



BRIEFING NOTE: WHY THE HEALTH OF THE NHS DEPENDS ON GROWTH AND REFORM

The Government is [reportedly considering](#) a long-term funding settlement for the NHS, with arguments raging over whether this increase will amount to an extra 3% or 4% a year.

Such a long-term settlement is welcome, not least because it allows the health service to plan ahead. Yet a focus on the precise figure ignores the real issue in terms of patient outcomes – the fact that any new money needs to be accompanied by reform of the NHS to make sure that it helps those in need.

New CPS analysis, using ONS data, shows that there is a strong tendency for the NHS to see increased funding lead to decreased productivity. This must be avoided in order to maximise NHS delivery and improve health outcomes.

In addition, hard-pressed taxpayers cannot afford to pay for this new funding. We urgently need to raise our economic growth rate – or else we could easily see taxpayers being forced to pay ever-increasing amounts to cover the costs of NHS spending growth.

1. Productivity in the NHS

The Office for National Statistics publishes annual data on NHS productivity, based on input and output figures for each calendar year, with data going back to 1995 and available [here](#).

Between 1995 and 2015, the ONS figures show that inputs (cash) increased by an average of 3.9% per year, while output (services provided) increased on average by 4.7% per year. This means that on average, productivity in public healthcare increased by 0.8% each year over that 20-year period. This is all shown below in *Table 1: NHS Input, Output and Productivity Growth 1995-2014*.

In this table, the five best and worst years for productivity gains are highlighted in green and red respectively.



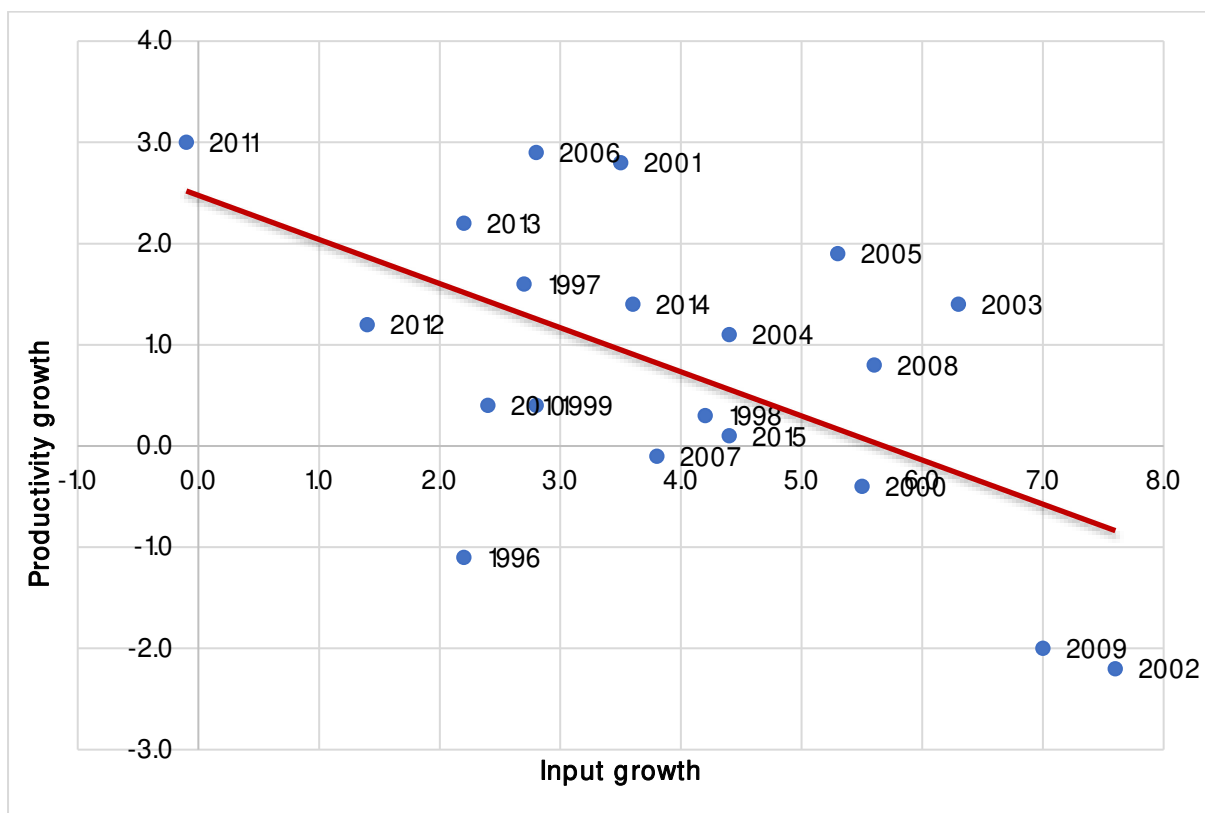
Table 1: NHS Input, Output and Productivity Growth 1996-2015

