The King's Fund

Ideas that change health care

Institute for Fiscal Studies

Authors
John Appleby
Rowena Crawford
Carl Emmerson

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How cold will it be? Prospects for NHS funding: 2011–17

Key points

- After significant real growth in National Health Service (NHS) funding this century (averaging nearly 7 per cent per year in England up to 2010/11), future prospects look far from rosy.
- As ever policy choices have to be made over public spending. But the consequences of the current financial crisis on the state of the public finances have meant that making these will require difficult trade-offs.
- This paper analyses the consequences for the NHS, other spending departments and taxation of three possible funding futures for the English NHS from 2011/12 to 2016/17:
  - 'tepid' (annual real increases of 2 per cent for the first three years, increasing to 3 per cent for the final three years)
  - 'cold' (zero real change, which is the lowest level of funding compatible with a pledge made by the Conservative Party)
  - 'arctic' (annual real reductions of 2 per cent for the first three years, falling to 1 per cent for the final three years).

Implications for other spending departments

- Over the next spending review period – 2011/12–2013/14 – the budget across all spending departments, including the NHS, could reduce in real terms by an average of 2.3 per cent per year. However, if the NHS were to be protected to a greater or lesser degree, other departments could face greater cuts.
- For example, if the NHS were to receive real cuts of 2 per cent per year, other departments could need their budgets to be cut by an average of around 2.5 per cent. No real rise in NHS funding (the cold scenario) would imply other departmental cuts averaging 3.4 per cent; and real rises of around 2 per cent for the NHS could imply real cuts in other departments averaging 4.5 per cent.
- Estimating the impact on other departments beyond 2013/14 is made more difficult as the 2009 Budget did not contain projections for total public spending beyond this date. However, under an assumption of no further tax-raising measures or cuts to benefits or tax credits, our assessment is for real reductions averaging around 1.0 per cent per year if the NHS receives increases of 3 per cent per year, to increases averaging 1.2 per cent for other departments under our arctic funding scenario for the NHS.

Implications for taxation

- If non-NHS departments were to receive an average 1.5 per cent real increase, while the NHS received a 3 per cent real increase each year between 2014/15 and 2016/17, then this would require a permanent increase in tax (or reduction in spending on social security benefits and tax credits) of £17.1 billion by 2016/17. This is equivalent to £540 per family, and such a sum is equivalent to that which would be raised through a 4.5 percentage point increase in the main rate of value-added tax (VAT).
- Even if a real freeze were applied across non-NHS spending departments, our tepid scenario would still require an increase in taxation (or reduction in spending on social security benefits or tax credits) of £6.9 billion, which would be equivalent to £220 per family. Such a sum is equivalent to that which would be raised through a 1.6 percentage point increase in the main rate of VAT.

The funding gap

- Demographic pressures up to 2017 are likely to cost the NHS around £1.1–1.4 billion extra each year at 2010/11 prices, and would require average real annual funding increases of around 1.1 per cent in order to maintain quality. Only our optimistic funding scenario (tepid) would provide enough money to cover this.
- Compared with Sir Derek Wanless's 2002 recommendations for future funding of the NHS, all three of our scenarios fall short. For our most optimistic (ie, highest funding) scenario (tepid), by 2016/17 the shortfall with Wanless's most optimistic view of the required future funding (ie, lowest, his fully engaged scenario) would be small: around £4 billion.
- However, under our two less optimistic funding scenarios, the 'gap' with this Wanless scenario could range from £21–30 billion – nearly 30 per cent of the current NHS spend in England. And under the worst funding scenarios envisaged by Wanless and ourselves (ie, the lowest level of funding provided combined with the highest level required), the gap would be nearly £40 billion at 2010/11 prices.

Implications for NHS productivity

- The NHS could fill this gap in funding by increasing its productivity. To do this, over the whole period from 2011–17, the NHS would need to make gains of between £21.6 billion and £47 billion, equivalent to improvements of 3.4 to 7.4 per cent per year, or £3.6 to 7.8 billion per year.
- While some productivity gains will be possible, the required increases are large. For example, private sector productivity growth averages around 2 per cent per year, and over the past decade measures of NHS productivity suggest that this has, at best, remained flat.

Consequences for health care spending as a share of GDP

- While UK health care spending as a share of national income will have increased over the past 10 years by nearly 3 percentage points to an estimated 9.7 per cent by 2010/11, closing the gap with our European Union (EU) neighbours, even under our optimistic funding scenario, the share of national income devoted to health care will flatten off from 2011/12–2016/17, and the gap between other European countries could widen.
- Under our pessimistic scenario, total public and private health care spending as a percentage of GDP would reduce to around 7.9 per cent, virtually wiping out all the increase seen since 2000.

Foreword

Much has already been written about the tighter financial times facing the health service in England and indeed in the rest of the UK. After years of unprecedented plenty, our publicly funded health care system is about to enter a period of uncertainty in which growth in its budget is certain to be constrained if not eliminated. That much is agreed, although listening to some politicians over the past few months you could be forgiven for believing that the NHS will somehow be immune from the economic downturn. The suggestion has been that while there may not be as much extra money as in recent years, the health service will somehow be protected – and that this crisis will be over relatively quickly. The dangerous implication of this false prospectus is that there is no need for urgent action and that ploughing a similar course to that pursued in recent years will suffice.

This paper, a collaboration between researchers at The King's Fund and the Institute for Fiscal Studies, sets out not only why that analysis is wrong but also why it is dangerous. There is a window of opportunity, probably between one and two years, during which funding remains relatively generous, and grasping that opportunity will be the key to driving continued improvement.

In many ways the NHS in England is more robust and better prepared than ever to deal with the downturn. Current funding levels enable it to employ more professionals than at any time in its history. There have been huge improvements in the capital infrastructure, and waiting times have been slashed. All this means that more need is being met and that the gap between demand and supply has been significantly reduced.

There is good news too on attitudes – there are tentative signs that clinicians are more engaged in shaping and running services after a period in which change was driven by central control and targets, which, for all their achievements, seemed to be offering diminishing returns.

It would be a mistake though to underestimate the challenge or the opportunity the downturn provides. There are key areas where productivity can be increased significantly and at the same time the quality of service improved. This will not be about devising new and untried solutions – the good practice and techniques are already out there in the health service – the imperative is to create the conditions in which they can be applied in each part of the country.

For The King's Fund this paper represents the first output of a programme to understand how we can deliver better quality at lower cost; we will identify the levers, actions and incentives and then work with managers and professionals to help deliver the changes and evaluate their impact.

Niall Dickson
Chief Executive, The King's Fund

Introduction

The funding of the NHS has increased enormously since the turn of the century. Real NHS spending in England will have almost doubled since 1999/2000 as a result of the government broadly delivering the funding increases suggested by Sir Derek Wanless in his 2002 review of the future of health care spending (Wanless 2002).

But prospects for future funding now look bleak. The financial crisis is estimated by the Treasury to have dealt a permanent blow to the size of the UK economy, with a significant knock-on impact on the strength of the public finances. Given this, it is hard to see how the next spending review – which might not report until after a 2010 general election – could unveil further real terms increases in the NHS budget without significant reductions in spending elsewhere, or the introduction of tax-raising measures.

The financial future remains uncertain, and will depend on the nature and path of the economic recovery, particularly the extent to which this boosts tax revenues and reduces spending pressures through lower debt interest payments or falls in unemployment. Nevertheless, there will also be policy choices to be made about spending priorities and the overall level of public spending. The Conservative Party has pledged that, for the next spending review period at least, it would, as a minimum, maintain NHS spending in real terms (Lansley 2009), while the Labour Party has also stated a similar commitment (Brown 2009).

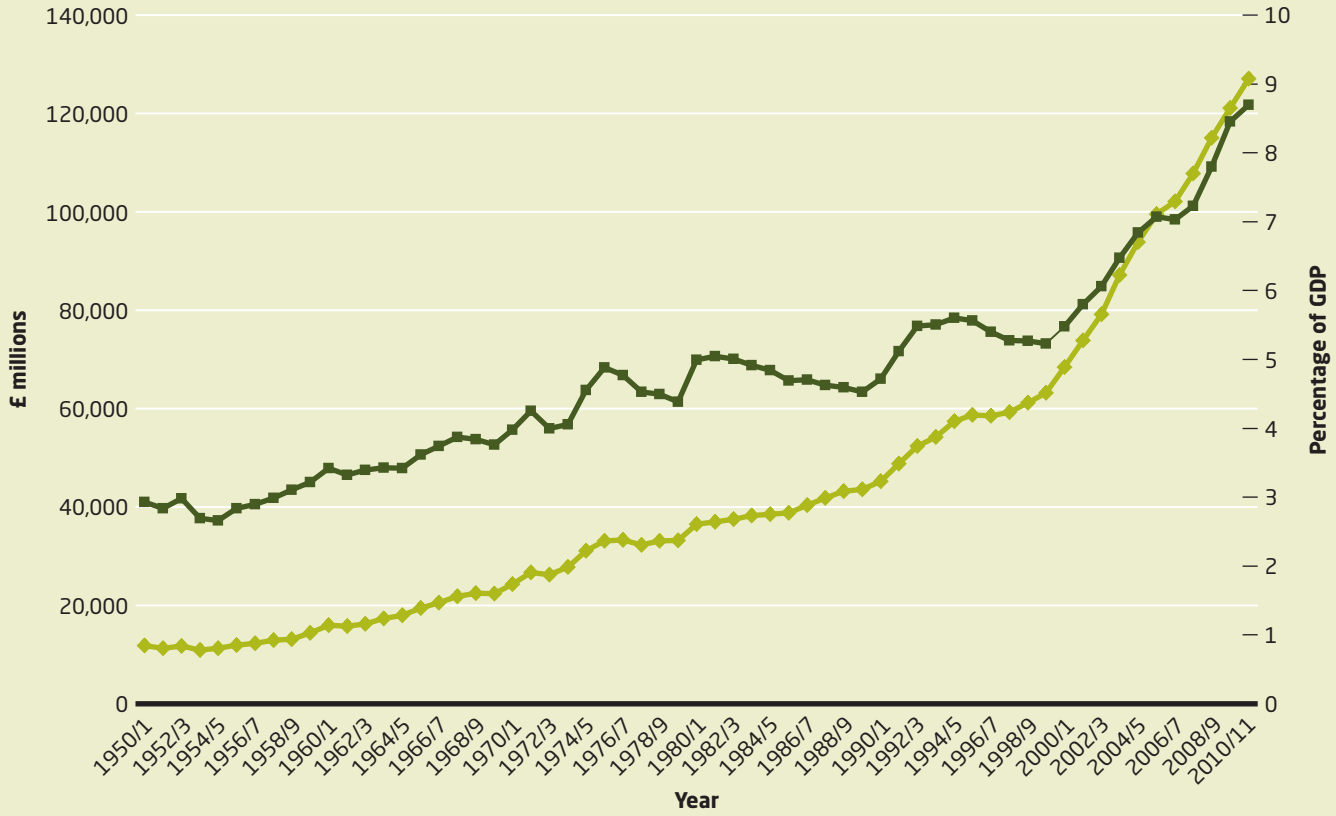
Although there is a general consensus that the NHS faces a tough financial future – not just for the three years from April 2011, but probably for the spending review period after that (up to March 2017) – there is less certainty about just how cold the financial climate will be. To provide some informed limits on the prospects for future NHS funding up to March 2017, this report explores three funding scenarios – low growth, no growth (the lowest compatible with the Conservative Party's pledge), and negative growth – and assesses the impacts and consequences of each on other government spending, taxation and the NHS itself.

