peak in 1964 to a low in 1976, rose again upto 1991, then fell as NHS expenditure increased rapidly with the advent of the internal market in 1991, and then rose from 1994 to 1997 and then fell again in the late 1990s.

In summary, the picture that emerges is one of long run growth in both public and private expenditure, but around this long run trend, of considerable year on year

volatility in both public and private annual growth rates, and also in the share that is private.

The UK compared

Tables 1 and 2 present the UK's position, in terms of total expenditure and the share that is public, in comparison to two groups of countries - the OECD and the G7 countries, The table indicates substantial differences in the level of health expenditure across countries, even within the relatively homogenous industrialised countries of the OECD. Table 1 illustrates health expenditure per capita as measured in purchasing power parities in the OECD. In 1997 these ranged from less than $1000 (e.g. Hungary and Korea) to more than $2,500 (Switzerland $2794 and the United States $4178)[2]. Within these countries the position of the UK is towards the bottom end. There is also a range in the share that health expenditure accounts for in GDP. The highest share is in the US, the lowest in Korea. Again the position of the UK is near the bottom of the OECD group.

[2] In comparison, in low-income countries these amounts are much smaller - $10 per capita in many African countries, and less than $100 per capita in most of Asia and Latin America. The share in GDP is also smaller.

Table 1: Total expenditure on health care (US dollars purchasing power parity) and share that is public: OECD countries

Year 1998	Total expenditure per capita US$ PPP	Total health care expenditure as share of GDP	Public finance as proportion of total
Australia	2043	9	69.3
Austria	1968	8	70.5
Belgium	2081	9	89.7
Canada	2312	9	69.6
Czech Rep.	930	7	91.9
Denmark	2133	8	81.9
Finland	1502	7	76.3
France	2077	10	76.4
Germany	2424	11	74.6
Greece	1167	8	56.8
Hungary	705	7	76.5
Iceland	2103	8	84.3
Ireland	1436	6	75.8
Italy	1783	8	68.0
Japan	1822	8	78.3
Korea	730	5	45.8
Luxembourg	2215	6	92.3
Netherlands	2070	9	70.4
New Zealand	1424	8	77.1
Norway	2425	9	82.8
Poland	496	6	73.3
Portugal	1237	8	66.9
Spain	1218	7	76.9
Sweden	1746	8	83.8
Switzerland	2794	10	73.4
U.K.	1461	7	83.7
USA	4178	14	44.7

Source: OECD Health Data base 2000

The table also shows the proportion of health care that is publicly financed. The unweighted average across all OECD countries is 75 percent and only in the USA and Korea is it less than 50%. In some countries (e.g. Ireland, the UK, the Nordic countries, the Czech Republic) most all health care expenditure is paid for by the public purse.

Table 2 presents these data for the more homogenous group of G7 countries. Again, the position of the UK is somewhat of an outlier, with the lowest average expenditure per capita on health care, and the highest public share.

Table 2: Total expenditure on health care (US dollars purchasing power parity) and share that is public: G7 countries

Year 1998	Total expenditure per capita US$ PPP	Total health care expenditure as share of GDP	Public finance as proportion of total
Canada	2312	9.5	69.6
France	2077	9.6	76.4
Germany	2424	10.6	74.6
Italy	1783	8.4	68.0
Japan	1822	7.6	78.3
U.K.	1461	6.7	83.7
USA	4178	13.6	44.7

Source: OECD Health Data base 2000

The crude share of public finance hides important differences in the finance and delivery of health care. Finance for public health care is raised by a mixture of general taxation, social insurance (payroll tax) contributions and local taxation. Examples of systems in which general taxation dominates are the UK and Denmark. An example of a country that uses earmarked social insurance contributions is the Netherlands. Private finance is usually raised by insurance premiums and/or out of pocket payments. Private insurance can be used to provide supplementary cover to public cover where those covered are offered no tax breaks (e.g. the UK) or initial cover for those without comprehensive public cover (e.g. the Netherlands) or cover against public sector co-payments levied on prescription medicines, dental care etc. (e.g. France, Denmark). Out-of-pocket payments can be predominantly co-payments with the third party usually paying the major share of the bill (e.g. the UK, the Netherlands, US and Denmark) or can amount to substantial use of the private sector on a fee-paying basis (e.g. Italy, Spain and Portugal).

While the public sector plays a key role in finance, the provision (i.e. supply) of health care varies widely in terms of a public-private mix. In the OECD delivery spans from being nearly 100 percent in the public sector (e.g. Sweden) to being substantially the role of the private sector (e.g. Switzerland, the US). Even where finance is predominantly social insurance or tax based, countries may use mainly private providers. Canada, for example, has predominantly public finance but private providers. Table 3 illustrates the mixture of public and private finance and provision in the OECD.

Table 3: Classification of countries by public/private mix of provision and finance in health care

Public/Private Mix	Country		
Mainly public provision, public finance	Denmark Finland Greece Iceland	Ireland Italy Norway Portugal	Spain Sweden United Kingdom
Mixed provision, public finance	Australia Austria Belgium	France Germany Japan	Luxembourg New Zealand
Mainly private provision, public finance	Canada		
Mixed provision, mixed finance	Netherlands		
Mainly private provision, private finance	Switzerland	United States	

Source: Organisation for Economic Co-operation and Development (OECD) 1994

Given the importance of health care expenditure as a share of GDP and of public expenditure, and the differences in institutional arrangements for financing and delivering health care, an obvious question is the extent to which differences in expenditure and outcomes are associated with the organisation of the health care system. This is examined in Section 3.

2. The UK allocation of public health care expenditure

It is clear that successive UK governments have had a strong commitment to equity in health care finance and delivery. In this section I examine the extent to which this commitment has been realised and whether it has translated into an equitable distribution of health outcomes.

The allocation of resources

Since 1974 an explicit goal in the allocation of public funds for health care has been that these funds should be allocated according to need. Throughout the 1960s it had become increasingly obvious that the distribution of resources within the NHS bore little resemblance to the principles of equal allocation for equal need and more to the historic distribution of hospitals. In 1976 the Department of Health decided to allocate funds to the 14 regions of the NHS on the basis of need, as measured by standardised mortality ratios (SMRs), themselves a measure of morbidity and a proxy for need. A region's need, and therefore its allocation, would be calculated on the difference between national and regional SMRs. The resource allocation formula (RAWP) covered about three-quarters of the NHS current expenditure budget, but did not cover either capital expenditure or payments to general practitioners (family doctors) or dentists. At its inception, the scheme meant monies were allocated according to the RAWP formula to regions, but within regions, allocation to areas, and below them districts, were decided by each region.

Over time, there was both greater devolvement of monies according to RAWP type principles down to district level (a district covers around 100,000 people) and

criticism of the use of SMRs as a measure of need. However, despite these criticisms, the basic approach was not modified till the mid-1990s. In part, this is because there was general agreement over the principle, and in part because movements to target allocations (those generated by the RAWP formula) were gradual, and dictated by politicians. Movement to target was achieved by allocation of 'new' health care resources. Regions kept the same real budget as last year and if above target, received no new funds. Extra real resources, if made available at Treasury level, went to below target regions. During the 1990s the formula was adjusted to incorporate better measures of need, and to deal with the fact that changes in the way the NHS delivers care meant the primary unit of allocation were units of around 100,000 persons.

Le Grand *et al* (1990) and Le Grand and Vizard (1998) provide an assessment of the extent to which movements to target reduced inequalities in allocations across regions. The average distance from target fell from the inception of the scheme to the late 1980s. Variations in average health care spending per person at regional level fell from the mid-1980s to 1992/3, though it rose in 1993/4 (the last year reported by the authors).