Calendar Year	% Output Growth	% Input Growth	% Productivity Growth
1996	1.1	2.2	-1.1
1997	4.4	2.7	1.6
1998	4.5	4.2	0.3
1999	3.2	2.8	0.4
2000	5.1	5.5	-0.4
2001	6.4	3.5	2.8
2002	5.2	7.6	-2.2
2003	7.7	6.3	1.4
2004	5.5	4.4	1.1
2005	7.3	5.3	1.9
2006	5.7	2.8	2.9
2007	3.7	3.8	-0.1
2008	6.4	5.6	0.8
2009	4.9	7.0	-2.0
2010	2.8	2.4	0.4
2011	3.0	-0.1	3.0
2012	2.6	1.4	1.2
2013	4.4	2.2	2.2
2014	5.0	3.6	1.4
2015	4.5	4.4	0.1



Overall, **when you run a basic correlation analysis on this data, you find that there is a strong negative correlation between the inputs for the NHS and NHS productivity growth.** This stands at -0.57 , which shows that productivity tends to be lowest in periods of higher spending, and highest in periods of lower spending.

Graph 1: Input growth vs productivity growth, 1996-2015



2. Why NHS productivity matters

The correlation between funding and productivity has enormously significant implications in terms of the funding settlement now being suggested.

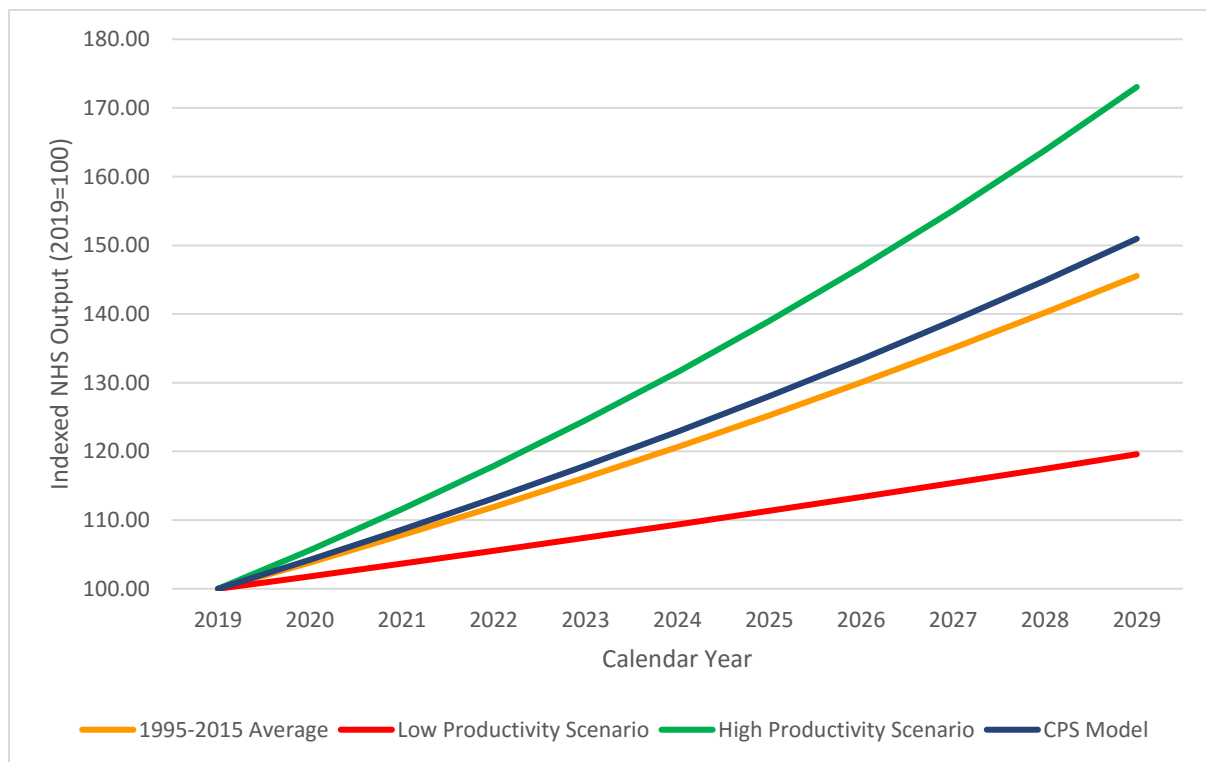
Let us say that the NHS receives a real-terms increase in funding of 3% year on year over the decade following 2019, in line with many of the reports.