First, we look at historical funding for the UK and English NHS, including a more detailed examination of funding this year and next following decisions made in the last Budget, before setting out the three funding scenarios and their consequences. We conclude with an assessment of the realism of each scenario, and a summary of the options for NHS funding up to March 2017.

Trends in NHS funding

Over the past 60 years, net UK spending on the NHS has risen around 10-fold in real terms to more than £127 billion (*see* figure 1, below). It has also grown as a share of national income, from around 3 per cent to nearly 9 per cent.

Figure 1 Real net spending on the UK NHS at 2010/11 prices and as a percentage of GDP



Sources: HM Treasury (2009); OHE (2009).

Real spending (left axis)
Per cent GDP (right axis)

Although average annual real spending has increased by around 4 per cent over the lifetime of the NHS, during the 20th century the average was 3.5 per cent, and in this century 6.6 per cent. Table 1, below, shows changes in average annual real NHS spending by periods of political rule.

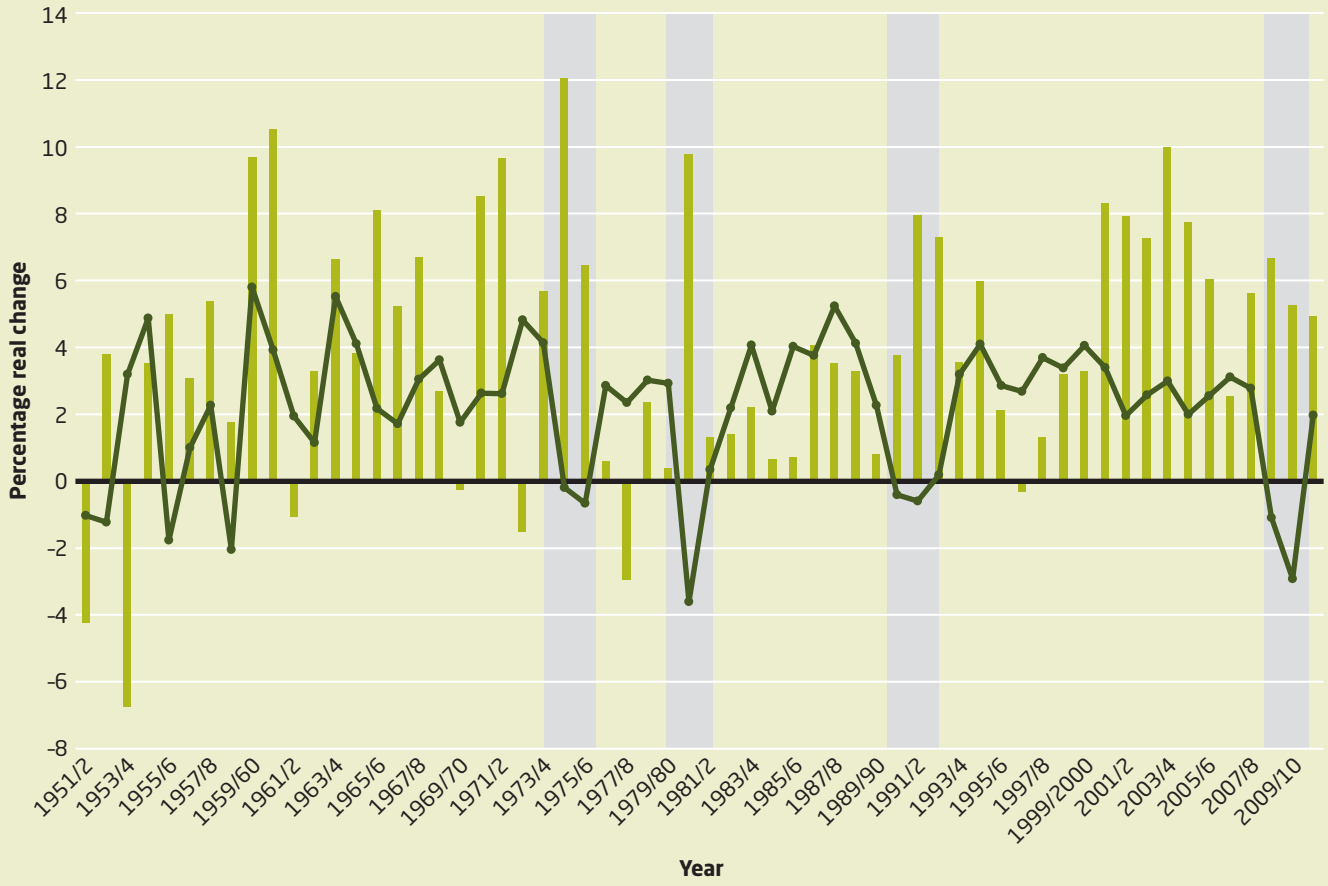
Table 1 Average annual real changes in net spending on the UK NHS

Time period/administration	Fiscal years	Average annual real change (%)
Whole period	1950/1-2010/11	4.04
20th century	1950/1-1999/2000	3.48
21st century	1999/2000-2010/11	6.56
Conservative	1951/2-1963/4	3.02
Labour	1964/5-1969/70	4.34
Conservative	1970/1-1973/4	5.50
Labour	1974/5-1978/9	3.58
Conservative	1979/80-1996/7	3.21
Labour	1997/8-2010/11	5.70

Sources: HM Treasury (2009); OHE (2009); authors' calculations.

Given the current economic situation, what does the historic record indicate in terms of NHS funding and general economic activity? As figure 2, below, shows, there is little immediate relationship between changes in real GDP (and periods of recession, shown in grey on figure 2, below) and changes in real NHS spending. If anything, NHS spending appears to grow by more than average during periods of recession. There is, perhaps, a detectable lag between GDP and NHS spending – particularly after the mid-1970s recession, reflecting the impact of International Monetary Fund (IMF) loan conditions at the time. Given current spending levels, this might suggest a similar lag in terms of reduced funding post-2011, and probably reflects the fact that recessions are associated with a negative shock to what can be sustained in the years following, and that it then takes a bit of time to adjust spending down to the new reduced level of national prosperity.

Figure 2 UK NHS net spending trends and real GDP: 1951/2 to 2010/11



Sources: HM Treasury (2009); OHE (2009).

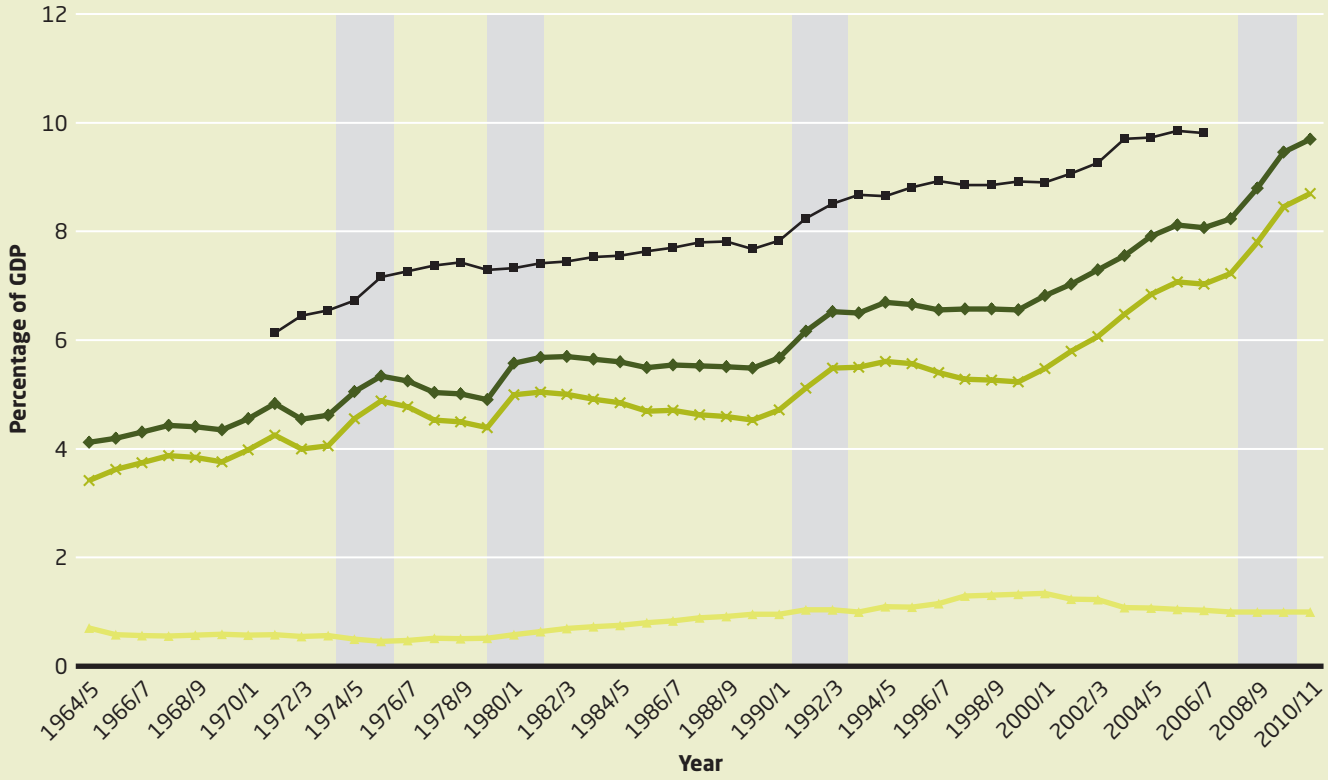
Total UK health spending as a percentage of GDP

