



Tithe an  
Oireachtais  
Houses of the  
Oireachtas

An Oifig Buiséid Pharlaiminteach  
Parliamentary Budget Office  
**Assessing the Uncertainty of Budget 2023  
Costings: A Scorecard Approach**

Publication 2 of 2023

## **Séanadh**

Is í an Oifig Buiséid Pharlaiminteach (OBP) a d'ullmhaigh an doiciméad seo mar áis do Chomhaltaí Thithe an Oireachtais ina gcuid dualgas parlaiminteach. Ní bheartaítear é a bheith uileghabhálach ná críochnúil. Féadfaidh an OBP aon fhaisnéis atá ann a bhaint as nó a leasú aon tráth gan fógra roimh ré. Níl an OBP freagrach as aon tagairtí d'aon fhaisnéis atá á cothabháil ag tríú páirtithe nó naisc chuig aon fhaisnéis den sórt sin ná as ábhar aon fhaisnéise den sórt sin. Tá baill foirne an OBP ar fáil chun ábhar na bpáipéar seo a phlé le Comhaltaí agus lena gcuid foirne ach ní féidir leo dul i mbun plé leis an mórphobal nó le heagraíochtaí seachtracha.

## **Disclaimer**

This document has been prepared by the Parliamentary Budget Office (PBO) for use by the Members of the Houses of the Oireachtas to aid them in their parliamentary duties. It is not intended to be either comprehensive or definitive. The PBO may remove, vary or amend any information contained therein at any time without prior notice. The PBO accepts no responsibility for any references or links to or the content of any information maintained by third parties. Staff of the PBO are available to discuss the contents of these papers with Members and their staff, but cannot enter into discussions with members of the general public or external organisations.

# Contents

Key Messages	2
Introduction	3
Background and Key Recommendations	3
The PBO Approach	5
Qualitative Rating and Criteria	6
PBO Assessment	8
Box 1: Different Approaches to Staff Costings and the Budgetary Implications	19
Box 2: What is a Behavioural Response?	20
Concluding Remarks	21
Appendix: Preparation of the Uncertainty Scorecard – OBR and UK Treasury	22

## Key Messages

- The provision of accurate and detailed policy costings is fundamental for parliamentarians to engage in effective budgetary scrutiny. All costings are produced with uncertainty inherent in the analysis. An assessment of the degree of this uncertainty provides a valuable context for Members when interpreting these figures. Our approach to assessing the uncertainty of budgetary costings builds on previous work by the Australian Parliamentary Budget Office and the UK Office for Budget Responsibility.
- To facilitate our assessment, we requested further information from government departments regarding the data and methodologies used in preparing budgetary costings. While we acknowledge helpful collaboration from government departments, it took approximately up to two months for the PBO to receive most of the requested information. Further, we did not obtain responses from all contacted departments. In addition, some of the information provided was insufficient in the level of detail given. The PBO believes that the transparency of budgetary costings could be improved by the publication of detailed methodological information alongside the Budget, ideally in one place.
- For each of the assessed Budget 2023 measures, the PBO evaluated data uncertainty, behavioural uncertainty, and modelling uncertainty, with each costing coded as low, medium or high across these categories. The PBO approached the coding exercise with a view to increasing consistency among coders, with multiple analysts assigned to the same policy costings.
- Much of the uncertainty associated with budgetary costings, as assessed by the PBO, relates to the lack of robust data on which to base an analysis. There is greater scope, therefore, for Government to consider and respond to data gaps that may be prohibiting effective *ex ante* (and *ex post*) analysis of policy changes. There is also scope to strengthen the linking of datasets across government departments so that the relevant information can be gathered and matched to underpin costings analyses.
- The PBO would welcome an *ex post* assessment by Government of the accuracy of budgetary costings, particularly for more impactful or more costly measures. Large discrepancies between the cost estimated *ex ante* and the actual cost, could be emblematic of inadequate costing, a high level of costing uncertainty, or issues with policy design, implementation and administration.

# Introduction

Policy costings are generally subject to some elements of uncertainty.<sup>1</sup> This means it is likely that the estimated cost of a measure will differ from the actual outcome once the policy proposal has been implemented. The level of uncertainty will differ, often due to factors relating to data, behavioural effects, and the way in which the cost was modelled (including any simplifying assumptions).

This document presents an assessment by the PBO of the uncertainties affecting the point estimate costings published by Government in respect of Budget 2023 measures. These uncertainties relate to issues and complexities that must be understood and considered when analysing each measure. The proposed scorecard assessment is a useful tool to identify and rank multiple types of uncertainty and to highlight the most relevant factors that can affect the accuracy of the costing figures provided in the Budget documentation.<sup>2</sup>

## Background and Key Recommendations

The provision of accurate and detailed policy costings is fundamental for parliamentarians to engage in effective budgetary scrutiny. If Members of the Oireachtas are to provide meaningful oversight of budgetary policy, it is important that they are provided with a comprehensive analysis of the financial implications of budgetary measures. Further, an assessment of the uncertainty inherent in these cost estimates provides critical information when interpreting the figures.

Generally, new measures or policy changes that are introduced in the Budget are costed, with these costings contributing to the overall size of the budgetary package. The Government generally publishes a “point estimate” of the cost or yield of new measures, on a first- and full-year basis. This information is provided alongside the material published on budget day.<sup>3</sup>

The PBO has, in the past, issued several recommendations regarding the costings process and the provision of costings information by government departments to Members.<sup>4</sup> Key among these, the PBO has called for more detailed information to be published regarding the analysis underpinning budgetary costings. By providing only a point estimate of cost, it is not possible to infer the approach that was taken to determine that cost estimate and the limitations of that approach, or crucially, to understand the uncertainty inherent in that estimate. For these reasons, for policy changes included in the Budget each year, the PBO would welcome more detailed information on:<sup>5</sup>

<sup>1</sup> See Parliamentary Budget Office, *Uncertainty Challenges in Budgetary Costing Analysis*, PBO Publication 20 of 2022, 23 August 2022, for an assessment of uncertainty in costings analysis, and a discussion of how this uncertainty can be mitigated.

<sup>2</sup> A draft version of this paper was issued to departmental stakeholders in advance of publication. We are grateful for the comments and general feedback that were provided.

