![Northern Ireland Fiscal Council logo]

Northern Ireland
Fiscal Council
Bringing transparency to NI's public finances

Updated estimate of the relative need for public spending in NI:
further sensitivity analysis

Contents

Foreword

The Northern Ireland Fiscal Council was established in 2021. It is chaired by Sir Robert Chote and the other members are Maureen O'Reilly, Professor Alan Barrett and Dr Esmond Birnie. Our aim is to bring greater transparency and independent scrutiny to the region's public finances, focusing on the finances of the NI Executive. In doing so we hope to inform both public debate and policy decisions to the benefit of everyone in NI.

Within this overall mission, our Terms of Reference require us to "*prepare [an] annual report on the sustainability of the Executive's public finances, including the implications of spending policy and the effectiveness of long-term efficiency measures*".[1] We published our first Sustainability Report in two parts – a general volume and a special focus on health - on 7 and 27 September 2022 respectively.[2]

In that first Sustainability Report we estimated that the Executive would need to spend around 20 per cent more per head in NI than the UK Government in England to deliver equivalent outcomes from public service provision. This was informed by previous relative needs assessments, none of them recent, so in May 2023 we produced a more detailed and up-to-date estimate using the methodology developed by the Independent Commission on Funding and Finance for Wales (the "Holtham Commission") in 2010. When accounting for the devolution of policing and justice in NI, this gave a central estimate of 24 per cent.[3] But it remained relatively broad-brush - we noted the potential sensitivity of any central estimate to the precise methodology used and to the weights given to different components.

In the run-up to and during the negotiations that led up to the publication of the UK Government's financial support package for the restored Executive, a number of stakeholders asked us to explore particular variants around our central estimate, notably as regards the way in which the additional need for spending-per-head on policing and justice might be calculated and incorporated. We provided informal advice on this and present the details here for transparency. As we have pointed out throughout, these remain broad-brush estimates and we do not have the resources or expertise to rerun the whole Holtham Commission regression exercise from the bottom up. The Executive and the UK Government may wish to consider commissioning such an exercise, but we have no prima facie basis for judging whether the outcome would be a higher or lower estimate of relative need.

The members of the Fiscal Council are responsible for the content of the report, but we have relied on the hard work and expertise of our colleagues Jonathan McAdams, Paul Montgomery, Karen Weir, Colin Pidgeon, Tamara Ferguson, Julie McIlhatton, Roisin Kelly and Philippa Todd. We are also very grateful for the input of officials from the original Holtham Commission team and other organisations including the

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[1] https://www.nifiscalcouncil.org/publications/initial-terms-reference
[2] https://www.nifiscalcouncil.org/publications/sustainability-report-2022 and https://www.nifiscalcouncil.org/publications/sustainability-report-2022-special-focus-health
[3] https://www.nifiscalcouncil.org/publications/updated-estimate-relative-need-public-spending-ni

Treasury and Department of Finance. But this is an independent assessment. We have come under no pressure from NI Executive or UK Government Ministers, advisers or officials to include, exclude or change any material.

The report is structured as follows:

- Chapter 1 is an **introduction**.

- Chapter 2 describes **adjustments** to our original calculation to take account **of differences in departmental activities** in NI and England.

- Chapter 3 tests other possible choices of **time period for comparing policing and justice spending**.

- Chapter 4 considers the option of **inferring policing and justice need from police numbers.**

- Chapter 5 sets out an alternative to our original approach, a method called **a weighted average.**

- Chapter 6 presents some **illustrative scenarios** combining in different ways different options explored in this report.

- Chapter 7 offers some **conclusions**.

1. Introduction

Needs assessment and the Holtham methodology

The UK Government has long accepted that the Devolved Administrations need to spend more per head on public services in Scotland, Wales and Northern Ireland than the UK Government does in England to deliver equivalent outcomes from public service provision.[4] The Block Grant paid by the UK Government is not explicitly based on any estimate of need, other than population size, but historically the level of funding has been sufficient to ensure that NI receives more than that level. However, the operation of the Barnett Formula tends over time to reduce the percentage funding per head premium over English spending. By contrast, the allocation of funding within England is based more explicitly on estimates of need, for example through the formulae that determine funding for NHS Integrated Care Board areas.

The Treasury's Statement of Funding Policy notes that higher spending (and thus funding) per head is justified in Scotland, Wales and NI because "*the costs of providing public services are also higher in these regions than the UK average*". This reflects differences in population characteristics and socio-economic conditions that help determine the number of people receiving a public service and the cost of providing it to each person. For example, it costs more to deliver school services in an area where schools are smaller, transport costs are higher and more children need extra support because of material deprivation (as is the case in NI relative to England).
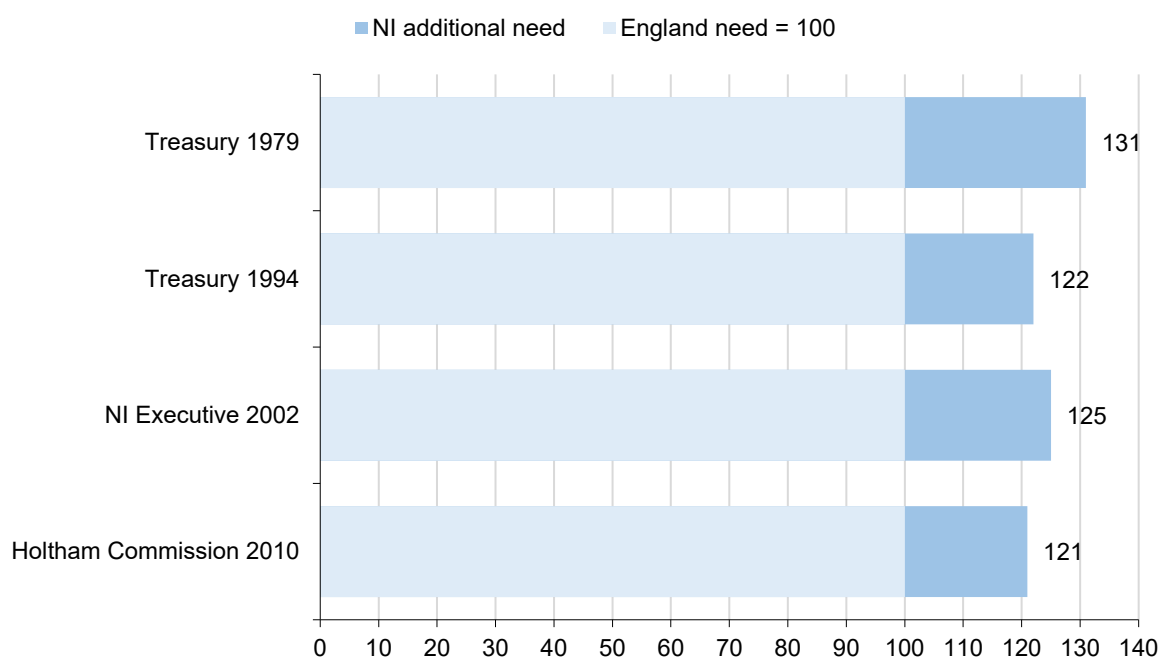
Prior to the creation of the Fiscal Council, various studies estimated the relative need for spending on public services in the Devolved Administrations, based on such factors, as we discuss in Chapter 4 of our Sustainability Report 2022.[5] The most recent of these – the Final Report[6] from the Holtham Commission in 2010 – estimated that NI needed to spend £121 per head to deliver the same standard of public services (excluding policing and justice) for every £100 spent per head in England (which for shorthand we refer to as a relative need of 121). This means NI's need is 21 per cent higher than England's, compared to 5 per cent higher in Scotland and 15 per cent higher in Wales. Chart 1.1 shows that earlier official estimates of relative need were somewhat higher, ranging up to 131 in Treasury's 1979 study.

