

Fiscal Projections by the Oesterreichische Nationalbank: Methods and Motives

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The financial and economic crisis and recent reforms in economic governance have increased the importance of fiscal projections both inside and outside central banks. The OeNB fiscal projection model is driven by external demand, by considerations of the comparability of subcomponents with cash data (or other administrative information), and by the difference between the driving factors of expenditure and revenue categories. The accuracy of ESCB central banks' fiscal projections is limited by prudence requirements as well as the no-policy change assumption (in the medium run) and by one-off events and a lack of information on smaller entities (in the short run).

JEL classification: E62

Keywords: Fiscal projections, tax elasticities, projection errors

The financial and economic crisis and recent reforms in economic governance have increased the importance of fiscal projections both inside and outside central banks, for the following reasons:

1. Fiscal policy influences growth and inflation via various channels. While this has likely always been the case, the period from 2008 up to now has been characterized by a fiscal stance that was very far from neutral. Very sizeable stimulus packages in 2008 to 2009 have been followed by massive consolidation packages across the industrialized world until now.
2. Fiscal projections play a crucial role in the Stability and Growth Pact, which has been strengthened with recent reforms. For example, fiscal projections of the European Commission enter the new operationalization of the debt rule (Holler and Reiss, 2011).
3. The uncertainty created by a very bleak fiscal outlook can lead to a deanchoring of long run inflation expectations. Furthermore, it may diminish trust in the solvency of governments, which in turn can

have a negative impact on financial stability, as explicit and implicit government guarantees may lose their value.

1 Fiscal Projections by the OeNB: Framework and Challenges

The OeNB performs fiscal projections in the framework of the biannual ESCB projection exercise, which are conducted for the years t , $t+1$ and $t+2$ and whose results for euro area countries are also included in the Broad Macroeconomic Projection Exercise (BMPE; see ECB, 2001). The OeNB projections thereby have a direct and indirect impact on the macroeconomic and inflation projections for Austria, and to a very small extent on euro area projections. Detailed information on fiscal projections is documented only in restricted ESCB documents; the ECB publishes projections on fiscal aggregates for the euro area as a whole only (see for example ECB, 2014).

At the national level, the OeNB publishes the projections on the Austrian headline budget balance and debt ratio in its publication Monetary Policy & the Economy (see for example Ragacs

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Refereed by:
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and Vondra, 2014); sometimes the documentation of the projections also includes indications on the development of the structural balance over the projection horizon.³

The OeNB fiscal projections have to follow the common ESCB guidelines, which inter alia imply that projections are performed under a “no-policy change assumption,” respect the prudence requirement, refer to general government, and that they follow the rules of the European System of Accounts 95 (ESA 95).

1.1 Common ESCB Guidelines: ESA 95, No-Policy Change Assumption, Prudence

National statistical institutes currently publish government finance statistics following ESA 95 for past data.⁴ Hence, the national public finance projections performed in the ESCB framework follow uniform rules and item definitions.

Moreover, the ESCB sets common guidelines for the projection exercise itself, most importantly the “no-policy change assumption.” This request implies that the effect of government measures should only be included in the projections if the measures have already been approved or are sufficiently well specified and are likely to enter into force. This can lead to unrealistic projections, as measures on taxes and entitlement spending often come at relatively short notice (i.e. they typically come into effect soon after they are announced and passed in parliament) and detailed budget plans are usually not available for more than one year ahead. Conse-

quently, at the current juncture, end-of-period projections are usually more conservative than announced government targets, as long as details about how to reach these targets have not been sufficiently specified yet.

Another important guideline postulates prudence, or caution, in projections, which tend to induce a negative bias into the fiscal projections.

The general guidelines under which ESCB projections are performed qualify them as fiscal projections rather than fiscal forecasts: Unlike forecasts, which include assumptions about issues like future legislation on taxes and entitlement spending, they project fiscal developments on the basis of current information.

1.2 Discrepancy between OeNB Public Finance Definitions and Administrative Accounts

Given the ESCB requests, the OeNB projections necessarily differ from the yearly budget projections as published by the Austrian Ministry of Finance (BMF) in most of its documents (Finanzrahmen, Budgetbericht).

While OeNB fiscal projections contain projections of developments at the general government level, the federal budget mostly comprises information at the core central government level, disregarding the other levels of government (states, municipalities, social security funds) and providing only some information on extrabudgetary units (like museums or universities)⁵. Therefore, some aspects of its general government projections have to be treated with a degree of caution, as the influence of the

³ *Budgetary forecasts for Austria are also published by the Ministry of Finance, the Austrian research institutes IHS and WIFO as well as by the OECD, the European Commission and the IMF.*

⁴ *Possible implications of the shift to ESA 2010 in autumn 2014 will be discussed in section 2.7.*

⁵ *The government provides some information on most extrabudgetary units (excluding chambers) in its report on “Ausgliederungen und Beteiligungen” (outsourced companies and major shareholdings), which also includes the expected transfers to these entities and expected dividends from them.*

federal government on most of these other entities is limited in the short run.⁶

Furthermore, the budget is compiled using administrative accounts, which do not necessarily correspond to national accounts (ESA 95). In particular, budget information is often published on a “cash” basis, i.e. transactions are recorded whenever a cash flow is observed. This differs from the calculation of the budget balance (or financial balances in general) in national accounts in two important ways: First, national accounts rely on an “accrual” basis, which recognizes a transaction when the activity generating a cash flow takes place (e.g. when salaries for January are paid in advance in December, they are counted as expenditure in January in national accounts). Second, for the calculations of financial balances in national accounts, one counts only so-called nonfinancial transactions (i.e. transactions which impact the net financial assets of government) and disregards financial transactions like the accumulation of cash reserves or privatizations.⁷

Additionally, some revenue and expenditure items are defined differently in the two systems. One example is the treatment of a child-related social transfer (“Kinderabsetzbetrag”) that is recorded as an expenditure item according to ESA 95, as it is paid out directly, but constitutes a tax credit that reduces tax revenue in the administrative accounts.

2 The OeNB’s Fiscal Projection Model

The OeNB fiscal model is an accounting model implemented in Microsoft Excel. The main variables of interest in the

OeNB fiscal projections are the ones which are relevant for the (EU) fiscal rules, namely the headline budget balance, the structural budget balance and the debt ratio.