<sup>3</sup> Costings for tax policy changes are included in Budget 2023: Tax Policy Changes, while costings relating to items of expenditure are included in Budget 2023: Expenditure Report. Department of Finance, *Budget 2023: Tax Policy Changes*, Government of Ireland, 2022; Department of Public Expenditure and Reform, *Budget 2023: Expenditure Report*, Government of Ireland, 2022.

<sup>4</sup> More recently, in Parliamentary Budget Office, *Budgetary Issues in the Finance Bill 2022*, PBO Publication 27 of 2022, 8 November 2022.

<sup>5</sup> It was also the case that for some policy-changes, no costings information was provided. For example, extensions of certain tax measures were un-costed as these measures are assumed by the Department of Finance to be a structural part of the tax system, despite requiring an extension. The PBO queries this approach in: Parliamentary Budget Office, *Budgetary Issues in the Finance Bill 2022*. In addition, in some cases, aggregate costings were provided in respect of a bundle of policy changes – this limits the scrutiny of measures on an individual basis.

- The data that were used and the source of this information;
- The estimation and projection method that was used, highlighting key assumptions (including behavioural assumptions); and,
- The sources of uncertainty affecting the accuracy of the cost estimate (including, for example, the provision of a range of possible estimates to reflect this uncertainty).

The publication of this information in respect of budgetary costings would enhance parliamentary scrutiny and oversight of the budgetary process.

While a higher level of uncertainty is inherent in cost estimates of policy proposals prepared for future years, due to wider projection uncertainty, the PBO would welcome the publication of multi-annual costings, as opposed to costings on a first- and full-year basis only. This is particularly important for tax policy changes that will largely take effect beyond the current costing horizon (e.g. the decision to extend a measure by two or more years),<sup>6</sup> or for those measures that are likely to become more costly year-on-year (e.g. measures for which take-up may initially be very low).

Costings should also include, where significant, the consideration of behavioural impacts, interaction effects with other measures, and estimates of broader macroeconomic impacts. While quantifying these factors can be challenging, a qualitative assessment of their potential impact would be welcome and would mark an improvement on current practice.

Much of the uncertainty associated with costings underpinning Budget 2023 measures relates to the lack of robust data on which to base an analysis. There is greater scope, therefore, for Government to consider and respond to data gaps that may be prohibiting effective *ex ante* (and *ex post*) analysis of policy changes. As an example, this might include the matching of data sources in the Department of Social Protection (DSP) and the Revenue Commissioners, to provide a more comprehensive dataset on the earnings of social welfare recipients.

The PBO would also welcome an *ex post* assessment by Government of the accuracy of budgetary costings, particularly for more impactful or more costly measures. Large discrepancies in the estimated versus actual cost could be emblematic of inadequate costing, a high level of costing uncertainty, or issues with policy design, implementation and administration.

Currently, information on costings in the budget documentation is limited and fragmented, and overall, the PBO believes that the transparency of budgetary costings could be improved by the publication alongside the Budget of a separate document dedicated to policy costings.<sup>7</sup>

For now, to facilitate our assessment of uncertainty, the PBO requested further information from government departments regarding the data and methodologies used in preparing budgetary costings, where necessary and practical. In most cases, the responses to these requests formed the basis of the PBO's assessment.

<sup>6</sup> For example, Finance Bill 2022 would extend the Knowledge Development Box by four years.

<sup>7</sup> As an example, the UK Treasury produces a document that provides costings of policies that have a fiscally significant impact on the public finances. The document sets out this impact over a five-year period, as well as the assumptions and methodologies underpinning the cost estimates, and highlights the main areas of uncertainty. HM Treasury, *Autumn Statement 2022 Policy Costings*, November 2022. The PBO considers this to be a useful template that could guide the presentation of budgetary costings in the Irish context.

## The PBO Approach

To assist Members in better understanding the sources of uncertainty in respect of budgetary costings, we propose an approach that builds on those developed by the Australian Parliamentary Budget Office<sup>8</sup> and the UK Office for Budget Responsibility (see appendix).<sup>9</sup>

There will always be a level of uncertainty in costings analysis and, in most cases, constraints will arise due to the lack of data and/or uncertainty regarding future behaviour, and therefore assumptions will need to be made. It is challenging to measure and assess the exact effect of uncertainty on cost estimates *ex ante*. Nonetheless, such exercises are useful in understanding why, and to what extent, the actual cost of a policy change could differ from an *ex ante* assessment of cost.

For each measure, the PBO evaluated the following three sources of uncertainty:<sup>10</sup>

- **Data uncertainty:** This is about the reliability, completeness, and adequacy of data in capturing the facts to date. The most significant is whether there is data on a relevant taxpayer or recipient base. If the costing is for a change to a pre-existing policy, the administrative data on an existing taxpayer or recipient base may exist and may be used as adequate data. If there is no relevant data, assumptions must be made on the nature of a taxpayer or recipient base, which increases uncertainty around the costing estimate.
- **Behavioural uncertainty:** This relates to how sensitive costing calculations are to the assumptions on behavioural responses to a policy (and not about sensitivity to the other modelling assumptions).<sup>11</sup> Behavioural reactions to a policy could affect the overall outcome, and therefore the actual cost of a policy, by dampening or intensifying the policy impact. Sometimes behavioural responses may be significant and materially affect a costing, while in other cases, there may be no or little behavioural response that needs to be considered. Some policy proposals are designed to induce particular behavioural changes, while others may induce unintended behavioural responses. In any case, it is necessary to model or assume how those affected by a policy may respond (or not respond), to accurately estimate the budgetary impact of the policy. More information on what contributes to behavioural uncertainty is provided in Box 2. Budget costings generally assume no behavioural change (i.e. a static costing).

<sup>8</sup> See Parliamentary Budget Office, *Behavioural Assumptions and PBO Costings*, Information paper no. 01/2020, 15 January 2020.

<sup>9</sup> The Office for Budget Responsibility produces a database of its Policy Costings uncertainty. See Office for Budget Responsibility, *Policy Costings Uncertainty Ratings Database*, 1 December 2022.

