

# **Methodology of Deriving Expenditure Frameworks of the State Budget and State Funds**

**Methodology of Deriving Expenditure Frameworks**  
of the State Budget and State Funds

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Methodological compendium series explains the Ministry of Finance's approaches in the field of macroeconomic and fiscal analysis, forecasts and projections to the general public. Methodology of this publication is a common document of the Ministry of Finance of the Czech Republic and the National Budgetary Council and follows the Act No. 23/2017 Coll., on fiscal responsibility rules.

Relevant comments and ideas helping to improve the quality of the publication are welcomed at:

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# Introduction and Summary

The Act No. 23/2017, on Fiscal Responsibility Rules (hereinafter the “Act”) has introduced a numerical fiscal rule into the Czech budgetary procedure, which generally determines the establishment of a binding consolidated expenditure framework of State budget and State funds. The rule is based on the principle of counter-cyclical and prudent fiscal policy setting, and links European legislation to the national budgetary procedure. The Act entrusts the particular methodological procedures to the Ministry of Finance and the National Budgetary Council, which, pursuant to Article 12(1), shall draw up and publish “...a description of the procedure for determining the expenditure framework of the State budget and State funds from the total expenditures of the public institutions sector...” and, pursuant to Article 10(6) of the Act, also “... the procedure for setting one-off and temporary measures and adjusting the total revenues for the influence of the business cycle”. The Ministry of Finance then follows the common methodologies while the National Budgetary Council assesses whether the rules determined by law and agreed methodologies are fulfilled.

This document deals with the description of the above-mentioned procedures agreed between the Ministry of Finance and the National Budgetary Council. The methods described here are based on the theory and practice of respected international organizations, statistical procedures or classifications, as well as the long-term experience of the Ministry of Finance. Compared to the previous methodology (MF CR and NBC, 2018), it explicitly puts the reference to medium-term budgetary objective, as anchored in the Stability and Growth Pact regulations, and incorporates the correction mechanism into the procedure of the expenditure ceilings derivation.

Generally, the process of establishing binding expenditure frameworks for the State budget and State funds has several steps. First, the Act establishes the minimum allowed **structural balance of the general government sector**,<sup>1</sup> since the expenditure frameworks are established and derived via balance items rather than expenditure items.<sup>2</sup> The minimum amount of structural balance is obtained by adding possible expenditure due to correction mechanism based on Article 10(3) and the application of escape clauses according to Article 10(4) of the Act to the value of the general government sector structural balance set by the law. In the case that the law does not explicitly set the value of the general government structural balance for the given year, the expected medium-term budgetary objective<sup>3</sup> will be used. From thus calculated balance, the **prediction of structural balances of other components**<sup>4</sup> of the general government sector is deducted. In particular, the forecast of the fiscal development of local governments and health insurance companies is crucial. A number of other units of the general government sector have either balanced budget by law or, on average, normally have zero or very small balance. This leaves only the structural balance of the State budget and State funds.

Since the State budget and State funds have an overall rather than structural approach to preparing budget revenues and expenditures, which is, moreover, expressed in cash rather than in accrual terms, the following steps focus on adjustments in these respects. In order to derive the overall balance, the cyclical component of State budget and State funds revenues and the balance of one-off and other temporary measures for these units of public budgets are added to the structural balance of the State budget and State funds in the accrual methodology. **The total balance of the State budget and State funds** in the accrual methodology is then converted **into the cash-flow methodology**, and this is carried in a manner reverse to the manner in which accrual data from cash balances are compiled for the purposes of the European System of National and Regional Accounts.

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<sup>1</sup> Act No. 23/2017, on Fiscal Responsibility Rules, uses the term “public institutions sector” instead of the “general government sector” used in this document. However, both terms define the same group, which includes entities in accordance with the methodology of Regulation (EU) No. 549/2013 of the European Parliament and of the Council on the European System of National and Regional Accounts in the European Union, as amended (hereinafter the “ESA 2010 methodology”). As the Czech statistical practice, crucial in deriving the expenditure frameworks, works with the term “general government sector” in the meaning of the above mentioned regulation, the term is also used in this material.

