Appraisal Periods

Summary and key points

Determining an appropriate period over which to assess costs and benefits is a fundamental element of any economic appraisal, including impact assessments. This document summarises generic guidance from the Treasury Green Book and conventional practice in impact assessments. It provides guidance on the choice of appraisal periods for both the overall cost benefit (net present value) analysis and calculation of the business impact (equivalent net direct cost to business) figure.

Standard 10-year appraisal period. The guidance points to a 'default' 10-year appraisal period and this will apply in the large majority of cases. This is characterised by proposals that are not time-limited and where costs and benefits of the options follow a broadly even profile over time.

When a longer than ten-year appraisal period might be appropriate. Where costs and benefits of the options extend beyond ten years and have a highly uneven pattern over time, the length of the appraisal period chosen can have a significant impact on the EANDCB figure, the NPV and potentially the relative ranking of different options. In particular, some policy interventions involve up-front (as well as ongoing) costs but benefits that do not arise for many years (or continue long after costs have ceased). This can be a particular feature of interventions in the energy, environmental and health fields. Departments will wish to provide a strong justification for their chosen appraisal period, particularly where costs and benefits are appraised over different periods.

When a shorter than ten-year appraisal period is appropriate. If a measure has a shorter life than ten years (known as a 'time-limited measure'), then this shorter period will normally be the timeframe over which the EANDCB figure is calculated. The appraisal period for the wider cost benefit analysis may, however, be longer (and possibly greater than ten years), depending upon the timing of the societal impacts.

Sunset clauses, IAs and PIRs. Historically, Better Regulation Framework guidance and practice has been that regulations implemented with a sunset clause shorter than ten years should still use an appraisal period of ten-years, since this is normally consistent with the expected lifetime of the policy. Departments will want to ensure that post-implementation reviews are conducted in good time for the review of a sunset clause.

Introduction

One of the key objectives of the assessment of the impact of regulatory changes is to put a monetary value on the costs/benefits to businesses and wider society. For the equivalent net direct cost to business (EANDCB), this is an annualised figure. In order to calculate this, we need to consider the cumulative discounted costs and benefits over an appropriate time horizon, known as the 'appraisal period'. This reflects the time it takes for the effects of the regulatory change to establish themselves. In addition, the appraisal period for the wider cost benefit analysis needs to be one that does not distort the value of the measure to society, either in itself (whether it is net costly or net beneficial, and to what extent) or relative to other options.

Existing guidance and conventional IA practice

The Treasury Green Book[1] (pages 9 and 42) states that costs and benefits should be calculated over the lifetime of the intervention or asset and that, for many interventions, a time horizon of **10 years** is suitable. It also states that, where significant assets are involved, e.g. buildings and infrastructure, **up to 60 years** may be suitable. The Green Book also notes that, for interventions likely to have significant costs or benefits **beyond 60 years**, such as nuclear waste storage, a suitable appraisal period should be agreed at the outset. This could occur, for example, if the project includes the safe storage of nuclear waste, climate change controls or immunisation programmes.

A 10-year appraisal period has also been conventional practice in impact assessments but with exceptions broadly aligned to the Green Book criteria outlined above.

When the choice of appraisal period is important

Standard 10-year appraisal period

Even where costs and benefits extend beyond ten years (as is normally the case for measures with an indefinite lifespan), providing these costs and benefits follow a broadly consistent profile over time, the choice of appraisal period is unlikely be a critical factor. This is for two reasons. First, the length of the appraisal period is unlikely to affect the ranking of options in net present value terms.[2] Second, using a shorter or longer appraisal period will have little effect on the EANDCB figure. In these situations, a standard 10-year appraisal period can be used.

[1] The Green Book (2022) https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent

[2] This assumes that the profile of costs and benefits does not vary significantly between the options.

A 10-year appraisal period allows one-off costs to be spread over a reasonable number of years. The 10-year appraisal period also reduces the need to forecast too far into the future, but generally takes account of most known impacts. Finally, in line with Green Book guidance, discounting means impacts beyond 10 years will have less of an impact on the NPV.

The large majority of IAs are appropriately appraised over ten years, such as the example below.