However, within the projection, both government revenue and expenditure are decomposed into several sub-components for external and internal reasons:

- The ECB requires a certain breakdown of revenue and expenditure for the ESCB projection process (including interactions with the EU budget).
- The OeNB macro forecasters need information about the (direct) fiscal contributions to demand (government consumption and investment), to deflators (indirect taxes and subsidies) and to households’ disposable income (mainly monetary social transfers, direct taxes paid by households and social contributions).
- Trend growth and the volatility of base variables for fiscal variables differ substantially; therefore it makes sense to distinguish fiscal variables according to their base variables. For example, within indirect taxes, payroll taxes develop closely in parallel to the wage bill while most other indirect taxes are related more to consumption (components) or to GDP. And within social transfers in cash, the trend growth of family benefits is much lower than that of long-term-care benefits.
- For some revenue and expenditure items, only budgetary information and/or monthly cash data for sub-components are available. For example, within payroll taxes, only cash data

⁶ For example, the federal government can significantly influence policies of the other entities by cutting transfers to them in the medium run and by negotiating different budget balance targets with states and municipalities. However, the short-run response to a cut (increase) in transfers may be an increase in debt (accumulation of cash reserves), and the renegotiation of budgetary targets can be time-consuming.

⁷ The recently introduced operating statement (“Ergebnisrechnung”) in the federal budget comes somewhat closer to national accounts, but differs on other issues (for example on the recording of investment expenditure).

on the contribution to the Family Burden Equalisation Fund (“Familienlastenausgleichsfonds”) are available.

- Furthermore, to be able to make comparisons with information on the overall balance of the federal government (from cash data, forecasts and the like), in several cases a distinction between items is made according to whether they have an effect on the headline balance of the federal government or not. For example, payroll taxes other than the previously mentioned contribution to the Family Burden Equalisation Fund affect the budget balance of the federal government only to a very limited extent.

2.1 Projection of Tax Revenue Using Macro Elasticities

The projection of revenue in taxes and social contributions builds on the following ingredients:

- Detailed data on tax revenue from Statistics Austria. The breakdown of these data differs from the presentation of tax revenue (“Abgabenerfolg”) in the federal budget due to time adjustments and differences in the recording of certain refunds⁸ (see Reiss and Köhler-Töglhofer, 2011).
- A collection of discretionary government measures that significantly affect government tax revenue (based on information from tax laws, stability programs and budgets).⁹
- The macroeconomic projections of the OeNB, which are conducted using the Austrian Quarterly Model (Leibrecht and Schneider, 2006). Macroeconomic variables are treated as exogenous in the model; therefore

several iterations of updating and exchanging macroeconomic and fiscal projections are conducted in cases of larger changes in macroeconomic or fiscal assumptions.

Table 1 provides an overview of the decomposition of tax revenue and the respective tax bases and elasticities. Tax bases are macroeconomic variables to which certain taxes are (supposed to be) related, e.g. total economy wages are chosen as the base for payroll taxes or (employers’ and employees’) social contributions. Tax elasticities indicate the percentage by which revenue of a certain tax should increase when the tax base increases by 1%.

Most elasticities are assumed to be 1. The exceptions are indicated below:

- According to information from the wage tax statistics (“Lohnsteuerstatistik”), roughly one-quarter of income tax on wages and about two-fifths of other social contributions are paid out of pension incomes. This fact has been incorporated in the elasticities of these two tax items.
- The income tax is progressive, and tax brackets are not automatically adjusted for (wage) inflation. Therefore, the elasticities of the income tax on average wages and average pensions are set above 1; they are based on microsimulations using the income tax brackets, and the percentiles from the wage tax statistics.
- Profit-related taxes tend to fluctuate much more than the gross operating surplus in national accounts (which is a rather poor proxy for the actual profits of corporations and the self-employed anyway). Therefore, a 1%

⁸ Due to these refunds, the differences between the data in the tax list of Statistik Austria and the Ministry of Finance are especially large for the wage tax (“Lohnsteuer”), the income tax (“veranlagte Einkommensteuer”) and the corporate income tax (“Körperschaftsteuer”). The largest of these refunds is the child-related social transfer (“Kinderabsetzbetrag”) mentioned in section 1.2.

⁹ Such measures are to some extent also collected on the expenditure side (especially for social transfers in cash).