<sup>10</sup> All three types of uncertainty are partially, but not fully, aligned to a generic concept of omitted variable bias. Omitted variable bias in the costing context can be considered to mean that a costing estimate deduced from a model is different from the actual (generally yet to be observed) value, because the model omits a certain variable that affects the precision of the estimate. Omitted variable bias arises if data on a certain relevant variable is unavailable (data uncertainty), if a variable meant to capture behavioural responses is omitted (behavioural uncertainty), and if the complexity of modelling makes a certain relevant variable overlooked or impossible to include (modelling uncertainty). In short, the concept of omitted variable bias captures certain but not all aspects of the three uncertainty categories.

<sup>11</sup> While behaviour can change in response to exogenous factors, our definition of behavioural uncertainty covers the direct responses to the policy and not to exogenous factors; uncertainty in behavioural responses to exogenous factors (e.g., the macroeconomic environment) is included in modelling uncertainty.

- **Modelling uncertainty:** This relates to how sensitive a policy costing is to modelling and chosen assumptions (including necessary modelling simplifications and projections) apart from those relating to behavioural responses. For example, high modelling uncertainty could entail high sensitivity on a wide range of unverifiable assumptions, or high projection uncertainty regarding future developments.<sup>12</sup>

## Qualitative Rating and Criteria

The PBO assigned a qualitative rating per type of uncertainty in terms of how it could affect the cost estimate. Table 1 sets out our criteria for assigning ratings under the three uncertainty types. The ratings are ‘low’, ‘medium’ and ‘high’.

As a means to increase the rigour of the coding process and to deal with variability in the assigned ratings, multiple analysts (minimum three and maximum four, depending on the availability of each analyst) individually coded the uncertainty categories for the same items, by following the same coding rules as described in Table 1. A final rating was then assigned after the coders compared and discussed one another’s results, to increase interrater reliability and agreement.<sup>13</sup> The aim was to reduce the subjectivity of each coder and increase the intersubjectivity among the coders. Through an open discussion among coders, the subjectivity of each coder can be counteracted and, as all coders converge to an agreement, the intersubjectivity within the coders increases. An attempt to increase interrater reliability and agreement is important particularly when coding is done for complex concepts and, therefore, more prone to errors.<sup>14</sup>

Of course, the coding is not dominant or definitive. It is still possible that those who did not participate in the original coding process (i.e., readers) will have a different interpretation or coding from the original coders. Yet, the point is that, as coding always requires subjective interpretation, increasing the intersubjectivity among coders through an open discussion is important to reduce the subjectivity of each coder.

The final assessment is independent and relates to the PBO’s determination on each type of uncertainty. The approach also highlights and articulates the most important source of uncertainty for each measure.

<sup>12</sup> Hansen and Sargent in their book *Robustness* argue for and explicitly account for model uncertainty when solving for optimal policy. Lars Peter Hansen and Thomas J. Sargent, *Robustness* (Princeton, NJ: Princeton University Press, 2008).

<sup>13</sup> Interrater reliability measures how similar the relative ranking of items (‘low’ vs. ‘medium’ or ‘low’ vs. ‘high’) is among coders, while interrater agreement captures how similar the absolute value (‘low’, ‘medium’ or ‘high’) assigned to each item is among the coders. Howard E. A. Tinsley and David J. Weiss, “Interrater Reliability and Agreement,” in *Handbook of Applied Multivariate Statistics and Mathematical Modeling*, ed. Howard E. A. Tinsley and Steven D. Brown (San Diego, CA: Academic Press, 2000), pp.95-124. In our case, both are important to understand the implications of each uncertainty category for the costing estimates. When coding is done on the nominal scale rather than on the continuous or ordinal scale, the conceptual difference between reliability and agreement disappears; Tinsley and Weiss, “Interrater Reliability and Agreement,” p.101. The term, intercoder reliability, is used in such a case; Clodhna O’Connor and Helene Joffe, “Intercoder Reliability in Qualitative Research: Debates and Practical Guidelines,” *International Journal of Qualitative Methods*, no. 19 (2020), p.2.

<sup>14</sup> Daniel J. Hruschka, Deborah Schwartz, Daphne Cobb St.John, Erin Picone-Decaro, Richard A. Jenkins, and James W. Carey, “Reliability in Coding Open-Ended Data: Lessons Learned from HIV Behavioral Research,” *Field Methods*, no. 16, issue 3 (2004), p.309.



**Table 1: Criteria for PBO uncertainty classifications**

	Data uncertainty
High	Data do not exist; only very limited or poor data are available (e.g., data are significantly out of date, non-representative or judgement based)
Medium	Data are incomplete and/or not fully representative; a small-scale dataset is available; data are of reasonable quality but from less reliable sources
Low	High-quality data with little sampling error (e.g., administrative and high-quality survey data)
	Behavioural uncertainty
High	Significant behavioural change is possible; behaviour could be volatile or unpredictable; no information exists on potential behaviour
Medium	Some behavioural change is possible; some information on potential behaviour is available
Low	No behavioural or negligible behavioural change is expected; very predictable and stable behavioural change is anticipated, for example due to an inelastic relationship
	Modelling uncertainty
High	High modelling complexity involving multiple stages and/or high cost-estimate sensitivity on a large range of unverifiable assumptions; high projection uncertainty for future developments
Medium	Some modelling challenges recognised; some sensitivity to certain underlying assumptions; medium-level projection uncertainty for future developments
Low	Straightforward modelling and identification of policy costing parameters; few sensitive assumptions; low projection uncertainty for future developments

Source: Irish PBO analysis based on OBR framework (see appendix).<sup>15</sup>

To fully assess the uncertainty of the costing estimates, the PBO often required access to more detailed information than what was publicly available. Where necessary or practical, we contacted relevant government departments requesting further information on the data and methodology used.<sup>16</sup>

Overall, it took up to two months for the PBO to receive most of the relevant information required to carry out this exercise. Unfortunately, responses were not received from every contacted department. The responses received also provided varying levels of detail, with some very high level and others providing much more relevant information. For the measures for which we did not receive a response, and for those measures for which we did not request additional information, we evaluated their uncertainty based on publicly available information and our own expert knowledge and judgement.

<sup>15</sup> See Office for Budget Responsibility, *Budget 2016 Policy Decisions*, 16 March 2016, p.217.

<sup>16</sup> Specifically, the PBO contacted Revenue, the Department of Finance, the Department of Further and Higher Education, Research, Innovation and Science, the Department of Transport, the Department of Social Protection, the Department of Children, Equality, Disability, Integration and Youth, the Department of Health, the Department of Education, the Department of Defence, the Department of Enterprise, Trade and Employment, and the Department of Justice.

