# Appendix E: Tax Forecasts Decomposed

The first part of this Appendix explores the revisions to forecasts of the main tax heads for 2019. It shows how the 2019 forecasts in *SPU 2019* have changed relative to *Budget 2019.* Three categories are identified in this analysis as drivers of these revisions: (i) an update to the 2019 "**macro**" economic outlook relevant for each tax head; (ii) the error arising from an incorrect "**starting point**" estimate of 2018, which biases the 2019 forecast (a positive starting point means that the 2018 outturn was actually higher than expected at budget time); and (iii) an "**other**" source of revision, caused by use of incorrect estimates of any other component of the forecast. It is the residual of the "macro" and "starting point" errors.[80, 81] Appendix Figure E.1 also compares the total revision relative to the performance against the *Budget 2019* profile at end-April 2019.

Appendix Figure E.1: Tax Forecast Revisions in 2019: *SPU 2019* versus *Budget 2019*
€ million (*SPU 2019 – Budget 2019*)
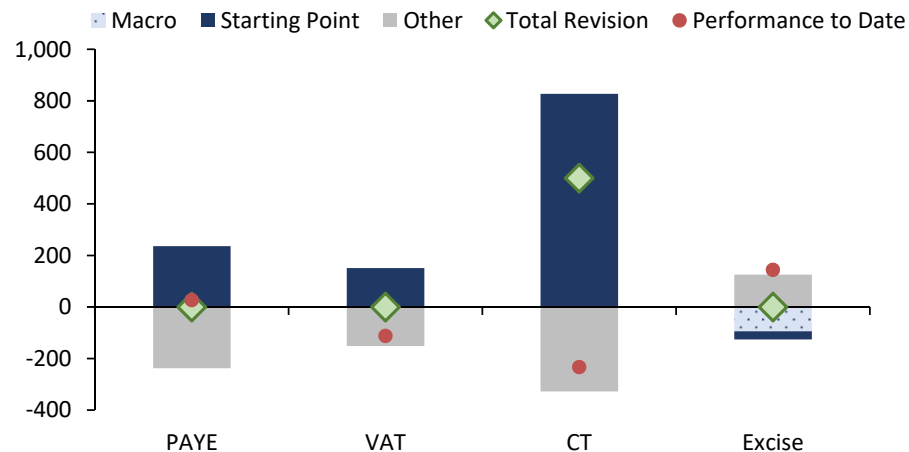
Sources: Department of Finance; and internal IFAC calculations.
Note: The chart breaks down the total revision into the macro component, a starting point component and an "other" component. Performance to date shows the tax receipts at end-May 2019 relative to profile. A positive performance to date indicates taxes are higher than what was forecast at *Budget 2019* time.

The second part of this Appendix examines the latest tax revenue forecasts produced by the Department of Finance in *Budget 2019* for the projection horizon

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[80] For a detailed description of the IFAC's forecast replication model, see Hannon (2014).

[81] The macro drivers for 2019 used in this exercise are based on the recent *SPU 2019* forecasts, as opposed to those projected at budget time. However, the Department of Finance's tax forecasts for 2019 use the macro drivers that were forecast in *Budget 2019.* The exercise is therefore based on the most up-to-date macroeconomic information for each tax source.

2018–2023. In particular, it shows the yearly changes in the forecasts of VAT, corporation tax, excise duties, and the PAYE and USC components of income tax (see Appendix Figure E.1).[82] For a detailed description of the IFAC's forecast replication model, see Hannon (2014).

The changes on the tax forecasts (year-on-year) are attributed to a number of components: (i) "**macro**" is the part of the forecast driven by the growth in the relevant macro driver (e.g. wage growth and its corresponding elasticity when analysing income tax); (ii) "**one-offs**" refer to non-recurring items that impact on expected tax receipts; (iii) "**policy**" impacts account for the estimated impacts from policy changes in a given year (e.g., discretionary tax cuts); (iv) "**carryover**" effects account for policy impacts carried over from previous years; (v)"**other**" represents potential elements affecting the forecasts (calculated as the difference between IFAC's internal forecasting exercise and that carried out by the Department of Finance), including judgement applied by the Department of Finance.