Table 1

Projection of Tax Revenue

Variable		Revenue in 2013 (EUR million)	ESA code(s) in tax list ¹	Base Variables ² (Elasticities ³)
Tax name according to national classification (English)	Tax name according to national classification (German)			
Value added type taxes	Mehrwertsteuern	24,932	D211	Private consumption + governments' demand for goods ⁴
of which VAT based contribution to EU	davon: MwSt-Eigenmittel	334		Information from EU budget
Other indirect taxes to EU	Sonstige indirekte Steuern an EU ⁵	355	D212+small part of D214	GDP
Tax on energy	Energieabgabe	886	D214AF	Real private consumption
Tax on mineral oils	Mineralölsteuer	4,165	D214AK	Real GDP
Duty on vehicles based on fuel consumption	Normverbrauchsabgabe	455	D214AL	Private consumption
Tax on tobacco	Tabaksteuer	1,662	D214AQ	Real private consumption
Other excise duties (without EU)	Sonstige Verbrauchsabgaben (ohne EU)	397	Other D214A	Real private consumption
Land transfer tax	Grunderwerbsteuer	790	D214CA	Past trend (without measures)
Insurance tax	Versicherungssteuer	1,056	D214GB	Past trend (without measures)
Other taxes on goods (without EU)	Sonstige Gütersteuern	1,157	Other D214	Private consumption
Taxes on land, buildings or other structures	Grundsteuern	731	D29A	Past trend (without measures)
Employers contribution of family burdens	FLAF-Beitrag der Dienstgeber	5,319	D29CA	Wages
Other total wage bill and payroll taxes	Sonstige Lohnsummenabgaben	3,203	Other D29C	Private wages
Other other taxes on production	Sonstige sonstige Produktionsabgaben	676	Other D29	Past trend (without measures)
Wage tax	Lohnsteuer	25,669	D51AG	Employees (~0.75), wages net of social contributions per employee (~0.75*1.8), pensioners (~0.25), average income of pensioners (~0.25*2.05)
Income tax	Veranlagte Einkommensteuer	3,507	D51AA	Gross operating surplus (1.7)
Contribution to chambers by private households	Kammerbeiträge von privaten Haushalten	1,133	D51AD	Wages
Promotion residential buildings	Wohnbauförderungsbeitrag	915	D51ED	Wages
Tax on interest	KeSt auf Zinsen	1,282	D51AF+ D51BE	Based on current short-term interest rates and history of long-term rates
Tax on capital yields	KeSt auf Dividenden	1,308	D51AE+ D51BD	Gross operating surplus (1.7)
Corporation tax	Körperschaftsteuer	6,377	D51BF	Gross operating surplus (1.7)
Financial Institutions Stability Fee	Stabilitätsabgabe	588	D51BG	GDP of last year
Other taxes on the income or profits of corporations	Andere Steuern auf Einkommen und den Gewinn von Kapitalgesellschaften	226	Other D51B	Gross operating surplus
Motor vehicles tax	Motorbezogene Versicherungssteuer	1,782	D59FG+ D29HD	Past trend (without measures)
Other current taxes on income, wealth, etc.	Sonstige Einkommen- und Vermögensteuern	555	Other D5	Past trend (without measures)
Employers' actual social contributions	Tatsächliche Sozialbeiträge der Arbeitgeber	22,096	D6111	Compensation of employees
Employees' social contributions	Tatsächliche Sozialbeiträge der Arbeitnehmer	19,398	D6112	Wages
Social contributions by self- and nonemployed persons	Tatsächliche Sozialbeiträge der Selbstständigen und Nichterwerbstätigen	6,078	D6113	Gross operating surplus of last year (0.6), pensions (0.4)
Imputed social contributions	Imputierte Sozialbeiträge	4,842	D612	Public wages
Capital taxes	Vermögenswirksame Steuern	747	D91	Past trend (without measures)
Taxes and social contributions assessed but unlikely to be collected	Uneinbringliche Steuern und Sozialbeiträge	-203	D995	Past trend (without measures)
<i>Tax revenue of which to the EU</i>		<i>142,086</i> <i>689</i>		

Source: OeNB, Statistics Austria.

¹ EU national tax lists, e.g. detailed list of taxes and social contributions according to national classification.

² If not stated otherwise, the variables refer to total economy aggregates of the current year in nominal terms.

³ If not stated otherwise, elasticities are 1.

⁴ Intermediate consumption, investment, social transfers in kind.

⁵ Taxes and duties on imports excluding VAT, sugar levy, duty on exceeding the milk quota.

deviation of the growth in gross operating surplus from its trend is assumed to translate into a 1.7% deviation¹⁰ of the respective tax revenue from its trend.

- Some taxes are assumed not to be related to any major variable in the macro projections, for example because they tax certain stocks (land taxes, motor vehicle taxes) or they tax transactions which are only to a small extent part of GDP or consumption (land transfer tax, insurance tax).

The relationship of some tax revenue items to their macroeconomic “base” is rather loose. While the relationship between wage-dependent taxes (social contributions and wage taxes paid by employees, employers’ social contributions, payroll taxes) and total economy wages tends to be relatively stable, the correlation of VAT (and some other smaller taxes on goods as well) and the corporate income tax to their assumed macroeconomic bases tends to be rather low. Therefore, projections of these taxes are regularly compared with the projections of the Ministry of Finance and the developments of cash data.

Most of the categories in table 1 have an exact counterpart in the cash data of the federal government; some differences can stem from time adjustments, e.g. for the duty on vehicles based on fuel consumption (Normverbrauchsabgabe), the wage tax and VAT, and from certain transfers which are recorded as negative revenue in wage, personal and corporate income taxes in administrative accounts but as expenditure in national accounts. How-

ever, among social contributions, only unemployment insurance contributions and a rather small part of pension insurance contributions are federal government revenue. Therefore, the development of social contributions by employees and employers is compared to the development of the cash data on unemployment insurance contributions (accounting for the effect of measures targeted only at a subset of social contributions).

2.2 Use of Budget Information and Assessment for Projecting Primary Expenditure and Other Revenue

Table 2¹¹ gives an overview over the projection of nontax revenue and primary expenditure. In very broad terms, three different categories can be distinguished:

1. Some variables are projected in a similar way as (acyclical) tax revenue items, meaning that they are assumed to behave rather predictably when one correctly accounts for measures taken in these categories. Above all these variables are expenditure on personnel as well as social benefits in cash (pensions, long-term care, family benefits, and unemployment benefits). While entitlement spending represents almost 100% of social benefits in cash, the predictability of personnel expenditure is supported by relatively stable government employment (when controlling for reclassifications) and the fact that agreed wage increases for general government tend to be close to those of the central government.

¹⁰ One motivation for choosing 1.7 was that consumption of fixed capital (which is relatively acyclical) makes up around 40% of gross operating surplus, meaning that – for unchanged consumption of fixed capital – a 1% trend deviation of gross operating surplus roughly translates into a 1.7% deviation of the net operating surplus from its trend.

¹¹ For some subcategories of certain expenditure items, no data are given in table 2 because they are either confidential or are based on rough internal calculations.

2. Some other items are mainly driven by very few transactions (such as dividends, capital transfers to banks and to transport entities, contributions to the EU budget, revenue from spectrum auctions). These items tend to display comparatively high volatility, but at the same time, information about them is often contained in budget documents or other publicly available sources (at least for t and $t+1$).
3. The remaining items tend to be driven by other levels of government