Table 4: Meeting of RAWP targets

	1985/6	1987/8	1990/1	1992/3	1993/4
Coefficient of variation between regions	0.103	0.097	0.093	0.091	0.14
	1993/4	1994/5	1995/6	1996/7	1997/8
Range of distance from target: districts	36.8	25.70	27.6	20.96	14.39

Source: Glennerster *et al* (2000)

Recent evidence of the allocation of expenditure at below regional level is provided by a study of the distribution of health expenditure at ward level within three urban local authorities in England for 1995/6. Bramley *et al* (1998) sought to allocate all sources of health care funding in three relatively deprived cities to wards. (Wards are small geographical areas with populations of around 5000 persons.) In practice, exact allocation of health care expenditure to individuals within small geographical areas is not possible from the administrative sources used in this study, and for some of the expenditure allocated, allocation was on the basis of location of the provider (hospital, or family doctor) rather than of the individual user of service. In addition, for hospital services detailed costs of services were not known and instead the researchers had to allocate the average to all users. Given these caveats, Bramley *et al* concluded that the distribution of health care expenditure by ward within these three cities was generally less dispersed than other forms of public expenditure, and was pro-sick and hence generally higher in more deprived wards. When allowance is made for the population age structure of the wards, the spending became more pro-deprived.

Broadly, it appears that the allocation of health care spending at region, district and possibly also ward level has been such that variations in allocations have reduced and are close to allocated according to the measures of need used in the allocation formulae.

The receipt of health care

Equity in the geographical distribution of resources does not necessarily imply equity in the distribution of health care across individuals of different incomes. In a series of studies, Propper and her co-authors have examined equity in the delivery of health care standardised for medical need. These studies estimate the extent to which violations of the principle 'equal treatment for equal need' are systematically related to income in the UK. The studies use individual level data from household surveys that contain data on individuals' access to resources, their use of health care services and their self-reported health status. Answers to the self-assessed health questions have been found to be good predictors of subsequent mortality in a variety of industrialised countries. Individual's incomes are defined as their equivalised household income. Medical need is defined as self assessed health, and various measures of this are used. Several forms of care (GP care, outpatient care, and in hospital care) are examined. The approach of using data on users and non-users contrasts with many other studies of equity in the allocation of health care which have looked at only users of health care (Propper, 1998, reviews these).

O'Donnell and Propper (1991) examine whether there are departures from 'equal treatment for equal need' that are systematically related to income using data from the mid-1980s and conclude that the distribution of NHS care is weakly pro-poor. Propper and Upward (1992) examine the distribution of health care utilisation standardised for need by income group for the UK for the years 1974, 1982, 1985 and 1987. These results are presented in Table 5. The columns present the share of NHS expenditure received by each income quintile after standardising for self reported morbidity. In 1974 the lowest income quintile received nearly 25 per cent of total NHS standardised expenditure. The comparable figure in 1987 was just under 23 per cent. The last line in each column presents the concentration index. This is a measure of the departure of the cell averages from proportionality and is a measure of the departure from equal treatment for equal need. The index that ranges from -1 to +1 where a negative (positive) number indicates pro-poor (pro-rich) inequity[3]. The results indicate a mildly pro-poor distribution in all four years. Propper (1998) found a similar distribution for 1991 and 1994.

[3] For details of the methodology see van Doorslaer and Wagstaff (1992) and van Doorslaer *et al* (2000).

Table 5: Percentage shares of NHS expenditure standardised for need, 1974-1987

Income quintile	1974	1982	1985	1987
Bottom	24.6	22.5	22.7	22.7
2nd	21.6	20.3	22.7	21.2
3rd	19.3	21.1	19.7	19.9
4th	17.9	21.7	18.9	19.8
Top	16.6	14.5	16.1	16.3
Concentration index	-.083	-.092	-.070	-.062

Source: Propper and Upward (1992)

Inequalities in outcomes

However, whilst the mechanisms for allocation become ever more complex, evidence on the distribution of health has raised fundamental issues about the effectiveness of the allocation formula in achieving equitable health outcomes. While RAWP allocations have reduced regional disparities in funding, there is a growing body of research that suggests that inequalities in health across geographical areas have not fallen since the 1970s and may indeed be rising.

The Acheson report (Department of Health, 1998) concluded that, in many respects, inequalities in health had not improved since the 1970s when RAWP began, and in some cases had worsened. For example, health status within London had improved in the better off (in terms of income) local areas whilst it had fallen in the poorer areas. Shaw *et al* (1999) found that standardised mortality ratios for the under 65 year olds were 2.6 times higher in those local constituencies (a constituency is the small area used for elections to national parliament) with the worst health outcomes than in the constituencies with the best health[4]. Infant mortality patterns were similar - infant mortality in the poorest health constituencies was 2.0 the level of that in the best health constituencies.

There is also evidence of increasing health inequality from studies of variation across individuals. Using data from repeated (cross sectional) household surveys Propper and Upward (1992) calculated the concentration index of self-reported health status for individuals ranked by their equivalised household income. They found the rich to have better health and that income related inequalities increased between 1974 and 1985, but then fell 1987 back to below the levels of 1982.

Many of those who study inequalities in health in the UK (e.g. Shaw *et al* 1999) argue that the solution lies not in improving health care but in changing individuals' access to resources. From their detailed review of resource allocation in the NHS, Glennerster *et al* (2000) conclude that allocating resources according to need will be inherently limited in the extent to which it can overcome differences in health status. Part of the reason is a technical one: making equal allocations for equal need assumes equal efficiency of productive units. But they see the more important reason being that equalising resources at an area level will not eliminate the differences in individual behaviour that lead to differences in actual expenditure across individuals.

[4] Health outcome of the constituency defined in terms of SMRs for the under 65s.

The problem is compounded by the well-known fact that variations in health seem to be largely determined by factors outside of the health care system, some well known, and others less so[5].

3. Does the organisation of the health care system determine expenditure?

International comparisons have been used to attempt to answer questions such as does the overall organisation of the health care system have any impact on health expenditure, does the use of a gatekeeper to the hospital sector result in lower expenditure, does the method of remunerating doctors affect expenditure, and do increases in the supply of doctors result in increases in health expenditure? Such international comparisons have also examined the impact of income and of demographic factors on total expenditure.

These international comparisons tend to be beset by several problems (Gerdtham and Jonsson 2000). The first is the weak theoretical base for the determinants of aggregate health expenditure. There is no clearly accepted model for the macroeconomic analysis of health expenditure. Few of the estimated models make clear the causal relationships between aggregate expenditure and the organisation of the health care sector. The importance of the physician as the agent for the patient and the key supplier of health care, the fact that health services are often provided on the basis of 'need' rather than willingness to pay, the use of non-price rationing (e.g. waiting lists) make the usual separation of demand from supply difficult. Second, the data may vary in its reliability. It can be difficult to capture the precise institutional details of a health care system. It can be difficult, for example, to determine which expenditures to include in health care when the same care may be covered in different countries by either the social security system, the health sector or the social services sector (an obvious example being care for the elderly). The specifics of the health care sector within countries means that classification of financing and delivery systems can often be somewhat arbitrary. For example, variables representing the public fraction of health care expenditure, the use of high cost procedures, the type of reimbursement system are often only approximations to the underlying influences of interest. The distinctions between institutional arrangements of different countries are usually captured by the use of dummy variables, but this means they often cannot be distinguished from country effects. Third, many of the extant studies rely on fairly small samples, and increasing the sample size increases the heterogeneity of the sample. Fourth, many of the estimates have not incorporated dynamics, even though observed differences in health expenditure are likely to be the result of both permanent and transitory differences[6].