The amount of national income (GDP) that the United Kingdom devotes to health care has traditionally been significantly lower than that of our European neighbours. Closing the gap between total (public and private) spending and the average for the EU-15 countries was the goal set by Tony Blair in 2000. (The then Prime Minister's comments were originally made on the BBC television programme *Breakfast with Frost*, on 16 January 2000, and were repeated in *Hansard* (*Hansard* 2000).) Since then, NHS funding has grown considerably, leading to an increase in total health spending from 6.8 per cent of GDP in 1997, to 8.4 per cent of national income in 2006.

Although the proportion of GDP devoted to total health care spending in the United Kingdom has risen since 2007/8 – apparently closing the gap with the European Union (EU) average (*see* figure 3, below), a significant part of this rise is due to lower/negative growth in GDP. Data for other countries' health care spending is available only up to 2006. However, all other EU countries have also experienced reduced and declining economic growth, and it is therefore expected – as in previous recessions (grey areas on the figure) – that the EU-14 average spend as a proportion of GDP will rise from 2007/8, and a gap will remain.

It is worth noting not just how UK health spending has risen sharply during economic downturns, but also that it has reduced and then levelled off in its share of spending in post-recessionary years; a pattern that might be expected post-2010/11.

Figure 3 UK NHS, private and EU-14 weighted average and total health care spend as a percentage of GDP



Sources and notes:

a) The EU-14 weighted average trend from 1964/5–1970/1 is missing for 10 countries (and is therefore excluded). Data for 1970/1–1986/7 are missing for three countries. Data from 1988/9 onwards is complete save for one country. Data has been extrapolated for all missing years on the basis of statistical time trends for each country.

b) Figures for the United Kingdom for 1964/5–2007/8 are calculated on most recent money GDP (HM Treasury 2009 [March]), UK NHS spend data from Public Expenditure Statistical Analyses (various) and OHE (2009). Data for 2008/9–2010/11 is based on Treasury estimates for money GDP and planned spending for the four UK territories. Private spending from 1964/5–2006/7 (OECD 2009) and for 2007/8–2010/11 assumed to remain constant at 1 per cent of GDP.

UK NHS + private
EU-14 (ie, excluding UK)
UK private
UK NHS

English NHS

The NHS in England accounts for around 83 per cent of total UK NHS spending, and historic funding has followed a similar path. Between 1993/4 and 2010/11 real funding will have increased from around £40 billion to more than £105 billion.

Annual real changes in spending (*see* figure 4, below) have averaged around 5.1 per cent each year over the period from 1994/5–2010/11, and spending in 2010/11 is planned to be around £106 billion. This average increase in spending is higher than that seen for the United Kingdom. This is because growth in UK NHS spending outside England has been slower than that in England. This arises because under the Barnett formula, funding is made available for the same cash increase per head in spending across the United Kingdom, leading to a lower real increase in spending in areas such as Scotland and Wales where baseline spending per head is higher.

Figure 4 English NHS net funding: real annual changes 1994/5 to 2010/11 (percentage)

Sources: House of Commons Health Committee (2009); Department of Health, personal communication 2009.

Table 2, overleaf, shows how actual spending can differ significantly from plans set in spending reviews. For example, for the 2004 spending review (2005/6–2007/8), actual spending was around £7.7 billion *lower* than originally planned (equivalent to 3 per cent of the total planned spend over the 2004 spending review period). And for the current spending review period up to 2010/11, the total underspend compared with the 2007 spending review plan is currently estimated to be around £6.1 billion (around 1.8 per cent less than planned).

Table 2 Differences between spending review plans and outcome: 2003/4–2010/11

Year	Net English NHS total spending (£ million)							Difference between spending review plan and latest outcome/plan (£ million)
	2003	2004	2005	2006	2007	2008	2009	
2003/4	63,294	63,667	63,001	64,183	64,184	64,173	64,173	879
2004/5	69,374	69,231	69,710	69,306	69,078	69,051	69,051	-323
2005/6	76,390	76,144	76,388	77,847	75,829	75,822	75,822	-568
2006/7	*84,324*	*84,324*	84,324	84,387	81,672	80,561	80,561	-3,763
2007/8	*92,643*	*92,643*	92,643	92,173	90,702	89,568	89,261	-3,382
2008/9						96,431	94,522	-1,909
2009/10						102,897	102,662	-235
2010/11						109,806	105,824	-3,982

Source: Department of Health departmental reports (2003–9).

Notes: Grey cells = estimated outcome; white cells = plans; boxed cells for 2003 = 2002 spending review plans (a five-year settlement); 2005 = 2004 spending review plans; 2008 = 2007 spending review plans; figures in italics for 06/7 and 07/8 are assumed as the departmental reports for 2003 and 2004 did not give any actual spending figures for these years; the figures are not as planned in the 2002 spending review, but are those detailed in the 2004 review, which included an adjustment upwards to reflect a reduction in the discount applied to future liabilities which, while affecting total spending figures, did not actually affect the NHS's purchasing power.

Most of the changes in spending between years are relatively minor or result, for example, from unplanned slippage of capital schemes or transfers between budgets. However, some are more substantial, and are the result of deliberate changes in plans or planned underspending. For example, the bulk of the £1.9 billion underspend in 2008/9 is the result of an underspend on capital (£350 million) and a deliberate underspend on revenue (£1.4 billion). The planned underspend in 2010 of £3.98 billion is a combination of top-sliced savings of £2.3 billion, plus a £1.4 billion 'technical adjustment to bring capital allocations in line with planned level of spend' (Department of Health 2009), which, put more simply, is a cut in the planned capital budget. The remaining differences are the net results of transfers between budgets (eg, from the NHS to personal social services and other minor technical adjustments).

These changes to the 2007 spending review plans are part of a strategy to meet additional savings demanded in the chancellor's 2009 Budget and a Department of Health plan to ensure a financial buffer is created through planned underspends by the NHS last year, this year and in 2010/11. The surplus in 2008/9 (£1.7 billion) was carried over to 2009/10. While the 2009/10 planned spend remains similar to that in the 2007 spending review, there is an intention to end the year with a surplus of around £1.3 billion, again, to be carried over to 2010/11. And by the end of next year, there is an implication to underspend and to carry this over into the next, as yet unformulated, spending review (Department of Health 2008b). The extent to which these intentions are reflected in the *planned* spending identified in Table 2, above, remain unclear.

The next section sets the scene for future funding of the English NHS using three possible scenarios for funding paths up to 2017/18.

Future funding scenarios

How much is spent on the NHS is, of course, a policy decision. However, it is a decision involving priorities and trade-offs, and bounded by what is affordable and credible, both financially and politically. Although the future is uncertain, here we test the credibility and the bounds by posing three possible future funding paths for the English NHS, and then examining the implications of each against estimates of baseline pressures – such as demographic change and best estimates of need – and the consequences of each scenario for the NHS, other public spending and taxation.

Three funding scenarios

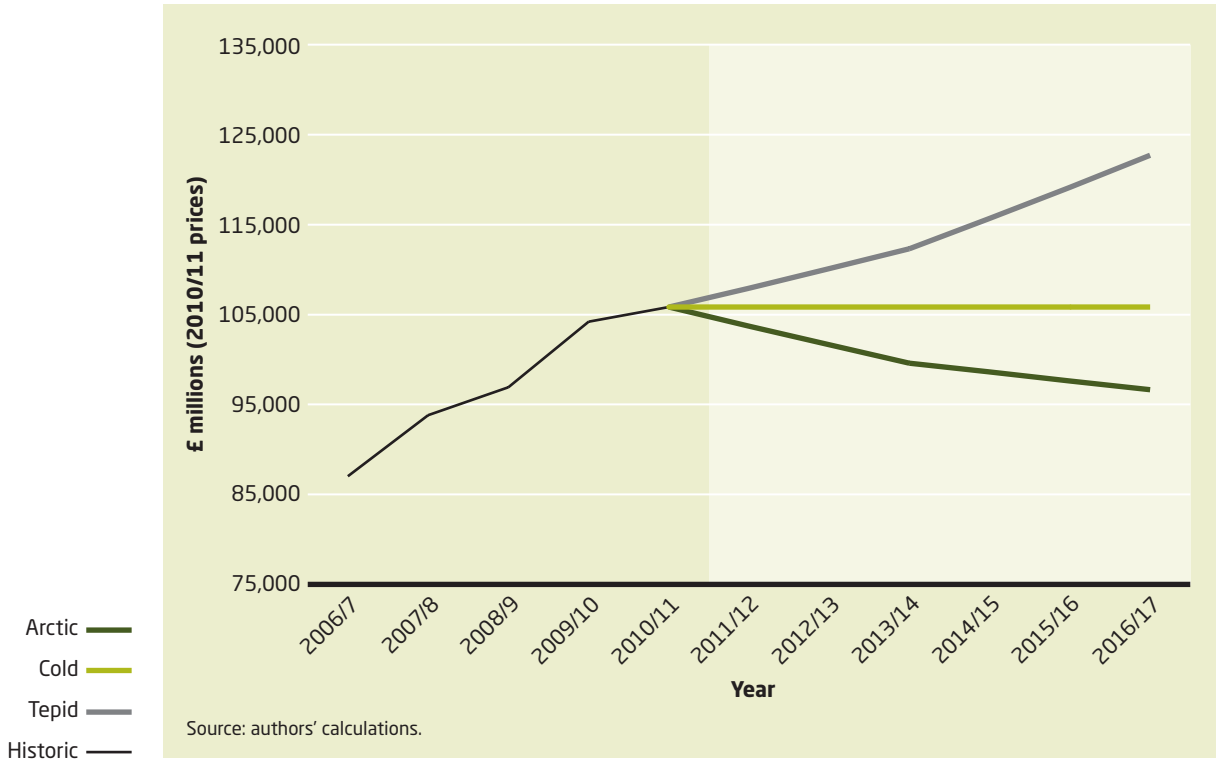
The three funding scenarios are:

- 'arctic': real funding cuts (–2 per cent for the first three years, –1 per cent for second three years)
- 'cold': zero real growth for six years
- 'tepid': real increase (+2 per cent for the first three years, rising to +3 per cent).