RPC-BEIS-3346(2) Preventing employer deductions from worker tips

This proposal considered a number of measures, including preventing any employer deduction from discretionary payments for service, except for those required under tax law. The proposal was not time-limited and the costs and benefits showed a similar profile over time. The main cost to business (and equivalent benefit to workers) was the ongoing loss of revenue from not being able to withhold an element of tips. The Department estimated that businesses would occur one-off transition costs of £5.3m in the first year of the policy (changing of contracts), followed by average annual costs of £317.7m as they can no longer make deductions from payments for service. As a result, this policy reaches the 'steady-state' of constant annual costs quickly. An appropriate default time horizon of ten years was used to assess costs and benefits.

Where a longer than ten-year appraisal period might be appropriate

Where costs and benefits have a highly variable pattern over time the length of the appraisal period chosen can have a significant impact on the EANDCB, the NPV and potentially the relative ranking of different options. This could occur, for example, where there are very large up-front costs and/or many years before benefits materialise. In an extreme scenario, such a measure could be presented as net costly if appraised over ten years but net beneficial over a longer period. Where a department chooses an appraisal period different to the usual ten years, a full explanation must be provided. There is no suggestion that departments would seek to do this, but this is to guard against a longer or shorter appraisal period distorting the comparison of options and/or calculation of the impact on business. For example, if the most significant costs are felt later in the life of a policy, a shorter appraisal period than necessary would present a more positive present value than is accurate.

The following section outlines examples where impacts were assessed over a period longer than ten years. They are typically where interventions involve up-front (as well as ongoing) costs but a longer time for benefits to occur. This happens primarily in two areas: energy/environment and health.

Energy and Environment

Smart Meter post 2020 (consultation stage IA; BEIS)

The proposal extends an obligation for energy companies to provide smart meters to households in the United Kingdom to 2024. The original policy took the obligation up to 2020 to try and get smart meter coverage to 95 per cent. The Department used a 14-year appraisal period for this piece of regulation. This aligned with the detailed cost benefit analysis being undertaken for the rollout of smart meters.

The expected lifetime of a smart meter was approximately 14 years and this length of appraisal period would allow the IA to capture the costs and benefits of a rollout cycle. It is important that costs over the investment cycle are captured – this is the appropriate period over which investment costs should be recovered

The Energy Efficiency (Non-domestic Private Rented Property) (England and Wales) (Amendment) Regulations 2020 (consultation stage IA; BEIS)

The policy intends to drive cost-effective energy efficiency improvements in the non-domestic private rented sector (PRS) that would not have occurred otherwise. The policy requires all PRS to meet a minimum EPC Band C requirement by 2030 with a minimum payback of 7 years. The IA stated: *'While the policy period is between 2020 and 2030, the longer appraisal is necessary to capture legacy impacts of measures (mainly insulation) installed up to the backstop year (2030) where all the population is impacted by the policy.'* (page 19, paragraph 41). As a result, a 44-year appraisal period was chosen to *'incorporate lifetime policy costs and benefits.*' (page 17). The Net Present Value was estimated to be £3.1bn, with the energy efficiency savings of £3.7bn being captured throughout the appraisal period.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839565/non-domestic-prs-consultation-ia.pdf

Health

The Department for Health and Social Care (DHSC) have frequently used a 25-year appraisal period for measures relating to tackling obesity. The Department's general reasoning is that any measures put in place to combat childhood obesity will carry further benefits into adult life as lifestyles. Furthermore, for measures specifically aimed at tackling childhood obesity, the Department opts for a 100-year cohort approach, which would capture benefits from reduced mortality from heart disease, stroke, cancer etc in middle to old age.

Department for Health and Social Care – Obesity-related cases

In both of the cases immediately below, the Department stated: "*The net present values of the options are assessed over a period of 25 years. This is much longer than the typical 10-year assessment period used in impact assessments. Ill health related to being overweight or obese tends to develop later in life. Therefore, a longer period than usual has been chosen to ensure the benefits of these regulations are captured in our analysis."* (pages 26 and 22, respectively).

