

STUDY COMMISSIONED BY THE FISCAL ADVISORY COUNCIL



Fiscal forecasting performance of the Austrian Fiscal Advisory Council

Key results, conclusions and
recommendations

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KEY RESULTS, CONCLUSIONS AND RECOMMENDATIONS OF A STUDY COMMISSIONED BY THE FISCAL ADVISORY COUNCIL¹

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Key results

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- This paper provides information on the **fiscal forecasting performance** of the **Austrian finance ministry, the European Commission and the Austrian Fiscal Advisory Council** with regard to **Austria's general government budgets** (including selected **economic indicators**), on the **varying predictability of compliance** with, or forecast quality of, the **multidimensional EU-wide fiscal rules** of the Stability and Growth Pact (SGP) as well as an **assessment of the strengths and weaknesses** of the **Fiscal Advisory Council's forecasting methods**.
- To assess the **fiscal forecasting performance, the fiscal indicators** established in the forecasting rounds from **fall 2014 to fall 2017** were cross-checked with **actual outcomes as at March 2018** (based on data for the general government consistent with ESA 2010). In **some areas**, this assessment was complemented with **real-time analyses**, i.e. the forecasts were compared with the respective **preliminary actual outcomes** published in the **following spring**.
- The assessment is essentially based on two **statistical indicators: forecast bias** – defined as the mean deviation of forecasts from actual outcomes – as an indicator for systematic **distortions** (overestimations and underestimations) and **mean absolute forecast errors (MAE)** as an indicator for **forecast precision**.

Economic expansion underestimated in macroeconomic forecasts in the period under review (2014 to 2017)

- The **fiscal forecasts of the Fiscal Advisory Council**, like those of the **finance ministry**, are based on **macroeconomic forecasts provided by the Austrian Institute of Economic Research (WIFO)**. The fiscal forecasts of the **European Commission** are based on the Commission's **own economic outlook**.
- In the period under review, the **Austrian economy** was initially hit by a **period of weak growth** before **output growth accelerated** markedly in 2016, reaching exceptional growth rates in 2017 unseen in Austria in the previous 20 years.
- The performance of the **key indicators** (GDP, employment, compensation of employees) was underestimated in this period **on average** by both **WIFO** and the **European Commission**. Only **WIFO's expectations** with regard to **private consumption growth** were somewhat **too optimistic**. **WIFO**

¹ Opinions expressed by the authors of this study do not necessarily reflect the viewpoint of the Fiscal Advisory Council.

forecasts were found to have a slightly smaller **forecast bias** than forecasts made by the **European Commission**.

- Ex post revisions made by **Statistics Austria** (in particular for the **compensation of employees, nominal GDP** and **private consumption**) increased the forecast bias for all relevant macro data.

Fiscal indicator forecasts by Austrian finance ministry, European Commission and Austrian Fiscal Advisory Council biased in the same direction with small differences across institutions

- The fiscal forecasts made by the Austrian finance ministry, the European Commission and the Fiscal Advisory Council in the **period under review (2014 to 2017)** were found to be **broadly biased in the same direction, tending to overestimate the fiscal indicators for Austria (budget deficit, structural budget deficit, government revenue and expenditure)**. For instance, compared with the actual outcomes as at March 2018, the Fiscal Advisory Council's estimates for the **general government deficit** (as a percentage of GDP) during the review period (2014 to 2017) were too conservative, with an **average forecast bias** of 0.41 percentage points and a mean absolute error (MAE) of 0.47 percentage points (finance ministry: bias of 0.36 percentage points; MAE of 0.43 percentage points; European Commission: bias of 0.44 percentage points; MAE of 0.47 percentage points). Among other things, these results reflect the fact that the period under review was characterized by an economic expansion the size of which was underestimated by WIFO and the European Commission.
- **For all four fiscal indicators**, the average **forecast errors** (bias and MAE) of the **individual institutions were generally clustered closely together**, without showing a distinct pattern with regard to indicator rankings or detailed breakdowns for the successive forecast rounds and forecast years. The results were thus not conclusive enough to yield an **overall ranking** with regard to the **forecasting performance** of the **institutions** reviewed (Fiscal Advisory Council, finance ministry, European Commission).

High fiscal forecasting performance by international standards

- When we compare the **assessment results** for Austria with those **for other countries**, the forecasts for Austria are of a very **high quality**: According to a study by Fioramanti et al. (2016), the estimates of the European Commission for Austria had the **lowest or second-lowest mean absolute error for the deficit ratio** of all 27 EU countries. For the years from 1969 to 2014, the **MAE for Austria** was 0.53 percentage points for the current year t and 0.79 percentage points for the following year $t+1$. For most other EU countries, the MAE for the budget deficit ratio amounted to 1 percentage point or more.

