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Abstract
We assess the proposal for a new fiscal framework that is currently being negotiated in the Parliament of the Czech Republic. The new framework contains the following elements: an expenditure rule that aims to restrain the growth of expenditures through cyclically adjusted revenues and a debt brake at a debt level corresponding to 55% of GDP to avoid unsustainable debt levels. Additionally, this set of rules shall be complemented by the Fiscal Council. Our assessment focuses on evaluating the performance of the new framework using two types of counterfactuals if it had been implemented a decade ago. In general, although we confirm the positive effects of the proposed framework, we also raise several concerns, primarily related to the effects of the rule on the ability of the public finances to operate as a macroeconomic stabilization policy.

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1. Introduction

In this study, we analyse the fiscal rule proposed by the Czech government. There are three primary reasons for the implementation of fiscal rules in the Czech Republic. First, because of persistent fiscal deficits, the ratio of the Czech public debt to GDP has been gradually increasing for the most part of the last two decades. Although there has been a slight decrease in the debt ratio recently, it remains well above the level of the early 2000s or the period before the Great Recession. Second, long-term trends in fiscal sustainability are also unfavourable, primarily because of spending pressures related to a population ageing, including costs such as pensions and health-care expenditures. Finally, the Czech Republic is required to implement EU fiscal rules (Council directive 2011/85/EU of November 8, 2011) that demand Member States to implement numerical fiscal rules in their national legislations.

The government proposal includes two key numerical rules: an expenditure rule consistent with a medium-term objective of structural deficit at 1% of GDP and a debt brake set to 55% of GDP. In addition to the numerical rules, the proposal presents major institutional modifications because it aims to establish both a Fiscal Council and a Committee for Budgetary Forecasts. The proposal also introduces a debt brake for regional and local governments and sets their maximum debt limit as 60% of their revenues.

In general, the new fiscal rules are regarded as beneficial instruments that help governments to achieve long-term sustainability of their public finances. The proposed fiscal rule does so by capping public-sector expenditures in a manner that is determined mainly by expected cyclically adjusted revenues. Consequently, structural deficits shall decrease. However, the design of fiscal rules is important not only to avoid deficit bias and to stabilize the debt ratio but also to strengthen the stabilizing role of fiscal policy. It is well known that different specifications of fiscal rules imply different degrees of flexibility in times of economic slack or even recession. Therefore, a large portion of our assessment concentrates on the effects of the proposed rule on macroeconomic stabilization. In particular, we attempt to investigate the extent to which the rule can work as a countercyclical device.

The core of this study is a counterfactual analysis in two alternative settings. In both cases, we assume the rule had been adopted in 2004, and we calculate how the deficits and the debt ratio would have evolved in that event. Our first counterfactual analysis is static, and we further assume that the change in the Czech Republic's fiscal policy stance did not affect other macroeconomic variables, primarily the GDP. This assumption is relaxed in the second counterfactual, in which we also simulate the development of GDP, inflation, interest rates and the nominal effective exchange rate along with fiscal variables to provide a more complex assessment of the impact of the proposed rule.

We show that if the proposed fiscal rule had been implemented in 2004, budgeted deficits would have been 30 to 60 billion CZK lower in recent years. In line with milder deficits, the debt ratio would also have been lower by approximately 10% of GDP in comparison to current levels.

Nevertheless, the extent to which the deficit bias of the Czech Republic's public finances would have been mitigated is heavily dependent on budgetary forecasts. Although the proposal contains several checks and balances against the systematic upward bias of predicted cyclically adjusted revenues, we show that even a difference between systematically conservative forecasts and unbiased forecasts might make a difference between accumulating surpluses in times of economic growth or remaining in a state of permanent deficit. These results are primarily driven by relatively small cyclical components of both revenues and budget deficits. Furthermore, we show that the cyclical component is generally difficult to forecast because of the effect of substantial ex-post revisions of the underlying trend.

Consequently, the effects on the potential macro-stabilization role of fiscal policy would have been relatively moderate: most of the observed countercyclical pattern is primarily caused by unanticipated positive or negative growth surprises[1] instead of being generated by adherence to the fiscal rule.