Restricting volume promotions for high fat, sugar, and salt (HFSS) products RPC-4332(1)-DHSC

The consultation stage IA included provisional estimates: the EANDCB for the preferred policy option was estimated to be £11.7m, whereas the NPV was estimated to be £2,940m. The main cost was estimated to be lost retailer profits of £175m, whereas the main benefit was taken as health benefits of £1.7bn over the 25-year appraisal period.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770705/impact-assessment-for-restricting-volume-promotions-for-HFSS-products.pdf

Restricting checkout, end-of-aisle, and store entrance sales of food and drinks high in fat, salt, and sugar (HFSS) RPC-4333(1)-DHSC

The consultation stage IA included provisional estimates: the EANDCB for the preferred policy option was estimated to be £77.3m; consisting of transitional costs to business of £30m. Whereas the NPV for this policy was estimated to be £3,340m, consisting of approximately £2,500m in health benefits over the 25-year appraisal period.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770706/impact-assessment-restricting-checkout-end-of-aisle-and-store-entrance-sales-of-HFSS.pdf

The RPC consultation stage opinions on these two cases indicated acceptance of the Department's argument for a longer than ten-year appraisal period but commented that the Department could explain more clearly why specifically 25 years would capture all of the effects of the policy.

The following consultation stage IA also used a 25-year appraisal period but explained that it had used a cohort approach involving 100 years: "*To compare the costs and benefits of the policy over the same time period we have taken a cohort approach. In modelling terms, the benefits only apply to the cohort of children who are alive or born into the model over the 25-year period. For this cohort, the benefits*

to them are modelled for 100 years from introduction of the policy. This is to ensure the health benefits accruing to our cohort of children are fully considered. Industry costs from the regulations are modelled over a 25-year period, but the costs that occur to retailers and manufacturers from children consuming fewer calories are also considered over 100 years for consistency". (paragraph 222, page 59).

Considering the impacts over the life of the cohort is similar to appraising an investment over the life of the asset, referred to above. However, the calculations are more complicated and will need to be explained clearly.

Introducing a 2100-0530 watershed on TC advertising of HFSS products and similar protection for children viewing adverts online (consultation stage IA; DCMS/DHSC)

The consultation stage IA included provisional estimates: the EANDCB for the preferred policy option was estimated at £4m; consisting mainly of costs of loss of advertising revenue but costs savings through reduced advertising. The NPV was estimated to be £2,730m, consisting of savings to the NHS through a healthier population.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786554/advertising-consultation-impact-assessment.pdf

The IA would benefit from providing further clarity on why the Department opted specifically for 100 years to model benefits and 25 years to assess business impacts.

Costs and benefits would usually be appraised over the same time period and a strong justification would need to be provided, for any different approach. This justification might be where regulatory costs to business are incurred only in the early years, and benefits are felt by the public much later. The cohort approach used by DHSC in the child obesity measures tries to capture the long-term nature of health impacts. This approach selects a 'group' of children aged, for example, between 6 and 16 years old. The benefits of avoiding obesity in childhood will be experienced later in life; through avoidance of diabetes and other weight related issues.

The following IA also used a 100-year cohort approach (albeit with a ten rather than 25-year appraisal period).

RPC-DHSC-4302(3): Ending the Sale of Energy Drinks to Children

The aim of the policy is to address excessive consumption of energy drinks by children, taking a precautionary approach to protecting their health and well-being. The IA noted: "…*it was necessary to extend the appraisal period used in the model*

to 100 years, so children affected by the policy have time to age in to the age bracket modelled and likely to suffer from the obesity caused chronic conditions." (page 124).

The EANDCB for the preferred policy option was estimated to be £61.6m, whereas the NPV was estimated to be £1,446.3m over the 100-year appraisal period. The main cost to business was estimated to be administration costs in the form of identification checks (£82m). The main benefit was estimated to be *'obesity benefits'* (£1.5bn), as children switch from energy drinks to lower calorie soft drinks (page 3).

When a shorter than ten-year appraisal period is appropriate

Time-Limited measures

Conventional impact assessment and framework practice is that if a measure is time-limited, and this is less than ten years, then the shorter period should be used to annualise costs and benefits to business in the EANDCB calculation. It has generally been taken that direct impacts on business fall only within the time period when the measure is in force. However, the cost benefit analysis of the IA would be undertaken over a period appropriate to capture overall societal impacts, which might be different to the period over which the EANDCB is calculated. The example below is for a measure falling into this category.

RPC-4226(2)-BEIS: Energy Company Obligation 3

This measure places an obligation on energy suppliers to install energy efficiency measures. This version of the scheme runs for three and a half years from October 2018 to March 2022.