<sup>2</sup> Compared to the adjustment of expenditure, the adjustment of balance is simpler and more transparent, as a number of general government sector units have, on average, balanced budgets or the deviations from balanced budget are usually insignificant. Usage of a structural balance instead of the total balance then allows disregarding one-off and other temporary measures that are difficult to anticipate and quantify ex-ante, irrespective of the length of the forecast horizon. However, the total expenditure of the general government sector can be derived by adding the projected total general government sector revenue adjusted for the effects of the business cycle and one-off or other temporary measures to the structural deficit. In order to fulfil the wording of the Act, the derivation and amount of total general government sector expenditure is part of the annual Public Institutions Sector Budget Strategy.

<sup>3</sup> The value of 1% of gross domestic product is explicitly stipulated by the Act in Article 10(1). Taking into account the directly applicable Council Regulation No. 1466/97, on the strengthening of the surveillance of budgetary positions and the surveillance and coordination of economic policies, as amended, the medium-term budgetary objective of the Czech Republic, derived from the documents agreed by the Council of the EU, or its preparatory bodies, and European Commission with respect to above mentioned Council Regulation, is to be maintained. Thus, for the purpose of expenditure ceilings derivation, the higher from these values is employed as the medium-term budgetary objective.

<sup>4</sup> Due to the knowledge of the tax assignment, it is possible to apply the relevant shares of tax revenues.

As the expenditure framework, not the balance, is binding, in the final step the derived cash balance of the State budget and State funds is deducted from the forecasted consolidated cash revenues of the State budget and State funds. This creates a **consolidated expenditure framework of the State budget and State funds**, which serves as the starting point in the budgetary process.

The following chapters deal with the individual parts for deriving the expenditure frameworks in more detail. They have been divided into thematic units and presented in a sequence based on their application.

# 1 Adjustment of Revenue for the Business Cycle Impact

Using statistical and mathematical methods, the impact of the business cycle on general government sector revenue can be estimated. This adjustment serves to minimize the impact of changes in the revenue dynamics or levels due to cyclical economic fluctuations on the expenditure framework of the State budget and State funds. In the Czech Republic's tax system, literature considers value added tax, excise tax, corporate income tax, personal income tax and social security contributions as cycle-sensitive.

## 1.1 Cyclically Adjusted General Government Sector Revenue

The relevant **revenue category** can be **adjusted for the impact of the business cycle** ( $R_t^*$ ) as follows:

$$R_t^* = R_t \cdot (Y_t^*/Y_t)^\varepsilon \quad (1)$$

where:

$R_t$  is the amount of the relevant revenue category in year  $t$ ,

$Y_t^*/Y_t$  expresses the **position of the economy in the business cycle** in year  $t$ . For the purpose of cyclical adjustment, the position of the economy in the business cycle is defined as the ratio of the potential product level ( $Y_t^*$ ) and the actual real economic performance ( $Y_t$ ),<sup>5</sup>

$\varepsilon$  indicates the **sensitivity** of the given revenue to the position of the economy in the business cycle. In accordance with sensitivity calculation for the tax system of the Czech Republic (Price et al., 2014, Mourre et al., 2014), used by both the European Commission and the Organization for Economic Co-operation and Development, the following sensitivities to the position of the economy in the business cycle are applied: 1.00 for the value added tax and excise tax; 1.78 for the corporate income tax, 1.65 for the personal income tax, and 0.86 for the social and health insurance contributions.

## 1.2 Potential Product and Output Gap

The calculation of the size of the output gap in the economy is based on the determination of the potential product level. **Potential product** is a measure of the equilibrium in the economy, without inflationary pressures and assuming optimal use of factors of production. The methodology for its determination uses the Cobb-Douglas production function with constant returns of scale.