Table 2

Projection of Primary Expenditure and Nontax Revenue

	ESA Code	Value in 2013 (EUR million)	Base Variables / Sources / [Comments]
Social benefits other than in kind	D62	61,390	[Part of households' disposable income]
Pensions		–	Indexation agreements, future increases in line with inflation, projections of number of pensioners, pension drift in line with past trend [part of base of wage tax]
Long-term care benefits		–	Federal budget
Unemployment benefits		–	Number of unemployed people from macro projection
Family benefits		–	Roughly constant in nominal terms
Other		–	
Compensation of employees	D1	29,306	[Mainly part of government consumption]
Wages and salaries	D11	21,562	Wage agreements (Tariflohnindex), future wage increases typically in line with inflation, drift in line with past trend
Employers' actual social contributions	D121	2,902	In line with wages and salaries [part of tax revenue]
Employers' imputed social contributions	D122	4,842	In line with wages and salaries [part of tax revenue]
Other taxes on production	D29	973	In line with wages and salaries [mainly contributions to FLAF; part of tax revenue; mainly part of government consumption]
Other current transfers	D7	8,363	
Contribution to EU budget		2,780	Information from EU budget
Other		5,584	[Mainly part of households' disposable income]
Intermediate consumption	P2	13,904	[Mainly part of government consumption]
Social transfers in kind provided via market producers	D631	18,103	[Part of government consumption]
Gross fixed capital formation	P51	3,168	
Subsidies	D3	10,659	
Health		–	
Transport		–	Information on transfers to ÖBB Personenverkehr
Other		–	
Capital transfers	D9	8,761	
Support to financial institutions		2,066	Budgets, reports from receiving banks
Health		–	
Transport		–	Information on transfers to ÖBB Infrastruktur
Other		–	
Other expenditure	D5+P52+P53+K2	–2,128	Information on spectrum auctions, issuing permits
Primary expenditure		152,500	
Sales and production for own final use	P11+P12+P131	6,137	[Mainly part of government consumption]
Interest income	D41	1,171	Interest rate assumptions of the macro forecast
Dividends	D421	1,183	Information on dividends to federal government
Other property income	D4–D41–D421	1,285	[Mainly surpluses of quasi-corporations („Gebührenhaushalte“) of municipalities]
Other current transfers received	D7	4,123	[Mainly part of households' disposable income]
Capital transfers received not related to taxes	D9–D91–D995	424	
Nontax revenue		14,324	

Source: OeNB, Statistics Austria.

than the core central government (e.g. states, municipalities, health insurance funds, extrabudgetary units). Well-specified measures on these categories tend to be rare or at least they are not a main driving factor of these categories. We rely on the past trends of these categories and on a general assessment of how restrictive the respective levels of government will (have to) be over the projection horizon for projections of these categories. As prudence is required of ESCB fiscal projections, (some of) these fiscal variables are also the main driver behind the potentially negative bias inherent in the OeNB's fiscal projections discussed in section 3.

Useful administrative intrayear information is to a large extent available only for the variables named in the first bullet point above. For example, we compare our projections on wage expenditure with the federal cash data on expenditure on personnel and our projections of pension spending with the quarterly reports of the Austrian Federal Ministry of Labour, Social Affairs and Consumer Protection. Furthermore,

we try to translate our projections of pension expenditure and revenue in social contributions into the federal governments' expenditure ceilings in the two pension-related budget chapters, i.e. chapters 22 "Pensionsversicherung" (pension insurance) and 23 "Pensionen – Beamtinnen und Beamte" (pensions of civil servants).

2.3 Projecting Interest Expenditure on the Basis of Assumptions about the Use of Interest and Information about the Debt Structure

More than 90% of Austria's Maastricht debt is counted as issued by the federal government,¹² and most of this debt is in the form of long-term securities, for which there is detailed publicly available information (table 3 gives a very simplified overview of Austria's debt structure). The information available enables us to make a fairly accurate assessment of the future development of interest spending (for given assumptions on the change in debt and the yield curve of the government) with relatively little effort.

Table 3

Structure of Consolidated General Government Debt of Austria in 2013

	EUR billion	Share in %	Comment
Long-term securities of federal government ¹	182	78	Mostly covered by publicly available data of the Austrian Federal Financing Agency
Long-term securities of other entities ¹	3	1	
Long-term loans	42	18	Imputed loans to EFSF and ÖBB Infrastruktur AG account for about one-third
Short-term debt	7	3	Initial maturity ≤ 1 year
Sum (= Maastricht debt)	233	100	Nominal value, consolidated¹
Memorandum item: Variable-rate long-term debt	3	1	

Source: Eurostat, Statistics Austria, Austrian Federal Financing Agency, ECB, OeNB.

¹ This decomposition is acceptable, as crossholdings of long-term securities between different levels of government are typically negligible in Austria.

¹² Note that this also includes imputed loans from the Austrian railway infrastructure company and the European Financial Stability Facility (EFSF) to the federal government.

For simplicity, it is assumed that maturing short-term debt, (long-term) variable interest debt, and long-term (fixed rate) debt are refinanced with the same broad category in each case, i.e. short-term with short-term, that the whole increase in debt (primary deficit, interest expenditure, stock-flow adjustment) is financed with fixed-rate long-term debt, and that the interest rate assumptions of the macroeconomic projections roughly reflect the actual issuing yields¹³ of different government debt instruments.

Table 4¹⁴ shows that the projection of interest expenditure is based on a recursive approach by assuming that interest expenditure in period t is given by interest expenditure of $t-1$ plus the effect of financing the increase in debt plus the effect of refinancing the maturing part of existing debt. The use of the publicly available data of the Austrian Federal Financing Agency (ÖBFA) has enabled us to account for the massive savings of government over the last years by the massive gap between the average issuing yields of redeemed long-term bonds and of newly issued long-term bonds (for example, the estimated savings in 2013 were almost EUR 200 million compared to 2012).

For the projection of the debt ratio, it is important to note that the change in debt is not simply the deficit. The difference between the two is typically called deficit-debt adjustment or stock-flow adjustment; the main driving factors are transactions in financial assets (accumulation of cash reserves, purchase of securities, granting of loans), statistical discrepancies, bond issues

Table 4

Projection of Interest Expenditure

Interest expenditure in $t-1$

+ increase in $\text{debt}_t * \text{LTR}_t * 0.5$
 + increase in $\text{debt}_{t-1} * \text{LTR}_{t-1} * 0.5$
 + $\sum \text{LT_redemptions}_t * (\text{LTR}_t - \text{LTR}_{\text{issuance}}) * (1 - \text{timing factor})$
 + $\sum \text{LT_redemptions}_{t-1} * (\text{LTR}_{t-1} - \text{LTR}_{\text{issuance}}) * \text{timing factor}$
 + $\text{ST_debt}_t * (\text{STR}_t - \text{STR}_{t-1}) * 0.5$
 + $\text{ST_debt}_{t-1} * (\text{STR}_{t-1} - \text{STR}_{t-2}) * 0.5$
 + discretionary adjustment

Interest expenditure in t

LTR (STR) = long-term rate (short-term rate) for Austria from BMPE (Broad Macroeconomic Projection Exercise) interest rate assumptions.