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[4]https://assets.publishing.service.gov.uk/media/655c909b046ed400148b9d2f/Statement_of_Funding_Policy_November_2023__FINAL_.pdf (paragraph 2.9)

[5] https://www.nifiscalcouncil.org/files/nifiscalcouncil/documents/2022-10/NI%20Fiscal%20Council%20-%20Sustainability%20Report%202022%20September%202022%20amended%2020.10.22-%20web%20version_0.pdf-

[6] Independent Commission on Funding & Finance for Wales Final report
https://www.gov.wales/sites/default/files/publications/2018-10/fairness-and-accountability.pdf

Chart 1.1 - Previous needs assessments

■ NI additional need ■ England need = 100

Treasury 1979	131
Treasury 1994	122
NI Executive 2002	125
Holtham Commission 2010	121

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

Sources: House of Lords - The Barnett Formula - Select Committee on the Barnett Formula; Department of Finance; Independent Commission on Funding and Finance for Wales.

The Holtham Commission study used six indicators to derive an overall estimate of the relative need for public services spending compared with England (Table 1.1). These were selected for their simplicity, completeness and availability on a consistent basis across Great Britain. To determine the relative importance of the six need indicators, regression analysis was used to estimate their relationship with past budget allocations. The weightings thus reflected the 'revealed preferences' of the UK Government in concrete spending decisions, rather than the value judgements of the Holtham Commission members. These weightings do not sum to 1.00 due to the way in which they are derived. The Commission found that the six indicators explained over 95 per cent of the variation in spending across the sub-regions of Wales, Scotland and England indicating the strength of association between these indicators and devolved spending levels.

Table 1.1 - Summary of Holtham Commission need indicators

	Need Indicator	Description of variable	Data Source
Demographics indicator 1	Number of children	Under 16 dependency ratio	Mid-year estimates (2008)
Demographics indicator 2	Number of older people	Retired persons dependency ratio	Mid-year estimates (2008)
Demographics indicator 3	Ethnicity	Percentage of the population that is from a black or minority ethnic group	Census (2001)
Deprivation indicator 1	Combined benefit rate (Income poverty)	Percentage of the population claiming income-related benefits	DWP benefits database (2008)
Deprivation indicator 2	Ill health	Age standardised percentage of the population with a long-term limiting illness	Census (2001)
Cost indicator 1	Sparsity	Proportion of people living outside settlements of 10,000 people or more	Census (2001)

Source: Independent Commission on Funding & Finance for Wales

The Council's updated Holtham estimate

In our May 2023 publication *Updated estimate of the relative need for public spending in NI*,[7] the Council updated the Holtham Commission analysis for the latest NI data. As shown in Table 1.2, we estimated that on a like-for-like basis the relative need for spending per head in NI was 120 rather than 121. We also extended the analysis to include spending on policing and justice, which was devolved to the NI Executive in April 2010[8] and is devolved in Scotland but remains the responsibility of the UK Government in Wales.

We included an additional policing and justice factor (with NI-specific effect) to the original Holtham formula (see Appendix A). We used an indicator based on spending. In light of the unique security situation in NI, deriving an indicator based on the rates of crime, incarcerations or other comparable measures seemed inappropriate. In addition, no single indicator covered the whole of the policing and justice sector adequately. There may also be some potential for 'gaming' of indicators that are sufficiently low level to be easily influenced by the Devolved Administrations – avoiding this was an important criterion for Holtham's choice of indicators.

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[7] https://www.nifiscalcouncil.org/publications/updated-estimate-relative-need-public-spending-ni
[8] https://www.legislation.gov.uk/uksi/2010/977/article/1/made

On this basis we estimated that public spending in NI needs to be around 24 per cent higher than in England to deliver the same standard of public service. But the precise number depends on the assumptions and techniques used.

Table 1.2 - Updated NIFC needs assessment

	Weight	Need indicator (England = 100) (Holtham 2009)	Need indicator (England = 100) (Updated NIFC)	Change in need indicator
Under 16 Dependency Ratio	0.19	115	111	-4
Pensioner Dependency Ratio	0.06	87	94	7
Combined Benefit rate	0.32	141	135	-6
Ethnicity	0.02	8	18	10
Sparsity	0.02	205	213	8
Life-limiting illness	0.28	125	125	0
Overall need indicator[1]		**121**	**120**	***-1***
Policing and Justice	0.08		149	
Total including Policing and Justice			**124**	

Note[1]: Overall need is calcuated using the Holtham Commission formula show n in Appendix A

Source: Independent Commission on Funding & Finance for Wales, Census 2001, 2011 and 2021, Department for Work and Pensions (Stat-Xplore), Department for Communities, ONS for Holtham indicators and PESA for Policing and Justice

NI has a lower level of estimated need than England in respect of the pensioner dependency ratio and the proportion of the population who are from an ethnic minority, but this is more than offset by the other indicators, particularly population sparsity and the combined benefit rate. The main drivers of the scale of the higher relative need in NI are the combined benefit rate and the age standardised long term illness. Although the indicators are relatively stable over time, NI's birth rate is falling and this is likely to lead to changes in relative need in the future.

In our May 2023 paper we provided sensitivity analysis around our central estimate of 124 based on a number of scenarios summarised in Table 1.3.

Table 1.3 - Impact on overall estimate of need in NI under different assumptions

Assumption	NI need	Change from baseline
Baseline	124	-
Use Appleby estimate of need for HSC rather than Life-limiting illness	119	-5
Use benefit income rather than claimants	129	5
Equal weight for all indicators	118	-6
Use overall population density for sparsity indicator	126	2
Taxable capacity	127	3

Source: Various and NIFC calculations

We tested this range of sensitivities by applying different assumptions to the underlying indicators, to see how much this affects the estimate of need. When we carried out our initial estimate and sensitivities, we got results in the range 118-129. Our estimate of 124 was around the midpoint of this range.