Given these problems it is perhaps not surprising that relatively few robust results emerge from cross-country comparisons of the determinants of health care expenditure. A recent survey (Gertham and Jonsson 2000) concluded that results

[5] In one of the few studies of variation in expenditure across a reasonably homogenous population, Cremieux *et al* (1999) found a positive association between expenditure on health care and better life expectancy and lower infant mortality across Canadian provinces.

[6] One commentator on early studies in this area concluded "We have had crude data, misspecified equations, contentious theory and cavalier history" (Culyer, quoted in Gertham and Jonsson, 2000).

must be treated with caution, but identified the following results. With respect to the non-institutional variables (those factors that are not features of the health care financing and delivery system) a common and extremely robust finding is that the effect of per capita income on expenditure is positive and often close to unity. On the other hand, the population age structure is generally insignificant. Institutional features appear to have the following impact on expenditure. The use of primary care gatekeepers, the use of direct patient payment for care followed by re-imbursement from a public or private insurer, the use of capitation payments for physicians in the ambulatory sector, the public provision of health services (proxied by the ratio of public beds to total beds) are all associated with lower health expenditures. Use of in-patient expenditure is associated with higher health care expenditures. Evidence on other features of the health care system, for example, the use of budget ceilings on inpatient care, and whether doctors are salaried or paid on a fee-for-service basis, is less clear cut.

These results indicate that both income and institutional factors determine health care expenditure, suggesting that as countries grow, so will their health care expenditure, but the extent of growth will be determined by the precise nature of the health care system. Looked at another way, these studies point to the importance of micro-incentives - incentives at the level of the supplier and the demander of health care. These issues are discussed in more detail below for the UK.

While these studies give some indication of the features of a health care system that may matter, two further caveats need to be borne in mind. The first is that cross-country studies to date have examined expenditure, and not efficiency. Whilst governments may be concerned with expenditure and expenditure growth, the real issue that is important for the design of health care systems is efficiency. However, without a way of adjusting expenditure for quality, efficiency cannot be measured. It is argued that this focus on expenditure distorts international comparisons. For example, it is argued that looking at expenditure only ignores the costs imposed by waiting lists that tend to be used in countries that have lower expenditure per capita, and so erroneously equates higher expenditure with inefficiency[7]. More generally, the position of the USA as an outlier with both high expenditure and higher (unmeasured) quality means that results are often not robust to leaving the USA out of the analysis.

Second, none of these studies have fully addressed the issue that the organisational form and financing of health care expenditure are endogenous. For example, centralised control of, or influence on health budgets, is itself a response to low income, budget deficits and a desire to control costs. Such endogeneity will bias the estimates of the coefficients on the institutional design factors in the estimates. Finally, even income may not be exogenous in the long run, as the level of health care affects productivity.

Age and expenditure

Perhaps one surprising result from the studies is the lack of the impact of age or of other measures of need (e.g. unemployment) on health care expenditures. The impact of ageing on government expenditure has been a major concern for both governments and academic writers (e.g. Bos and von Weisacker 1989). Severe consequences were

[7] For an example of this argument see Danzon (1992)

expected for the health care sector, when population aging was argued to be the cause of rises in government expenditure upto the mid 1980s (OECD 1988)[8].

However, recent analyses of cross-country expenditure data have concluded that the age effect is correlated with income (richer countries in the sample have older populations) and show that, holding constant for income, age per se has little effect. Recent analysis of country specific micro data on health care expenditure data indicates expenditures on health care are concentrated in the last few months of life. An analysis of micro data for a sample of Swiss individuals in the last eight quarters of life during the period 1983-1992 (Zweifel *et al* 1999) indicate that the amount of health care expenditure depends on remaining lifetimes but not on calendar age, at least for those over 65. From this Zweifel *et al* infer that the positive relationship between age and health care expenditure that can be observed in cross sectional data may be caused by the fact that at age 80, for example, there are many more individuals living in their last 2 years than at age 65. The impact of ageing will thus be to push the high levels of health care expenditure to later in individual's lives rather than to increase per capita expenditure.

Cutler and co-authors (Cutler and Meara 1999, 1998, Cutler and Sheiner 1999) have carried out detailed analysis of the relationship between ageing and health using data on health care expenditures in the US under the Medicare programme for elderly persons. Cutler and Meara (1999) analyse the increase in Medicare spending during the 1980s and 1990s. During these decades, Medicare spending has doubled in real terms despite the fact that the health of Medicare beneficiaries improved over the period. In attempting to reconcile these two facts, they show that most of the growth has been amongst the oldest old. Between 1985 and 1995 spending among those ages 65-69 rose by 2 percent annually. In contrast, spending for those over 85 rose by 4 percent. However, the source of this increase is not increased use of acute care (for which the growth rate amongst the young elderly is in fact higher than for the old elderly) but increased use of post-acute services.

They speculate that this increase in use might reflect three factors. The first is 'gaming' in response to the reimbursement mechanisms used in Medicare. Inpatient care is reimbursed prospectively, so hospitals receive the same payment regardless of whether they provide rehabilitative care or not. However, post-acute care is reimbursed on a cost basis when services are used. So if hospitals unbundle the post acute care from the inpatient setting, they collect additional revenues at no extra cost. The second factor is that some of the additional services might reflect real extra services, perhaps substituting for care previously provided by a family member. Getting reimbursement for such care was made easier in the late 1980s. Finally, Culter and Meara argue some of the increase in expenditure might be fraud. Their data mean they are unable to establish the relative strength of these factors.

This analysis illustrates the importance of the interaction of demography, health status, and the institutional arrangements for reimbursement and delivery of care. Ageing per se does not necessarily mean that individuals are more in need of health care: in fact, in the US data at least, older groups are healthier than in the past. However, even though healthier they use more resources. This is in part due to

[8] Emmerson *et al* (2000) contains projections of the impact of aging on expenditure for the UK.

changes in family choice (dues to changes in taste and in income) and the availability of better rehabilitation care, but is also due to the particular nature of the reimbursement arrangements for publicly funded care in the US. In other words, again the literature points to the importance of micro-incentives and the responses of agents to these incentives in determining the level and composition of expenditure.

It is also possible that that the impact of age will be affected by endogenous government budgetary responses. Getzen (1992) found no empirical relationship between ageing and expenditure and argued (as an ad hoc justification of his findings) that during the 1980s the existence of budget deficits meant that governments acted to damp down the increased demand that arose from an ageing population. He concluded therefore that aging *per se* did not automatically mean greater health care expenditure: the effect would depend on the overall fiscal position of the government. This contention remains to be tested.

4. Does the organisation of the health care system determine equity?

There is considerable evidence that policy makers within OECD countries are concerned about equity in health care. As shown in Table 1, the share of the state in health care expenditure is high, and many countries have achieved close to universal coverage of their population for the majority of health care services (OECD 1993).

The simple share of public finance in total health care expenditure hides the fact that OECD countries finance their health care though a mixture of taxes, social insurance contributions, private insurance premiums and direct payments at point of use (known as out-of-pocket payments). These various different payment sources have very different implications for both vertical and horizontal equity in the payment for health care, and may also have an impact on equity in the receipt of health care.