Increase in debt proxied by: primary deficit _{t} + stock-flow-adjustment _{t} + interest expenditure _{$t-1$} .

LT_redemptions (LTR_{issuance}) = amount (average yield at emission) of redeemed bonds covered by the publicly available dataset of the Austrian Federal Financing Agency.

Timing factor = (calendar month of redemption - 1)/12.

Source: OeNB.

above or below par, and time-of-recording differences. While we collect information on possible stock-flow adjustments over the projection horizon (effects of bond issues in the current year, support to banks and to other euro area Member States), changes in cash reserves and transactions of the lower levels of government make projections of the debt ratio very difficult.

2.4 Construction of “Semifiscal” Inputs for Macro Projections

The external requirements of the ECB and of the macroeconomic forecasters also make it necessary to come up with projections on categories that have no impact on the headline budget balance, the structural budget balance or the debt ratio:

- The ESCB fiscal projections also have to include transactions of (all parts

¹³ Accrual adjustment in national accounts implies that in case of government bonds, the issuing yield roughly reflects the recorded interest spending (and not the coupon payments).

¹⁴ In the absence of detailed information on the use of derivatives by government entities, we assume that the impact of swaps on interest payments will remain constant over the projection horizon.

of) the Austrian economy with the EU budget (listed in table 1B in European Central Bank, 2009). While some of the transactions have a direct impact (above all the gross national income-based fourth own resource) or an indirect impact (the VAT-based contributions drive a wedge between overall VAT revenue and the VAT revenue of government)¹⁵ on the budget balance, some of them have no impact at, e.g. most importantly the subsidies paid by the EU budget to the private sector in Austria (mostly related to agriculture).

- The OeNB macroeconomic projections (and to some extent also the ESCB fiscal projections) also make use of variables which are mainly driven by fiscal developments, but do not fully enter government revenue or expenditure. These variables include nominal government consumption, which in turn includes deficit-neutral consumption of fixed capital and for whose computation other expenditure items have to be decomposed into market and nonmarket production. They also include the construction of deflators for government consumption and investment. These deflators are not directly needed for the fiscal projections, as the projections are nominal. Furthermore, some components of household disposable income (social benefits, social contributions) are mainly driven by government revenue and expenditure, but to some extent also by transactions of households with other private entities.

Table 5 gives an overview of the construction of these “semifiscal” inputs for the macro projections.¹⁶

2.5 Interaction between Expenditure and Revenue

Government revenue and expenditure interact in several ways, especially because pensions and expenditure on personnel are recorded in gross terms:

- Public pensions are subject to source taxation (wage income tax, social contributions) but are recorded in gross terms on the expenditure side.
- Employers’ payroll taxes (mainly contributions to the Family Burden Equalisation Fund) and (actual and imputed) social contributions on public wages are recorded on the expenditure side, but are at the same time government revenue. Furthermore, public wages are also subject to social contributions and wage taxes paid by employees.

Especially the interaction of public pensions with taxes is highly relevant for projections, as the wage bill is more volatile than pension payments and as differences between the increases of the two can be significant. The difference in 2009, when total economy wages grew by about 4 percentage points less than total public pensions, represented an extreme case.

The interaction between payroll taxes and social contributions on public wages is important for the correct assessment of the impact on the budget balance of measures on payroll taxes or employers’ social contributions, like the extension of the contribution of the Family Burden Equalisation Fund to all public employees in 2008 to 2009. It is also important for the correct assessment of public wage agreements, like the wage freeze in 2013, on the overall budget balance. Furthermore, the implicit

¹⁵ Under ESA 2010, the VAT-based contributions will be recorded as increasing government expenditure (and not as reducing government revenue).

¹⁶ As government investment is currently low, it is simply assumed that the change in the government investment deflator is identical to the change of the private investment deflator.

Table 5

Adjustment of Fiscal Variables for Macro Forecast

Net indirect taxes

Taxes on production and imports (including taxes to EU)

- Subsidies from government
- Subsidies from the EU budget

Not part of expenditure projection
(mainly subsidies for agriculture)

Net indirect taxes

Contribution of taxes and transfers to households' disposable income

Current taxes on income, wealth, etc.

+ Social contributions

– Social benefits other than in kind

+/- Households' share in other current transfers received and paid

+/- Households' social contributions and transfers with sectors other than government

This slight simplification ignores the role of commuters

Not part of revenue/expenditure

Contribution of taxes and transfers to households' disposable income

Government consumption (nominal)

Compensation of employees (D1)

+ Other taxes on production (D29)

+ Intermediate consumption (P2)

+ Consumption of fixed capital (K2)

– Parts of D1/D29/P2/K2 stemming from market production

+ Social transfers in kind provided via market producers (D631)

– Output for own final use (P12)

– Payments for other nonmarket output (P131)

Not part of revenue/expenditure

Government consumption (nominal)

Government consumption (deflator)

Share of D1 and D29 * Increase in average wages

(1-Share of D1 and D29) * Increase in private consumption deflator

– Discretionary adjustment

Partly driven by increase in governments' productivity

Increase in government consumption deflator

Source: OeNB.

rates of both payroll taxes and employers' actual social contributions tend to be lower for public than for private wages.

Another interaction which is accounted for in the projection is that parts of the demand for goods (typically investment) recorded on the expenditure side are produced by government itself; this is covered on the revenue side by the item production for own final use (P.12). Currently, this item contains the effect of self-produced software (Statistik Austria, 2013). Under ESA 2010, this item should become more important, as expenditure on R&D produced for own account will be recorded as gross fixed capital forma-

tion and production for own final use at the same time (Eurostat, 2013).

The model does not account for some other revenue-expenditure interactions. This includes, for example, the imputed financial services (FISIM) related to interest revenue (which increase both interest revenue and intermediate consumption; see Statistik Austria, 2013), direct taxes paid by government to itself, or market output sold by government to itself.