**Cobb-Douglas production function** expresses economic performance as a function of total factor productivity and inputs of labour and capital production factors:

$$Y_t = A_t \cdot L_t^{\alpha_t} \cdot K_t^{1-\alpha_t} \quad (2)$$

where:

$Y_t$  represents **real economic performance** in year  $t$ ; for the purpose of calculating the output gap, real gross value added is used,<sup>6</sup> which better describes cyclical developments than real gross domestic product, because the volatility of the tax and subsidies on products balance that differs both quantities from one another is usually not linked to the business cycle,<sup>7</sup>

$L_t$  **labour**, characterized by the amount of hours worked in the economy, is calculated as the product of the employment and the average hours actually worked,

$K_t$  **capital** is a weighted average of cyclically insensitive fixed assets<sup>8</sup> (e.g. dwellings, roads, dams, etc.) and cyclically sensitive fixed assets. These are further adjusted according to the indicator of utilization of production capacity in the manufacturing industry,

<sup>5</sup> The ratio of the potential and actual real product level is the inverse value of the usually expressed output gap size ( $OG_t = (Y_t - Y_t^*)/Y_t^*$ ), that is  $Y_t^*/Y_t = 1/(1 + OG_t)$ . The reason is the straightforward expression of the cyclically-adjusted revenues.

<sup>6</sup> Real gross value added is based on chain-linked volumes referenced to the base year.

<sup>7</sup> For example, the introduction of restrictions on the sale of tobacco products at the original rate of taxation for only 3 months from the effective date of the new rate led to a strong fluctuation in indirect taxes in 2014 and 2015, which was not justified by economic performance.

<sup>8</sup> Cyclically sensitive fixed assets are assets in those sectors whose gross value added strongly correlates with the economic cycle. The volume of these assets accounts for approximately 40% of fixed assets in the economy.

$\alpha_t$  **the elasticity of labour** to economic performance is defined as the share of labour on total output; elasticity is calculated as the ratio of employees' compensation to the sum of employees' compensation and gross operating surplus,<sup>9</sup>

$A_t$  represents the **total factor productivity**, the residual in the Cobb-Douglas production function equation, i.e. the proportion of gross value added and the weighted average of labour and capital.

**Potential product** ( $Y_t^*$ ) is then the product of trend total factor productivity and the weighted average of potentially disposable factors of production:

$$Y_t^* = A_t^* \cdot L_t^{*\alpha_t} \cdot K_t^{*1-\alpha_t} \quad (3)$$

where:

$L_t^*$  **potentially disposable labour** is calculated as the product of the workforce (sum of employment and unemployment) and the average hours usually worked,

$K_t^*$  **potentially disposable capital** represents the volume of fixed assets at constant reproduction prices (i.e. net of depreciation) generated by the gradual addition method, where the difference between the real gross fixed capital formation and its consumption is added to the stock of fixed assets at current prices from the annual national accounts at the end of 2015,

$A_t^*$  **the trend aggregate factor productivity** is derived by smoothing out the aggregate factor productivity by a Hodrick-Prescott filter with a lambda parameter of 1,600.

To make the analysis of cyclical developments unaffected by long-term structural phenomena such as the fall in structural unemployment, the time series of the weighted average of potentially disposable factors of production  $L_t^{*\alpha_t} \times K_t^{*1-\alpha_t}$  is calibrated against the time series of the weighted average of utilized factors of production  $L_t^{\alpha_t} \times K_t^{1-\alpha_t}$ .

The output gap is estimated from quarterly data,<sup>10</sup> which in addition to past values include also the period of the medium-term outlook.<sup>11</sup> All calculations are made on base indices with the same basis created from seasonally and working days adjusted data.

More detailed information about the methods and data used in estimating the output gap are given in an appendix to this document.

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<sup>9</sup> Thus, the same ratio of income from labour and capital as in the rest of the economy is granted implicitly even in mixed income (income of self-employed persons).

<sup>10</sup> The time series of annual estimates of the output gap is calculated from quarterly data.

<sup>11</sup> The used time series start in Q1 1993 and end in Q4 of the year that follows 3 years after the current year.