## PBO Assessment

Overall, the PBO assessed 48 policy measures included in Budget 2023. The PBO endeavoured to include as many budgetary measures as was practicable. However, as this is a resource intensive process (both for the PBO and analysts in government departments responding to our information requests), we focused our assessment on those policies that are likely to have the largest material impact on the Exchequer, and/or those that are exposed to the greatest level of uncertainty.

Table 2 presents our uncertainty rating for each measure. The main uncertainty factors potentially affecting the precision of the cost estimate are also summarised in the final column.<sup>17</sup>

---

<sup>17</sup> Our analysis distinguishes between temporary/short-term and permanent/multi-year measures. Temporary measures for existing policies are characterised by lower levels of uncertainty compared to measures whose cost covers a longer time horizon, and forecasts for future developments are required. The costs listed in Table 2 were taken from either the Budget 2023 Expenditure Report, or the Budget 2023 Tax Policy Changes publication.

**Table 2a: Summary of Budget 2023 Measures and Uncertainty Scores - Once-off Measures**

Sector	Measures	Budget Cost Estimate	Data uncertainty	Behavioural uncertainty	Modelling uncertainty	Of which: most important	Main areas of uncertainty
Energy	<b>Excise reductions</b> on petrol (21 cent per litre), diesel (16 cent per litre) and marked gas oil (5 cent per litre) extended until the end of February 2023	€117 million	Low	Low	Medium	Modelling	Modelling uncertainty relates to the forecasts for future energy prices and their impact on the wider economy and consumer behaviour.
	<b>VAT rate reduction</b> on electricity and gas (to 9%) extended until the end of February 2023	€45 million	Low	Low	Medium	Modelling	Same as above.
	<b>Temporary Business Energy Support Scheme</b>	€1.2 billion	High	Medium	High	Data	Data uncertainty relates to (1) details of the recipient base and their pre-policy energy usage and costs; (2) specific nature of contractual arrangements businesses have entered into. Modelling uncertainty relates to (1) average unit prices incurred by businesses for energy between the claim and the reference period; (2) changes to the price of energy on the wholesale market and the impact on the retail market over the duration of the scheme; (3) the number of businesses who ultimately make a claim for relief under the scheme. Behavioural uncertainty relating to greater energy usage by businesses that otherwise would not have occurred.
	<b>Electricity credits</b> of €600 (€200 * 3 times)	€1.2 billion (€400m * 3)	Low	Low	Low	Data	Data compilation of the customer base from all energy suppliers.
	<b>€400 Fuel Allowance Lump Sum</b>	€148.5 million	Low	Low	Low	Data	Data uncertainty relates to the accuracy of the database of the current cohort of Fuel Allowance recipients.

Table 2a: Summary of Budget 2023 Measures and Uncertainty Scores - Once-off Measures (cont.)

Sector	Measures	Budget Cost Estimate	Data uncertainty	Behavioural uncertainty	Modelling uncertainty	Of which: most important	Main areas of uncertainty
Social Protection	Weekly Welfare Schemes double week payment	€316.4 million	Low	Low	Low	Data	Database of the current cohort of social welfare recipients.
	€500 Working Family Payment (WFP) Lump Sum	€23 million	Low	Low	Low	Data	Database of the current cohort of WFP recipients.
	Child Benefit Double Payment (per child)	€170.4 million	Low	Low	Low	Data	Database of the current cohort of Child Benefit recipients.
	€500 for those on the Carers' Support Grant, Disability Allowances, Invalidation Pension and Blind Pension	€175 million	Low	Low	Low	Data	Database of current recipients.
	€200 Living Alone Allowance Lump Sum	€46 million	Low	Low	Low	Data	Database of the current cohort of Living Alone Allowance recipients.
	A 100% Christmas Bonus to recipients of long-term social welfare payments (providing for a minimum payment of €20)	€293.7 million	Low	Low	Low	Data	Database of the current cohort of long-term social welfare recipients.
Further and Higher Education	Once-off reduction in the student contribution fee by €1,000 for undergraduates and 1/3 for Apprentices; €1,000 increase to postgraduates' tuition fee contribution grant	€106 million	Low	Low	Low	Data	Database of current beneficiaries.
	Double payments to those eligible for SUSI maintenance grants and once-off payment of €500 for SFI and IRC PhD researchers	€19 million	Low	Low	Low	Data	Database of the current cohort of scholarship holders.
Transport	20% reduction in public transport fares extended until the end of 2023	€194 million	Medium	Medium	Medium	Behavioural	Data sources and behavioural change including substitution towards increased use of public transport, especially during the course of high energy prices.  Modelling uncertainty relates to forecasting the change in the relative prices of public transport compared to alternative means, as well as climate-change motives, during 2023.

**Table 2b: Summary of Budget 2023 Measures and Uncertainty Scores - Permanent/Multiyear Measures**

Sector	Measures	Budget Cost Estimate	Data uncertainty	Behavioural uncertainty	Modelling uncertainty	Of which: most important	Main areas of uncertainty
Tax	<b>Standard rate cut-off</b> point at €40,000; €75 increase in <b>tax credits</b> for personal, employee, and earned income credit; €100 increase in the home carer tax credit	€1.2 billion (full year)	Low	Low	Medium	Modelling	Modelling uncertainty relates to the projection of the tax base - future earnings and employment.
	An increase in <b>USC</b> 2% rate ceiling by €1,625	€77 million (full year)	Low	Low	Medium	Modelling	Same as above.
	<b>Zero-rated for VAT</b> on newspapers and periodicals, automatic External Defibrillators, period products, non-oral Hormone Replacement Therapy, and non-oral Nicotine Replacement Therapy	€41.5 million (full year)	Low	Low	Low	Data	Data uncertainty relates to VAT data on affected items.
	<b>€0.50 increase on pack of 20 cigarettes</b> with pro-rata increase on other tobacco products	€54 million (full year, yield)	Low	Medium	Low	Behavioural	Behavioural uncertainty relates to the price sensitivity to higher cigarette prices in Ireland. Behavioural effects include the purchase of non-Irish duty paid tobacco products as well as the substitution to other nicotine products, such as e-cigarettes.
	<b>Help-to-Buy scheme</b> extended by two years to the end of 2024	€175 million per annum <sup>18</sup>	Low	Medium	High	Modelling	Modelling uncertainty relating to (1) forecasts of the number of new builds purchased by first-time buyers; (2) forecast of house price inflation for new builds.  Behavioural change possible if there are more first-time buyers motivated to buy new builds as a result of the extension of the scheme.
<b>Rent tax credit</b> of €500	€200 million	Medium	Low	Low	Data	Data uncertainty relates to how accurately the current administrative databases of renters capture the population of renters and key qualifying conditions (e.g. tax payers not currently receiving housing supports).	