The Net Present Value was appraised over a 46-year period because this reflected the economic life of energy efficiency measures and was the period over which benefits would be felt, mainly by households. Environmental benefits would also be long-term. However, the business costs would be incurred only over the lifetime of the scheme and, therefore, the EANDCB was calculated over a 3.5-year time period.

Where a policy is not time-limited but where the policy is 'active'[3] for less than ten years

[3] Historical better regulation guidance, informing IA practice, was that the appraisal period used should be the time period in which the policy is active.

The Low Pay Commission (LPC) makes recommendations to the government each year for how much to increase the national minimum and living wage (NMW/NLW) rates. The regulation is not time-limited but the NMW/NLW is uprated each year by a succeeding new regulation. The Department originally used a one-year appraisal period but it was noted that this omitted impacts that extend beyond one year (since the starting point for assessing the impact of the next uprating would be the existing NMW/NLW rate). The Department defined the period over which the policy is 'active' as the time until wages in the absence of the uprating of the NMW/NLW (the counterfactual) would 'catch-up' with the new NMW/NLW rate.

RPC-4324(1)-BEIS: National Minimum Wage (Amendment) Regulations 2019: increases in the national minimum wage and national living wage rates

The LPC recommended that the NLW be increased by 4.9% to £8.21, the 21-24-year-old NMW rate by 4.3% to £7.70, the development rate by 4.2% to £6.15, the youth rate by 3.6% to £4.35 and the apprentice rate by 5.4% to £3.90. These rates would apply form April 2019. The Department used a counterfactual in which wages increase at a rate equal to the assumed increase at the 20th percentile of the wage distribution. This rate was recommended by the National Institute of Economic and Social Research (NIESR). In this case, this approach led to an appraisal period of two years.

Measures with a sunset clause

Sunset clauses impose an automatic expiry of the measure on a specified date, usually within seven years. Conventional IA and framework practice has been that where a regulatory measure is subject to a sunset provision, the appraisal period should be the expected life of the policy, not the sunset period. Costs and benefits of the policy should be appraised over the full expected life of the policy (with ten-years as a default), i.e. assuming the relevant legislation will be renewed.

Departments are advised, in particular, to contact the RPC secretariat and/or the Regulation Directorate if they are unsure how to appraise measures with a sunset clause, either on introduction or on renewal/expiry/amendment.

Post-Implementation Reviews

Examples of long appraisal periods were seen earlier in the guidance. Where costs and benefits are modelled over a long period, departments will need to be explicit in how they plan to conduct their post-implementation review (PIR). PIRs are normally undertaken five years after policy implementation. However, with a longer appraisal period, departments should provide particular clarity on how they will conduct their PIR.

In 2017, the Health and Safety Executive published a PIR of the Control of Asbestos Regulations 2012. This used a period of much longer than ten-years to assess the impact of the policy – this reflected the very long latency of the health impacts.

The Control of Asbestos Regulations (CAR) 2012 (RPC-3527(1)-HSE) - PIR

The core requirements of CAR 2012 include assessing the risks from asbestos; putting in place measures to prevent exposure to asbestos; providing appropriate work equipment; and providing information, instruction and training to workers. Due to the very long latency of the health impacts, HSE evaluated the measure over a 100-year period (2016-2115).

In explaining the appraisal period, the PIR explained: "*When estimating benefits of interventions dealing with exposure to asbestos, the latency periods involved mean that the usual appraisal period is 100 years. This is required to allow all the benefits of reduced exposures to manifest. On the advice of our epidemiologists, we take that approach here.*

This means that we have had to estimate the costs over the same period. We recognise that this introduces even more uncertainty to our costs. We believe is that it is likely that costs per job will tend to reduce in the future, as technological developments mean it will be easier and cheaper to deal with asbestos. We have, however, not introduced this assumption into our calculations, and have kept our unit costs constant over the appraisal period, simply extending the current annual ongoing costs over the future." (page 30).

The RPC opinion noted that: "…*due to difficulties in comparison with previous impact assessments and the long latency of the health impacts, the PIR concentrates on the likely costs and benefits going forward, rather than those that have been incurred. The PIR is not, therefore, a conventional evaluation, although the approach is acceptable given the particular circumstances*."