## 2 One-off and Other Temporary Measures

In addition to the impact of the business cycle on the general government sector's balance, one-off or other temporary measures (hereinafter the "one-off measures") may distort the true nature and setting of the fiscal policy. Therefore, the structural balance also excludes these effects, which may temporarily improve or worsen the balance.

### 2.1 Definition and Principles for the Recording of One-off Measures

When identifying one-off measures, the national methodology is largely based on the original definitions and specifications of the European Commission (EC, 2004). A one-off **measure** is understood as **an exceptional measure which is not of a structural nature and it is:**

- 1) **temporary** – the measure only has a limited duration,
- 2) **unrepeatable** – limited frequency or likelihood of occurrence of the measure, with more frequent repetition of the measure of the same nature meaning a structural nature,
- 3) **transitional** – after the end of its validity, the measure does not lead to a permanent change in the level of revenue or expenditure, but to a return to an autonomous level.

**One-off measures are reported according to the following principles:**

- 1) **symmetry** – the measure can improve or worsen the balance,
- 2) **significance** – the effect on revenue or expenditure is higher than 0.05% of gross domestic product over the period of the measure,
- 3) **accrual methodology** – the measure is expressed in the current methodology of the European System of National and Regional Accounts used by the Czech Statistical Office.

### 2.2 Justification of the Characteristics and Principles of Reporting

When defining one-off measures, as in the case of other practical applications, it is necessary to choose the appropriate degree of complexity. All of the possible situations or measures can probably never be captured and, on the contrary, a general definition would allow for an undesirable degree of loose interpretation that would disrupt the fiscal rule itself. Therefore, the characteristics and principles for the reporting of one-off measures are accompanied by the following refinements and clarifications of the meaning of individual points.

A key feature of one-off measures is **exceptionality**, both in terms of the nature<sup>12</sup> of measures and the frequency of their occurrence. For measures to be exceptional, the circumstance of their occurrence is not crucial. Such circumstances may include a reaction to an event beyond the control of executive or legislative power, as well as conscious governmental decision. However, each one-off measure must at the same time meet the three essential characteristics.

In the first place, the **length of its duration** must be **clearly limited**. The methodology a priori does not determine the maximum duration of the effect of one-off measure on the revenue or expenditure of the general government sector. On the other hand, it is clear that a one-off measure is not one that has a long-term or even permanent effect. Therefore, it is necessary to assess from ex-ante perspective the likelihood of prolongation of the measures introduced for a limited period of time.

When classifying one-off measures, it is also necessary to assess the **frequency of occurrence or the risk of repetition**, because the mere temporary validity does not guarantee that the measure will not be repeated. The nature of the measure should therefore not give rise to the expectation of recurrence.<sup>13</sup>

Finally, the measure must only have a **transitional effect** on revenue or expenditure items. Therefore, the measure must not only act temporarily, but after expiration it must not change the amount or structure of revenue or expendi-

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<sup>12</sup> One of the typical examples is investments, which can be understood as one-off for each particular project, but the investments as an expense cannot be considered exceptional. Generally, investments are a regular recurrent part of general government sector expenditure. This can also include organizing a major sporting event.

<sup>13</sup> An example is support for agricultural producers in case of drought, long rains, severe frost, etc. It is essentially a measure of the same nature, compensating losses of one group of economic entities. The primary event is therefore irrelevant from this perspective.

ture. Revenue/expenditure then returns to their autonomous level.<sup>14</sup> However, if the one-off measure also produces secondary effects, it is seen as if the transitory requirement has been fulfilled, because secondary effects are usually not included even in the quantification of the measure.

If the measure meets all three characteristics, it may be considered as one-off. In addition to the factual nature of the measure, the way of capturing or principles for reporting the impact of one-off measures are also important.