Output gap forecast error accounts only for a small part of uncertainty in structural budget deficit forecasts

- **Detailed results** for the components of the **structural budget balance** show that the forecast uncertainty associated with the **cyclical component of the budget balance** for Austria, which is a direct function of the output gap, is **small**. Much rather, the **forecast error** in the structural budget balance mainly reflects the uncertainty surrounding forecasts of **government revenue and expenditure**.
- The absolute forecast errors (MAE) of the forecasts (Fiscal Advisory Council, finance ministry and European Commission, compared with actual outcomes in March 2018) averaged between 0.40 and 0.55 percentage points for the **structural budget deficit ratio**, thus **visibly exceeding** the forecast

errors for the **cyclical component** (or the output gap), which averaged between 0.14 and 0.20 percentage points. Likewise, the forecast uncertainty associated with **one-off measures** (MAE of 0.07 to 0.13 percentage points) had little impact on the forecast error observed for the structural budget balance.

- **The extent to which the objective of adjusting the fiscal deficit** for the cyclical component of the budget can be met with the adjustment procedure currently used falls **outside the scope** of this study.

Revenue forecast mainly distorted by cyclical errors and data revisions

- Compared with actual outcomes as at March 2018, the **Fiscal Advisory Council underestimated government revenue by EUR 1.5 billion on average (or 0.8% of the revenue intake in 2017) in the period under review**. The finance ministry underestimated the revenue intake by a similar amount (EUR 1.3 billion), as did the European Commission (EUR 1.6 billion).
- The revenue forecast errors of the Fiscal Advisory Council can essentially be traced back to **misestimated growth figures** as well as **ex post data revisions**. In sum, these two error sources, which are based on external factors, account for underestimations of EUR 1.8 billion on average. **Fundamental errors** resulting from the forecast method applied by the Fiscal Advisory Council led to overestimations of EUR 0.3 billion on average, thus playing a **minor role** and confirming the **accuracy** of the **elasticities used** by the Fiscal Advisory Council with regard to the underlying macroeconomic data.
- The **cyclical errors** are almost entirely due to the average underestimation, driven by the economic forecast, of **direct taxes** (–EUR 0.3 billion) and **social security contributions** (–EUR 0.4 billion). This underestimation can, in turn, be pinpointed in particular to the fact that **employment growth** and hence **growth of compensation of employees** was considerably underestimated in **WIFO's macroeconomic forecasts**. **Growth of compensation of employees** in Austria had a visibly **higher bias** than, for instance, growth of **real and nominal GDP**.
- **When analyzing individual budget categories we find that the underestimations** of the government revenue intake on average during the period under review are broadly due to forecast errors for **income from government production activity** (bias: –EUR 0.7 billion) and for the **direct tax intake** (bias: –EUR 0.6 billion). In both cases, the underestimations mainly reflect ex post **revisions of actual outcomes**. In the case of direct taxes, the bias was intensified by the extent to which economic growth – in particular growth of compensation of employees – had been underestimated.
- In terms of **individual taxes** the single biggest underestimation relates to **corporate income tax** (bias: –EUR 0.4 billion), which was broadly offset by the average overestimation of **VAT** (about EUR 0.2 billion) and **assessed income tax** (about EUR 0.2 billion). The overestimation may be due to an over-optimistic forecast of the revenue intake from **measures combating fraud** implemented under the general government tax reform of 2015/2016 (which facilitated access to account information and created the obligation to keep cash register records, etc.). The estimates relating to **withholding tax on investment income** were found to be less precise, with a mean absolute error (MAE) of EUR 0.4 billion, despite a bias of just –EUR 24 million. In this respect, frontloading effects in anticipation of tax increases under the tax reform of 2015/2016, which moved revenue intake forward to 2015 from 2016 and 2017, turned out to be higher than expected.

Small expenditure forecast bias on account of offsetting effects

- Compared with actual outcomes as at March 2018 and the **amounts involved (EUR 175 billion on average)**, **total government expenditure was underestimated by just EUR 2 million on average**

in the period under review. In other words, the forecasts would qualify as unbiased. The same holds true for the expenditure forecasts of the European Commission and the finance ministry, both of which also had very low mean forecast biases at EUR 0.1 billion and EUR 0.2 billion, respectively.