2.6 Cyclical Adjustment and Structural Budget Balances

As explained above, the revenue and expenditure outcome is substantially

shaped by fluctuations in macroeconomic activity, which in our projection model is captured by the link to the OeNB macroeconomic projections. In the realm of fiscal policymaking, it is useful to filter out the impact of cyclical – and hence temporary – factors from permanent developments to assess the soundness and sustainability of budgetary developments. This is particularly important in the context of EU fiscal rules, which set fiscal targets (for the budget balance) in structural terms, i.e. excluding the impact of the economic cycle and of certain one-off measures. Hence, the collection of fiscal measures mentioned in section 2.1 also plays an important role for calculating structural balances. These measures are used to assess structural fiscal developments by subtracting specific one-off-measures on the revenue side (like the revenue from the tax agreements with Switzerland and Liechtenstein) or on the expenditure side (revenue from spectrum auctions, support to financial institutions) from the cyclically adjusted balance to obtain the structural balance.

Cyclically adjusted budget balances are calculated by all international organizations, such as the ESCB, the European Commission, the OECD and the IMF. However, the exact methods applied differ considerably.

In general, determining the cyclical component involves two different steps: (1) Measuring the cyclical position of the economy, and (2) measuring the link between macroeconomic variables and the budget, which is represented by tax and expenditure elasticities (see

table 1). The cyclical position of the economy is typically measured by the output gap, which is the difference between actual output and potential/trend output, i.e. the output that would be achieved if productivity and employment were at their trend level.

To determine the cyclical component, the European Commission's method¹⁷ links the respective elasticities directly to the output gap, assuming a constant elasticity of the corresponding tax and expenditure bases to output. This assumption can lead to measurement errors, for example when an export-led recovery raises output but not private consumption and hence VAT revenues.

To take into account these possible composition effects, the ESCB uses a more disaggregated approach.¹⁸ The tax elasticities are directly linked to the "tax base" gap – the deviation between the actual and the trend value of tax and expenditure bases (see table 1) – instead of the output gap.¹⁹ However, as indicated above, the relationship of some major taxes to their so-called macroeconomic base is rather loose. Therefore, the ESCB method may paint a relatively more plausible picture than the European Commission's method in years in which corporate taxes and VAT are "well-behaved" (e.g. 2011 and 2012) but faces (even more) problems in cases of massive revenue shortfalls in corporate taxes like in 2009.

2.7 Outlook: Implications of ESA 2010

The OeNB (fiscal) projections face a new challenge in September 2014 when

¹⁷ For more detailed information on the European Commission's method, see Denis et al. (2006), European Commission (2008), Girouard et al. (2005), Larch et al. (2009) and Mourre et al. (2013).

¹⁸ For more information on the ESCB method, see Bouthevillain et al. (2001) and Kremer et al. (2006).

¹⁹ The European Commission (2008, p. 104) estimated that such composition effects account for about one-quarter percentage point of GDP every year on average. In addition, the two methods differ in their approaches to calculating the respective gaps and the respective elasticities.

the new European System of Accounts, ESA 2010, replaces ESA 95. The most important changes for Austria stem from the recognition of R&D expenditure as investment and from the revised criterion for sector classification.^{20, 21} Both have an impact on GDP and on the structure of government revenue and expenditure. From September 2014, Statistics Austria will publish data only according to ESA 2010, with backward series available until 1995.

Information from Statistics Austria indicates that in Austria, the tightening of the sector classification criteria results in a reclassification of 1,400 units into the government sector, including the federal facility management company BIG (Bundesimmobiliengesellschaft), the Vienna Transport Authority (Wiener Linien), the Austrian railway infrastructure company (ÖBB Infrastruktur AG) and hospitals run by state or local governments. Reclassified units have significant levels of off-budget debt, in particular ÖBB Infrastruktur AG and BIG, which will be included in government debt. According to preliminary estimates by Statistics Austria, the overall effect on the debt ratio would be around 2.5 percentage points in 2011 (including the effect of the increase in GDP). The impact on government budget balances is expected to be rather minor, as the general government sector already bears the annual losses incurred by these units via subsidies and capital transfers. However, the structure of revenue and expenditure will change significantly. Most

importantly, these subsidies and capital transfers to ÖBB Infrastruktur AG and state hospitals will become intragovernmental transfers, which are going to be “replaced” by additional public consumption (i.e. compensation of employees, intermediate consumption and the like) and investment.

3 Ex Post Analysis of OeNB Projections

An ex post analysis of fiscal projections has to be treated with caution for several reasons:

- For budget balance projections, large one-off payments (payments to the financial sector) or revenue and large ex post revisions of data (like in 2008 for 2004 or in 2011 for 2007 to 2009, see below) represent particular risks.
- Furthermore, the assessment of projections beyond the current year is impeded by the no-policy-change assumption.
- A small pessimistic bias through “prudent” projections is (at least implicitly) intended by ECB guidelines.
- Budgetary projections are conditioned on a certain macroeconomic projection. Even in cases where the GDP projection is relatively accurate, larger projection errors for variables like the total economy wage bill can translate into large projection errors for the budget balance.
- The projection of the debt ratio is further obstructed by the often erratic behavior of stock-flow adjustments (see last paragraph of section 2.3).

²⁰ In ESA 95, a government-controlled unit is basically classified outside the government sector if it is a “separate institutional unit from government” and if “more than 50% of the production costs are covered by sales” (ESA 95, para. 3.19), which remains valid in ESA 2010. However, in ESA 2010 production cost also comprises the cost of capital (net interest payments), which makes it harder to fulfill the 50% criterion. In addition, ESA 2010 introduces qualitative criteria which assess (1) whether the unit sells its production only to government, (2) whether the unit faces competition from private suppliers for the mandate to supply to the government, and (3) whether the unit has an incentive to undertake viable profit-making activities.

²¹ For a full overview of changes, see Eurostat (2013).

Therefore, we focus our analysis on projections of the deficit ratio for the current year and year $t+1$ (and not $t+2$), and do not analyze debt ratio projections. Furthermore, detailed comparisons are only made with the projections by the Ministry of Finance in the spring and autumn EDP notifications (with the planned values for the current year). This is the institution that should know best about the real-time development of budget balances due to its direct and timely access to the data.²²

Furthermore, one should note that the forthcoming analysis of projection errors cannot be seen as an evaluation of the sum of all model features described in section 2. This model has evolved substantially over recent years, with several features (like the modeling of expenditure-revenue interactions, an equation for the interest payments forecast, a detailed breakdown of revenue) being introduced because relatively large projection errors were made at the very beginning of the crisis.