New variant estimates for policing and justice

Since the launch of the report, stakeholders have approached us seeking further information on our sensitivity scenarios and other alternatives. The main focus has been on the methodology and indicator employed when incorporating policing and justice in the overall need estimate, as this is the element which is new and has no precedent in the Holtham analysis.

We have not included alternatives for the Holtham indicators themselves, as we have attempted to remain as close as possible to the Holtham approach. The degree of subjectivity in choosing indicators that have not been the subject of regression analysis in our view weighs strongly in favour of using the Holtham indicators as far as possible. Where an exact replica was not possible in our original update, we opted to depart from the Holtham methodology as little as we could manage to, and that same concern steers our approach here.

This paper shows the effect of a number of different variables:

- Adjusting for comparability of expenditure on policing and justice.
- Taking alternative time periods for the policing and justice indicator. We originally used the most recent five-year period and in this analysis we look at three further scenarios:
  - Removing Covid effects from the initial time period we chose;
  - Analysing the 5 years following devolution of policing and justice, when the budget was ring-fenced; and
  - A long-run average value of policing and justice expenditure.
- The use of Patten policing numbers as an indicative 'needs ratio' between NI and England.
- Applying a 'weighted average' methodology, including to some of the functions not including by the Holtham Commission.

We then present a few scenarios constructed from selecting and combining a number of these variables to illustrate their combined effect.

Spending per head and the financial impact of variants

Ultimately, it is worth remembering that small changes in the level of assessed need, or to the factor by which the Barnett Formula is adjusted, may not make as big a difference to overall funding as one might expect, especially in the near term.

Based on the simplified model we developed for our recent paper on the UK Government's financial support package[9] we can compare the rate at which relative spending per head changes, shown in Chart 1.2. The chart shows that starting at 120 and using a factor of 122, spending per head reaches the 124 line by 2034-35, using 124, it reaches the 124 line by 2033-34, and by using 127, it reaches the 124 line by

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[9] https://www.nifiscalcouncil.org/publications/nis-public-finances-and-uk-governments-financial-support-package-restored-executive

2031-32. In other words, a relatively small change to the rate of increase moves the crossover point forward one or two years in each variant.

Looked at another way, if assessed need were 122, a factor of 122 would bring funding per head to need by 2028-29. If need is 124, a factor of 124 would bring funding per head to need in 2033-34. For 127, a factor of 127 would bring funding per head to need in 2039-40. This shows that both the starting point and the agreed end point are important when assessing funding per head.

Chart 1.2 - Change in relative spending per head using different needs-based factors
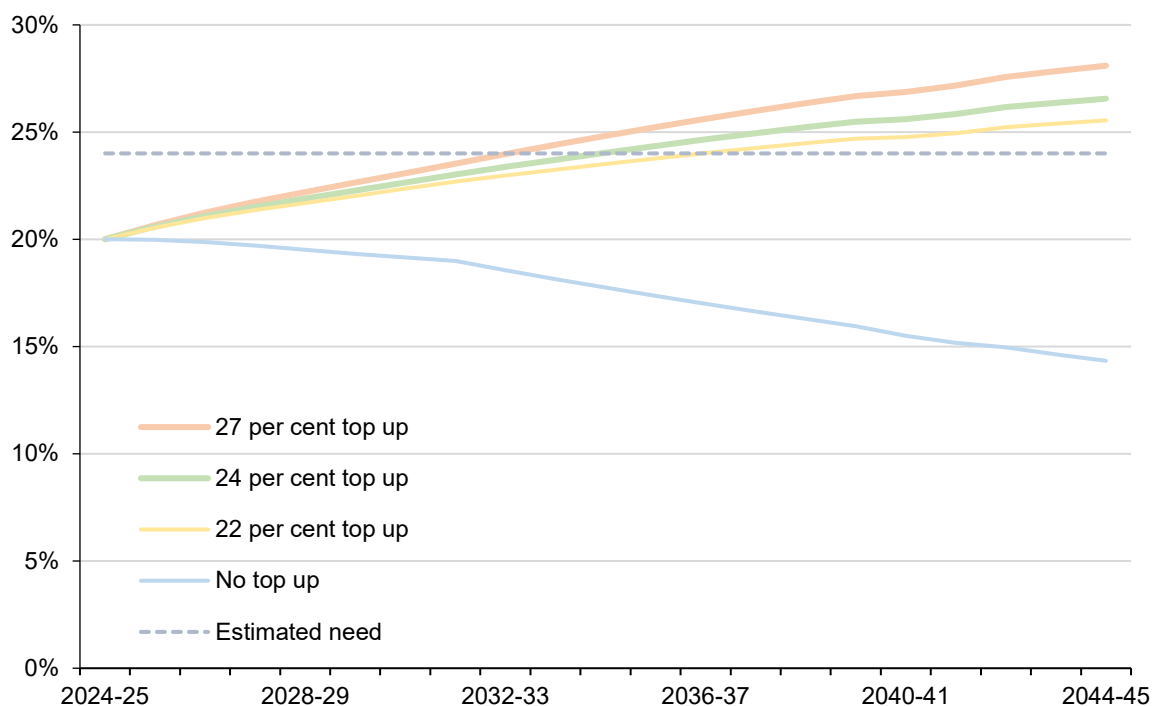
Source: NIFC calculations

Using some broad assumptions, we can also look at the impact of different variants in terms of the actual funding they deliver for spending on services. Assuming that UK Government spending on equivalent functions to those devolved to NI grows at a rate consistent with the OBR's forecasts, our modelling suggests that with an unchanged Barnett Formula (i.e. without a needs-based factor) the NI Block Grant would grow by around 17 per cent (or 13 per cent per head) between 2024-25 and 2044-45, adjusting for inflation. The 24 per cent uplift included in the funding package would raise these increases significantly, to 30 per cent and 25 per cent per head respectively. Moving to a 22 per cent uplift would reduce the increase per head from 25 to 24 per cent and moving to a 27 per cent uplift would increase it from 25 to 27 per cent - both modest changes relative to the impact of having the 24 per cent uplift and not having one at all.

Table 1.4 – Growth in Block Grant under different uplift scenarios

2022-23 prices	No uplift		22 per cent uplift		24 per cent uplift		27 per cent uplift	
	Block Grant (£ million)	Funding per head (£)	Block Grant (£ million)	Funding per head (£)	Block Grant (£ million)	Funding per head (£)	Block Grant (£ million)	Funding per head (£)
2024-25	13,742	7,104	13,742	7,104	13,742	7,104	13,742	7,104
2044-45	16,081	8,042	17,658	8,830	17,802	8,902	18,017	9,010
Change (per cent)	17	13	29	24	30	25	31	27

Source: NIFC calculations

Introduction

2. Adjusting for departmental activities

The weighting of our original policing and justice need indicator was estimated using expenditure (Total DEL) in the English Home Office, Ministry of Justice and Law Officers' Departments as a percentage of UK Government equivalent spending over the 5-year period.