- In the case of the forecast of the Fiscal Advisory Council, the small average underestimation of government expenditure in the period under review is due to the **average underestimation** of expenditure on account of **basis errors** (EUR 0.6 billion) and **discretionary errors** (EUR 0.2 billion), which were **offset by the average overestimation** of **cyclical errors** (EUR 0.1 billion) and **fundamental errors** (EUR 0.7 billion). These detailed results highlight that, adjusted for offsetting effects, the **forecast errors** above all resulted from revisions of actual outcomes (**basis errors**) and own **fundamental errors**. The influence of cyclical factors and misestimations of discretionary errors played a lesser role.
- The **fundamental uncertainty** surrounding forecasts of **government expenditure growth** can be explained by the **discretionary nature** of government expenditure and the multitude of **influencing factors varying over time**. Only in a rare number of cases is it possible to establish a direct relationship (elasticities) between exogenous measures and spending categories. Moreover, there are **information gaps** with regard to historical data (such as the number of employees) and with regard to economic policy measures adopted by regional and local governments or public sector units that have been removed from the government budget.

Forecast errors for government revenue and expenditure (but not for the budget balance) are influenced by the comparison date

- The **size of the forecast errors** for **government revenue and expenditure** depends significantly on the **selected comparison date**. While **revenue** was underestimated by EUR 1.4 billion on average compared with actual outcomes as at March 2018, the revenue intake was underestimated by just EUR 0.8 billion compared with the initial results in the following spring. **Expenditure** was underestimated by EUR 2 billion compared with actual outcomes as at March 2018 but overestimated by EUR 0.7 billion compared with the initial results in the following spring. Ex post statistical revisions of the data for government revenue and expenditure had **only a moderate** impact on the bias of the **budget deficit** compared with actual outcomes as at March 2018, namely EUR 1.4 billion (compared with initial results in the following spring: EUR 1.5 billion).
- When we assess **government revenue and expenditure as a percentage of GDP**, the **forecast error** in the **denominator effect** comes into play as well, which exceeded the (actual) **forecast error in government revenue and expenditure** in nominal terms in the period under review. With regard to the **budget deficit**, revisions of actual outcomes as well as the impact of the GDP denominator effect played only a minor role.

Average overestimation of the budget deficit in the review period mainly driven by cyclical errors

- The **overestimation of the deficit** (bias) by **EUR 1.4 billion** (0.4% of GDP) **on average** from 2014 to 2017 resulted from the economy being stronger than expected (**cyclical error: EUR 0.9 billion**), a downward revision of the deficit based on actual outcomes (**basis error: EUR 0.4 billion**), a **fundamental overestimation** of the deficit by **EUR 0.3 billion** as well as an underestimation of the impact of **discretionary measures** on the deficit (**-EUR 0.3 billion**).
- When adding up the **deficit errors and grouping them by cause** while disregarding whether these errors were positive or negative, we find **basis and cyclical errors (external errors)** to account for

78% of the **forecast bias** and 49% of the **MAE**. **The relative share of fundamental errors was 17% (bias) and 30% (MAE)**. The gap between the two measures can be explained by the fact that the forecast bias resulting from **fundamental errors and discretion errors** was partly offset by **overestimations and underestimations** during the period under review.

Conclusions and recommendations against the backdrop of fiscal rule compliance

- Having mapped **fiscal forecast errors** to the **underlying reasons**, we found **macroeconomic forecasts** to be particularly relevant for the **forecasts of revenue intake**. The quality of fiscal forecasts for Austria could be improved above all with measures to reduce the forecast bias for the **income components of GDP** (above all **compensation of employees**).
- In the period under review (2014 to 2017), the forecasts of the finance ministry, the European Commission and the Fiscal Advisory Council for the **budget deficit** and the **structural budget deficit** were similarly precise. From this perspective, **the two indicators seem equally adequate for use as fiscal rules** for Austria. More specifically, using the structural budget balance as a fiscal rule has the **conceptual advantage** of making the **procyclicality or anticyclicality of fiscal policy transparent**.
- With regard to Austria, the **EU's expenditure rule** appears to be characterized by a high degree of **forecast uncertainty**: In hindsight, the **target limits** derived for Austria from the European Commission's forecasts **with regard to the expenditure rule** appear to have been too restrictive in the period under review (on average, the target limit was underestimated by 0.51 percentage points). Furthermore, we found a **considerable bias** for the nominal **growth rates of (adjusted) public expenditure** (forecasts of the Fiscal Advisory Council: 0.34 percentage points).
- The **forecast error (MAE)** results would imply a **budgetary buffer of around 0.25% of GDP in relation to the medium-term objective (MTO)** given the margin of tolerance of 0.25% of GDP laid down in the EU's fiscal framework for **Austria**. The fact that the forecasts tended to overestimate the (Maastricht and structural) budget deficit ratios in the period under review (2014 to 2017) can largely be attributed to the fact that the size of economic expansion was underestimated. Under other economic framework conditions, the forecast bias regarding the budget deficit ratios might even have been negative.
- The **preliminary data on actual fiscal outcomes** (available by March of the following year) published by **Statistics Austria** are **relevant for policymaking**, as they feed into the assessment of Austria's compliance with fiscal rules made first by the European Commission and then by the Ecofin Council. While the ex post revisions of actual outcomes were rather limited for the budget deficit, the preliminary data on public revenue and expenditure were found to have shortcomings. With regard to the **EU's expenditure rule** in particular, the March assessments of fiscal rule compliance could be found to be wrong ex post. One way to improve the quality of the data that are available by March would be to **bring forward the deadlines by which the subsectoral levels of government and large public sector units that have been removed from the government budget** are required to submit data to Statistics Austria.
- **Broad transparency requirements for public households ensure a higher precision** of fiscal forecasts. In the period under review (2014 to 2017), the MAE for Austria turned out to be lower than the long-term average despite comprehensive fiscal policy measures (such as the 2015/2016 tax reform and the government's bank support package) and unexpected events (influx of migrants in 2015 and 2016).