The chart below shows four outcomes. The “High Productivity Scenario” shows what will happen if the average annual gain in NHS productivity over those 10 years matches that of the five best years for productivity gains, out of the 20 for which there is data.

The “1995-2015 Average” line shows what will happen if productivity matches its historical average. The “CPS Model” line shows what will happen if productivity matches its expected rate at 3% funding growth (see Graph 1 above). And the “Low Productivity Scenario” shows what would happen if we match not the five best performances in recent years, but the five worst.

Graph 2: NHS output in multiple productivity scenarios, with 3% funding increase



The differences are stark. The High Productivity Scenario, which predicts an average annual gain in productivity of 2.56%, results in the NHS increasing overall output by 73%. Under the Low Productivity Scenario, productivity would in fact decline by 1.16% year on year. When combined with the 3% growth in inputs, this would lead to output growth of just 20%.



To see what these would mean in the real world, we can simply apply them to the NHS's current level of activity.

Healthcare workforce statistics show that the number of nurses and health visitors, excluding nurses in GP practices, stands at 283,853 on a Full Time Equivalent (FTE) basis, and the number of nurses in GP practices stands at 15,800, giving a total of 300,000 (to the nearest thousand). A 73% expansion would therefore equate to the work of an extra 219,000 nurses, while a 20% expansion would be equivalent to the work of only an extra 60,000, a 159,000 difference. (See [NHS Digital, Healthcare Workforce Statistics, September 2017](#)).

This would not mean that the NHS would have 159,000 extra bodies. It would mean that the existing staff would be working that much more efficiently: if a nurse becomes twice as productive, this is as effective as hiring an additional nurse.

This would, of course, apply across the NHS. For example, in 2014-15 there were 7,567,487 cancer treatments (involving radiotherapy, chemotherapy and cancer drugs). A 73% increase would amount to just over 5.5 million extra treatments, while a 20% increase would only equate to around 1.5 million - a difference of roughly four million. (See [Productivity of the English NHS: 2014/15 Update](#), p13).

Similarly, according to the National Joint Registry, 101,651 hip replacement procedures were carried out in 2016. A 73% increase in this would be 74,205, while a 20% increase would be only 20,330, giving a difference of just under 54,000 (see [National Joint Registry Annual Report 2017](#) p26).

These calculations are, by necessity, approximate. But the sheer importance of productivity shines through – and of ensuring that the NHS is working effectively rather than letting the NHS machine simply swallow any extra funding.

To give another example, let us compare a 3% real-terms increase in NHS spending with the 4% figure reportedly being advocated by many NHS leaders. The CPS model suggests that at 3% input growth, productivity gains tend to be around 1.17%, while at 4%, the increase is only 0.73%.

Under this scenario, 4% increases year-on-year would mean that output by the end of the 10 years would only be around 5% higher than if funding increases had been kept to 3% – in other words, if no effort is made to match increased funding with increased productivity, greater funding increases will not deliver significantly better outcomes.



3. How should we pay for the NHS?

Let us assume, once again, that the hard-headed Treasury number-crunchers win out, and the NHS receives only a 3% increase in funding. In the absence of higher economic growth, that would still mean that taxes would have to rise substantially to pay for the extra costs.

The Office for Budget Responsibility projects, over the next 10 years, that growth will vary from a low of 1.2% in 2019/20 to a high of 2.2% in 2028/29, with an average rate of growth of 1.7%. We have assumed, in our analysis, that these forecasts will turn out to be true (These are from *Long-term economic determinants- March 2018 Economic and fiscal outlook* and are available [here](#). Baseline figures on NHS spending are in the Treasury's *Public Expenditure: Statistical Analysis 2017* and are online [here](#).)