1 Growth surprise = the difference between actual and predicted real GDP growth. For a discussion of the importance

Nevertheless, if the fiscal rule had been implemented a decade ago, its impact on GDP growth would have been relatively minor. We did not find support for the substantial negative effects of fiscal consolidation stemming from implementation of the rule in the mid-2000s, likely because of robust economic growth and favourable external conditions. Furthermore, if the fiscal rule had been followed in the Great Recession, it would not have implemented the fiscal consolidation of 2012 and 2013 that is considered a cause of the last recession. Discussion of the validity of these results with respect to the recent literature on the impact of fiscal consolidation in recessions is also provided.

Despite several potential caveats, we believe that the proposed fiscal framework is a welcome and overall positive step towards long-term sustainable public finances in the Czech Republic.

The remaining portion of our analysis is structured as follows. The second chapter discusses the need for the fiscal rules in the Czech Republic. The third chapter summarises the basic types of fiscal rules and the fourth chapter analyses the impact of fiscal rules on the sustainability of public finances and economic performance. The fifth chapter discusses the proposed fiscal rules in detail and provides an informal assessment of the proposal. In the sixth chapter, we focus on the accuracy of macroeconomic forecasts in the Czech Republic. In the following chapters we present the two counterfactual analyses: the seventh chapter primarily assesses past compliance with the proposed rule; chapter eight contains the dynamic simulation. Concluding remarks close this study.

2. Is there a need for a fiscal rule in the Czech Republic?

The Czech Republic can be regarded as an ideal candidate for fiscal rules that require long-term budgetary discipline. At 41% of GDP, the public debt is well below the threshold imposed by EU fiscal rules. However, until recently the Czech Republic's debt ratio has grown steadily and during periods of robust growth, declines in the debt ratio were too short and too small to offset previous increases (Figure 2.1). Therefore, the Czech Republic is prone to significant deficit bias: the government runs deficits not only in recessions and periods of sub-par growth but also in good times.

The public debt has increased, and fiscal deficits have become entrenched despite the fact that the current fiscal framework, which was introduced in 2004, is based on fiscal targets that were intended to constrain governmental discretion. However, the fiscal framework has been too permissive and allowed consecutive governments to violate fiscal targets without any sanctions, further strengthening the deficit bias.

The sub-par performance of the Czech Republic's institutional framework is reflected by its position in the Fiscal rule strength index of the CESifo (Enziger, 2014). Among the 27 EU countries, the Czech Republic appears in 22nd place, with the value of the index –0.14 (min -1.01, max 3.26). The European Commission, the IMF and OECD are sceptical of the current framework. In particular, the IMF provides a following assessment of the Czech fiscal framework "*A Medium-Term Expenditure Framework, but no fiscal rule is in place. The framework covers two years beyond the budget year. At present, the central government and state funds are covered by the expenditure rule. The government may change the MTEF for the originally second and third years when a state budget bill is introduced. In principle, this is possible only in specifically defined cases, which are enumerated in the Budgetary Rules Act. These include for example significant deviations from the macro-economic forecast, natural disasters, changes in revenue from the EU funds, etc. In practice, frequent changes have been made, so that the framework is not considered a rule."*[2]

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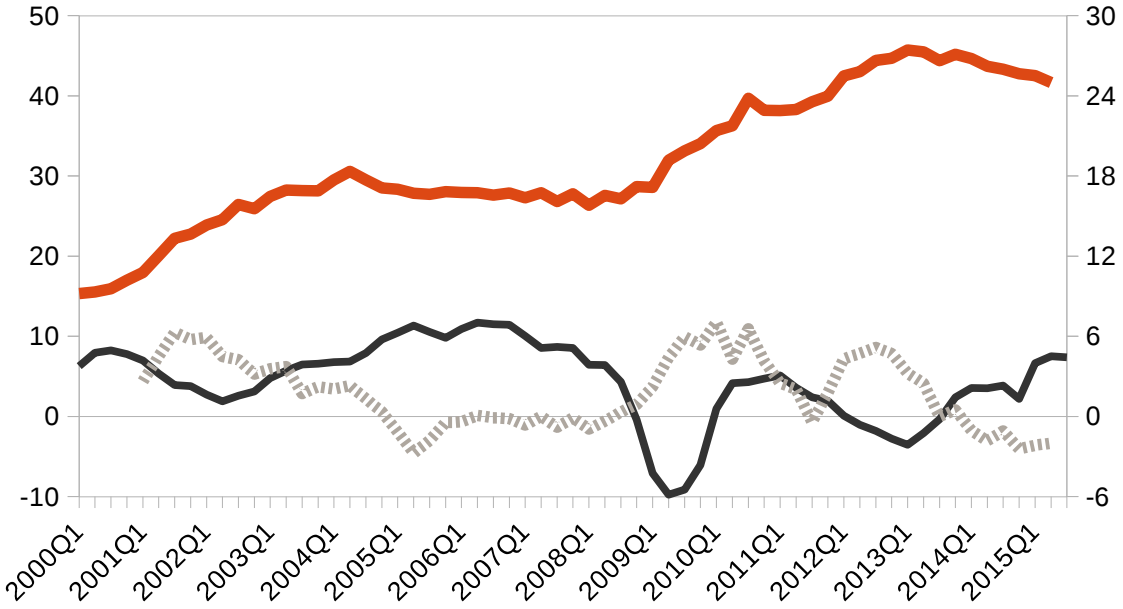
of growth surprises in output growth rates in emerging and advanced economies, their synchronisation and spill-overs, see in particular Abiad et al. (2013).