<sup>18</sup> While listed as €83m per annum in the tax policy changes document, this is clarified in a footnote with a full cost at €175m per annum, with €92m “in the base.” Please see the PBO Finance Bill publication for commentary on this approach.

Table 2b: Summary of Budget 2023 Measures and Uncertainty Scores - Permanent/Multiyear Measures (cont.)

Sector	Measures	Budget Cost Estimate	Data uncertainty	Behavioural uncertainty	Modelling uncertainty	Of which: most important	Main areas of uncertainty
Tax	€7.50 increase in <b>carbon tax</b> per tonne to €48.50 from October 12th 2022	€151 million (full year yield)	Low	High	Medium	Behavioural	<p>Uncertainty relates to estimating the size of the behavioural change – reduction in CO<sub>2</sub> emitting activities – as a result of the tax.</p> <p>Modelling uncertainty relates to forecasting future energy prices and consumption levels.</p>
	<b>Vacant Homes Tax (VHT)</b>	€3-€4 million per year yield	High	Medium	Medium	Data	<p>Data uncertainty relates to quality and level of the data showing the value and location (relevant as the VHT rate is a function of the LPT rate, which can differ across Local Authorities) of residential properties which are occupied for less than 30 days in a twelve-month period; data on relevant exemptions granted also necessary (e.g. homes for sale or rent); further uncertainty due to the fact that the tax is self-assessed.</p> <p>Behavioural uncertainty relates to the response of owners of vacant homes to the tax (e.g. listing the property for sale or for rent or changing the use of it).</p> <p>Modelling uncertainty relates to the projection of the housing market and the necessary assumptions, e.g., the ease/difficulty of policy implementation such as the self-assessment of the tax liability.</p>
	<b>Concrete Levy</b>	€32 million annual yield <sup>19</sup>	Medium	Low	High	Modelling	<p>Data uncertainty relates to the availability of detailed volume data by product.</p> <p>Modelling uncertainty relating to the projection of the demand for affected products.</p>
Social Protection	Weekly Personal and Qualified Adult rates of payment - <b>Working Age recipients:</b> Increase in the weekly rates of payment to all working age recipients by €12 per week, with proportionate increase for qualified adults and those on reduced rates of payment; full €12 increase for young jobseekers	€436.2 million	Low	Low	Medium	Modelling	Modelling uncertainty relates to the projection of future recipients.

<sup>19</sup> Revised from the Budget day figure as the scheme was altered during the Finance Bill.

**Table 2b: Summary of Budget 2023 Measures and Uncertainty Scores - Permanent/Multiyear Measures (cont.)**

Sector	Measures	Budget Cost Estimate	Data uncertainty	Behavioural uncertainty	Modelling uncertainty	Of which: most important	Main areas of uncertainty
Social Protection	Weekly Personal and Qualified Adult Rates of Payment – <b>Pensioners:</b> Increase in the weekly rate of all pension payments (for those aged 66 and over) by €12 per week with proportionate increases for qualified adults and those on reduced rates of payment	€447.3 million	Low	Low	Low	Modelling	Modelling uncertainty relates to forecasting the number of pensioners (largely depending on demographic developments).
	<b>Qualified Child Increase:</b> (a) Increase in the weekly rate of the qualified child increase for children aged 12+ by €2 per week; (b) Increase in the weekly rate of the qualified child increase for children under 12 by €2 per week	€30.4 million	Low	Low	Low	Modelling	(Taking estimates of recipient numbers as given) modelling uncertainty relates to the projection of the number of children that recipients have.
	<b>Domiciliary Care Allowance:</b> (a) Increase in the rate of Domiciliary Care Allowance by €20.50, from €309.50 to €330 per month; (b) Provision to parents of babies who remain in an acute hospital after birth for a period of 6 months	€15.1 million	Low	Low	Low	Modelling	Modelling uncertainty relates to the projection of future recipients.
	<b>Increase in the Fuel Allowance means threshold from €120 to €200 per week</b> above the rate of State Pension Contributory (an increase of €80 per week)	€9.8 million	High	Low	High	Data	No data on the new cohort in respect of household means (income and savings) and circumstances; further, DSP does not hold data on the income and savings of persons aged under 70 in receipt of qualifying contributory payments for Fuel Allowance.  Modelling uncertainty relates to (1) the projection of new Fuel Allowance recipients; and (2) the modelling of eligibility conditions for this new cohort.
	<b>Increase in the means threshold for Fuel Allowance for those aged over 70</b> to €500 per week for a single person, and to €1,000 per week for a couple	€53.5 million	Medium	Low	Medium	Data	Proxy admin data used for the new cohort in assessing household means (income and savings) and circumstances.  Modelling uncertainty relates to (1) the projection of new Fuel Allowance recipients, and (2) the modelling of eligibility conditions for this new cohort.

Assessing the Uncertainty of Budget 2023 Costings: A Scorecard Approach

Table 2b: Summary of Budget 2023 Measures and Uncertainty Scores - Permanent/Multiyear Measures (cont.)