To put these prospective funding changes in a historical context, there has never been a six-year period of zero real growth in the history of the NHS, and certainly no continuous six-year period of real reductions. The average annual increase in the tepid scenario is around 2.5 per cent, and while there have been six-year periods of similar levels of growth – the early 1950s, the mid-1970s and the early 1980s – such growth is a percentage point less than the historic average, and nearly one-third of the real average annual increase over the past decade.

Figure 5, below, shows historic funding (at 2010/11 prices) from 2006/7–2010/11 for the English NHS, and from 2011/12–2017/18 for the three funding path scenarios.

Figure 5 Three funding scenarios



Source: authors' calculations.

Some sense of the credibility of these funding futures can be adjudged from historic spending trends following previous recessionary periods. Table 3, below, for example, shows annual percentage changes in real UK NHS funding for immediate years after the recessions of the mid-1970s, early 1980s and early 1990s. As can be seen for the first two periods, spending growth was low, indeed negative in one year, and the average annual change was well below the historic average since 1948 of around 3 per cent. For the period after the 1990/92 economic downturn, NHS spending growth was initially quite high (possibly due to a combination of pre-election largesse and extra funding to smooth the implementation of major reforms of the NHS in this period), but fell back to low levels of growth after three years.

Table 3 Annual percentage changes in real UK NHS funding 1976/7–1997/8

Post-recessionary periods	UK NHS real change in funding (%)
1976/7	0.6
1977/8	-2.9
1978/9	2.4
1979/80	0.4
Average annual change	0.24
1982/3	1.4
1983/4	2.2
1984/5	0.7
1985/6	0.7
Average annual change	1.50
1992/3	7.3
1993/4	3.6
1994/5	6.0
1995/6	2.1
1996/7	-0.3
1997/8	1.3
Average annual change	1.67

Source: authors' calculations.

On balance, and despite the period immediately after 1991/2, post-recession experience has tended to be for reductions in NHS funding growth rates.

Of course, as each recession is different, with varying consequences for the state of public finances and the limits on funding possibilities, the historical record is perhaps of limited value in assessing the credibility of the funding scenarios. We therefore look next at the implications of each scenario for other public spending and taxation, and then draw conclusions about the credibility of each scenario.

Implications for non-health public spending and taxation

Funding these scenarios will not be easy given the prospects for government finance, and could have implications for other spending departments and taxation. The potential consequences for both are examined below. A crucial policy decision for the next two spending reviews will be the priorities to be given to spending across the whole of government. The 2009 Budget planned for total spending by the public sector – after economy-wide inflation – to be cut over the period 2011/12–2013/14 by an average of 0.1 per cent per year. This is comprised of average growth in current spending of 0.7 per cent per year in real terms, but a real terms average decline in investment spending of 17.3 per cent per year.

Within this total spending envelope, there are some areas of expenditure that are largely out of government control in the short term, and may necessarily grow faster than the growth planned for spending as a whole. For instance, social security benefit payments are affected by circumstances in the economy, and government debt interest payments depend on past borrowing and market interest rates. By making assumptions about the growth of these areas of spending, we can predict how much spending growth will be available to departments over this period.

The 2009 Budget forecast that debt interest payments would grow at an average annual real rate of 8.4 per cent over this period. The Department for Work and Pensions' most recent long-run projections of benefit spending indicate that social security spending will grow at an average annual rate of 1.7 per cent in real terms, provided that the government's aspiration to increase the basic state pension in line with average earnings is put back from April 2012 to April 2015. Finally, we assume that other areas of the government's so-called 'annually managed expenditure' – spending not easily subject to firm limits set several years in advance – grow at 1.9 per cent per year in real terms. This is the growth in these other areas that was projected at the time of the 2007 comprehensive spending review, before the subsequent recession was predicted, for the period 2008/09–2010/11. (The largest components of this spending are spending by local authorities financed by council tax, contributions to the EU budget, and pensions paid to retired former public sector workers). These assumptions imply that total annually managed expenditure over the period 2011/12–2013/14 will grow at 2.6 per cent per year, which, given the planned total spending cut of 0.1 per cent per year, implies that departmental spending would have to be cut by an average of 2.3 per cent per year in real terms over this period.

Figure 6, overleaf, shows the budget constraint potentially facing the government in the period 2011/12–2013/14, that is, how the cut of 2.3 per cent per year in real terms could be shared between the NHS and other central government spending on public services (under the assumptions set out in the paragraph above). So, the greater the increase in the NHS budget (moving to the right on the x-axis), the greater the cut back in non-NHS central government spending on public services (moving down the y-axis) would need to be.

Our three funding scenarios for the NHS are represented as points on this budget line. Our tepid scenario for the NHS would require non-NHS departmental spending to be cut by an average of 4.5 per cent per year in real terms, while our cold scenario would require cuts of 3.4 per cent per year. Even our arctic scenario for the NHS would still require spending by non-NHS departments to be cut by an average of 2.5 per cent per year, which is greater than the 2 per cent annual real cuts the NHS would receive under this scenario.

Figure 6 Trade-off between NHS and other departmental spending in the period 2011/12-2013-14

Source: authors' calculations.

The historical average annual real growth in UK NHS spending (1950/1–2010/11) of 4.0 per cent (as shown in table 1, p 5) is right on the right-hand edge of the scale shown in figure 6, above, and would require real cuts in non-NHS departmental spending of an average of 5.6 per cent per year, which would clearly be implausible without significant reductions in the (non-NHS) public services provided by central government free at the point-of-use. After three years, non-NHS departmental spending would be reduced in real terms by 12.9 per cent, 10.0 per cent and 7.2 per cent under our tepid, cold and arctic scenarios, respectively.

It is possible that the government might in future decide to relax this budget constraint, either by taxing or borrowing more, or by cutting back on non-departmental government spending such as that on social security benefits or tax credits. For example, a vertical shift of the budget constraint, so that the cold scenario for the NHS could be funded with only a 2.0 per cent real annual cut in non-NHS departmental spending, could be achieved, but this would require additional finance of £10.6 billion (in 2009/10 terms) by 2013/14. If shared equally, this would equate to around £340 per family.

For the period 2014/15–2016/17 there are not yet any Treasury forecasts for the growth in total public spending. This period is beyond the next spending review period, and the majority of it will be beyond the next parliament. The 2009 budget described a possible scenario for the public finances that pencilled in a fiscal tightening of 3.2 per cent of national income between 2014/15 and 2017/18, but a future government might decide that a faster reduction in borrowing is required. Any fiscal tightening could come either from tighter restrictions to public spending growth, or from further increases in taxation.

The 2009 Budget set out a scenario in which investment spending – set to be cut back relatively sharply over the three years from April 2011 – would be protected over this period, leaving the reduction in borrowing to be achieved either through restrictions to growth in current spending or from new tax-raising measures. No detail on the combination of these that was intended to be used was provided in the budget.

As for the period 2011/12–2013/14, we can make projections for 2014/15–2016/17 about the areas of non-departmental spending that are not directly under government control in the short run. Debt interest payments are forecast based on the 2009 Budget projections for borrowing and debt over this period. Spending on social security payments is again based on long run Department of Work and Pensions projections, and assumes that the re-linking of the uprating of the basic state pension to average earnings begins in April 2015. Finally, other areas of annually managed expenditure are projected to continue to grow at the average annual real rate planned in the 2007 comprehensive spending review for 2008/09–2010/11. Taken together, these assumptions imply that total non-departmental spending will be growing at an average of 2.1 per cent per year in real terms over the period 2014/15–2016/17.

The government might choose to deliver the reduction in borrowing set out in the 2009 Budget without new tax-raising measures or reductions in the generosity of social security benefits or tax credits, meaning that all the fiscal tightening would come from a reduction in the growth of spending on public services. Table 4, below, shows what such a choice would imply for non-NHS departmental spending under each of our scenarios for NHS spending. The government could increase NHS spending by an average of 3 per cent per year in real terms from 2014/15 (our tepid scenario) without having to increase taxation, so long as non-NHS departmental spending was cut by an average of 1.0 per cent per year. Alternatively, the government could freeze NHS spending in real terms, and increase all other non-NHS spending by an average of 0.7 per cent per year in real terms.