Equity in the finance of health care

Wagstaff *et al* (1999) examine the progressivity of the health care financing system in 12 OECD countries. Progressivity is measured using the Kakwani index, which is equal to the difference between the concentration index for payments and the Gini coefficient for gross (i.e. pre health care payment) income. This index measures departures from proportionality. A zero value of this index indicates proportionality in payments (i.e. all individuals pay the same proportion of their income for health care), and a negative (positive) value indicates a progressive (regressive) structure. Indices were calculated for the five sources of payment for health care: direct taxes, indirect taxes, social insurance, private insurance and direct payments. Indices for total taxes (direct and indirect), total public (taxes plus social insurance), total private and total expenditures were computed as weighted averages of the relevant separate indices.

The results indicate that direct taxes used to finance health care are progressive. This is particularly true in the UK, Ireland and Germany, but less true in Sweden and Finland where a relatively high share of direct taxation for health care finance comes from local income taxes which are less progressive than national taxation. Indirect taxes are regressive in all of the countries in the study. Social insurance is generally progressive, apart from Netherlands and Germany, where higher income groups are excluded from the social insurance schemes used to finance health care. The

progressivity of private insurance depends upon what private insurance buys. In countries where private insurance buys cover against public sector co-payments (e.g. Denmark and France) progressivity is lower where co-payments are higher (because poorer individuals spend a higher proportion of their income on insurance against co-payments). In countries where private insurance is taken out as supplementary to cover (often 'double' cover) provided by the state (e.g. Italy, the UK, Portugal and Spain) insurance is generally progressive. This is because richer individuals are those who pay for cover twice. Where insurance is the sole form of cover for the majority of the population (the US, Switzerland) it is highly regressive. Where it is the sole form of cover for richer individuals (Germany, the Netherlands) it is progressive. Finally, out-of-pocket payments are generally a highly regressive means of raising revenue, though their regressivity varies across countries, reflecting the differences across countries in exemptions from out-of-pocket payments.

The net effect of these different payment mechanisms on the progressivity of health care finance across the 11 countries is given in Table 6. The countries are ranked in terms of progressivity of health care finance, with the most regressive at the top. The position in the ranking depends on the weight of the different payment mechanisms in the total health care financing package. Broadly, it can be seen that countries that rely most heavily on private insurance have the least progressive health care financing system. Tax financed systems are proportional or progressive. Countries which rely heavily on social insurance have less regressive systems than those which rely most on private insurance, but have less progressive systems than those which use tax finance (the exception being France where over 70 percent of revenues are raised by social insurance). [9]

Table 6: Progressivity of health care financing

Country (Year of analysis)	Progressivity of all payments for health care
Switzerland (1992)	-.1402
US (1987)	-.1303
Netherlands (1992)	-.0703
Germany (1989)	-.0452
Sweden (1990)	-.0158
Denmark (1994)	-.0047
Spain (1990)	0.0004
France (1989)	0.0012
Finland (1996)	.0181
Italy (1991)	0.0413
UK (1989)	.0518

Progressivity measured as Kakwani index.
Source: Wagstaff *et al* (1999)

[9] van Doorslaer *et al* (1999) examine the impact of health care payment sources on vertical and horizontal equity and redistribution. They find that the vertical effect (unequal treatment of unequals) is far more important that horizontal inequity (unequal treatment of equals). Public finance systems tend to have small positive redistributive effects and less differential treatment of equals, while private financing sources generally have (larger) negative redistributive effects that are to a substantial degree caused by differential treatment.

Equity in the delivery of health care

The principle of equity in the delivery of health care is widely adopted in OECD country policy documents (van Doorslaer and Wagstaff 1992). But differences in the mix of public and private financing, and in the delivery systems across these countries may mean that these equity goals are not met in practice. van Doorslaer *et al* (2000) estimate the extent to which violations of the principle 'equal treatment for equal need' are systematically related to income in 13 OECD countries. The study uses individual level data from household surveys. This contrasts with many other studies of equity in the allocation of health care, which have looked at only users of health care. Individual's incomes are their equivalised household income and various forms of care are examined. Departures from proportionality (equal treatment for equal need) are measured by an index that ranges from -1 to +1 where a negative (positive) number indicates pro-poor (pro-rich) inequity[10].

In all the countries studied, individuals in lower income groups are more intensive users of the health care system. The poor use more services of the general practitioner, the medical specialist and the hospital. But after standardising for the level of need for care, there is little or no evidence of significant inequality in the delivery of health care overall. Interpreted literally, these results indicates that in the late 1980s and early 1990s, the health care systems of these countries appeared to perform reasonably well on the horizontal equity criterion of equal treatment for equal need.

Furthermore, there is no evidence of a link between the health care financing system and the equity in *delivery* of care. Table 7 shows the extent of departures from equal treatment for equal need across countries where the countries are ranked in terms of their progressivity in finance (from Wagstaff *et al* 1999). As can be seen, countries that are the most progressive in terms of finance are not those that have the most pro-poor distribution of health care. For example, the UK has the most progressive financing system of the group in the table but equity in delivery is more pro-poor in Finland, Denmark and the Netherlands.

Table 7: Extent of progressivity in delivery of all medical care

Country (Year)	Progressivity of delivery of all medical care[1]
Switzerland (1992)	0.040
US (1987)	0.009
Netherlands (1992)	-0.038
Sweden (1990)	-0.014
Denmark (1994)	-0.060
Finland (1996)	-0.029
UK (1989)	-0.016

1. A negative (positive) value positive value indicates a progressive (regressive) system.

Source: van Doorslaer *et al* (2000)

While this study finds no evidence of significant inequity in the delivery of health care overall, it does find that significant pro-rich inequality arises for physician

[10] For details of the methodology see van Doorslaer *et al* (2000).

contacts. This seems to be due mainly to a higher use of medical specialist services by higher income groups and a higher use of GPs care amongst lower income groups. These findings appear to be fairly general and emerge in different countries with very diverse characteristics regarding access to specialists and provider incentives. It occurs in countries with universal coverage (Scandinavia) as well as those without (US), countries with (Denmark, Netherlands) and without (Belgium) a GP gatekeeper role, countries with (Belgium) and without (Denmark) substantial cost sharing by patients. On the other hand, this finding does not emerge in two other countries that share few features in common (the UK and Switzerland).

The lessons which may be drawn from these studies to date of equity in the finance and delivery of health care is that changes to the finance side would appear to have more impact on equity than changes to the delivery side. However, such conclusions may be premature. The analysis on the delivery side was not able to adjust for differences in quality of care across individuals and relied upon analysis of data drawn from a variety of country-specific surveys. Second, the results on the finance side are not incompatible with a position in which countries in which citizen care about fairness in health care finance adopt more progressive finance (i.e. use taxation rather than social insurance or private insurance and use less co-payments). In other words, the financing system might be endogenous to the beliefs about fairness.

A study of attitudes towards the role of the state in financing health care carried out by Taylor-Gooby (1999) showed that there is a considerable difference in the level of support for government responsibility for the sick. Table 8 presents the answers to a question asked in 4 countries over time. This shows considerable variation in the level of support for this principle. In addition, the ranking of these countries in terms of support for this statement is similar to their ranking in terms of progressivity of financing of health care. Again, further research using comparable data sets is needed to ascertain the link between equity beliefs and financing arrangements.

Table 8: Percentage saying government should definitely be responsible for health care for the sick

Year	West Germany	Britain	Italy	Sweden
1985	54	85	87	n.a
1990	57	85	88	n.a
1996	51	82	n.a	71

Source: Taylor-Gooby (1999)

5. Does the organisation of the health care system determine health outcomes?

The level of health

The above analyses have been concerned with expenditure of the health care system and its level and distribution. Health expenditure is, however, input: arguably what individuals care about is the output of the health care sector, in other words, health. Obviously there are many factors other than health care that determine individual's health status, but one measure of performance of health care systems is the extent of

health of the population. Tables 9 and 10 present two commonly used measures of outcomes - life expectancy and infant mortality - for the G7 countries. These tables make it clear that the UK performs relatively badly on these summary statistics, though not as badly as the US, which is the biggest health care spender. When countries are ranked in terms of their expenditure the performance of the UK is perhaps a little better, in that it is the lowest spender but has better than the lowest outcomes (though the comparison is less favourable to the UK if the US is excluded).