For simplicity at that time, we made no adjustment for the proportions of the English departments' activities relating to Policing and Justice that are undertaken by Executive departments in NI – known as comparability factors. These were 82.5, 99.9 and 90.1 per cent for the three relevant UK Departments as set out in the Treasury's November 2023 Statement of Funding Policy.[10] Similarly, no adjustment was made for the Exchequer share of business rate income - Treasury includes a component of business rate income in the funding for UK Government departments but not for the Devolved Administrations (who levy their own rates) and this needs to be removed when making funding comparisons to ensure they are 'like-for-like'.

Applying the NI comparability factors reduces the policing and justice weighting from 7.6 per cent in our original analysis to 6.8 per cent. This would reduce the overall NI relative need indicator to 123. Further adjusting for business rate income in UK Government equivalent spending moves the policing and justice weighting from the 6.8 per cent after the comparability factor adjustment up to 7.1 per cent. This is not large enough to further change the overall NI need indicator from 123.

Table 2.1 - Policing and justice comparability and business rates adjustments

	2017-18	2018-19	2019-20	2020-21	2021-22	17-18 to 21-22
+ Applying policing and justice comparability factors	7.1%	7.2%	6.9%	6.2%	6.4%	6.8%
+ Applying policing and justice comparability **and** business rates adjustment	7.5%	7.6%	7.2%	6.4%	6.6%	7.1%

Source: HM Treasury PESA, Statement of Funding Policy and NIFC calculations

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[10] Statement_of_Funding_Policy_November_2023__FINAL_.pdf (publishing.service.gov.uk)

3. Choice of time period for comparing policing and justice spending

Our initial analysis used the most recent available five-year period (2017-18 to 2021-22) for policing spend as the basis for the policing and justice need indicator that we then carried through to the full analysis, giving the overall needs figure of 124.

The Holtham approach was a regression analysis aimed at explaining previous spending allocations, to infer a 'revealed preference' for levels of need. Because of this, and the need for an indicator with comprehensive application, we considered it most appropriate to use the level of spend on police services, prisons and law courts per head of population in our analysis. Over the most recent 5-year period policing and justice spending per head of population was 49 per cent higher in NI than in England implying a need indicator of 149.

Below, we test the implications of alternative time periods from our original approach, to understand what difference that makes. We look at:

- The period 2017-18 to 2019-20 i.e. pre-Covid;
- The period post-devolution 2010-11 to 2014-15; and
- A long run average from 2010-11 to 2020-21.

Our findings are summarised in Table 3.1.

Table 3.1 - Implications for overall NI need indicator of different policing and justice spending timeframes

	NIFC published analysis	NIFC further sensitivity anaylsis[1]			
	NIFC Initial analysis 2017-18 to 2021-22)	Applying policing and justice comparability factors (2017-18 to 2021-22)	Applying pre-Covid years (2017-18 to 2019-20)	Applying post-devolution of policing and justice (2010-11 to 2014-15)	Applying long-run average 2010 to 2020-21
Need indicator for policing and justice spend	149	149	152	179	165
Implied overall NI need indicator	124	123	124	127	125

Note[1]: The indicators in this table do not have a business rates adjustment applied, so the policing and justice alternatives can be view ed in isolation

Source: HM Treasury PESA, Statement of Funding Policy and NIFC calculations

Removing potential Covid distortions

Including Covid-affected years in the comparison may have resulted in a slightly lower weighting for policing and justice than normal, as spending on other functions was inflated during this period. Table 3.2 shows the weightings for policing and justice implied by each year's spending individually and this confirms that the

weighting is lower in Covid years (2020-21 and 2021-22). Confining the comparison to the three pre-Covid years 2017-18 to 2019-20 increases the weighting shown in the first row of the preceding Table 2.1 from 6.8 per cent to 7.1 per cent. The same adjustment increases the weighting shown in the second row of Table 2.1 to 7.5 per cent. This would in turn increase the overall NI need estimate back to 124. At the same time, restricting the per head comparison of expenditure on policing and justice raises the indicator slightly from 149 to 152. Combined with the updated weighting, this has no impact on the overall indicator of need: it would remain at 124.

Table 3.2 - Removing Covid distortions

	2017-18	2018-19	2019-20	2020-21	2021-22	17-18 to 19-20
+ Applying comparability factors	7.1%	7.2%	6.9%	6.2%	6.4%	7.1%
+ Applying comparability **and** business rates adjustment	7.5%	7.6%	7.2%	6.4%	6.6%	7.5%

Source: HM Treasury PESA, Statement of Funding Policy and NIFC calculations

Using the immediate post-devolution period

Some stakeholders have argued that the period immediately following the devolution of policing and justice in 2010 would be a better basis for comparison than the recent period as this more clearly embodies the UK's Government's 'revealed preference' for relative spending.

This reflects the fact that the baseline level of spending on policing and justice that the Executive inherited was adjusted directly in line with changes in UK Government spending on policing and justice through to 2014-15 because the Barnett consequentials of changes in that spending were earmarked for the NI Department of Justice rather than being available for the Executive to spend as it wished as is the case today.[11] The Executive did though have special access to the Treasury's contingency reserve over that period.

A counter-argument against using the immediate devolution period is that this was closer to the period of the Troubles and so the need for spending may have been greater. One might hope that the need for legacy-type law and order spending would decrease over time as the security situation became more 'normalised'.

If the average level of spending per head over the period of hypothecation (2010-11 to 2014-15) is used to derive a policing and justice needs indicator, this gives a figure of 179 rather than the 149. Using the relevant comparability factors for the hypothecated period (as per SR2010), this increases the weighting of policing and justice from 7.5 to 8.6 per cent which would raise the overall NI needs indicator from 124 to 127. Of course, the weighting generated by this approach reflects the UK Government's perceived need for spending on NI policing and justice at the point of devolution and its (or other people's) assessment may have changed since then.