Sector	Measures	Budget Cost Estimate	Data uncertainty	Behavioural uncertainty	Modelling uncertainty	Of which: most important	Main areas of uncertainty
Social Protection	<b>Increase in the Working Family Payment</b> Thresholds by €40 per week	€16.8 million	Medium	Medium	High	Modelling	<p>Modelling uncertainty relates to (1) the projection of new recipients; (2) assumptions around the take-up rate for new recipients (DSP noted that the number of recipients on the WFP scheme has fallen previously, despite an increase in threshold); (3) forecasting changes in earnings.</p> <p>Data uncertainty relates to the lack of cross-tabulated administrative data in respect of household breakdowns, earnings, and WFP eligibility conditions for the new cohort.</p> <p>Behavioural uncertainty relates to the possibility that there may be a labour supply response by recipients, that affects qualification for the scheme.</p>
	<b>Employment Support Schemes:</b> Increase in the top-up payment for Community Employment, TUS, and Rural Social Scheme by €5	€7.8 million	Low	Low	Medium	Modelling	<p>Modelling uncertainty relates to the projections of the number of future recipients, which is dependent on future economic developments.</p>
Childcare	The <b>National Childcare Scheme subsidy</b> increased from €0.50 per hour to €1.40 per hour	€121 million	Medium	Medium	Medium	Modelling	<p>The estimated costs assuming a perfect alignment of geographic location and service provision, which contributes to data uncertainty.</p> <p>Modelling uncertainty relates to the projection of the number of future applicants (especially due to how the labour market participation rate can be affected by the development of the economy), including the potential impact of Ukrainian refugees (who were not factored into the cost).</p> <p>Behavioural uncertainty relates to (1) the fact that those currently using other forms of care may switch to centre based childcare because of the higher subsidy (although current capacity constraints may limit the impact on the cost); (2) potential impact on the supply side - creating a disincentive to sign up to any scheme with a fee control/management element.</p>



**Table 2b: Summary of Budget 2023 Measures and Uncertainty Scores - Permanent/Multiyear Measures (cont.)**

Sector	Measures	Budget Cost Estimate	Data uncertainty	Behavioural uncertainty	Modelling uncertainty	Of which: most important	Main areas of uncertainty
Further and Higher Education	<b>Student Grant Scheme: Reduction in the Student Contribution via SUSI by €500</b> for families on qualifying incomes	€25 million	High	Low	High	Data	Data uncertainty relates to the point that there is no income information on future eligible applicants whose income data is not captured by the current SUSI scheme.  Modelling uncertainty relates to the projection of the number of new enrolments, incomes, and eligibility conditions.
	<b>Student Grant Scheme: Increase in income thresholds</b> to bring more students into the 50 per cent Student Contribution support bracket	€8 million	Medium	Low	Medium	Data	Data uncertainty relates to a lack of information in the current cohort database regarding new participants becoming eligible under a higher means threshold.  Modelling uncertainty relates to the projection of new enrolments, incomes, and eligibility conditions.
	Student Grant Scheme: <b>Maintenance grant increases to adjacent and non-adjacent rates</b>	€21 million	Low	Low	Medium	Modelling	Modelling uncertainty relates to the projection of new recipients and their conditions that affect the rates.
	€500 stipend increase for <b>PhD students</b> in receipt of SFI or IRC awards	€2 million	Low	Low	Low	Data	Data uncertainty relates to how accurately the database of the current cohort of scholarship holders has been kept up to date.  Behavioural and modelling uncertainties being negligible, because the number and value of scholarships to be awarded is fixed by policymakers.
Health <sup>20</sup>	<b>Acute hospital charges - Abolition</b> of all inpatient hospital charges	N/A	Medium	Low	Medium	Modelling	Data uncertainty relates to the variability of data on hospital inpatients.  Modelling uncertainty relates to the projection of the number of future inpatients.

<sup>20</sup> The total cost of the package for the Health measures is €107.1 million, of which €10 million in funding was allocated for the public funding of IVF treatment; however, no detailed information was available. As a result, we could not assess the costing uncertainty.

Table 2b: Summary of Budget 2023 Measures and Uncertainty Scores - Permanent/Multiyear Measures (cont.)

Sector	Measures	Budget Cost Estimate	Data uncertainty	Behavioural uncertainty	Modelling uncertainty	Of which: most important	Main areas of uncertainty
Health	<b>GP visit cards</b> - Extend cards which allow free visits to GPs to children aged 6 and 7, and to those on/below the median income	N/A	Medium	High	High	Behavioural /Modelling	<p>Data uncertainty relates to (1) population estimates given that detailed age-gender population breakdowns were not available for 2022 at the time of the analysis; (2) the lack of administrative data on GP use.</p> <p>Behavioural uncertainty relates to (1) assumptions around how more often the new cohort would frequent GPs than they otherwise would have without GP cards; (2) the separation of costs between spending related to those who did not take up the card before but might take up the service now, and spending related to newly eligible card holders; (3) the number of public patients each GP will take on (or convert from private) and the impact on General Medical Services (GMS) contract uptake.</p> <p>Modelling uncertainty relates to (1) estimating the size of the newly eligible cohort and their demand for GP care; (2) the demographic characteristics of new card holders; (3) of the newly eligible 6 and 7 year olds, how many will become eligible under the income or age criteria; (4) projected steady state costs containing uncertainty arising from identifying and separating COVID-19 related payments; (5) pricing within the General Medical Services (GMS) contract being assumed to be unchanged; (6) the SWITCH model used having underlying uncertainty.</p>
	<b>Extension of the free contraception</b> scheme to cover all women aged between 16 and 30	N/A	High	Low	High	Data	<p>Data uncertainty relates to the unavailability of the data in respect of the new cohort.</p> <p>Modelling uncertainty relates to the extrapolation from the existing cohort to the new cohort, and assumptions around demand.</p>

Table 2b: Summary of Budget 2023 Measures and Uncertainty Scores - Permanent/Multiyear Measures (cont.)

