

# Calculating the costs of a no deal Brexit for the NHS: Methodological assumptions

**Mark Dayan**

## **General notes and limitations**

In all sections of this analysis, where multiple estimates or uncertainty are present, the choice is generally taken that would provide a more conservative estimate.

These calculations do not account for any increase in the rates charged by private providers delivering clinical services to the NHS. However, this seems possible in view of the rising costs they would face, and the fact that payment mechanisms in the English NHS used to cover additional costs of public sector providers could also apply to the private sector.

## **Devices and general spending trend**

To calculate total spend on EU medical devices in 2017, the following commodity codes were used to extract data from HMRC's Data by Commodity Code trading data:

- 9018 (Instruments and appliances used in medical, surgical, dental or veterinary sciences)
- 901920 (Therapeutic respiration apparatuses)
- 9021 (Orthopaedic appliances)
- 9022 (X ray and radiation appliances) except 902229 (those not used for medical purposes)

<https://www.uktradeinfo.com/Statistics/BuildYourOwnTables/Pages/Table.aspx>

This showed a figure of £3.4 billion in total arrivals from the EU. This was then multiplied by 78.6% – the share of UK health spending that year that was public rather than private, as compiled by the OECD – to give an estimated NHS figure.

[https://stats.oecd.org/index.aspx?DataSetCode=HEALTH\\_STAT](https://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT)

In order to estimate a 2019/20 figure, this was then multiplied up by the budget increases laid out in official documents for the UK health services, weighted in line with their 2017/18 share of total spending. 2017/18 budgets were taken from the following documents:

England:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/728780/Department\\_of\\_Health\\_Annual\\_Report\\_Accounts\\_Web\\_Accessible\\_NEW.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728780/Department_of_Health_Annual_Report_Accounts_Web_Accessible_NEW.pdf)

Scotland: <https://www.gov.scot/publications/scottish-budget-draft-budget-2018-19/>

Wales: <https://beta.gov.wales/sites/default/files/publications/2018-06/final-budget-2018-2019-note.pdf>

Northern Ireland:

<http://www.hscboard.hscni.net/download/PUBLICATIONS/CORPORATE%20AND%20FINANCIAL/Annual-Report-and-Accounts-2017-18.pdf>

Planned 2019/20 budgets were taken from the following documents:

England: <https://www.gov.uk/government/publications/budget-2018-documents/budget-2018>

Scotland: <https://www.gov.scot/publications/scotlands-fiscal-outlook-scottish-governments-five-year-financial-strategy/pages/8/>

Wales: <https://beta.gov.wales/sites/default/files/publications/2018-06/final-budget-2018-2019-note.pdf>

Northern Ireland had not produced a planned figure, so it was assumed that the Northern Irish health care budget would rise in line with increases in the block grant.

Adding together the figures for all countries produced an estimated 2019/20 spend of £2.8 billion.

For non-tariff barriers, the figure of a 6.1% increase in tariff equivalent costs for “machines, equipment and energy” was used from the government’s Cross Whitehall Briefing.

<https://www.parliament.uk/documents/commons-committees/Exiting-the-European-Union/17-19/Cross-Whitehall-briefing/EU-Exit-Analysis-Cross-Whitehall-Briefing.pdf>

It should be noted that this is an optimistic assumption. It appears likely that many medical devices could be categorised as “chemical, rubber, plastic products”, or “other manufacturing”. Both these sectors are rated as facing non-tariff barriers at least twice as high.

An alternative approach would have been to use the economy-wide non-tariff barrier estimates calculated by the government, or by the financial services group Rabobank. These are again higher in all cases.

To calculate the effects of devaluation, an estimate was used that sterling would fall to parity with the euro. That was from a starting point of around 1.14, the average for the last full financial year.

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/696926/average-year-to-march-2018.csv/preview](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/696926/average-year-to-march-2018.csv/preview)

This is in line with reported forecasts from ING and JP Morgan Asset Management, and is below the drop implied by many other forecasts.

<http://uk.businessinsider.com/pound-price-drop-hard-brexite-no-deal-2017-10/#jpmorgan-asset-management-115-by-the-end-of-2019-1>

It was assumed that the fall in the value of sterling against other EU currencies would be the same.

Lastly, estimated spending on EU medicines was adjusted downwards to account for price elasticity of demand – the tendency of purchasers to consume less of products when their prices rise. A range of different studies have looked at price elasticity for medical products, typically pharmaceuticals at an individual level. They tend to find relative low figures between 0.14 and 0.5. The figure of 0.2 was used from the RAND Health Insurance Experiment, a 15-year study in the 1970s and 1980s seen as seminal in tracking drivers of the use of health care.