Table 4 Implied growth in non-NHS departmental spending if no increase in taxation

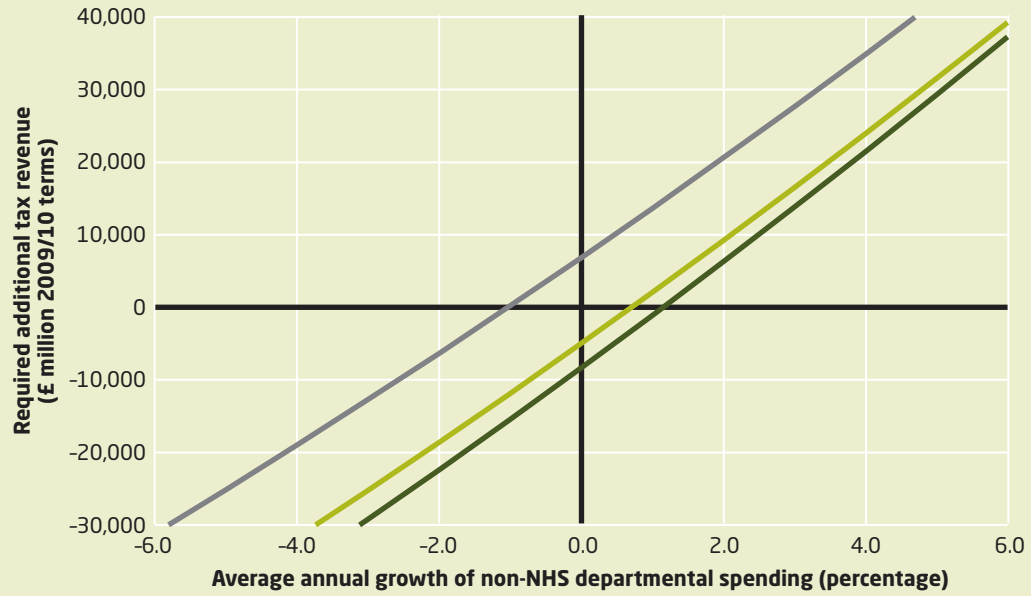
NHS funding scenario	Average annual growth in non-NHS departmental spending		
	2011/12-2013/14	2014/15-2016/17	2011/12-2016/17
Arctic	-2.5	+1.2	-0.6
Cold	-3.4	+0.7	-1.4
Tepid	-4.5	-1.0	-2.8

Source: authors' calculations.

The government might, however, decide that it wishes to deliver the fiscal tightening planned in the 2009 Budget through a different combination of tax increases and restrictions on public spending growth. Figure 7, overleaf, shows the possible choices for the period 2014/15–2016/17 that a future government would face if it were to deliver the reduction in borrowing set out in the budget, and given our assumptions for non-departmental spending growth, which, for example, implies no reduction in the planned generosity of social security benefits or tax credits. The three lines represent our three funding scenarios for the NHS, and given each funding scenario, the government largely faces a choice between raising taxation or having slow or negative real growth in non-NHS departmental spending.

If the government decided, for instance, that it would like to enable non-NHS departmental spending to grow by an average of 1.5 per cent per year in real terms, this would – assuming that borrowing is to be reduced as set out in the 2009 budget – require a permanent increase in taxation by 2016/17 of just over £2.6 billion (in 2009/10 terms) under the arctic scenario, £5.6 billion under the cold scenario, and £17.1 billion under the tepid scenario. These equate to a permanent increase in taxation by 2016/17 of around £80, £180 and £540, respectively, for every family in the United Kingdom.

Figure 7 Trade-off between non-NHS departmental spending and increases in taxation for the period 2014/15–2016/17, given our NHS funding scenarios



Source: authors' calculations.

As an alternative way of contextualising these potential tax increases, Her Majesty's Revenues and Customs estimates that each percentage point increase in the main rate of VAT would boost revenues by £4.3 billion, so these tax increases would equate to increases in the main rate of VAT of 0.6, 1.3 and 4.0 percentage points respectively. Under the tepid scenario for NHS spending, from 2014/15 additional tax rises worth £6.9 billion would still be required even if non-NHS departmental spending were frozen in real terms. This is equivalent to £220 per family, or a 1.6 percentage point increase in the main rate of VAT. An alternative would be for some (or all) of these funds to be raised through cuts in the generosity of social security benefits or tax credits.

Funding vs need: what is the gap?

Even accepting the implications of our funding scenarios, would there be sufficient resources to allow the NHS to meet the population's health care needs?

One consequence of the future funding scenarios is that the NHS could find its financial inputs drifting increasingly behind pressures to meet changes in the population's health care needs. Here we examine:

- the possible pressures on NHS funding arising from changes in demography over the next eight years
- how our scenarios compare with Sir Derek Wanless's (2002) estimates of future funding needs for the NHS
- what the scenarios might mean for UK health care funding relative to its European neighbours.

Demographic pressures

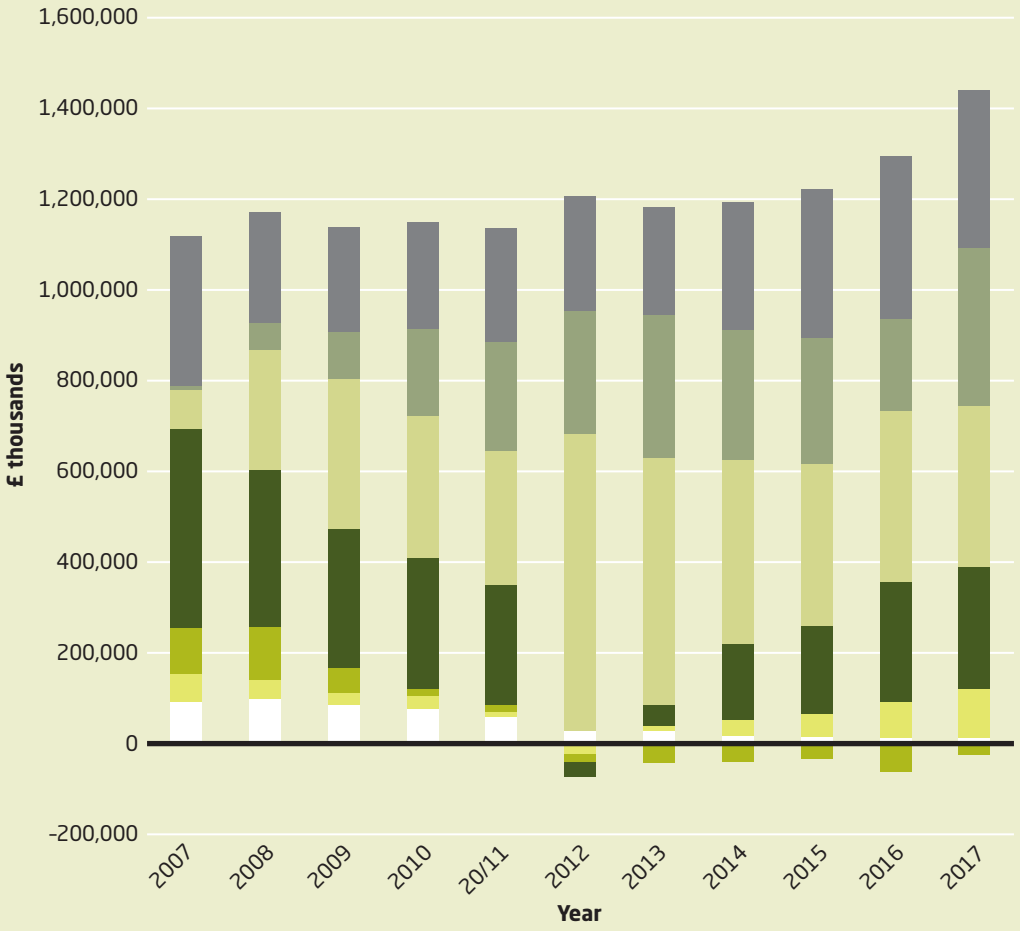
Between 2009 and 2017, the population of England is projected to grow by around 3.24 million to 55.3 million – an increase of 6.3 per cent (Government Actuaries Department 2009). Not only will the population grow in total, but its age composition will also change. Of the total growth in population, the 45–64 and 64–74 age groups account for around 30 per cent each, and the 75+ age group for around 19 per cent.

The implications of all these changes for NHS spending can be estimated by multiplying changes in population for each age group by the current age group costs of NHS care (Department of Health 2008a). Figure 8, overleaf, shows the final impact of demographic change on total NHS costs based on the assumption that demographic changes have a similar impact across the totality of NHS spending.

Assuming all other things (policy, priorities, technology, etc) remain constant, demographic change alone suggests a need to increase spending by between £1 billion and £1.4 billion each year – an annual increase at constant prices of around 1.1 per cent of the NHS budget – in order to maintain quality. Moreover, the additional sums required are slightly lower over the first three-year period (2011/12, 2012/13 and 2013/14) than over the following three-year period (2014/15, 2015/16 and 2016/17). This is one of the reasons why two of our funding scenarios (arctic and tepid) have been designed to allow for a more generous NHS settlement in the second three-year period than in the first.

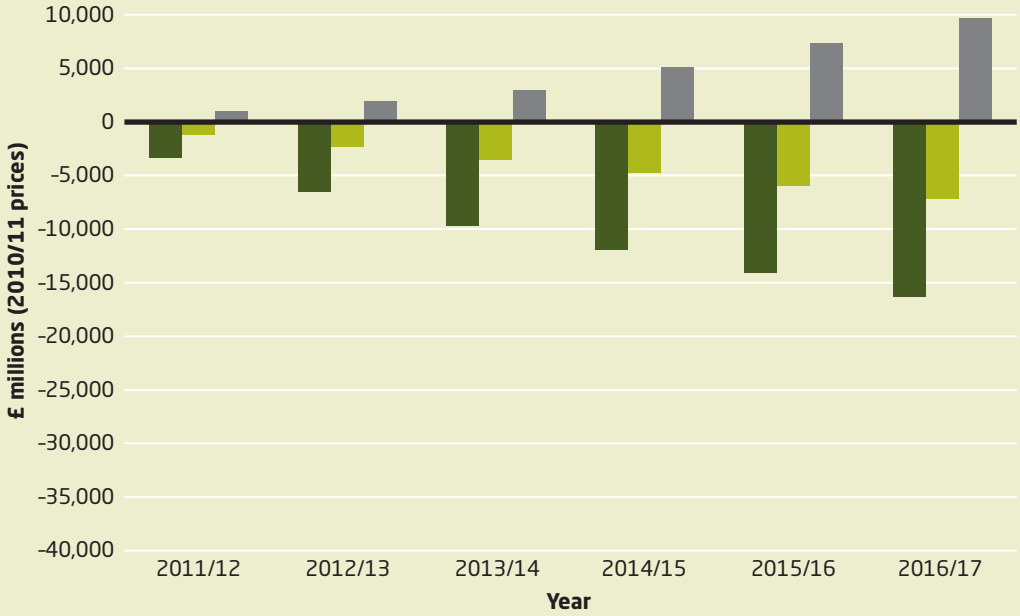
Comparing this with our three funding scenarios from 2011/12–2016/17 (*see* figure 9, overleaf) suggests that the tepid scenario would provide enough funding to deal with the impact of demographic change, but that the more parsimonious scenarios would fall short by between £7 billion and £16 billion by 2016/17.