Table 9: Life expectancy in 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

Spending is ranked according to share of health spending in GDP.
Source: Emmerson *et al* 2000 (from OECD Health Data 1999).

Table 10: Infant Mortality in G7 countries 1996

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

Infant morality defined as death at age under 1 year per 1000 live births. Spending is ranked according to share of health spending in GDP.
Source: Emmerson *et al* (2000) (from OECD Health Data 1999).

Examination of outcomes for specific illnesses and conditions tends to show that the UK performs badly compared to the rest of the G7 group (Emmerson *et al* 2000, Coleman 1999). The UK has high death rates from ischaemic heart disease and relatively poor survival rates for some common cancers (lung, heart, breast and prostate, Sikora 1999). It is argued that these poor survival rates are indicators of failures in the medical system, though the failure may be due to lack of money or poor organisation of services (e.g. lack of concentration of cancer services) or both.

While these tables suggest that the UK is not performing that well, more detailed cross country analyses of the relationships between expenditure and mortality tend to find little relationship between expenditure and mortality. In early research Leu (1986) found no relationship between medical care expenditures and lower mortality

after controlling for per capita income. Hitiris and Posnett (1992) using OECD data find limited evidence of a relationship between health care expenditures and mortality rates, despite using a large pooled time series of countries, and allowing for heteroskedastiticy and autocorrelation.

Interestingly, the relative position of the UK on the measures has worsened during the 1990s: prior to this date the UK position was generally above average for the G7 group. More formal cross-country analyses indicate some convergence within EU countries over time in health care spending and outcomes (Nixon 2000). Those countries that in the 1960s had lower than average health care expenditure and lower than average outcomes appear to have caught up with higher spenders and those with better outcomes. Conversely, those countries with good relative positions in the 1960s and 1970s appear to have had a fall in their relative position. So countries with worsening trends in infant mortality over the period 1960-95 include Belgium, Denmark, France, Finland, Greece, Ireland, the Netherlands, Sweden and the UK. Belgium, Germany (females only), Denmark, Spain (males only), the Netherlands, Sweden and the UK experienced worsening trends in terms of life expectancy. Viewed this way, the relatively poor current position of the UK might simply reflect regression towards the mean.

Inequality in the distribution of outcomes across countries

van Doorslaer *et al* (1997) examine income related-inequalities in health across nine European countries. Using data from household surveys they calculate the concentration index of the distribution of self-reported health status health[11]. Individuals were ranked by equivalent household income. Ill health was measured by the responses to questions in which respondents were asked to rate their health. Answers to these questions have been found to be good predictors of subsequent mortality in a variety of industrialised countries. In all countries, inequality was found to be significant. The authors explore the statistical association between these inequalities and two measures of health care expenditure and the level and distribution of income for the nine countries. They find that there is little association between health inequalities and GPD per capita, health spending and the percentage of health care spending that is public. On the other hand, they find evidence of a positive association between health inequalities and income inequality, as measured by the Gini coefficient for after tax income.

6. The role of private finance and the dynamics of health care expenditure

While the size of the private sector relative to the public is small, private finance accounts for around 15 percent of health care expenditure in the UK. This private expenditure includes copayments for pharmaceutical, direct payment for care provided outside the NHS and payments for health insurance. Setting aside co-payments for pharmaceuticals (which are free for the elderly, the young and those in receipt of social security), private payments are made by individuals who are richer. Besley *et al* (1999) found the privately insured to be wealthier, more likely to live in prosperous areas of the UK, be more educated, be more likely to be in work, and to

[11] For details of the calculation of the concentration index see van Doorslaer *et al* (1997).

support the Conservative Party. Propper *et al* (2001) also find evidence of a cohort effect in purchase: younger individuals are currently more likely to purchase than their older counterparts. Unsurprisingly, adding in the receipt of private care to NHS expenditure makes the UK distribution of health expenditure less progressive (O'Donnell *et al*, 1993).

There are a number of essentially static arguments in favour of a private sector that operates alongside a public sector system. First, there are a limited number of economic models that show that systems in which there is private provision alongside public is welfare increasing. Besley and Coate (1991) argued that systems in which there is de jure universal provision, but in which richer individuals are de facto allowed to 'opt out' can be redistributive, even when public provision is financed by a non-redistributive mechanism such as a head tax. Gouveia (1997) argues that allowing the rich 'opt out' maintains the existence of a public system by keeping tax payments down to levels supported by a coalition of the rich and the poor. The second often advanced argument is that the private sector allows individuals choice. The third is that for a given budget, individuals who use the private sector may actually benefit those who remain in the public sector. If richer individuals use private care but pay taxes for public care, then this will reduce demand in the public sector, so increasing the resources available per capita in the public sector. For example, in the UK it is argued that those who use the private sector for treatment reduce waiting times for those who remain in the public sector.

But the dynamics of the process may be somewhat different. If the wealthier receive less of their health care through the public system, their commitment to contribute taxes to the system may decrease. In addition, without the 'sharp elbows' of the middle classes to keep up quality, the quality of the public sector may fall. A fall may lead to lobbying for lower taxes for the public scheme and a reduction in budgets. If opting out does depend on the quality of the public sector, reductions in the budget will lead to less use of the system by richer individuals. This will, in turn, lead to further calls for reductions in the budget. So attempts to cut public expenditure may lead to the public sector becoming a 'poor service for the poor'.

The relationship between private financing and the evolution of the public system turns on the relationship between the quality of the public sector, use of the public and private sector, and political support for the public sector. The argument that private finance will lead to a downward spiral towards a 'poor service for the poor' depends upon the premise that support for public sector financing is negatively associated with private demand and that the demand for a privately financed alternative is affected by the quality of the public sector.

In practice, there are several possible relationships between support for public finance and use of private health care. Users of private health care services may be less supportive of public services on ideological grounds or because they simply see little personal return from public services they do not use. Alternatively, users of private services may be frustrated with the level of service available from the public sector, although ideologically they may prefer higher state spending to achieve higher service levels and quality for all. Use of the public or private sector may affect attitudes. Users dissatisfied with the level of service in the public sector may switch to the private sector. Users of the private sector may like the quality of service they receive

and no longer see themselves as potential beneficiaries of the public service, and in turn lessen their support for state provision.

At an EU level, Mossialis (1997) finds a positive relationship between expenditure per capita and satisfaction with the health care services, though there are two outliers (Denmark and Italy). In addition he finds a north-south divide in citizen's satisfaction with health care systems, with those in the north being more satisfied, those in the south being less so, and the UK (and Ireland) lying between the two. In an examination of the dynamics of expenditure across countries (using OECD data), Globerman and Vining (1998) find no relationship between the current share of public expenditure in a country and past shares of public expenditure in health care in that country. In other words, low current levels of public expenditure do not necessarily imply low levels of expenditure in the future.