<https://www.rand.org/health/projects/hie.html>

Combining these three factors suggests spending on EU medicines would rise to £3.3 billion – an increase of around £470 million on the spending level otherwise projected. It should be noted that this calculation does not account for the possible impact of tariffs on the components of medical devices, which could increase the impact.

## Medicines

Community prescribing spend for the four countries of the UK in 2017/18 was taken from the following documents:

England: <https://digital.nhs.uk/data-and-information/publications/statistical/prescription-cost-analysis/prescription-cost-analysis-england-2017>

Scotland: <http://www.isdscotland.org/Health-Topics/Prescribing-and-medicines/Publications/data-tables2017.asp?id=2204#2204>

Wales: <https://gov.wales/docs/statistics/2018/180523-prescriptions-dispensed-community-2017-en.pdf>

Northern Ireland: <http://www.hscbusiness.hscni.net/services/2930.htm>

The resulting total figure of £11.3 billion reflects the “net ingredient cost” of medicines. The sources make clear that this may be an overestimate of total spend, as it gives the cost of medicines at list prices and does not take into account discounts that may be secured.

For hospital and other secondary care spending on medicines, 2017/18 expenditure was taken from the consolidated annual accounts of NHS England trusts.

[https://improvement.nhs.uk/documents/2852/Quarter\\_4\\_2017-18\\_performance\\_report.pdf](https://improvement.nhs.uk/documents/2852/Quarter_4_2017-18_performance_report.pdf)

This was then multiplied up to other countries, assuming the same budget proportion as in England. The result is likely to be a slight underestimate, as the starting figure does not count the medicine costs of private sector providers in England, where they play a larger role than in other countries. The English figure itself may also be an underestimate because, according to the King’s Fund, some funding paid out for more general services outside hospitals will go to medicines.

This gives us a 2017/18 total figure of £20.2 billion across primary and secondary care. Adjusting this for budget increases in the same way as for devices above gives a baseline 2019/20 figure of £21.3 billion. Due to the counting of medicines at list costs discussed

above, this again is probably an overestimate. The ABPI have provided data by personal correspondence which suggests the total in the 2017 calendar year would have been as much as £4 billion less if counted after discounts are applied, although a small part of the difference is accounted for by discounts given to wholesalers rather than to the NHS. Using this data would reduce the total cost for branded medicines given below by around £250 million.

This is increased by 7.5% reflecting the sector specific estimate in the University of Sussex briefing on the impact of Brexit on manufacturing sectors.

<http://blogs.sussex.ac.uk/uktpo/publications/which-manufacturing-sectors-are-most-vulnerable-to-brexit/>

The Sussex briefing is clear that its findings at sector level are not “definite predictions”, but they appear to be the most sophisticated publicly available modelling at this level. An alternative approach would have been again to use non-tariff barriers given in the government impact assessment, specifically for the EU component (estimated at two-thirds as per below). As the impact assessment non-tariff barrier estimate for the “chemical, rubber and plastic products” sector is around 12%, this would produce a similar estimate.

The resulting figure, equivalent to £22.9 billion across the UK, is then adjusted for devaluation with a two-thirds weighting, reflecting evidence given to the Health Select Committee by Department of Health Permanent Secretary Chris Wormald that “approximately two-thirds of the medicines that we use in the UK are either from the European Union or are transported via the European Union”.

<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/exit-ing-the-european-union-committee/the-progress-of-the-uks-negotiations-on-eu-withdrawal/oral/91884.html>

It should be noted that this does not adjust for the additional impact of devaluation on imports that come directly from outside the European Union. HMRC data shows that in 2017, 22% of pharmaceutical imports came from outside the EU, but we lack any indication of what proportion are used in the NHS. This adjustment is therefore highly conservative.

Medicines spend is then adjusted for price elasticity as above.

A 2016/17 figure from the National Audit that 28% of all NHS spending is on generic medicines was used to divide the subsequent total into generics and branded spend.

<https://www.nao.org.uk/report/investigation-into-nhs-spending-on-generic-medicines-in-primary-care/>

For generics, the full additional cost of £827 million is treated as being passed through for the NHS.

For branded medications, it is assumed that part of the £2.1 billion in potentially increased prices is borne by the industry, because of the existence of the Pharmaceutical Pricing Regulation Scheme (PPRS) and Statutory Scheme for limiting medicines bill increases. The current incarnation of the PPRS, which expires at the end of 2018, achieves this by requiring companies to pay the Department of Health a percentage of total sales determined by the proportion by which actual growth in the medicines bill exceeds planned growth. This ABHI document provides an outline of the initial working of this scheme.