This year, NHS spending in England stands at £126.3 billion. The table below shows the cumulative growth in that budget, and in GDP (assuming current projected growth rates continue), and the resulting gap in tax revenues, in 2017/18 prices.

Table 2: Shortfall between NHS budget and tax revenue

Calendar Year	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29
NHS budget growth (cumulative)	3%	6.1%	9.27%	12.55%	15.9%	19.4%	23.0%	26.68%	30.5%	34.4%
GDP growth (cumulative)	1.2%	2.5%	4.0%	5.5%	7.2%	9.1%	11.2%	13.4%	15.8%	18.4%
Tax shortfall as % of NHS budget* (cumulative)	1.8%	3.6%	5.3%	7.0%	8.7%	10.3%	11.8%	13.3%	14.7%	16.0%
Tax rises required	£2.3 bn	£4.8 bn	£7.3 bn	£10 bn	£12.8 bn	£15.5 bn	£18.3 bn	£21.2 bn	£24.2 bn	£27.2 bn
* The tax shortfall is the gap between the NHS budget and forecasted GDP growth, which we take as a proxy for tax revenues. This gap is expressed as a % of the NHS budget										

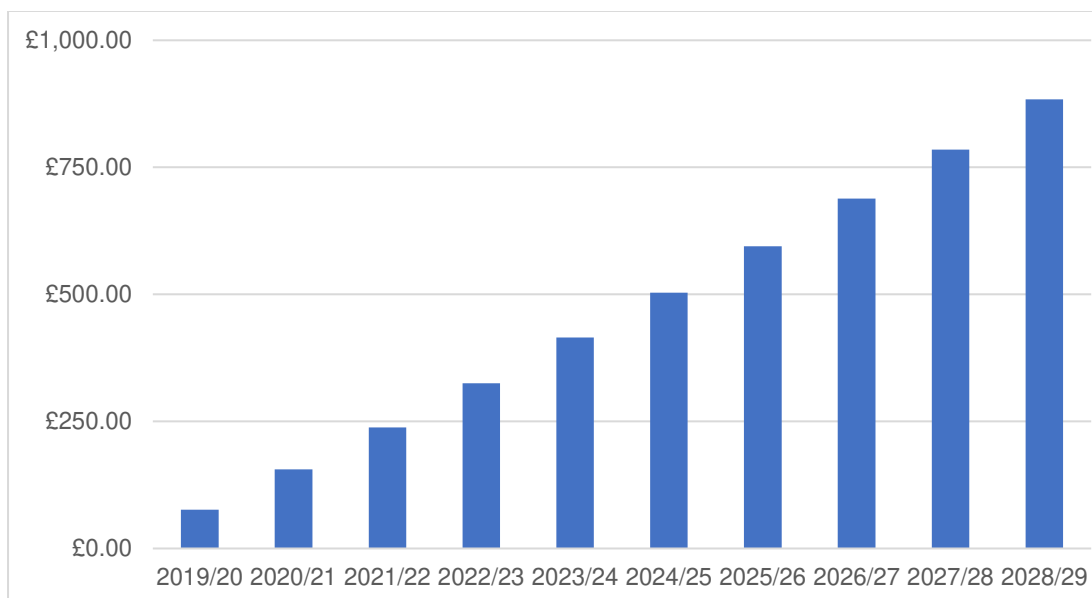


Using the table's figure of £27.2 billion, we can then divide this by the number of income tax payers (based on HMRC data, accessed [here](#)) to work out a cost per taxpayer. This gives a cost to each income taxpayer by 2028/9 of £883.77 every year, in real terms.

If you calculate this net tax shortfall and then divide it by the number of taxpayers, you obtain the figures in Graph 3 below, which shows how each year taxpayers would be asked to pay an increasing amount to support the NHS, should economic growth continue to remain low.

At a time when cost of living is a major issue, we would argue that this is not acceptable – and is another reason that reform to boost our economy and raise long-term growth rates is vitally necessary (on top of the direct income growth such economic growth would bring).

Graph 3: Annual cost per taxpayer of forecast growth and 3% NHS spending increases



As before, funding increases of 4% would exacerbate this situation. Under such a scenario, the tax shortfall by 2028/9 would end up at 29.7%, resulting in a funding gap of £50.4bn and a potential cost per individual taxpayer of £1,635.06.