At a national level, evidence from the UK suggests that those who use the private sector are, in general, less supportive of public financing of health care. Users of private health care services and, more particularly, users of private medical insurance, are less supportive of increases in expenditure on the NHS or the equity goals of the NHS (Burchardt *et al* 1999, Hall and Preston 1998). There is also evidence from the UK that the *quality* of the NHS is associated with use of the private sector: longer waiting lists have been found to be linked with higher levels of demand for private medical insurance (Besley *et al* 1999), though not with *use* of the private sector (Burchardt *et al* 1999). Besley *et al* and Calnan *et al* (1993) also find evidence of a link between dissatisfaction with the quality of the NHS and private insurance purchase in the UK. However, both stress that it is dissatisfaction with the quality of service, rather than the concept of public provision, which drives people into the private sector.

But there is considerably less evidence that private use leads to *change* in attitudes. Burchardt and Propper (1999) find that use of private health care in the UK in the early 1990s did not lead to clear-cut changes in attitudes towards the NHS over the following 5 years. Furthermore, over this 5-year period the attitudes of both private sector and NHS users changed and the changes in attitudes of both sets of users were very close. It appears that, in the UK at present, it is *use* of a service that leads to attitude change and not whether that individual uses a public or a private service.

These studies point to an interaction between NHS utilisation, private utilisation and attitudes which suggests that the state of the NHS might have an impact upon the utilisation of the private sector alternative by the individual. The evidence is less clear as to whether this will translate into lower support for the NHS and for taxes for the NHS. Judge *et al* (1998) found that levels of dissatisfaction with health care fluctuated between 1983 and 1996, but rose towards the end of the period to be higher than during the previous 13 years. A strong association exists (at national level) between actual levels of expenditure on the NHS, spending priorities and dissatisfaction with the NHS. Public support for higher spending and levels of dissatisfaction with the NHS rose in the second half of the 1980s when funding increases were relatively small, fell back again in the early 1990s when spending rose, then rose again as spending slowed down in the mid 1990s. However, the same study found little support for major changes in the traditional method of tax finance for the NHS during this period. In a study of attitudes to public sector funding, Brook *et al* (1997) found

that the use of private sector alternatives for health care was an important determinant of individuals thought was a funding priority for themselves, but was a less important determinant of what they perceived to be in the national interest.

Given this evidence, it appears that a decrease in expenditure on the NHS may lead to increased use of the private sector but this will not lead to a large shift in support away from the NHS. Increasing NHS expenditure paradoxically may therefore put greater pressure on the NHS as more individuals use the higher quality public service. Conversely, the findings also suggest there may be scope for more private finance at the margin without threatening the tax base of the NHS.

In considering extensions to private finance it is necessary to take into account possible supply-side responses. Under the current performance monitoring arrangements within the NHS, in which hospitals are set waiting list or waiting time targets, Martin and Smith (1999) found that an increase in waiting lists resulted in a larger increases in supply than reductions in demand. They attributed this to the fact that hospital managers are strongly monitored in terms of waiting time/list targets. In addition, physicians who work in the private sector generally also work on the public sector and are not strongly monitored in terms of hours of work supplied to the NHS. So any exogenous increase in demand for private services (say a tax break for private purchase) or a change in quality of the NHS will impact on both sectors.

Measures to stimulate private finance could lead to a worsening of service in the NHS as staff moved into the private sector to meet the increased private demand. If the fall in demand for NHS care was sufficiently large NHS waiting lists would then fall. This might stimulate some NHS demand, but it might also reduce the pressure on managers to exert effort, and if the Martin and Smith estimates are taken at face value, would result in less NHS activity. So in the short run, giving tax breaks could harm NHS users. The benefit to private users would depend on whether price in the private sector rose and the difference in the benefits of treatment - including the difference in waiting times - in the two sectors.

7. Lessons from the internal market reforms

The UK, along with several other OECD countries, implemented a major reform of its health care system in the 1990s. In 1991 the internal market reforms were introduced. These separated the functions of provision and purchase of hospital based health care, creating one set of agents responsible for provision and another responsible for purchase. NHS hospitals were to be given greater autonomy from central and local control and purchasers were created from area based authorities that had previously adminstered hospitals and from a self-selected group of primary care physicians (Culyer *et al* 1990). The intention of the reforms was to create competition on the supply side of the market. Purchasers were free to buy hospital based health care from any provider, including the small private sector. Providers would compete for contracts to supply care, which it was argued would encourage efficiency (Maynard 1991).

These reforms are part of a more general health care reform process intended to increase competition in health care markets[12]. It is generally agreed that such reforms have brought about less change than their architects hoped for[13]. However, within a UK context the reforms have highlighted the importance of incentives for providers and purchasers of health care. An assessment of the reforms concluded that "the incentives were too weak and the constraints too strong" (Le Grand *et al* 1998). The constraints come, in part, from the controls imposed by central government (Propper 1995).

One area over which there was less central control was on the behaviour of General Practice Fundholders. In the internal market, two main classes of buyer were created: health authorities and a self-selected group of family physicians (General Practitioners or GPs), called General Practice Fundholders (GPFHs). The reforms gave GPs choice, and GPFHs the ability to pay for this choice for a subset of treatments.

The fundholding scheme ran from 1991 to 1999. The scheme was voluntary, and practices joined in different years over the scheme's life. By its end, nationally about half of all general practices were fundholders. GP fundholders held a budget from which they were expected to pay for only particular, specified types of care, including a specified subset of all procedures that an elective hospital patient might have. These included common elective procedures, and accounted for about 70% of all elective admissions. GP fundholders placed contracts for these procedures with hospitals. These contracts commonly included information about price and some dimensions of quality including, in some instances, waiting times (Glennerster *et al.* 1994). The contracts were likely to link payment to activity, with GP fundholders basically paying hospitals for each case treated.

Any surplus from the fund could be retained by fundholder to use in their practices. As GPFHs are self-employed contractors subject to relatively little financial monitoring, exactly how these funds were spent was not subject to detailed scrutiny, and at the very least, practice improvements translate into higher income when the GP exits from the practice. The research on the behaviour of GPFHs shows that GPs were generally active in making changes in the internal market (Glennerster *et al* 1994) and detailed analyses of the financial incentives embodied in the scheme suggests that GPFHs responded to financial, as well as non-financial, incentives. The implementation of the reforms was undertaken in a way that GPFHs had budgets based on their referrals in the year immediately prior to entry into the scheme. This gave them incentives to increase their use of hospital services prior to entering the scheme in order to inflate their budgets (which they then could hold at this level for the life of the scheme). Croxson *et al* (2001) show that fundholders did respond to these financial incentives by increasing their referrals to hospital prior to entry into the scheme, so inflating their budgets upwards for the duration of the fundholding

[12] Culyer *et al* (1990) and Maynard (1991) provide an overview of the NHS reforms. Propper (1995) provides an assessment of the limits to reform. Glied (2000) provides a review of the US literature on managed care. Chalkley and Malcomson (2000) review issues in government contracting for health care services. Le Grand and Bartlett (1993) provide a review of the wider set of 'quasi-market' reforms enacted in the UK.

[13] Le Grand *et al* (1998) provide an assessment of the UK reforms. Saltmann and Figueras (1998) review the experience of managed competition. A more sociological assessment of several reforms is provided in Social Science and Medicine 52 (2001).

scheme. Gravelle *et al* (2001) showed that fundholding practices responded to positive prices by admitting fewer patients than non-fundholding practices. They also responded to changes in waiting times and patient characteristics in a way that was consistent with the positive financial costs of making referrals.

Evidence on the prices charged by NHS hospitals to GPFHs and the District Health Authority buyers indicates that external incentives – competition – also influenced behaviour. The Department of Health set regulations such that price was meant to equal average cost. However, this rule was not (and probably could not) be monitored. A limited number of studies of the impact of supply side competition on prices were undertaken. These showed that higher levels of competition were associated with lower prices, particularly for services which had lower costs (Propper, 1996 and Propper *et al*, 1998). These studies also suggest that NHS hospitals gave greater discounts to those buyers who were more able to move their contracts between sellers.