2 See Budina et al., 2012, Fiscal Rules dataset, 2012 edition. Similarly, the European Commission (2015b, p. 15) criticises the Czech fiscal framework for being "relatively weak compared to EU standards": it is evaluated as the 5th-weakest framework among the EU members primarily because of insufficient monitoring and enforcement. Additionally, the OECD has been recommending implementation of fiscal rules together with independent fiscal

Figure 2.1: Public Debt and Economic Growth, 2000 - 2015



Note: Debt ratio in % of GDP (red, left axis), GDP growth, y-o-y, % (black), change in the debt ratio (grey dashed).

Furthermore, the current, still relatively low, level of public debt masks unfavourable long-term trends. The Czech Republic is exposed to the same ageing problem as the rest of Europe, but the fiscal consequences of the ageing process are likely to be even more pronounced because the Czech population relies on the public provision of age-related expenditures to a greater extent than in most European countries. Dybczak (2006) analysed the Czech health care system and pension system and show that a massive debt is likely to accumulate by 2060. Janský and Schneider (2012) estimated that the public debt could reach as much as 160% of GDP in 2050 if current policies are not changed. The unsustainability of Czech public finances has also been confirmed by Krejdl (2006).

The prospects of long-term sustainability have been updated in several recent studies. The European Commission (2015a) forecasts an increase in public pension expenditures (% of GDP) from 9 % (2013) to 9.7 % (2060) and estimates the increase in total age-related expenditure from 19 % to 22 % of GDP. Fiscal sustainability is also questioned by the European Commission (2015b). Expected increased expenditures related to pension and healthcare systems are significant determinants of the future sustainability of the Czech Republic's public finance. Therefore, implementation of the fiscal rule could significantly contribute to strengthening budgetary discipline, which is likely to be even more necessary in the decades to come. However, the design of fiscal rules is also important: different specifications imply different levels of flexibility in bad times and a different ability to enforce the accumulation of surpluses in good times.[3]

Moreover, the Czech Republic is also committed to implementing a numerical fiscal rule with respect to its obligations arising from EU membership. The obligation to approve and implement fiscal rules is embodied both in EC Directive 2011/85/EU and in the Treaty on Stability and Coordination and

bodies (e.g., the fiscal council) in the Czech Republic for several years (e.g., OECD, 2011) because the current fiscal framework is also regarded as weak. The OECD (2011, p. 13-14) mentions, e.g., the inability to effectively reduce debt in good times and the regular increases in medium-term expenditure ceilings that were introduced in 2004.

3 The OECD (2014) predicts an increase in public debt that should reach 60% of GDP around the year 2030. Therefore, the OECD recommends "fiscal policy tightening" in the medium term and welcomes fiscal governance reform initiatives that should help stabilize public finances and make fiscal governance both effective and transparent (OECD, 2014, p. 22-23).

Governance (the "Fiscal Compact"), which is currently in the process of ratification by the Czech Parliament. More specifically, the Fiscal Compact states that the fiscal rule shall set a medium-term objective of the annual structural balance of the general government with a lower structural-deficit limit of 0.5% of GDP at market prices. In case of a country with a debt-to-GDP ratio that is significantly below 60% and in which the risks to the long-term sustainability of public finances are low, the lower limit of the medium-term structural-deficit objective can reach 1% of GDP.