The methodology assumes a **symmetrical treatment** of one-off measures so that the assessment of the fiscal position of the general government sector and its changes expresses as accurately as possible the non-cyclical structural nature of the balance. Symmetry makes it possible to include measures that not only improve but also worsen the balance. It also creates scope for recording such measures that are interrelated and reflected on both sides of the budget. For example, a one-off revenue to which specific expenditure is linked, not necessarily in the same year,<sup>15</sup> would be identified as a one-off measure on the revenue and expenditure side. On the other hand, one-off measures need to be recorded with caution. Therefore, in the case of expenditures directly financed by one-off revenues, the principle of symmetry can be applied only up to the amount of total one-off revenues.<sup>16</sup>

In terms of the macroeconomic impact and purpose of identification, **only quantitatively significant measures are considered**. A threshold of 0.05% of gross domestic product has been set. The threshold is based on the EC (2015),<sup>17</sup> but the national methodology considers the threshold in total. This is because the same measure may work in one year, or its effect may be spread over several years.<sup>18</sup>

Measures are assessed and reported in the **accrual methodology** of the European System of National and Regional Accounts. The currently valid accrual methodology is always the one used by the Czech Statistical Office for the reporting of general government sector data. This ensures recording uniformity among the different statistical authorities, transparency and consistency of methodologies.

The above principles for reporting one-off measures show that they are not only **identifiable** but also **quantifiable** on the basis of available information. Here too, due to the precautionary principle, the methodology does not include measures that can be difficult to quantify and the difficulty of quantification is demonstrably justified. Typical representatives of this group are effects related to the optimization behaviour of economic agents which is often associated with planned tax- or social benefits-related measures.<sup>19</sup> While these fluctuations in general government sector revenues or expenditures can be considered as one-off, they are disregarded due to the ambiguity of their occurrence. And finally, their ex ante quantification in a satisfactory manner would be problematic.

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<sup>14</sup> For some one-off measures, the identification of a transitory action is unambiguous. However, there are also measures that may, by the nature of the system whereby they are set, "leave" revenue or expenditure after its expiry at a different level. An example is the rate of personal income tax increased only for a transitional period. Since the wages and salaries from which the amount of the tax is calculated have very different levels after the expiry of the measure, it is not possible to assess the transitional attribute in absolute terms, but with regard to the dynamics of the environment.

<sup>15</sup> For example, a one-off revenue in one year and the related one-off expenditure paid in the following year.

<sup>16</sup> It is clear from the characteristics of one-off measures that the principle of symmetrical recording can only be applied if the measure on the opposite side of the balance sheet is not of a structural nature. For example, the sale of the seat of a public institution can be classified as a one-off revenue, but if the institution moves to rented premises, i.e. a recurrent payment of rent, it is not a one-off expenditure but a structural one.

<sup>17</sup> The European Commission's methodology (2015), except for the exemption aiming to ensure equal access to all European Union's Member States, sets the minimum value of one-off measures at 0.1% of gross domestic product in one year after rounding.

<sup>18</sup> For example, the measure can be effective over the second half of the first year and the first half of the second year. In the event that the impact of the measure is 0.02% of gross domestic product in one year and 0.04% of gross domestic product in the following year, one-off measures shall be included in these amounts in the relevant years. To assess the overall level of measures which affects the economy over multiple years, the gross domestic product ratios are to be subject to summarization.

<sup>19</sup> For example, the planned reduction in the personal income tax rate from the following year may lead economic agents to postpone the payment of bonuses or premiums to a period with lower tax burden.

## 3 Adjustment from Accrual to Cash Methodology

The **balance of the State budget and State funds in the accrual methodology** is then adapted to the **cash-flow methodology** in which State budgets and budgets of State funds are compiled, negotiated, implemented and controlled. The adjustment method is reversed compared to the compilation of the Government Deficit and Debt Notification Tables for the purposes of the European System of National and Regional Accounts.