Sector	Measures	Budget Cost Estimate	Data uncertainty	Behavioural uncertainty	Modelling uncertainty	Of which: most important	Main areas of uncertainty
Education	686 <b>additional teachers</b> supporting pupils with additional needs	€12 million	Low	Low	Low	Modelling	<p>Figures not incorporating the impact of the extension of the Building Momentum pay agreement.</p> <p>Modelling uncertainty relates to the potential for further pay agreements, for example in the context of persistent high inflation.</p> <p>Refer to Box 1 for a discussion of the approaches to staff costings.</p>
	1194 additional <b>special needs assistants</b>	€12 million	Low	Low	Low	Modelling	Same as above.
	370 <b>additional teachers</b> to reduce the Primary Staffing Schedule	€6 million	Low	Low	Low	Modelling	Same as above.
	Rollout of Free School Books Scheme to primary pupils	€42 million	Low	Low	Low	Data	Data uncertainty relates to how accurately past data on textbooks and their costs has been kept across schools.
Justice	<b>Garda Members and Garda Staff:</b> The full year cost of recruitment in 2022, and the recruitment of up to 1,000 trainee Gardaí and in the region of 430 additional Garda Staff in 2023 to underpin civilianisation and redeployment and to provide professional support to frontline policing <b>special needs assistants</b>	N/A <sup>21</sup>	Low	Low	Medium	Modelling	<p>Figures not incorporating the impact of the extension of the Building Momentum pay agreement.</p> <p>Modelling uncertainty relates to (1) the potential for further pay agreements; (2) projections for allowances, as they can differ depending on the needs and roles of gardaí.</p> <p>Refer to Box 1 for a discussion of the approaches to staff costings.</p>

<sup>21</sup> €18.4m, which was referenced in the Expenditure Report, is the additional amount provided for all elements of Garda pay (including pay, allowances and overtime) in Budget 2023

**Table 2b: Summary of Budget 2023 Measures and Uncertainty Scores - Permanent/Multiyear Measures (cont.)**

Sector	Measures	Budget Cost Estimate	Data uncertainty	Behavioural uncertainty	Modelling uncertainty	Of which: most important	Main areas of uncertainty
Defence	400 new members of the <b>Defence Forces</b>	€10.5 million <sup>22</sup>	Low	Low	Low	Modelling	Figures not incorporating the impact of the extension of the Building Momentum pay agreement. Modelling uncertainty relates to the potential for further pay agreements. Refer to Box 1 for a discussion of the approaches to staff costings.
Pay Agreement	Proposed <b>extension of the Building Momentum Public Sector</b> pay agreement across 2022 and 2023	€1.4 billion	Low	Low	Medium	Modelling	Modelling uncertainty relates to the projection of the number of public servants on different pay scales.
ELS	Continued provision of existing levels of service ( <b>ELS</b> )	€1.9 billion	Medium	Low	Medium	Modelling	Data gaps and modelling uncertainty, involving the projection of future demand for services.

**Note:** The descriptions and costs of the measures are taken from Budget 2023 Tax Policy Changes and Expenditure Report. For greater details on these measures (e.g., the starting time or the coverage time of the costing), consult these documents.

<sup>22</sup> Provided by the Department of Defence to the PBO.

### Box 1: Different Approaches to Staff Costings and the Budgetary Implications

Through our engagement with departments in relation to this exercise, and a broader review of the publicly available costings analysis, the PBO found that departments adopt alternative approaches to the costing of additional public servants. While our uncertainty assessment in this paper was carried out based on each approach as given, it is nonetheless worth highlighting how the use of different methods can have implications for costing.

The Public Spending Code (PSC) provides a framework for officials to cost the hiring of additional public servants. The approach outlined in the PSC is summarised in Table 3 below.

**Table 3: Public Spending Code framework for estimating staff costs**

	Cost Component	Methodology
<b>A</b>	Pay	Midpoint of pay range
<b>B</b>	Direct Salary Cost	Pay + Employers' PRSI
<b>C</b>	Total Salary Cost	B + Imputed pension cost
<b>D</b>	Total Staff Cost	C + 25% of A in respect of overheads

**Source:** Adapted from the *Public Spending Code: Central Technical References and Economic Appraisal Parameters*, Department of Public Expenditure and Reform.<sup>23</sup>

The imputed pension cost (with rates prescribed in the PSC) captures costs arising from the creation of pension entitlements which are payable in future (employees meet a portion of the pension cost through employee pension contributions and additional superannuation contributions; however, the balance is a deferred cost borne by the State). A provision for overheads amounting to 25% of pay captures costs arising from accommodation, utilities, support, training, IT equipment etc.

The PSC notes that, when preparing estimates of staff costs, the appropriate course is to consult the Corporate Services unit in the first instance, to appraise direct and indirect costs on a cost-by-cost basis. Then if more specific information is available, this should be used. This may arise, for example, if there are additional costs relating to specialist equipment or accommodation or particularly high levels of travel and subsistence.

A range of approaches has been observed in practice. In some cases, in the spirit of the PSC guidelines, the mid-point of the relevant salary scale is used to establish a base salary cost. In other cases, the entry point of the relevant salary scale is used. Another approach involves the use of outturn payroll data to calculate an average salary cost for the grade. In practice, it is appropriate to consider and choose an approach on a case-by-case basis.

For example, when deriving the first-year cost of hiring additional public servants, using the midpoint of the scale risks overestimating the true cost, if new entrants are more likely to start on the first point of the relevant salary scale. However, the cost of additional public servants can be expected to rise over time, as individuals progress to higher points of their scale, and so the midpoint can act as a better gauge of the long-term cost of new hires.

Regarding the use of payroll data, if annual pay data specific to new entrants of a particular grade is available, this could provide a more reliable salary base than can be obtained using only salary scale information. However, this assumes that past trends in staff costs will be relevant for the costing period, and there are additional factors to consider when using payroll data. The calculation of an average salary cost will be sensitive to the timing of new hires as well as to the implementation of any public sector pay agreements in the year.

<sup>23</sup> Department of Public Expenditure and Reform, *The Public Spending Code*, gov.ie, 26 September 2022.

Apart from direct salary costs, it is necessary to consider the additional elements of public sector pay that should be factored into costing. In principle, staff costs include not only salaries, but also allowances, premia pay, pension contributions, and overhead costs. When estimating the cost to the Exchequer, all relevant items should be included. For instance, while pension costs are not ultimately borne in the first year of hiring, there is a pension entitlement that arises from that first year of service. The estimation and inclusion of deferred pension costs would provide a more complete picture of the cost of new hires.

Where salary scales are being used to estimate the base salary cost, provision must be made for these additional elements of pay, where appropriate (see Table 3 for the PSC guidelines in this regard). Where payroll data is being used to estimate the base salary cost, it is necessary to consider what elements of pay are captured by this data, and what must be accounted for separately or removed prior to costing. In particular, it is necessary to consider whether overtime costs are included in payroll data. Intuitively, the hiring of additional staff should reduce the need for overtime. If there remains an overtime requirement, then this should be provided for, as required, in the Revised Estimates in line with estimated levels of excess demand. However, this should not be included when reporting the estimated cost of new hires.