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[11] https://www.finance-ni.gov.uk/sites/default/files/publications/dfp/Northern%20Ireland%20Budget%202011-15.pdf

Table 3.3 - The post-devolution period

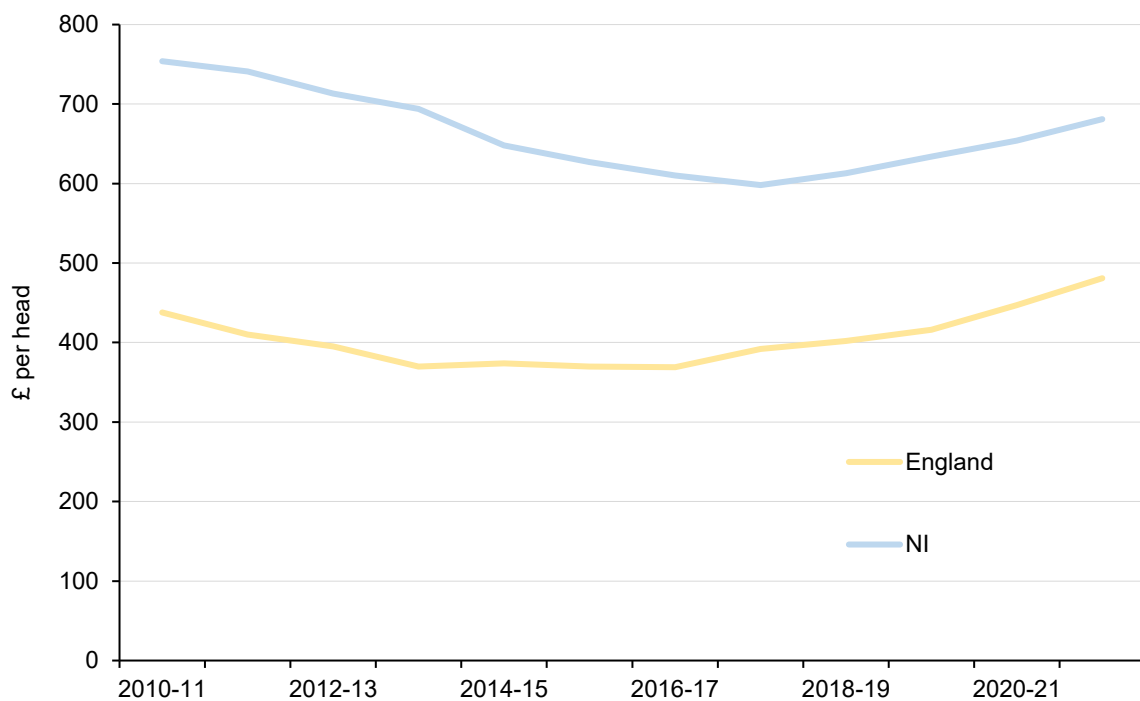|	2010-11	2011-12	2012-13	2013-14	2014-15	10-11 to 14-15
+ Applying spending from the post-devolution period	9.1%	8.9%	8.6%	8.2%	8.1%	8.6%

Source: HM Treasury PESA and Country and Regional Analysis

Using a long-term average

Given that the relative need for spending over any relatively brief period of time could be argued to reflect special short-term circumstances, some stakeholders favour the use of a longer-term average. Over the period 2010-11 to 2021-22 spending per head (and assumed need) on policing and justice was 65 per cent higher in NI than England. Plugging in a relative needs factor of 165 and a weighting of 7.6 per cent (**without** adjusting for Covid distortions and business rates) raises the overall need indicator from 124 to 125.

The absolute and relative spending-per-head levels over this period are shows in Charts 3.1 and 3.2. The period of rising relative spending in NI from 2010-2013 reflects the impact of the period of post-crisis financial austerity on spending in England. As we have often observed, the Barnett Formula normally squeezes relative spending in NI because increases in spending-per-head in England are matched in cash rather than percentage terms. But the 'Barnett squeeze' goes into reverse when spending in England is being reduced. The absolute reduction but relative increase compared with England in NI policing and justice spending over this period means that it is difficult to infer too much in terms of the UK Government's assessment of relative need from the earmarking of spending.

Chart 3.1 - NI and England £ per head on policing and justice

Source: Country and Regional Analysis 2015 to 2022

Choice of time period for comparing policing and justice spending

Chart 3.2 - NI policing and justice premium in different scenarios
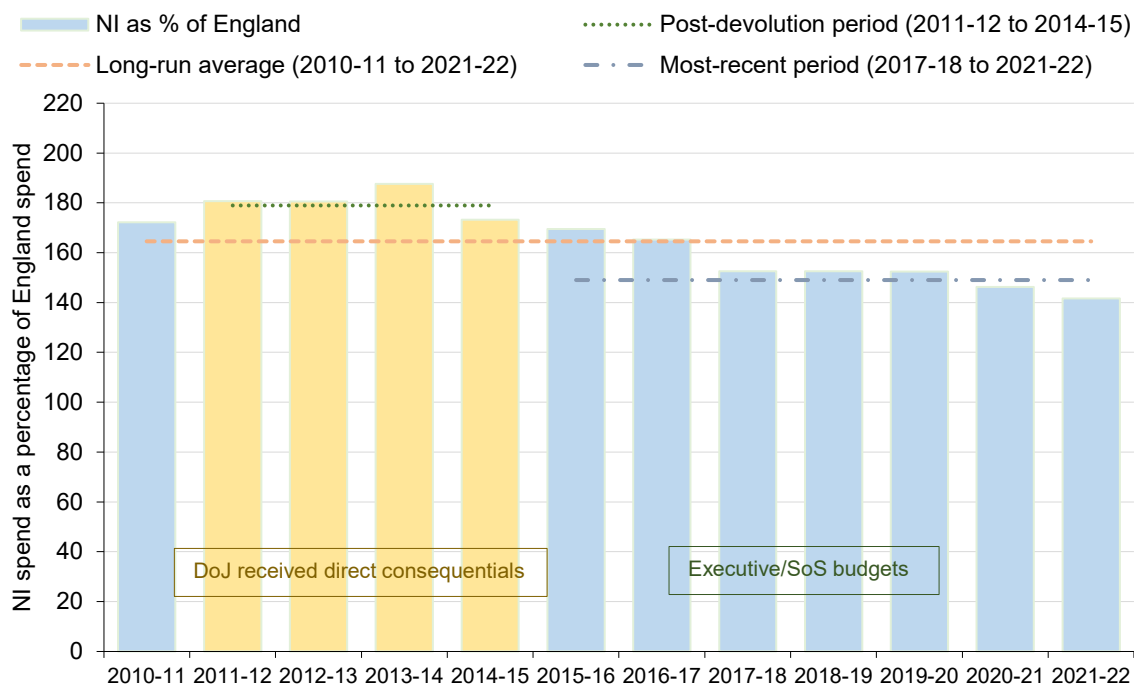
Source: Country and Regional Analysis 2015 to 2022

Table 3.4 – NI policing and justice long-run NI premium

£ per head	2010-11[1]	2011-12[2]	2012-13[2]	2013-14[2]	2014-15[2]	2015-16[3]	2016-17[3]	2017-18[3]	2018-19[3]	2019-20[3]	2020-21[3]	2021-22[3]	11-12 to 21-22
England	438	410	395	370	374	370	369	392	402	416	447	481	405
NI	754	741	713	694	648	627	610	598	613	634	654	681	664
NI as % of England	**172**	**181**	**181**	**188**	**173**	**169**	**165**	**153**	**152**	**152**	**146**	**142**	**165**

Note[1]: pre-devolution budget

Note[2]: Department of Justice received direct Barnett consequentials on policing and justice spending in England and Wales

Note[3]: Department of Justice budgets set by NI Executive/Secretary of State

Source: Country and Regional Analysis 2015 to 2022

4. Inferring need from police numbers

Some stakeholders argue that relative need can be estimated directly – rather than from relative spending levels – by drawing on the conclusions of the Independent Commission on Policing for Northern Ireland that was established in 1998 as part of the Good Friday / Belfast Agreement and chaired by former Cabinet Minister Chris (now Lord) Patten.