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[82] The generic formula applied by the Department of Finance to forecast revenue is given by:
$\text{Rev}_{t+1} = (\text{Rev}_t - \text{T}_t) * (1 + \text{B}_{t+1} * \text{E}) + \text{T}_{t+1} + \text{M}_{t+1} + \text{M}_t + \text{J}_{t+1}$,
where revenue forecasts (Rev_{t+1}) depend on their lag stripped of one-off items (T_t), one-off items in the current period (T_{t+1}), the macro drivers (B_{t+1}) and their associated elasticity (E), current policy (M_{t+1}) and carryover policy impacts (M_t), and judgement (J_{t+1}). See Hannon (2014) for a discussion of this approach. Rewriting the formula in terms of annual changes yields: $\Delta\text{Rev}_{t+1} = \text{Rev}_t * \text{B}_{t+1} * \text{E} - \text{T}_t * \text{B}_{t+1} * \text{E} + \Delta\text{T}_{t+1} + \text{M}_{t+1} + \text{M}_t + \text{J}_{t+1}$. In this way, yearly revenue changes for each tax head are attributed to the addition of: (i) the macro driver, which covers the parts of the formula affected by B_{t+1}; (ii) changes in one-off items, as shown in ΔT_{t+1}; (iii) current and previous policy changes (M_{t+1} and M_t, respectively); and other adjustments, mainly judgement, as covered in the component J_{t+1}.
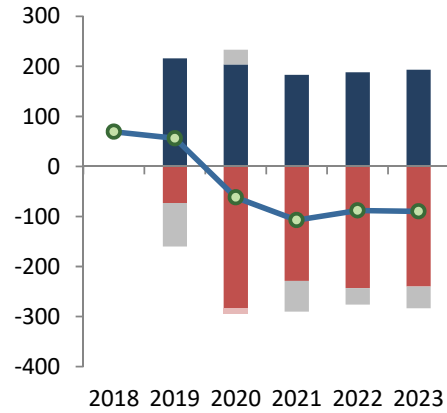
Appendix Figure E.2: Tax Forecasts Decomposed

€ million, year-on-year change

Legend: Macro ▪ | One-offs ▒ | Policy ▪ | Carryover ▪ | Other/Judgement ▪ | Total Revenue ─○─
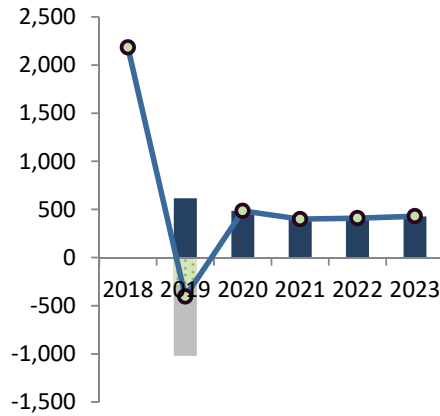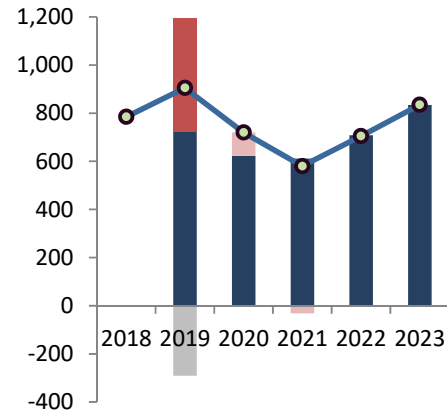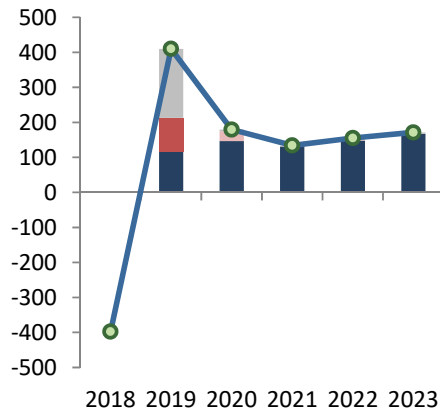
A. PAYE
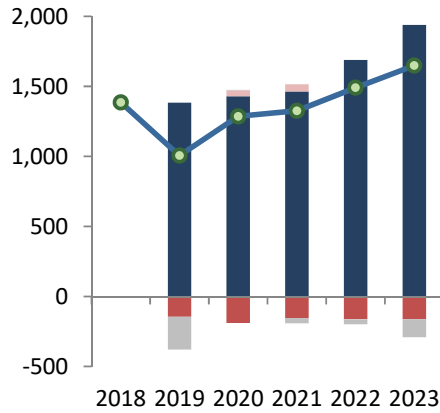
B. USC

C. Corporation Tax

D. VAT

E. Excise Duties

Sources: Department of Finance; and internal IFAC calculations.