3.1 The Role of Macroeconomic Projections, Fiscal Measures and Statistical Revisions

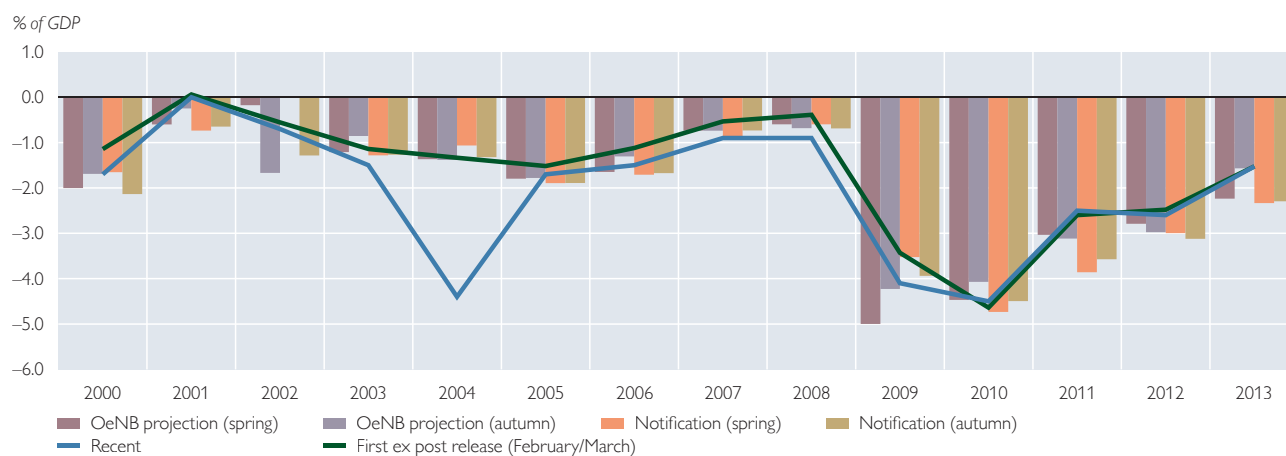
Chart 1 displays in bars the projected or planned values for the OeNB and the Federal Ministry of Finance (called Notification) respectively, for each of the biannual projections for the corresponding year. Chart 2 displays one-year-ahead projections by the OeNB, e.g. the bars for 2001 display the budget deficit as expected in the projection exercises in the year 2000 for the year 2001. The projections are compared to realized data (displayed in line charts) taken from two different vintages as published by Statistics Austria:

- the first ex post release (which comes in March $t+1$ and in some years was made in February $t+1$), and
- the current release (e.g. of March 2014).

Deviations between OeNB projections and final data are particularly striking in the year 2004 and, as chart 2 shows, also in 2009, but are very limited in

Chart 1

Budget Balance of the Current Year: OeNB Projection, Notified Planned Values and Realizations

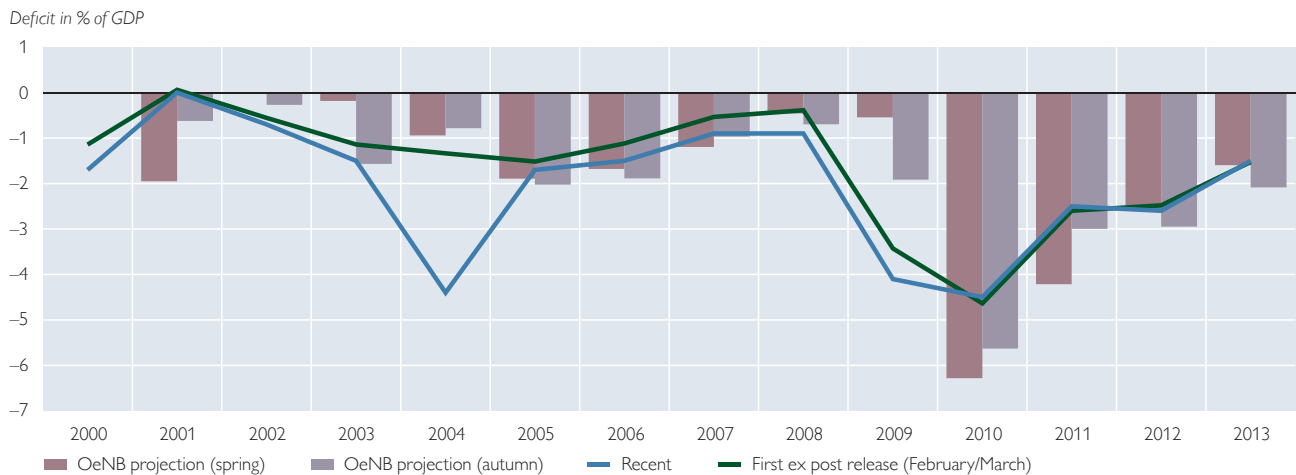


Source: OeNB, Statistics Austria, Federal Ministry of Finance.

²² A comparison with other projecting institutions (WIFO, IHS, IMF, European Commission, OECD) indicates that OeNB projection errors (compared to the first ex post release) were somewhat lower than those of international organizations and similar to those of other Austrian institutions (and somewhat lower in recent years).

Chart 2

Budget Balance of Year t+1: OeNB Projections and Realizations



Source: OeNB, Statistics Austria.

other years. The following section gives an overview of the main causes of the observed fiscal projection errors.

The observed deviations of actual outcomes from projections have various causes. Fiscal projection errors may originate from unforeseen macroeconomic developments, which is particularly important in times of economic turning points such as in 2009. When projecting budgetary developments for 2009 in 2008, the size of the economic downturn could not be correctly assessed yet. In spring 2008, the OeNB expected a nominal GDP growth rate of 4% for 2009, when it actually turned out to be -2%. As the main budgetary categories are linked to macroeconomic variables, large macroeconomic projection errors impact strongly on the quality of fiscal projections.

Often, projection errors are also due to fiscal measures that were not yet known or well specified enough at the time of the projection. The income tax reform in 2009, which decreased the tax burden and government revenues by roughly 1% of GDP in 2009, was not included in the projections pub-

lished in 2008. Since the beginning of the crisis, one-off payments have become more common due to financial assistance to the banking sector. Another recent one-off measure was the auctioning of mobile phone licenses in 2013, for which much lower revenue was included in the projection. As a result, the budget deficit projected in spring was much higher than in autumn, when the revenues were already known. Furthermore, changes in the stance on expenditure items like intermediate consumption, investment and spending on transfers (other than monetary social transfers) are hard to observe in real time, as they are to a large extent driven by states, municipalities and extrabudgetary units. This was a main contributor to projection errors for years like 2009 or 2011 when the growth in these expenditure items was very low (with and without controlling for the effect of well-specified measures).