Figure 8 Estimated annual change in total NHS spending arising from changes in population structure by age group: all other things held constant: 2010/11 prices



Source: authors' calculations.

Figure 9 The funding gap: impact of demographic change



Source: authors' calculations.

Wanless's funding projections

The most recent and comprehensive assessment of future NHS funding was carried out by Sir Derek Wanless in 2002 on behalf of the then chancellor, Gordon Brown (Wanless 2002). *Securing Our Future Health: Taking a long-term view* set out three scenarios for funding up to 2022/23. Each made assumptions and estimates about the demand for and supply of health care, including future levels of obesity, life-style behaviours, the impact of demographic change, NHS productivity gains, increased and better use of health technologies, and so on.

The most optimistic view of the future, and the one requiring least growth in NHS funding – the 'fully engaged' scenario – assumed, among other things, significant improvements in the population's health, improving health-related behaviours, and year-on-year gains in NHS productivity of between 2.5 per cent and 3 per cent. The most pessimistic scenario – 'slow uptake' – generally assumed lower gains in productivity and continuation of historic trends in population health behaviours (and hence demand for health care). The third scenario – 'solid progress' – differed from the pessimistic view largely in terms of assumptions about NHS productivity gains (which were similar to the fully engaged scenario), and from the fully engaged scenario in terms of future population health.

Table 5, below, shows the real annual percentage increases this scenario-based exercise indicated for NHS funding between 2007/8 and 2016/17. By comparison, the last three columns show the real percentage changes for our three funding scenarios. (Note that the shaded cells are the actual real changes in English NHS funding.)

Table 5 Real annual percentage increases (as indicated by scenario-based exercise) for NHS funding between 2007/8 and 2016/17

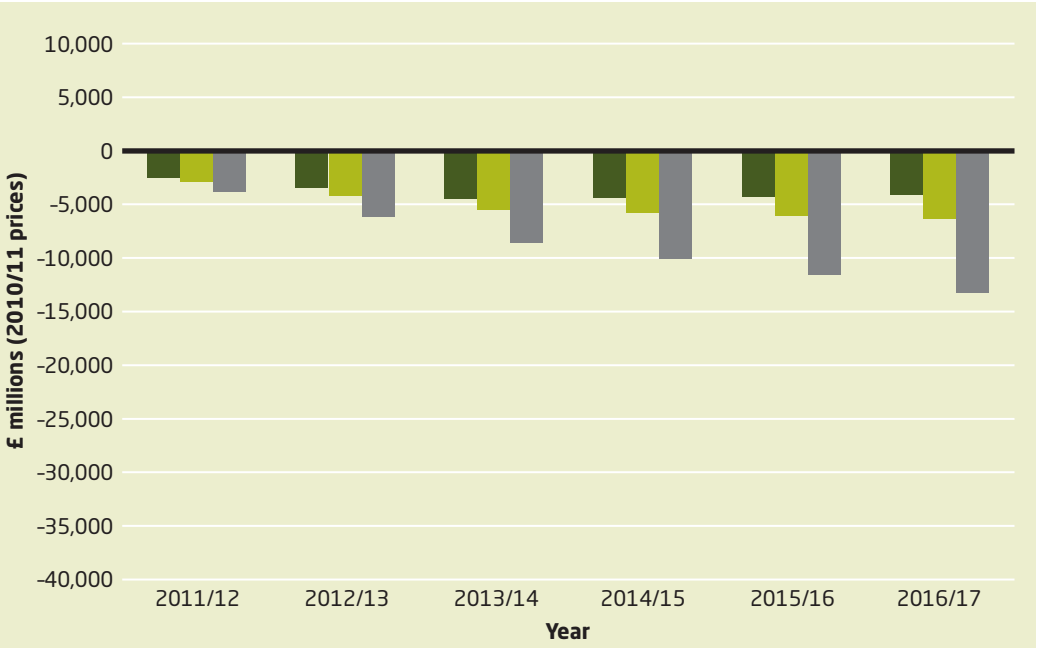
Year	Wanless's scenarios			The King's Fund/Institute for Fiscal Studies scenarios		
	Fully engaged (%)	Solid progress (%)	Slow uptake (%)	Arctic (%)	Cold (%)	Tepid (%)
2007/8	4.4	4.7	5.6	7.8	7.8	7.8
2008/9	4.4	4.7	5.6	3.3	3.3	3.3
2009/10	4.4	4.7	5.6	7.5	7.5	7.5
2010/11	4.4	4.7	5.6	1.6	1.6	1.6
2011/12	4.4	4.7	5.6	-2	0	2
2012/13	2.8	3.1	4	-2	0	2
2013/14	2.8	3.1	4	-2	0	2
2014/15	2.8	3.1	4	-1	0	3
2015/16	2.8	3.1	4	-1	0	3
2016/17	2.8	3.1	4	-1	0	3

Sources: Wanless (2002); The King's Fund/Institute for Fiscal Studies; personal communication, Department of Health 2009.

Table 5, above, clearly shows that, from 2011/12 onwards, year-by-year comparisons between the Wanless funding projections and our funding scenarios suggest an increasing 'gap' in funding for all our scenarios.

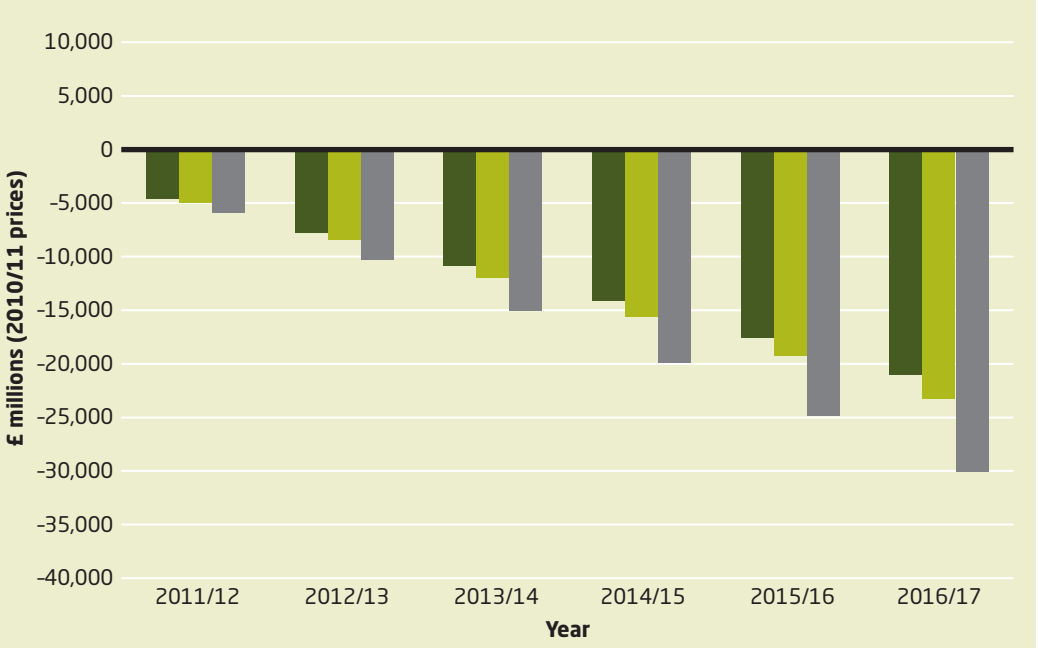
This funding gap is shown for each of our scenarios and each of the Wanless projections in constant (2010/11) terms in Figures 10–12.

Figure 10 The funding gap: tepid



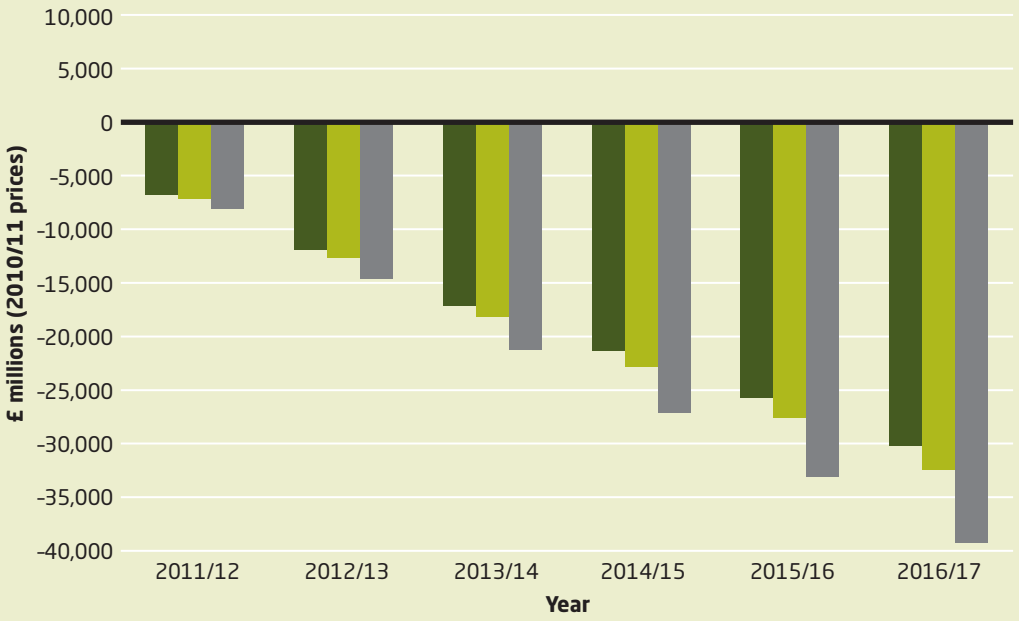
Source: authors' calculations.