### 3.1 General Characteristics of the Adjustments

Accrual and cash methodologies look differently on both the financial and non-financial operations of the State in terms of when the receivables and liabilities arise (see Eurostat, 2016 for details). The accrual approach attempts to assign a record to the period to which it belongs, rather than when it was associated with the cash flow. Tax revenues, social security contributions, social benefits paid, interest and others (for details, see CZSO, 2015) are therefore treated differently. Additionally, the accrual balance is adjusted for operations that do not affect the resulting balance in the ESA 2010 methodology but are cash revenue or expenditure. These are, for instance, the adjustments of revaluation or specific methodological nature in the accrual methodology. On the other hand, there is adjustment for operations that are not part of the cash revenue of the State budget and State funds, but it is revenue and expenditure in the ESA 2010 methodology.

### 3.2 Specific Adjustments for Core Revenue and Expenditure Items

**Accrual tax revenues** are calculated using the so-called time-adjusted cash method, which simply means that cash payments are included in the period where they belong based on their economic substance. The length of the time lag is based on legal regulations and lessons learned from the practice of delays between the inflow of funds on State accounts and the occurrence of tax liability. In the case of taxes paid with advance payments, tax overpayments or arrears are usually shifted to the relevant year. For other taxes, payment adjustments are made at the turn of the year. Therefore, the amounts resulting from the time lag are adjusted for accrual taxes. When transitioning to the cash balance, a similar adjustment is also made for **social security contributions**.

In the case of **social benefits**, the most significant accrual adjustment concerns advance payment for pension insurance benefits. From their accrual level, it is necessary to deduct advance payments transferred at the end of last year to Czech Post for the payment of pensions in January of the current year and, on the other hand, to add advances provided to Czech Post at the end of the current year for payment in the following year.

In the case of accrual calculation, **interest on bonds** is calculated in such a way that the difference between the redemption price and the issue price is to be spread into individual years over the maturity period. This applies to coupons in the case of coupon bonds and with realized premia or discounts from government bonds. These adjustments are eliminated when transitioning to cash balance. Additionally, accrual interest does not include the effect of financial derivatives.

**Resources related to European Union funds** often have a great impact on the difference between the accrual and cash methodology in the final budget execution. However, as the accrual methodology eliminates the impact of these funds on the balance and the State budget is compiled (planned) as balanced in terms of the funds' impact, there is no adjustment in this case.

Some operations may be recorded on a one-off basis in the ESA 2010 methodology, but recurrently in cash methodology. It includes for instance:

- a) a one-off accrual impact of the **guarantees claimed**, which are included in a cash balance as continuous repayment of principal of the guarantees claimed.
- b) **financial compensation to churches and religious entities** within the property settlement. These were recorded in the accrual system in 2012 as a capital transfer, but in cash system the principal is paid again on a continuous basis. Therefore, in the context of the transition from the accrual to the cash balance, the annual expenditure associated with the principal payment must be included in the State budget expenditures.
- c) the accrual balance recorded the lease of military aircraft **JAS-39 Gripen** in one year. Again, this is the exclusion of the influence in the accrual recording year, and in subsequent years, on the other hand, an increase in cash expenditure by the individual instalments.

- d) **purchase of military equipment** where the adjustments relate to the transition from the recording of expenditure at the moment of delivery of the equipment to the moment of payment for the delivery, i.e. the cash effect on the balance (recording of cash expenditures related to the advance payments for military equipment or repayments of equipment purchased in the past).

Other operations in which the cash and accrual approach differ include **financial operations**, when there is a change in the structure of financial assets and which therefore does not affect the balance in the ESA 2010 methodology (for example, the inclusion of loans granted in cash expenditure and their repayments in cash revenue). The purchase and sale of **shares** and other **securities** are treated similarly.

Specific methodical adjustments are also made in the accrual methodology. These include, for example, revenues from so-called “**super-dividends**”<sup>20</sup> (recorded in the accrual methodology as a reduction in holdings) or taking into account **extra-budgetary operations** that are not budgetary revenue, and thus do not enter the cash balance of the State budget or State funds.

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<sup>20</sup> Super-dividends are dividends that are high in relation to the level of recent dividends and profits. Simply put, it is a dividend paid over and above the operating profit of the past year, which represents the use of own assets in the ESA 2010 accrual methodology (see Eurostat, 2016).

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