Moreover, deviations sometimes originate from statistical revisions of past data which might come about years later. An important case in point is the

year 2004, when the first real data published by Statistics Austria pointed to a deficit of slightly above 1% of GDP. However, this data was revised in 2008 after a Eurostat decision that a debt assumption and a capital injection to the federal railway corporation (ÖBB) should be treated as deficit increasing, resulting in a deficit revision and a projection error (compared to recent data) of more than 3 percentage points. The situation was similar for the years 2007 to 2009, for which deficits were revised in March 2011 by about ½% of GDP each year (mainly due to changes in the statistical treatment of an agreement between the federal government and ÖBB Infrastruktur AG).

3.2 The OeNB and the Federal Ministry of Finance Have a Negative Bias in Budget Balance Projections

Chart 1 and table 6²³ (left part) show that the OeNB projections tend to be rather pessimistic compared to the first ex post release. As first ex post release

data are broadly unaffected by ex post revisions, they provide a good comparison for the assessment of the quality of the projections. OeNB projections pointed to a better headline balance than the actual results according to the first vintage only in two years in each case: The spring projections indicate better than actual outcomes in 2002 and 2010; the autumn projections display better outcomes in 2003 and 2010. The projections of the Federal Ministry of Finance are also pessimistic compared to the first ex post release. Like for the OeNB, only 4 out of 28 publications of planned data were more optimistic than actual outcomes (2002 and 2004 for data planned in February/March; 2004 and 2010 for data planned in September/October).

The fiscal projection bias for spring projections prior to the deep economic downturn in 2009 was on average smaller than the bias observed since 2009 (table 6); this is to some extent the result of single large projection errors, which happened to the OeNB in

Table 6

Bias¹ and Mean Absolute Projection Error of Budget Balance Projections for the Current Year

	Bias ¹			Mean Absolute Projection Error		
	2000–2013	2000–2008	2009–2013	2000–2013	2000–2008	2009–2013
Spring						
OeNB	-0.4	-0.3	-0.6	0.5	0.4	0.6
Finance Ministry (February/March)	-0.4	-0.2	-0.6	0.5	0.4	0.6
Autumn						
OeNB	-0.3	-0.3	-0.3	0.4	0.4	0.5
Finance Ministry (August/September)	-0.5	-0.4	-0.6	0.5	0.4	0.6
Overall						
OeNB	-0.3	-0.3	-0.4	0.4	0.4	0.6
Finance Ministry	-0.4	-0.3	-0.6	0.5	0.4	0.6

Source: OeNB, Federal Ministry of Finance, Statistics Austria.

¹ Bias = average of yearly projection errors (= projected minus actual value). A positive (negative) value indicates that budget balance has been overestimated (underestimated) on average.

²³ The projection bias is the average of the yearly projection errors, which is calculated as the projected value minus the actual value. Positive (negative) values indicate that the budget balance is on average overestimated (underestimated), which would then be called an optimistic (pessimistic) bias.

2009 and to the Federal Ministry of Finance in 2011.

The pessimistic fiscal projection bias displayed in the OeNB projections is the result of the ESCB projection framework, which requires prudence. Political economy considerations might influence the planned values of the Ministry of Finance, as “too optimistic” projections on headline balances might trigger additional expenditure pressures.

The picture drawn above would change completely when comparing the projections with the most recent budgetary data available: the overall fiscal projection bias is slightly optimistic. This result is, however, distorted by the ex post deficit revisions for 2004 and 2007 to 2009. Disregarding these outliers still indicates an overall pessimistic projection bias. Despite the risk of introducing distortions, institutions often base their assessment of the quality of older fiscal forecasts on comparisons with most recent budgetary data available (and to ESA 2010 based data starting from this autumn).

The right part of table 6 shows that the mean absolute projection errors of the Federal Ministry of Finance and the OeNB are relatively similar. The mean absolute projection error (MAE) measures the average absolute deviation of projections from the realized values. Unlike the bias, projection errors of opposite sign do not cancel each other out; therefore they are usually larger than the bias. If projections are biased toward one side, like in the case of the OeNB and the Federal Ministry of Finance, the absolute values of the mean absolute projection error and the bias are quite close.

4 Conclusions

Fiscal projections help to assess a country’s sustainability and the effect fiscal policy measures have on sustainability.

Measuring this effect is particularly important for monitoring fiscal consolidation needs. Moreover, fiscal projections play an important role in the new European fiscal governance framework.

The OeNB performs fiscal projections in the framework of the biannual ESCB projection exercise. Therefore, OeNB fiscal projections have to follow the common ESCB guidelines, which inter alia imply that projections are performed under a “no-policy change assumption,” respect the prudence requirement, refer to general government, and that they follow the rules of the European System of Accounts 95 (ESA 95).

The OeNB’s fiscal projections provide information on variables that are most relevant for the (EU) fiscal rules, namely the headline budget balance, the structural budget balance and the debt ratio. In addition, both government revenue and expenditure are decomposed into several detailed sub-components.

Most of the (tax) revenue variables and some of the expenditure variables are projected using (tax) elasticities and the developments of their underlying bases, which stem from the OeNB macroeconomic model. The degree of detail of the OeNB fiscal projection model is determined by external demand, by considerations of the comparability of subcomponents with cash data (or other administrative information), and by the difference between the driving factors of expenditure and revenue categories.

As in previous years, the OeNB will continue to recalibrate and adjust its projections (for example the elasticities of profit-related taxes). Additional information that will be available at lower levels of government and intrayear information will be used to further

improve the quality of the projections. A first major adjustment of the OeNB projection will already take place with the change to ESA 2010.

As fiscal projections are intended to support policy decisions, it is important to assess how well they do. While the article highlights several reasons for projection errors, the accuracy of cen-

tral banks' fiscal projections is most severely limited by the ESCB requirements. In particular, the prudency requirements as well as the no-policy change assumption lead to an inherently pessimistic bias of Austrian fiscal projections (with the exception of the impact of two major ex post deficit revisions).

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