Figure 11 The funding gap: cold



Source: authors' calculations.

Figure 12 The funding gap: arctic



Source: authors' calculations.

Overall, the possible gap in NHS funding in comparison with Wanless's future funding scenarios depends on which view of the future seems most likely, and ranges – in constant prices – from a shortfall of around £4 billion (fully engaged/tepid) to a shortfall of nearly £40 billion (slow uptake/arctic) by 2016/17. These are equivalent to around 4 per cent and 38 per cent, respectively, of the planned NHS spend in 2010/11. Under the lowest possible increase compatible with the Conservative Party's commitment to maintain NHS funding in real terms (cold scenario), the shortfall would, under the fully engaged scenario, be £11 billion in 2013/14, rising to £21 billion in 2016/17.

United Kingdom–European Union (EU) spending gap?

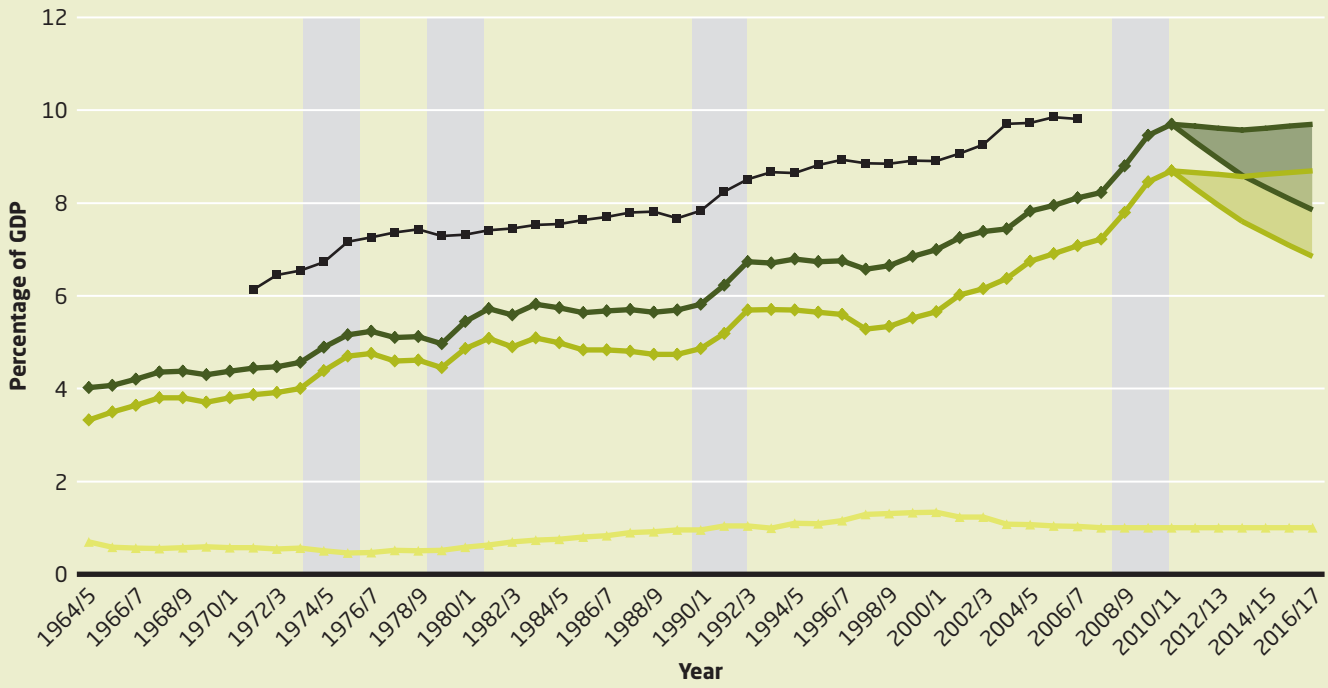
Our funding scenarios also have implications for UK spending relative to its European neighbours.

The range for NHS spending as a percentage of gross domestic product (GDP) up to 2016/17, assuming future NHS funding lies somewhere between our arctic and tepid scenarios, is shown in figure 13, overleaf. The range for total UK health spend, assuming private spending remains constant at 1 per cent of GDP, is also shown.

Compared with an estimated spend of around 8.5 per cent in 2009/10, by 2016/17, NHS spend could range from a low of around 7.1 per cent of GDP to a high of 9.1 per cent. Given the assumption of a constant 1 per cent share of national income for private health spend, total UK health care spending by 2016/17 could range from 8.1 to 10.1 per cent compared with around 9.5 per cent this year.

The upper range of these estimates would take the United Kingdom to the average for the EU-14 (ie, excluding the United Kingdom) a decade previously. The likelihood is, however, that the EU average will also increase, particularly during the recessionary period as GDP falls, but also after 2010/11, albeit slowly. The gap between UK spending and that of its EU neighbours will remain, and might possibly widen, depending in part on the relative rate of recovery of the UK economy over the next few years. (Ironically, of course, a slow rate of economic growth could make health spending as a percentage of GDP look better than would a high rate of economic growth.)

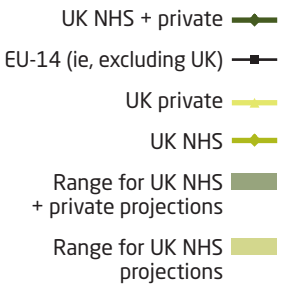
Figure 13 UK NHS, private and EU-14 average total health care spend as a percentage of GDP: projections



Sources and notes:

a) Source: OECD (2009). The EU-14 weighted average trend from 1964/5-1970/1 is missing for 10 countries (and therefore excluded). Data for 1970/1–1986/7 are missing for three countries. Data from 1988/9 onwards is complete save for one country. Data has been extrapolated for all missing years on the basis of statistical time trends for each country.

b) Figures for the United Kingdom for 1964/5–2007/8 are UK NHS spend data from Public Expenditure Statistical Analyses (various) and OHE (2009). Data for 2008/9–2010/11 is based on planned spending for the four UK territories. Private spending from 1964/5–2006/7 (OECD 2009) and for 2007/8–2010/11 is assumed to be 1 per cent of GDP. Figures for the United Kingdom for 1964/65–2007/8 are calculated on the most recent money GDP (HM Treasury 2009 [March]), 2008/9–2013/14 are based on HM Treasury estimates for money GDP (HM Treasury Budget 2009), and 2014/15–2016/17 are based on the assumption that real GDP growth and inflation return to trend by 2014/15.



Closing the gap: improved NHS productivity

Our funding scenarios show evidence of shortfalls compared with the pressures on demand from demographic changes, the Wanless estimates of NHS funding needs and the UK's European neighbours. Given the potential tax and/or non-NHS departments' spending cuts indicated by even our baseline scenarios, there is a vanishingly small chance of meeting these shortfalls through even large tax rises or deeper cuts. The only realistic option is to tackle NHS productivity.

If the NHS were to compensate for the gap in funding, what magnitude of productivity gain would it need to achieve?

To appreciate the task facing the NHS, Table 6, below, sets out the productivity gains the NHS would need to achieve to close the gap between each of our three funding scenarios and Wanless's most optimistic funding scenario (fully engaged), which projected the lowest growth in funding for the future based on, among other things, presumed gains of between 2.5 per cent and 3 per cent in annual NHS productivity improvements. In order to close the gaps in funding illustrated by Figures 10–12, the NHS would need not only to meet, but to exceed, Wanless's productivity improvements.

On average, for the three-year period 2011/12–2013/14, under the fully engaged scenario, the average annual productivity gains needed would be 8.0 per cent for our worst case funding scenario (arctic), 6.0 per cent for the cold scenario, and 4.0 per cent for the tepid scenario. For the subsequent spending review period up to 2016/17, productivity improvements would need to average 6.8 per cent, 5.8 per cent and 2.8 per cent, respectively.

In monetary terms (2011/12 prices), these gains are shown in the last three columns of the table, and for the whole six-year period total £47.0 billion, £37.5 billion and £21.6 billion for our three funding scenarios. Gains needed over the next spending review period of around £20 billion under our cold scenario (no real growth in funding) echo indications from NHS Chief Executive David Nicholson of improvements in productivity of around £15–20 billion over this period (Nicholson 2009).

Table 6 NHS productivity gains required to close funding gap with Wanless's fully engaged scenario

Year/period	Annual productivity gains required to close funding gap					
	Percentage			Money, £ million, 2010/11 prices		
	Arctic	Cold	Tepid	Arctic	Cold	Tepid
2011	8.9	6.9	4.9	9,418	7,302	5,185
2012	7.3	5.3	3.3	7,725	5,609	3,492
2013	7.8	5.8	3.8	8,254	6,138	4,021
2014	6.8	5.8	2.8	7,196	6,138	2,963
2015	6.8	5.8	2.8	7,196	6,138	2,963
2016	6.8	5.8	2.8	7,196	6,138	2,963
	Average annual change			Total for period		
2011/13	*8.0*	*6.0*	*4.0*	25,398	19,048	12,699
2014/16	*6.8*	*5.8*	*2.8*	21,588	18,413	8,889
Whole period	*7.4*	*5.9*	*3.4*	46,986	37,462	21,588

Source: authors' calculations.

Table 7 presents summary productivity figures for Wanless's less optimistic scenarios, solid progress and slow uptake. Gains needed under these scenarios are slightly higher, and range from £22.1 to 47.5 billion over the whole period 2011/12–2016/17.

To put these figures in context, the latest figures from the Office of National Statistics show that between 1997 and 2007, measured UK NHS productivity *fell* by 4.3 per cent and averaged –0.4 per cent each year over the whole period (ONS, 2009).