- The **forecast errors** for **acyclical government revenue and expenditure** (i.e. budget positions that do not rise and fall in line with economic conditions) could reflect **conceptual shortcomings** in the **cyclical adjustment methods** used in the fiscal rule monitoring process as well as **misestimations** of the **budgetary impact of economic policy measures**. These aspects have not been addressed in this paper, but an assessment of those issues would be desirable.
- To enhance the predictability of the budget and the forecasting performance of the Fiscal Advisory Council, and to ensure compliance with fiscal rules, the Fiscal Advisory Council would suggest **closing economic data gaps** that are relevant for policymaking (such as data on the number of public sector employees), ensuring **high-quality cost estimates** for major government economic policy measures as well as ensuring the **widest possible access to official data and information** in line with confidentiality requirements.
- The conclusions made here are **limited** by the fact that a **maximum of 12 observations** (fall 2014 to fall 2017) were available for forecasts of the Fiscal Advisory Council.

Recommendations for improving the forecast method applied by the Fiscal Advisory Council

- The largest **revenue forecast** errors associated with methodology relate to the categories **direct taxes, investment income** and **income from production activity**. With a view to improving the tax estimates, the method used to estimate corporate income tax revenue has already been finetuned, starting with the spring 2017 forecasting round, and the forecasts have been increasingly based on **interim employment data available from the Austrian Association of Social Insurance Providers**. Both adjustments have significantly reduced the forecast bias. With a view to improving the estimates for **income from production activity**, there are plans to intensify the exchange of data with Statistics Austria.
- The largest **fundamental errors** in the **expenditure forecasts** are related to **social benefits categories** (notably **spending on pensions** and **unemployment benefits**) as well as to the **compensation of employees**. Methodological adjustments already in place aimed at using **interim data from the Association of Social Insurance Providers** have led to a significant reduction in fundamental errors when estimating pension expenditure. Plans to (re)establish a **commission on old age pensions** that would produce its own pension spending estimates should make additional information available and thus help to further **improve pension forecasts**. With regard to forecasts for **spending on unemployment benefits, fundamental errors** can be traced back to **misestimations of the relationship** between **unemployment numbers** and the growth of the **wage bill**. Here, it would be advisable to re-estimate the corresponding elasticities and use interim data (rather than annual data). Furthermore, there are plans to intensify the exchange of information with the **labor and social affairs** ministry.
- Fundamental errors in the forecast for the **compensation of public sector employees** are essentially due to the lack of **historical time series** on full-time equivalent employment. **Improving forecasts for spending on the compensation of employees** hinges primarily on access to reliable actual data (number of public sector employees as defined in ESA 2010 in terms of headcount and full-time equivalents).
- The fiscal impact of individual **discretionary measures** in the fiscal forecast of the Fiscal Advisory Council predominantly reflects cost estimates derived from the **impact assessments** required under the federal government's new **budget law**. The statutory requirement for cost estimates is limited to federal government measures and excludes measures submitted to parliament as a motion. Fiscal

forecasts would benefit from the availability of **cost estimates from regional and local governments and public sector units that have been removed from the government budget**. Furthermore, it would be important to have access to **explanatory notes** for publicly available ex ante and ex post estimates regarding the fiscal impact of economic policy measures, allowing impact assessments to be cross-checked and enhanced.