So, while in general the regulatory activities of central government might have limited the responses of agents in the internal market, it does appear that even with such regulation, agents did respond to financial incentives.

8. Conclusions

This review has examined the financing of the UK health care sector using evidence from both international comparisons and from within the UK. The international comparisons suggest the following. The lower expenditure per capita of the UK can, in part, be attributed to organisation of the health care system. Features of the UK system, such as the use of primary care gatekeepers and budgets set at a system wide level, appear to keep expenditure below what would be expected given national income. The evidence on equity in finance and delivery indicates that on the finance side the UK has one of the most progressive systems. On the delivery side the NHS is not worse, and indeed somewhat better, in terms of equity in the use of health care resources, than several other OECD countries which spend considerably more per capita on their health care.

On the other hand, the international evidence on expenditure cannot be taken as evidence of efficiency as no adjustment is made for quality. Further, the evidence also indicates that that these positive properties of the UK system may not translate into health outcomes. The UK has, on some measures, poorer health outcomes than similar countries and a poorer distribution of health. While these outcomes might be better than expected given the level of funding, the fact that little relationship between funding and mortality has been found at cross-country level makes such an inference something of a leap of faith. And the distribution of outcomes appears more related to the distribution of income than to any measures of health care spending.

What international comparisons also hint at is the importance of incentives at the level of the supplier and the demander. The funding analyses show the UK use of gatekeepers (the UK's General Practice system whereby individual's must be referred into the hospital sector for treatment and diagnosis by their family doctors) and payment of doctors by salary rather than fee-for-service mean expenditure per capita is lower than it would be with other design features. However, cross-country analyses are generally at a level at which is hard to isolate the impact of such incentives: to

understand these micro-incentives it is necessary to examine data in which the incentive structures can be more clearly identified.

Examination of responses to the financial incentives embodied in the UK internal market reforms indicates that physicians and health care providers do appear to respond to financial incentives in a tax financed, predominantly public provided health care system. Referral patterns of GPs reflected financial (and other) rewards. Where competition was stronger, prices appeared to be lower. However, it is also clear that responses of agents were limited by the structures established, and the actions taken, by central government to 'manage the market'.

In terms of the type of finance, the review suggests there are no clear equity grounds for moving away from tax finance. The present tax financed system is more equitable than either social insurance or private insurance. On the other hand, there are growing pressures on the NHS, which are reflected in public attitudes. The evidence suggests that a marginal extension of private finance will not necessarily erode public support for the NHS.

Finally, the review highlights the importance of moving on from a focus on what are basically inputs - expenditure and its distribution - to an examination of outcomes and the links between inputs and outputs. The UK appears to meet its equity goals well in terms of how it spends public finance, but this is not mirrored by an increase in equity in health outputs. The existence of health inequalities raises the issue that the focus by governments on inputs and amounts of money spent is somewhat skewed. As important is a focus on what is being achieved for this money. To assess the extent to which health outcomes have much to do with expenditure on health care, greater research effort needs to be directed to looking at the impact of expenditure on health. In other words, economists need to direct effort to the study of the efficiency of production. This in turn suggests a greater focus on the responses of suppliers and demanders to incentives.

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Figure 1: Real Spending on NHS as a percentage of GPD 1960-2000

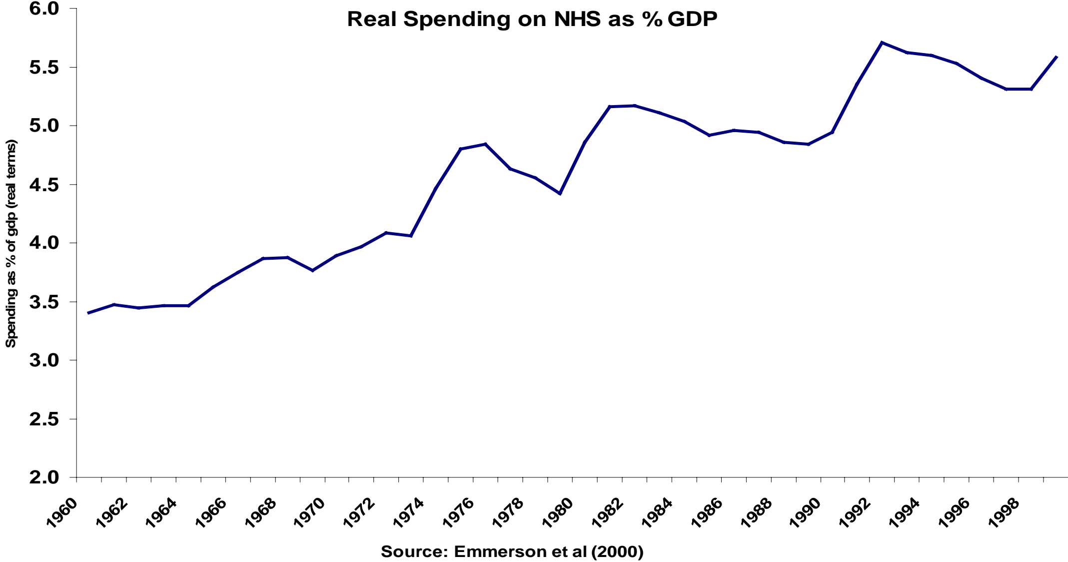
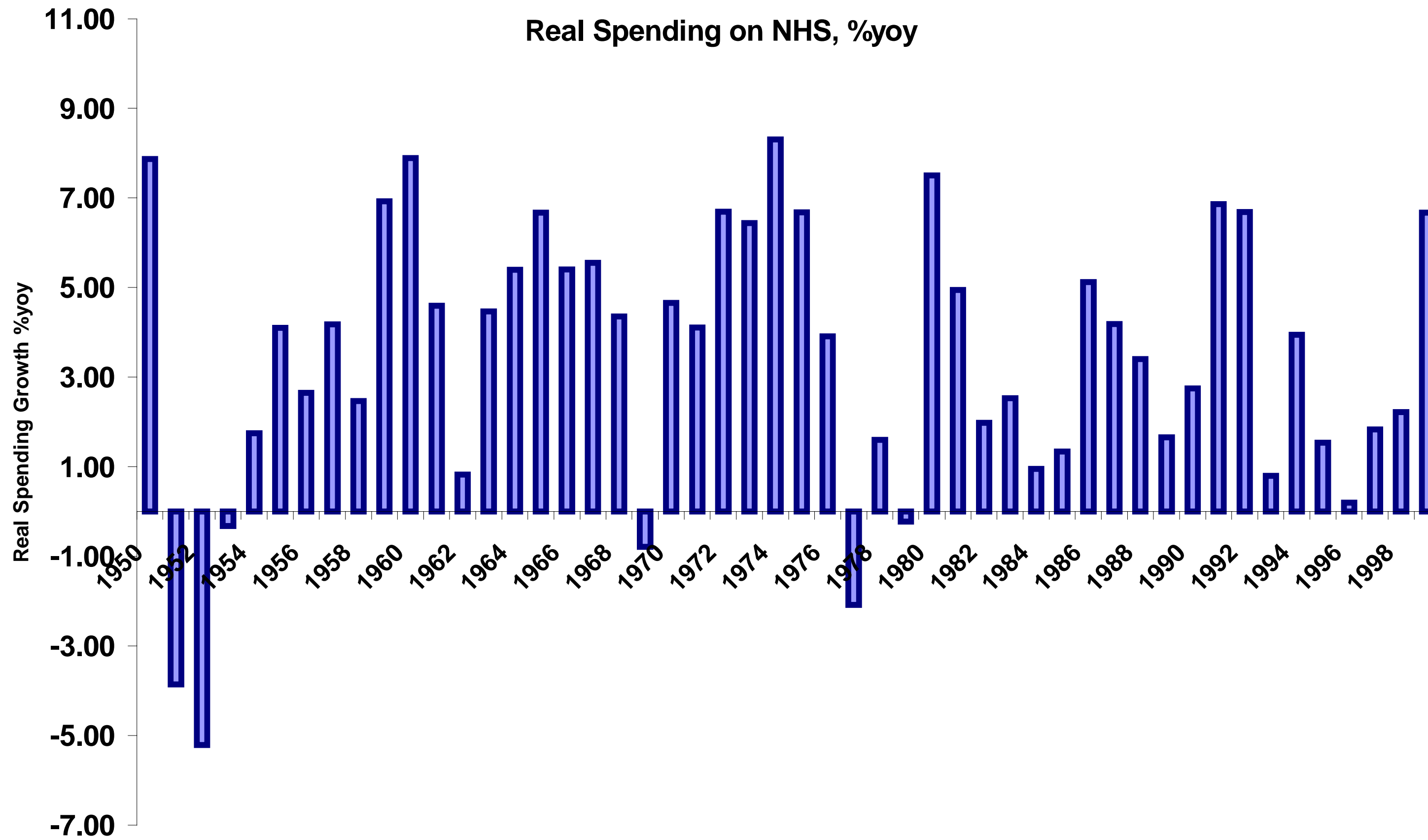