3. Overview of existing fiscal rules

This chapter describes basic types of the fiscal rules, presents their examples with the focus on the EU and summarizes literature discussing effectiveness of the fiscal rules in general. The chapter is divided into three sections. First section deals with the rules typology and few examples of the rules, second discusses EU fiscal rules and third summarizes literature related to the fiscal rules effectiveness.

3.1. Typology of the rules and examples

A fiscal rule can be defined as a "long-lasting constraint on fiscal policy through numerical limits on budgetary aggregates" (Budina et al., 2012, p. 5). However, the fiscal rules do not contain only numerical rules; instead, they can also focus on defining procedures that aim to increase, e.g., predictability and transparency of fiscal policy,

Budina et al. (2012) distinguished four primary types of numerical rules:

- Debt rules, which are often expressed as the public debt limit as a % of GDP (sometimes referred as "debt brakes");
- Balanced-budget rules, including structural or cyclically adjusted balancing and balancing over the cycle. Therefore, these measures can help stabilize an economy that has been hit by economic shocks;
- Expenditure rules limit government spending, which is often expressed in terms of GDP growth rates; and
- Revenue rules.

In the past two decades, fiscal rules have experienced a dramatic boom. According to Budina et al. (2012), in 1990, just 5 countries (Germany, Indonesia, Japan, Luxembourg and the US) used fiscal rules. By 2012, 76 countries had active fiscal rules. Countries often implemented two or more numerical rules. Those authors also divided rules into national rules and supranational rules. Forty-five countries used national rules, with the developed countries leading the trend. Those countries were very quickly followed by emerging economies. There were different motivations for the implementation of such rules, including the South American debt crisis, the reduction of debts and deficits, etc.

Fiscal rules were also implemented at the supranational level. They were necessary supplementary tools to ensure both the sustainability of the monetary unions and fiscal discipline among the EU countries. According to Budina et al. (2012), we can find the following supranational rules active as of 2012:

- European Union: Stability Growth Pact;
- Eastern Caribbean Currency Union: Public-debt-to-GDP of 60% by 2020;
- West African Economic and Monetary Union: Public debt-to-GDP of 70%, balanced-budget rule; and
- Central African Economic and Monetary Community: Debt and balanced-budget rule.

Although most of these fiscal rules rely on simple numerical rules (i.e., a balanced budget and a debt lower than a certain percentage of GDP), some of the implemented fiscal rules have built-in exceptions related to specific expenditure items and appear not only in expenditure rules but also in

balanced-budget rules and debt brakes. Those exceptions are related either to expenditures that are not under direct control of the government - e.g., interest payments - or to cyclically sensitive expenditures that enhance the potentially stabilizing role of fiscal policy. Additionally, capital expenditures are excluded. These expenditures have the most significant impact on both short-term growth and long-term growth potential, and governments are not forced to cut public expenditures when compliance with the rule must be achieved by fiscal tightening.

3.2. The EU Fiscal Rules

On the EU level, the first implementation of numerical fiscal rules is associated with the Maastricht treaty and common currency project. Since 1997 the Stability and Growth Pact has become a key building block of the rules specifying that all EU members should not exceed government deficit of 3% GDP and public debt 60% GDP. However, the pact did not prevent number of EU member states from ongoing accumulation of public debt. The fiscal rules included in the pact were also repeatedly criticized either due to their insufficient flexibility to deal with business cycle fluctuations or due to the low credibility and lack of efficient enforcement of the rule by the Council of the EU (notably after its decision not to apply sanctions against France and Germany for running the excessive deficits).

However, the recent euro area debt crisis, with its protracted period of severe stress on the bond markets, further revealed the weaknesses of the pact and in 2011/2012, concerns about the future of the monetary union were raised. In reaction to the crisis, EU leaders adopted a comprehensive revision of the EU fiscal framework that is binding for the EU Member States.

The current EU fiscal framework consists of three main building blocks: i) the Stability and Growth Pact (SGP), including the "six-pack" revision with its requirement of clear fiscal rules; ii) the "two-pack," which regulates the budgetary process of euro area members and iii) the separate intergovernmental Treaty on Stability, Coordination and Governance (TSCG)[4].