The Patten Review recommended that NI needed a regular complement of 7,500 officers for post-conflict policing, provided the security situation did not deteriorate significantly[12] – equivalent to 3.9 officers per 1000 people. There are currently around 150,000 police officers in England and Wales – equivalent to 2.5 per 1,000 people.[13] From a spending perspective, this implies a relative need indicator of 160 and an overall need indicator of 125 rather than 124 - the same as that implied by the long-run spending comparison.

Table 4.1 - Patten recommendation and current police officers per thousand people

Territory	Number of police officers	Officers per 1,000 people
England[1]	139,425	2.47
Wales[1]	8,005	2.58
Scotland	16,363	2.99
Northern Ireland	6,440	3.38
Patten recommendation for Northern Ireland	*7,500*	*3.94*

Note[1]: excluding British Transport Police and Central Service Secondments

Source: House of Commons Library, ONS, PSNI

It is worth noting that the current number of police officers in NI is around 6,440,[14] implying a shortfall against the Patten recommendation of around 14 per cent. This reflects not just the financing available to the Executive but also the proportion it has chosen to spend on policing and justice and the proportion of that sub-total spent on police numbers (rather than, for example, prisons and law officers' functions). The number of police officers in England is also below the implied requirement (2.56 per 1,000 people) from the Home Office model used by Patten.

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[12] https://cain.ulster.ac.uk/issues/police/patten/pm19100.htm

[13] The Home Office needs model used in the Patten Review assumed that 2.56 officers were required for every 1,000 people in England and Wales. This would imply a policing and justice need indicator of 177- and an overall need indicator of 126 based on a 7.5 per cent weighting for policing and justice.

[14] https://www.psni.police.uk/our-publication-scheme/who-we-are-and-what-we-do/strength-police-service-statistics, as at 1 February 2024

5. A weighted average methodology

Having determined an estimate of relative need (and weighting) for policing and justice, incorporating it in the broader calculation to generate the overall need indicator is not as straightforward as the discussions to date would suggest. The most comprehensive approach would be to carry out a full regression analysis that replicated the Holtham approach, including spending on policing and justice as part of the dependent variable as well as an additional explanatory variable to reflect differences in the need. As we discuss below, there are other areas of spending for which the Executive is responsible that Holtham omitted – notably agriculture, transport, support for industry and recreation, arts and leisure – that would ideally be included as well.

In principle, this would give a more accurate historic needs assessment for NI at the point in time that the Holtham Commission carried out its estimate. Those more comprehensive weights could then be updated as far as possible with new data to provide a current estimate more consistent with the Holtham approach. However, such an exercise would be very resource-intensive and beyond the current capabilities of the Council. Indeed, the Holtham team commissioned external experts to provide the regression analysis on which the needs estimate was founded. It is also highly likely that some of the data required to undertake such analysis would no longer be available, for example because the roll-out of Universal Credit has fundamentally altered the way data on certain benefits is measured and collected.

In the central estimate discussed to date, we took a very simple 'proportional additive approach' to incorporating policing and justice. To do this, an additional factor was added to the Holtham formula rather than calculating the weighted average of two different need indicators. This simply ignored the other aspects of spending not covered by Holtham. The weights did not add to one which is similar to the original Holtham regression analysis where they summed to less than one.

An alternative is a 'weighted average' approach where the weights sum to one, treating the Holtham and policing and justice need indicators as separate estimates before combining them based on their respective share of UK Government equivalent spending.

Some stakeholders consider the proportional additive method too simple. In particular there is a concern that it risks over-weighting the impact of policing and justice spending. Others however, have noted that the weighted average applies the Holtham figure to areas explicitly not covered in the Holtham analysis. They feel this produces estimates of overall need that are illogical in hypothetical scenarios where NI's policing and justice spending lies between that of England (100) and the Holtham figure for NI excluding policing and justice (121).

Table 5.1 shows the breakdown of UK Government equivalent spending in 2008-09 with the areas covered by the Holtham analysis accounting for 74.7 per cent, policing and justice 7.1 per cent, other spending within the Executive's DEL 6.8 per cent and other spending 11.5 per cent.

Different weightings and different needs estimates for the various sub-components of spending deliver different overall needs estimates. For example, if we assume that all non-policing and justice expenditure (92.5 per cent of the total) has an average needs estimate of 120 as in our updating of the original Holtham estimate and the policing and justice has a needs estimate of 149 (7.5 per cent of the total) this implies an overall need indicator of 122, or 124 if the long-term average relative need (165) and weighting (8.6 per cent) were used.

For some (but not all) areas of Executive spending excluded from the Holtham analysis, the NI Executive estimated need indicators in its 2001 needs assessment exercise (Chart 5.1). If we use those needs indicators (applied to the relevant UK Government department shares of total equivalent DEL spending), the overall needs indicator rises to 125 (as shown in Table 5.1). This largely reflects a very high needs indicator for agriculture (342), albeit with a very small spending share, and a modestly higher-than-average indicator for transport, with a rather larger spending share. We have found two sources for a transport needs indicator. The assessment by the NI Executive in 2001 calculated need at 171, whereas an earlier Treasury study put it considerably lower at 133. In our judgement, the lower number (which is much closer to the NI Executive total figure) feels more reasonable. The support for industry relative need was estimated as the simple average of the 2001 estimates for trade, industry and energy and employment. It is assumed that the relative need for culture is the same as for the functions covered by the Holtham analysis as there was not a separate need estimate calculated by the Executive in 2001. However, public spending on recreation, culture and religion in NI was 156 per cent higher per head of population than in England between 2017-18 and 2019-20. This calculation covers around 89 per cent of total UK Government equivalent spending.