[https://www.abpi.org.uk/media/1561/understanding\\_pprs2014.pdf](https://www.abpi.org.uk/media/1561/understanding_pprs2014.pdf)

Earlier versions of the PPRS relied more on profit controls. The PPRS is voluntary and there is a “statutory scheme” for companies who are not members of it. The Statutory Scheme is currently being amended so that it too is based on clawing back a percentage, in a similar though not identical fashion to the PPRS.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/736023/Statutory\\_Scheme\\_Consultation\\_Document\\_corrected.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/736023/Statutory_Scheme_Consultation_Document_corrected.pdf)

The simplifying assumption is made that the new schemes will enable the government to load the proportion of expenditure that is counted for the purposes of the PPRS on to the private sector, while bearing the costs of the proportion that is not. The proportion of branded medicine spend counted as “measured spend” for the PPRS is calculated by comparing 2017/18 total NHS medicines spending, as calculated above and minus 28% assumed generic spend, to measured spend for the 2017/18 financial year from the following document:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/751240/pprs-aggregate-net-sales-and-payment-information-august-2018.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/751240/pprs-aggregate-net-sales-and-payment-information-august-2018.pdf)

This suggests that 57% of branded spend is measured under the PPRS. The proportion of additional no deal related costs is then assumed to be passed on to the private sector.

In reality the picture is more complex and likely to change over time. Because the list prices represent an overestimate, the PPRS proportion is probably higher. The ABPI have provided data in personal correspondence which suggests it may be over 80%. Non-measured spend comprises a mix of “parallel trade” imports from other countries at cheaper prices, and supply by companies under the statutory scheme. The parallel trade provides goods at a discount to the normal price, so there is little scope for the DHSC to control prices. However, drugs supplied by UK companies under the statutory scheme will still face price controls.

The 57% should therefore be seen as a rough heuristic which accounts for the considerable uncertainty about how much of the additional costs the DHSC will be able to load on to the private sector. On the one hand, the new PPRS and statutory schemes are likely to give civil servants the right to control all prices and to recoup extra costs from industry. In the past, they have only rarely accepted increases: it is possible they would manage to do so again, holding down costs for several years of the new scheme.

However, it is also plausible that the scale of permanent additional costs would make it unsustainable to do so, with companies credibly threatening withdrawal from the market unless controls were looked at again.

This assumption leaves a cost to the NHS of £920 million.

## **Other supplies**

In order to estimate the cost base of purchased goods and services other than medicines, the following lines were taken from national 2017/18 NHS accounts documents for England and for Wales:

England: "Prescribing", "Supplies and Services - Clinical", "Supplies and Services - General", "Informatics Major Contracts", "Consultancy"

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/728780/Department\\_of\\_Health\\_Annual\\_Report\\_Accounts\\_Web\\_Accessible\\_NEW.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728780/Department_of_Health_Annual_Report_Accounts_Web_Accessible_NEW.pdf)

Wales: "Prescribed goods and products", "Supplies and services - general", "Supplies and services - clinical", "External contractors", "Consultancy services"

<http://www.assembly.wales/laid%20documents/agr-ld11644/agr-ld11644-w.pdf>

As similar spending lines are not yet available for Scotland or Northern Ireland, an average of the Welsh and English figure was assumed as a proportion of total revenue spending for the health department in each country. The Welsh and English figures and Scottish and Northern Irish estimates were then increased in line with overall 2019/20 budgets in each countries.

Total estimated 2019/20 baseline spend for medicines and EU medical devices was then subtracted from each country's estimated total supply spend for that year to give estimated baseline figures for other supply areas for that year.

For an estimate of the impact of “no deal” on wider costs, the additional CPI inflation forecast by the National Institute of Economic and Social Research (NIESR) for 2019 in their “Prospects for the UK Economy” was used. Unlike the non-tariff barrier and consumer price measures used above, it is assumed that the effect of devaluation is captured within this measure. A publicly available note of these figures can be seen here.

<https://www.niesr.ac.uk/sites/default/files/UK%20Economy%20Press%20Release%20-NIER%20No246%20November%202018%20-%20EMBARGOED%20until%2000.01%20Friday%2026%20October.pdf>

NIESR’s figure appears to be relatively conservative, with reports suggesting some City institutions forecast far higher inflation in the event of a no deal scenario.


<https://www.politico.eu/article/brexit-recession-economy-standard-poors-no-deal-would-plunge-britain/>

The ratio between the “soft Brexit” and “no deal” CPI forecasts given in the NIESR’s was adjusted down slightly to avoid double counting the price increases already accounted for in medicines and EU medical devices. This resulted in an additional price increase of 1.06%. The estimated baseline 2019/20 spend was then multiplied by this to give an additional cost of £88 million.



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**59 New Cavendish Street  
London W1G 7LP  
Telephone: 020 7631 8450  
[www.nuffieldtrust.org.uk](http://www.nuffieldtrust.org.uk)  
Email: [info@nuffieldtrust.org.uk](mailto:info@nuffieldtrust.org.uk)**

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