Table 7 NHS productivity gains required to close funding gap with Wanless's solid progress and slow uptake scenarios

Year/period	Annual productivity gains required to close funding gap					
	Average annual change (percentage)			Total for period (money, £ million, 2010/11 prices)		
	Arctic	Cold	Tepid	Arctic	Cold	Tepid
Solid progress						
2011/13	*8.3*	*6.3*	*4.3*	26,350	20,001	13,651
2014/16	*7.1*	*6.1*	*3.1*	22,541	19,366	9,842
Whole period	*7.7*	*6.2*	*3.7*	48,891	39,367	23,493
Slow uptake						
2011/13	*8.2*	*6.2*	*4.2*	26,033	19,683	13,334
2014/16	*6.8*	*5.8*	*2.8*	21,429	18,255	8,730
Whole period	*7.5*	*6.0*	*3.5*	47,462	37,938	22,064

Source: authors' calculations.

Conclusions

There is no doubt that beyond 2011, and most probably up to 2017, a period likely to cover the next two spending review periods, the outlook for public spending, and therefore the prospects for NHS funding, looks tight.

The purpose of this report's analysis has been – through three funding scenarios – to attempt a more accurate assessment than hitherto of the potential range of future parsimony confronting the NHS in particular and public spending in general. The implications of the NHS funding scenarios and the choices available to government have been described, including possible options for future taxation.

As to which of our funding scenarios would seem most likely and, given the inevitable trade-offs involved, most politically and publicly acceptable, is a matter of judgement. However, the Conservative Party has pledged that, for the next spending review period at least, it would, as a minimum, maintain NHS spending in real terms (Lansley 2009), while Labour has also made a similar commitment (Brown 2009).

Furthermore, there have been only three three-year periods in the history of the NHS when real spending has actually fallen (1950/1–1953/4, –7.3 per cent; 1975/6–1978/9, –0.1 per cent; 1976/7–1978/9, –0.2 per cent), and there have been no six-year periods where this has been the case. This might suggest that real reductions in NHS funding – including our arctic scenario – are unlikely, although low or zero growth may well feel like cuts to the health service.

Even small real funding rises will have implications and consequences for the budgets of other spending departments and, possibly, the levels of taxation. A real annual rise in NHS funding of 0–2 per cent for the period 2011/12–2013/14 is likely to mean real budget cuts of between 3.4 per cent and 4.5 per cent each year on average across other spending departments. Without further tax-raising measures, then for the period 2014/15–2016/17 a real annual rise in NHS funding of 0 to 3 per cent would require real funding growth across other departments to be constrained between growth of 0.7 per cent per year and cuts of 1.0 per cent per year. Therefore, even our tepid scenario implies – without further increases in funding from higher taxes, lower than planned spending on social security benefits or tax credits, or higher than planned borrowing – 2.8 per cent average annual real cuts for non-NHS departmental spending over the six-year period.

There is an option to meet real increases in NHS funding through increases in revenue-raising. However, even providing for our tepid scenario for NHS funding and freezing non-NHS departmental spending over the three years from April 2014 would require an extra £6.9 billion. This would be equivalent to £220 per family or the amount that would be raised by 1.6 percentage points on the main rate of value-added tax (VAT). If non-NHS departmental spending were only constrained to real growth of 1.5 per cent per year (rather than a real freeze), then our tepid scenario would require £17.1 billion (or £540 per family or 4.0 percentage points on the main rate of VAT).

Given the serious restrictions placed on other departments by significantly increasing NHS funding in real terms, a spending settlement for the NHS that is more generous than our tepid solution seems unlikely unless there are to be significant further tax increases or reductions in the generosity of social security benefits or tax credits. If this is not to be the case, then the most likely outcome would seem to be funding growth for the NHS lying somewhere between our cold and tepid scenarios.

Our tepid scenario (real increases in NHS spending of 2 per cent per year between 2011/12 and 2013/14, and 3 per cent per year between 2014/15 and 2016/17) would mean health care would take a declining share of national income up to 2013/14, and would still not have recovered its 2010/11 level by 2016/17. The gap in health spending as a share of national income between the United Kingdom and its EU neighbours might begin to widen again after a period that has seen some catching up.

Real increases in funding of up to 2 per cent per year for the NHS – low by historic standards – would have implications for the service itself. Such increases would just about cover increased demands for health care arising from population increases and changes in demographic structure. However, this assumes no other changes in baseline cost pressures or the likelihood of new (and more expensive) medical technologies, for example.

An imperative for the NHS if it is to do more than simply maintain current levels of service and quality, but meet aspirations embodied in the funding scenarios suggested by Sir Derek Wanless, will be to make every health care pound it spends work harder through improved productivity. Even if the NHS had been operating under the Wanless fully engaged scenario up to 2010/11, increases in NHS funding between our cold and tepid scenarios would require average annual productivity increases of between 3.4 per cent (tepid) and 5.9 per cent (cold) to make up for the gap with Wanless's funding requirements. These productivity gains equate to savings of between £13 billion and £19 billion over the three years from 20011/12–2013/14, and further gains totalling between £9 billion and £18 billion over the subsequent spending review period up to 2016/17.

However, the funding path indicated by the fully engaged scenario was conditional on significant improvements in productivity, population health and reductions in adverse health behaviours. But, as an update of the 2002 Wanless review suggested, the actual position currently lies, at best, somewhere between slow uptake and solid progress, with stagnant or declining productivity and only marginal progress on many population health measures and health determinants (Wanless *et al* 2007). The funding gap is therefore likely to be larger than that implied by the fully engaged scenario, and consequently the productivity gains needed to avoid a shortfall in terms of progress towards a 'world-class health care system' will also be larger.

There are policy choices to be made about future NHS funding, and current and medium-term economic pressures limit the realistic choices available; none, as we have shown, comes free of trade-offs or effort.

References

Brown G (2009). *PM's speech to the Royal College of Nursing*. Speech to the RCN annual conference, Harrogate, 11 May 2009. Available at: www.number10.gov.uk/Page19276 (accessed on 8 July 2009).

Department of Health (2009). *Departmental Report*. London: Department of Health. Available at: www.dh.gov.uk/en/Publicationsandstatistics/Publications/AnnualReports/index.htm (accessed on 9 July 2009).

Department of Health (2008a). *Exposition Book 2009–10 and 2010–11* [online]. London: Department of Health. Available at: www.dh.gov.uk/en/Managingyourorganisation/Financeandplanning/Allocations/DH_091850 (accessed on 9 July 2009).

Department of Health (2008b). *The NHS in England: The operating framework for 2009/10*. London: Department of Health. Available at: www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_091445 (accessed on 9 July 2009).

Department of Health (2003–9). *Departmental Reports* (various). London: Department of Health. Available at: www.dh.gov.uk/en/Publicationsandstatistics/Publications/AnnualReports/index.htm (accessed on 9 July 2009).

Government Actuaries Department (2009). 'Projections database: England, population by age last birthday in five year age bands'. Government Actuaries Department website. Available at: www.gad.gov.uk/Demography%20Data/Population/index.aspx?y=2006&v=Principal&dataCountry=england&chkDataTable=cc_5y (accessed on 9 July 2009).

Hansard (House of Commons Debates) (2000). 19 January 2000 col 837. Available at: www.publications.parliament.uk/pa/cm199900/cmhansrd/vo000119/debtext/00119-03.htm (accessed on 9 July 2009).

House of Commons Health Committee (2009). *Public Expenditure on Health and Personal Social Services 2008: Memorandum received from the Department of Health containing replies to a written questionnaire from the committee*. HC1190. London: The Stationery Office. Available at: www.publications.parliament.uk/pa/cm200708/cmselect/cmhealth/1190/1190.pdf (accessed on 9 July 2009).

HM Treasury (2009). *Public Expenditure Statistical Analyses* (various). Available at: www.hm-treasury.gov.uk/pespub_index.htm (accessed on 9 July 2009).

HM Treasury Budget (2009). *Budget 2009*. Available at: www.hm-treasury.gov.uk/bud_bud09_index.htm (accessed on 9 July 2009).

Lansley A (2009). Speech to NHS Confederation conference, Liverpool, 10 June 2009. Quoted in *The Guardian*, 10 June 2009. Available at: www.guardian.co.uk/society/2009/jun/10/tories-nhs-expenditure (accessed on 9 July 2009). Extract of speech available at: www.andrewlansley.co.uk/newsevent.php?newseventid=11 (accessed on 9 July 2009).

Nicholson D (2009). *The Year: NHS Chief Executive's Annual Report 2008/09*. London: Department of Health. Available at: www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_099689 (accessed on 9 July 2009).

OECD (2009). *OECD Health Data 2009: Statistics and Indicators for 30 Countries*. Paris: OECD. Available at: www.oecd.org/document/30/0,3343,en_2649_33929_12968734_1_1_1_1,00.html (accessed on 9 July 2009).

OHE (2009). *The Compendium of Health Statistics*. London: Office of Health Economics. Available at: www.ohe.org/page/compendium.cfm (accessed on 9 July 2009).

ONS (2009). *Total Public Service Output and Productivity* [online]. Newport, Wales: Office for National Statistics, UK Centre for the Measurement of Government Activity. Available at: www.statistics.gov.uk/articles/nojournal/TotalPublicServiceFinalv5.pdf (accessed on 9 July 2009).

Public Expenditure Statistical Analyses (various). Available at: www.hm-treasury.gov.uk/pespub_pesa08.htm (accessed on 8 July 2009).

Wanless D (2002). *Securing Our Future Health: Taking a long-term view*. Final report. London: HM Treasury. Available at: www.hm-treasury.gov.uk/consult_wanless_final.htm (accessed on 9 July 2009).

Wanless D, Appleby J, Harrison A, Patel D (2007). *Our Future Health Secured? A review of NHS funding and performance*. London: The King's Fund. Available at: www.kingsfund.org.uk/research/publications/our_future.html (accessed on 9 July 2009).

Authors

John Appleby is chief economist at The King's Fund.

Rowena Crawford is a research economist at the Institute for Fiscal Studies

Carl Emmerson is Deputy Director at the Institute for Fiscal Studies

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The King's Fund
11–13 Cavendish Square
London W1G 0AN
Tel 020 7307 2400

Registered charity: 207401

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