Chart 5.1 – Relative need by function
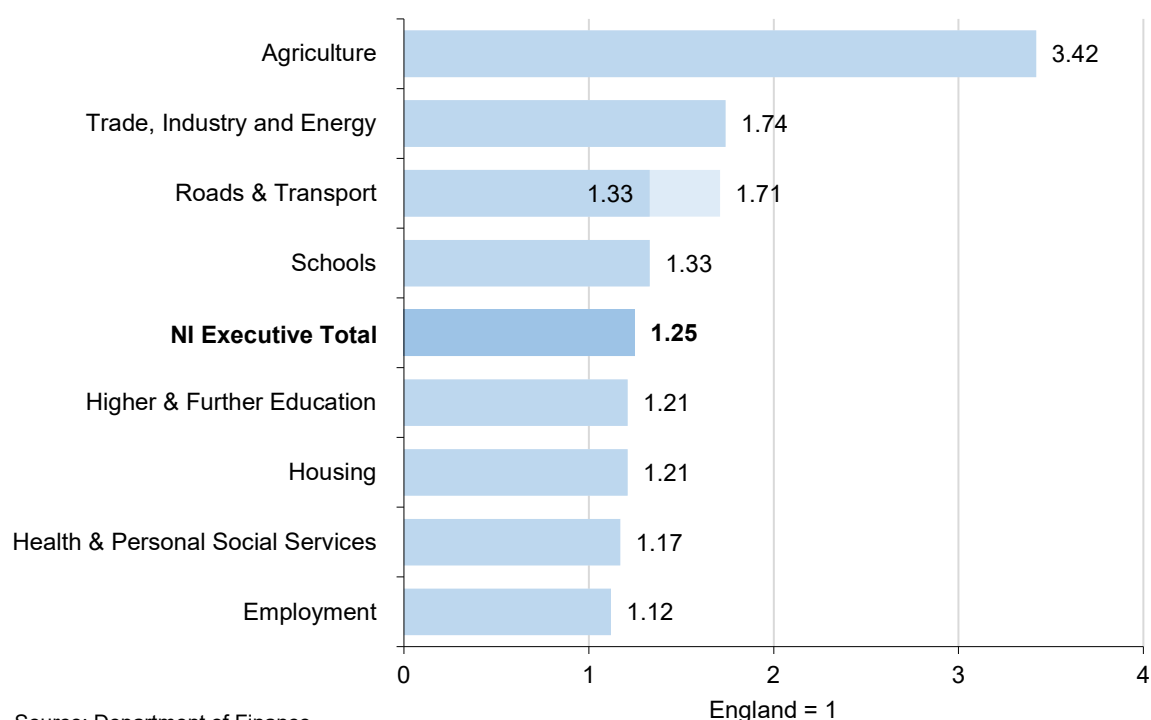
Source: Department of Finance

Table 5.1 - Relative weights and need by function area

	% of spend	Weight	Need	Additional need (= Need - 100)	Weight*Additional Need
Policing and justice	7.1%	8.0%	149	49	3.9
Agriculture	1.0%	1.1%	342	242	2.7
Transport	4.8%	5.4%	133	33	1.8
Support for Industry	0.4%	0.4%	140	40	0.2
Culture	0.6%	0.6%	120	20	0.1
Holtham	74.7%	84.4%	120	20	16.9
Additional need					**25.5**
Total need	**88.5%**	**100.0%**			**125.5**

Source: NIFC calculations

Some stakeholders have argued that the overall needs indicator should reflect an even higher needs indicator for agriculture than the 342 in the 2001 Department of Finance exercise. Charts 5.2 and 5.3 show that spending per head on agriculture was on average 473 per cent higher in NI than England from 2010-11 to 2021-22. In the early part of this period this higher spending was facilitated by payments from the EU Common Agricultural Policy. Since Brexit the UK Government has provided equivalent support but outside the core Block Grant. If one were to use 473 as the agriculture needs indicator, 149 for policing and justice and Holtham's 120 for everything else, this would give an overall need indicator of 126. These estimates are based on weightings using outturn data for 2017-18 to 2019-20. Using planned spend for 2022-23 to 2024-25 instead would increase the overall estimate of need by a further three points due to the increase in the share of spending on Department for Environment, Food and Rural Affairs.
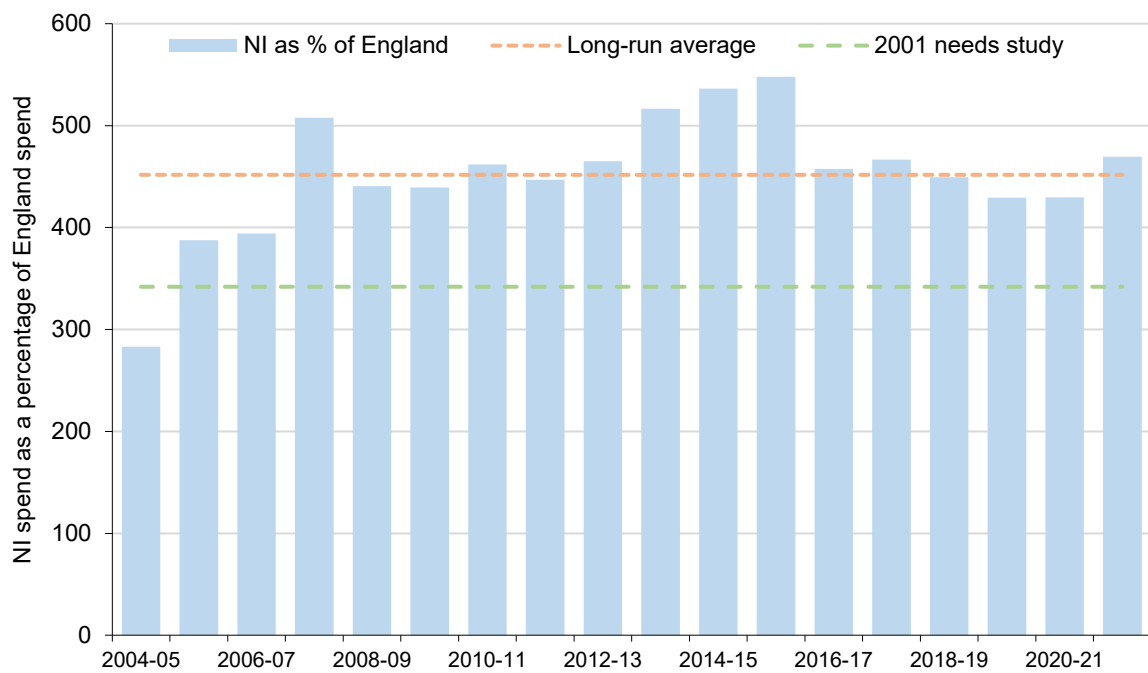
Chart 5.2 - Historic per head speading on agriculture
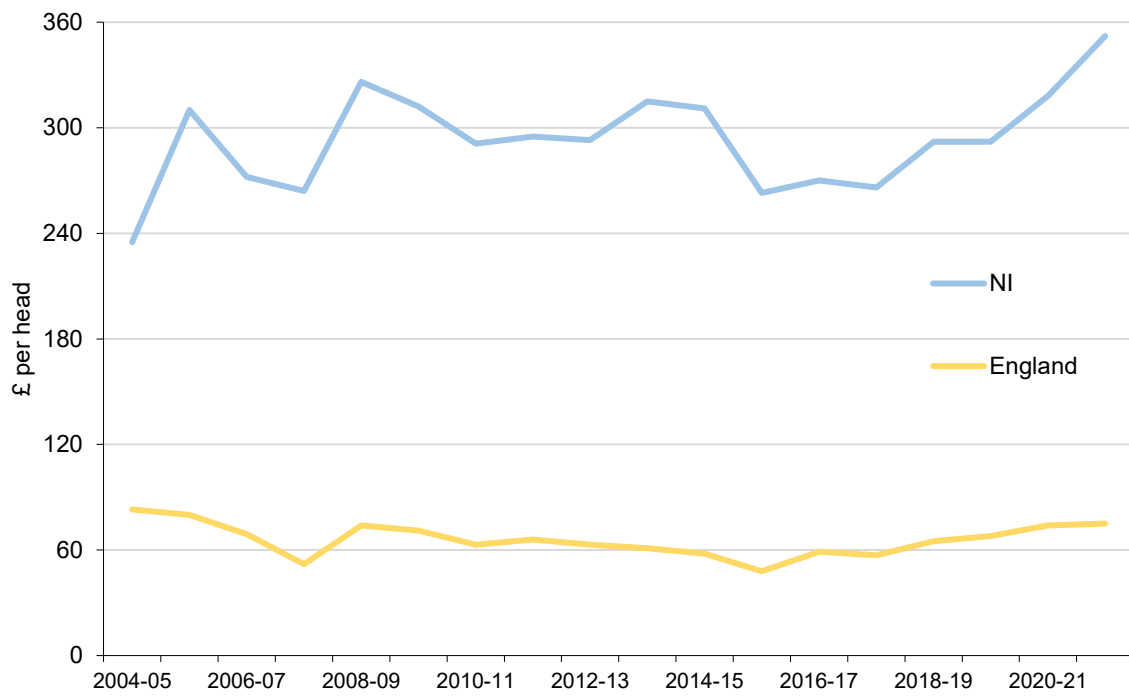
Source: PESA and Country and Regional Analysis 2010 to 2022