### Box 2: What is a Behavioural Response?

In designing a policy, policymakers anticipate particular outcomes, as determined by an expected response by the target population (individuals or businesses), who are often assumed to be perfectly informed about and comply with, the proposed policy change. In practice, the reaction of those targeted by the policy change may not correspond with the policy design expectations. Uncertainty about the reactions of those targeted can significantly affect the outcome and cost of the policy. For example, behavioural uncertainty includes:

- How responsive the demand of a targeted population for a good or service would be to a change in its price, as induced by a new policy (the price elasticity of demand).<sup>24</sup>
- Whether the target population would change the timing of behaviour (e.g., either bringing transactions forward or deferring them) to enjoy the benefit, or avoid the cost, that would otherwise not arise as a result of a new policy.

<sup>24</sup> The demand can also respond to a change in the relative price of an alternative good or service (the substitution effect), or can be lower than expected for reasons such as unawareness, inertia, time constraints or the lack of access to necessary infrastructure; however, in our definition of behavioural uncertainty, we consider only the responses directly to policies and not to those exogenous factors.

## Concluding Remarks

As outlined in a previous PBO publication,<sup>25</sup> costings are generally subject to elements of uncertainty. This means that it is likely that the estimated cost will differ from the actual outcome once the policy proposal is implemented. The level of uncertainty will differ, often due to factors relating to data, behavioural effects, and the way in which the cost was modelled (including any simplifying assumptions).

Detailed and high-quality policy costings in respect of budgetary measures are fundamental for effective oversight and scrutiny by parliament. The assessment of the degree of uncertainty relating to budgetary costings provides a crucial context for Members when interpreting these figures.

This paper marks the PBO's first attempt at assessing budgetary costings in terms of their uncertainty across the dimensions of data, behavioural and modelling, and is based on previous work by the Australian Parliamentary Budget Office and the UK Office for Budget Responsibility (see Appendix).

To facilitate our assessment, it was often necessary for the PBO to request further information from government departments regarding the data and methodologies used in preparing budgetary costings. The transparency of budgetary costings could be improved by the publication by departments of detailed methodological information alongside the Budget. Much of the uncertainty associated with budgetary costings, as assessed by the PBO, relates to the lack of robust data on which to base an analysis. There is greater scope, therefore, for Government to consider and respond to data gaps that may be prohibiting effective *ex ante* (and *ex post*) analysis of policy changes. The PBO would also recommend an *ex post* assessment by Government of the accuracy of budgetary costings.

---

<sup>25</sup> See Parliamentary Budget Office, *Uncertainty Challenges in Budgetary Costing Analysis*, PBO Publication 20 of 2022, 23 August 2022, for an assessment of uncertainty in costings analysis, and a discussion of how this uncertainty can be mitigated.

## Appendix: Preparation of the Uncertainty Scorecard – OBR and UK Treasury

The UK does not have a budget office based within parliament. The Office for Budget Responsibility (or OBR) was established in 2010 and functions similarly to the Irish Fiscal Advisory Council, but with a mandate that extends to the consideration of policy costings.<sup>26</sup>

The OBR produces five-year ahead macroeconomic and fiscal forecasts, which are used by the UK Treasury and government departments in producing policy costings. The OBR performs an audit function in respect of these policy costings. This process occurs in relation to two policy events per year – the Spring Statement and the Autumn Budget. This service requires the OBR to maintain strong links with the UK Treasury, HMRC (Revenue) and various government departments.

A scorecard assessing uncertainty issues in respect of budget costings is the key output of this process. A system is also in place to coordinate the overall process. A Policy Costings Steering Group is chaired by the Treasury and attended by the OBR and relevant government departments. This steering group oversees the costings process and the production of the costings scorecard by the Treasury. At the first meeting of the steering group, the Treasury provides a first draft of the scorecard, which is an initial list of the proposed policy measures. This meeting occurs roughly seven to nine weeks before the Spring or Autumn statement. The OBR, the Treasury and the relevant departments then discuss the scrutiny that each measure requires – this can be based on policy complexity, similarity to previously considered policies, or the likelihood to be enacted. Much of the analytical and technical discussion takes place outside of the steering group and on an informal basis among individual analysts working for each body. Formal discussions at a more senior level are used to agree costing conventions to ensure that there is consistency in the approach to costing similar types of policies.

For the chosen policies, the responsible department then sends the OBR a ‘costing note’, detailing the policy and the estimated cost or yield.<sup>27</sup> This costing note goes through internal scrutiny processes before being sent to the Treasury, and finally to the OBR for consideration. The OBR then discusses the analysis included in the note with the responsible department and the Treasury. This process is repeated iteratively, until the OBR is satisfied that the costing is ‘reasonable and central’.

The Treasury publishes a final scorecard and a policy costings document summarising the final costing notes for each measure. The OBR contributes an annex to this policy costings document, identifying the costings for which there is particular uncertainty, and also identifying measures where the OBR has chosen not to endorse the Treasury’s published costing as ‘reasonable and central’. In its assessment of uncertainty, the OBR considers the accuracy of the costing in general, as well as uncertainties related to chosen behavioural assumptions, and the data and model used in the analysis.

The OBR also publishes its own version of the scorecard, showing how each measure on the scorecard is split between tax and spending, and including any policy changes that it considers to be policy measures but that do not appear on the Treasury scorecard. The OBR, in line with its mandate, is also required to factor in the estimates of policy costings to its five-year macroeconomic and fiscal forecasts.

<sup>26</sup> Based on information provided in correspondence between the PBO and the OBR, information on the OBR website, as well as information included in: Briefing paper No. 6 – Policy costings and our forecast, Office for Budget Responsibility, March 2014.

<sup>27</sup> The format of this costing note was advised by the OBR, who prepared a template for use by government departments.





Contact: [pbo@oireachtas.ie](mailto:pbo@oireachtas.ie)

Go to our webpage: [www.Oireachtas.ie/PBO](http://www.Oireachtas.ie/PBO)

Publication date: January 26, 2022

## Houses of the Oireachtas

Leinster House

Kildare Street

Dublin 2

D02 XR20

*[www.oireachtas.ie](http://www.oireachtas.ie)*

Tel: +353 (0)1 6183000 or 076 1001700

Twitter: @OireachtasNews

## Connect with us



## Download our App