Figure 2: Real year on year growth in spending on the NHS 1961-1999



Source: Emmerson et al (2000)

Figure 3: Private Health Spending as a share of GDP

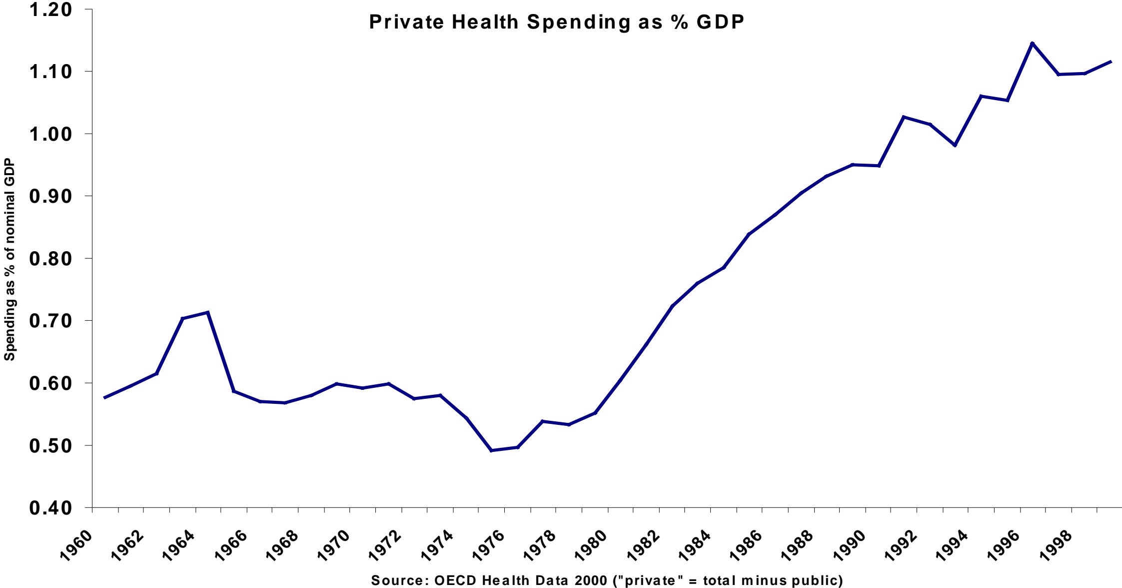


Figure 4: Real year on year growth in private expenditure 1961-1999

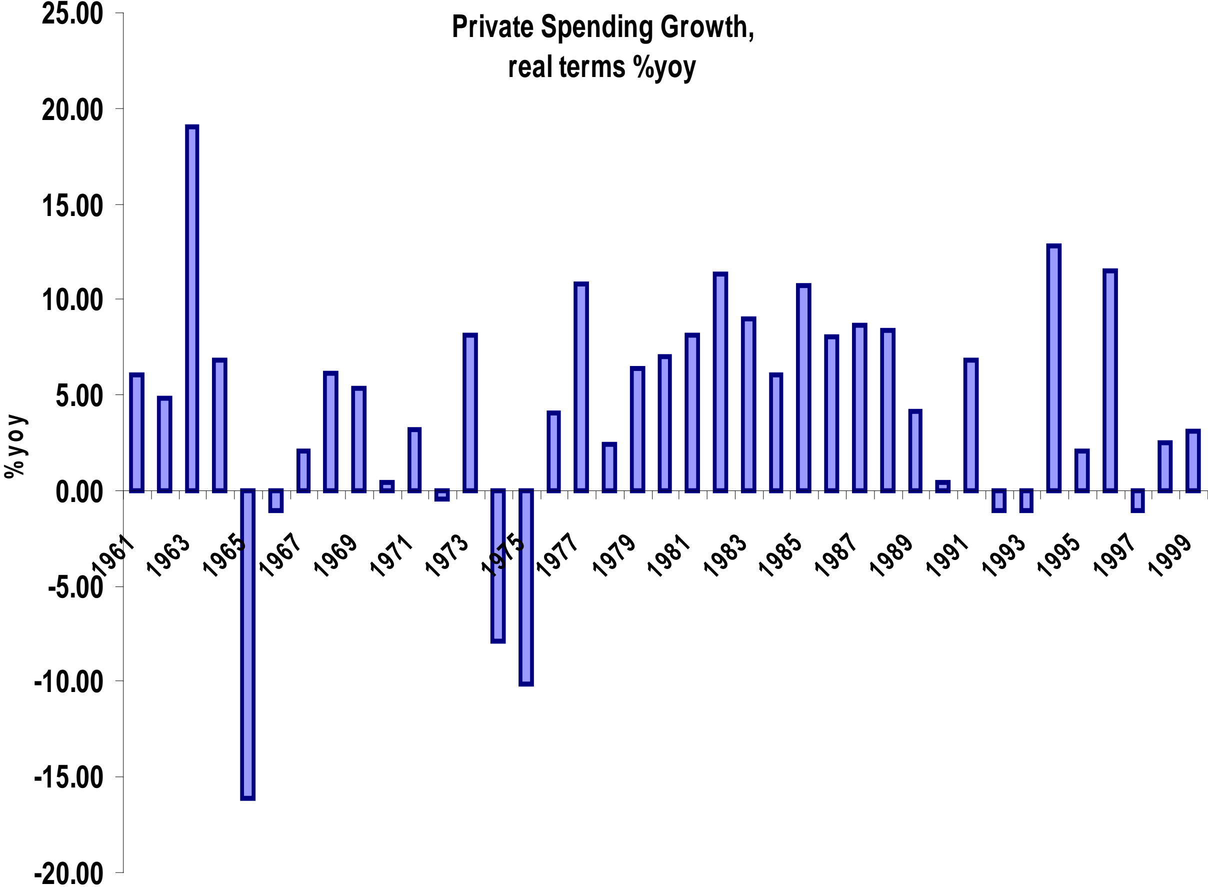


Figure 5: Private health spending as a share of total health spending 1960-1999