Chart 5.3 - NI agriculture premiums

Source: PESA and Country and Regional Analysis 2010 to 2022

6. Illustrative scenarios

Below, we combine some of the earlier variant judgements to provide a few illustrations of the impact of selecting different assumptions, using both the proportional additive and weighted average methods namely:

- Using the most recent five-year period for policing and justice, and excluding agriculture;
- Considering the effect of using a long-run average for policing and justice spend; and
- The addition of agriculture at the level estimated by DoF in its 2001 exercise. (all of these are adjusted for comparability and Covid).

Table 6.1 - Illustrative scenarios

Scenario	Proportional Additive*	Weighted Average*
Most recent policing and justice period, excluding agriculture	124	123
Using long-run average for policing and justice, excluding agriculture	125	124
Most recent policing and justice period, including agriculture at 2001 needs estimate (342)	127	125
Long-run average for policing and justice, including agriculture at 342	128	126

Note: *All adjusted for comparability factors and Covid where appropriate

Source: PESA, NIFC calculations

This generates estimates both above and below our broad-brush 124.

Illustrative scenarios

7. Conclusions

When presenting our estimates of relative need, we – like the Holtham Commission before us – have always emphasised that the precise number you derive is sensitive to various methodological judgements over which reasonable people might disagree. And if funding is linked to need, inevitably some stakeholders will favour higher estimates of relative need (and therefore funding) and others will favour lower estimates.

The broad-brush 124 central estimate that we produced in May 2023 has now been incorporated in the UK Government's support package for the restored Executive, but as a top-up to future Barnett consequentials rather than as a way to set the entire quantum of the Block Grant. This means that its impact on the overall size of the Block Grant builds up only gradually over time. So adopting a slightly higher or lower estimate of relative need than 124 – within the range covered by the variants set out in this paper – will not have much near-time impact on the Executive's spending power, certainly relative to a scenario in which some or all of the short-term budget support being provided through to 2026-27 were incorporated into the baseline for the setting of the Block Grant over the next Spending Review period. As we saw in Table 5.1, having a top-up of 22 per cent might reduce the Block Grant per head in real terms by 1 percentage point in 20 years' time while having a top-up of 27 per cent might increase it by 2 percentage points.

Conclusions

Appendix A - Holtham Commission formula for calculating relative need

Figure 1: Relative need in the Devolved Administrations (England =100)
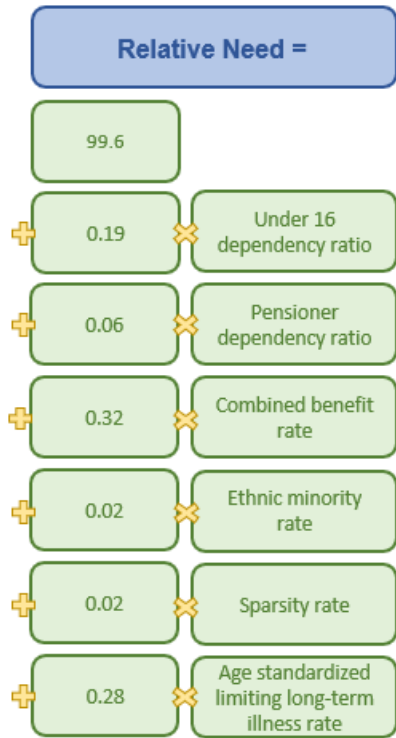
Appendix B - Splicing editions of PESA/CRA data

The Treasury's PESA publication warns against splicing data from different editions:

Users are strongly advised against simply splicing data together from different editions of PESA, as data is unlikely to be directly consistent due to changes in coverage and classification.[15]

For the long-run series in this paper, we have relied on PESA/CRA data presented on the basis of COFOGs (Classification of functions of Government). The COFOG basis reports on the **function** in which the spending occurs, not on the **department or body** that commits the expenditure. It should therefore be blind to departmental reorganisations which move functions from one organisation to another.

However, one reason for not splicing PESA editions without attention to the overlapping years' data is that restatements of outturns can create apparently odd changes. For example, between the Country and Regional Analysis 2016 and 2017[16] there was a **minus** £16 per head variance in the NI 2015-16 outturn for policing and justice. In the same year, in England there was a **plus** £14 per head variance. These movements, especially in opposite directions, could affect the accuracy of calculations.

To minimise this risk, where possible, we use the **first** year from each set of five outturns, as these are the most stable and least likely to be restated, with the obvious exception the last five years which all come from CRA 2022, as shown in Table B.1 (the data we used for Charts 3.1 and 3.2 and Table 3.4 in the main paper). Note: the CRA 2023 edition was released after these calculations were completed.

Table B.1 - How we splice PESA/CRA data

Source	CRA 2015	CRA 2016	CRA 2017	CRA 2018	CRA 2019	CRA 2020	CRA 2021	CRA 2022					
£ per head	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	11-12 to 21-22
England	438	410	395	370	374	370	369	392	402	416	447	481	405
NI	754	741	713	694	648	627	610	598	613	634	654	681	664
NI as % of England	172	181	181	188	173	169	165	153	152	152	146	142	165

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[15] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1171658/E02929310_HMT_PESA_2023_Accessible.pdf
[16] Each year's Country and Regional Analysis (CRA) (usually released autumn) is restated in the following summer's PESA