The six-pack strengthens the SGP in several ways. First, the EU Member States are required to adopt and implement numerical fiscal rules in their national legislation. Second, budgetary balances are required to converge towards a country-specific, medium-term objective[5] (MTO, the so-called "preventive arm" of the fiscal framework). Third, the excessive deficit procedure (representing the "corrective arm") can be launched not only when the 3% deficit criterion is breached but also when the debt ratio is not diminishing at a pace that has been pre-defined as satisfactory. Finally, an excessive imbalances procedure has been introduced; this procedure should help monitor and reduce major macroeconomic imbalances.

The euro area Member States are required to perform additional acts: a two-pack that enhances surveillance over national fiscal policies and introduces a monitoring system for countries in the excessive deficit procedure, along with the TSCG, which strengthens SGP even further. More specifically, the contracting parties must respect their country-specific medium-term objective as defined in the SGP, with a lower limit of a structural deficit of 0.5% of GDP (1% of GDP for countries with a debt ratio of significantly less than 60% of GDP)[6]. Additionally, the fiscal rules should contain automatic sanctions that should be triggered in the event of deviation from the MTO,

4 Although the Treaty on Stability, Coordination and Governance is not part of EU law, it has been signed by all EU member states except the U.K., the Czech Republic and Croatia. The TSCG is effectively binding primarily on the euro area Member States, whereas non-members might decide which parts of the TSCG to obey. The fiscal part of the TSCG is referred to as the "Fiscal Compact".

5 The medium-term budgetary objective is defined taking into account the impacts of business cycles and other factors, which therefore are defined in structural terms.

6 The TSCG contains explicit escape clauses to broaden the flexibility of the fiscal rules primarily in times of economic recessions or other events that have a direct impact on the fiscal stance but are out of the government's control.

and compliance with the rules should be monitored by independent institutions.[7] These rules shall also be implemented in national legislation, preferably in the form of constitutional laws to boost their credibility. Overall, the TSCG not only imposes stricter limits on budget deficits but also calls for strengthening of the fiscal framework.

Currently, it is still relatively early to assess the efficiency of the new EU fiscal framework. Nevertheless, we observe a rapid decrease in the number of EU countries under the excessive deficit procedures and improvements in fiscal positions as the impact of the Great Recession and the euro area debt crisis gradually vanishes.[8]

Box 1: Numerical fiscal rules in the EU

The EU Member State must obey the following numerical fiscal rules:

- The fiscal deficit limit is set to 3%. If the limit is violated, the Excessive Deficit Procedure is invoked.
- Public debt-to-GDP ratio should not exceed the threshold of 60%.
- An "excessive public debt-to-GDP ratio" (= invoked Excessive Deficit Procedure) is a value of the ratio that exceeds 60% of GDP while not being sufficiently decreased (reduction of the difference between the actual and threshold debt by 5 % per year on average over three years).
- Medium-term budgetary objectives should be fulfilled or a member should be converging to the criteria by "adjusting their structural budgetary positions at a rate of 0.5% of GDP per year as a benchmark".*

The euro area Member States must also fulfil additional numerical rules as defined by the TSCG:

- The structural deficit limit is 0.5% of GDP. For countries with a public debt-to-GDP ratio significantly below 60% the limit is set to 1%.**
- Automatic correction mechanisms must be implemented if the limit is exceeded. The precise structure of the mechanism is specified by national laws.**

The euro area Member States can be fined for violating correction or preventive arms:

- Repeated deviations from the medium-term budgetary objective without appropriate corrections can lead to sanctions of 0.2% GDP.
- Failure to successfully implement corrections stemming from the Excessive Deficit Procedure can lead to sanctions of 0.2% GDP and in specific cases even 0.5% GDP.
- Failure to implement the lower limit of the structural deficit into national legislation in line with the TSCG can be fined 0.1 % of GDP.

* See http://ec.europa.eu/economy_finance/economic_governance/sgp/preventive_arm/index_en.htm

** The non-euro-area Member States TSCG ratifiers can voluntarily choose to obey also chosen rules for EU members.

4. Do the fiscal rules benefit the economy?

It is generally agreed both that fiscal rules improve public finances (e.g., Afonso & Guimarães, 2015) and that fiscal rules can better guide policy makers than reliance on market discipline. Begmann et al. (2013) find that signals from the bond market are often erratic and not particularly informative about the sustainability of public finances. Similar points are raised by Wyplosz (2012) and DeGrauwe-Foresti (2015). The positive effects of expenditure rules, particularly on budget discipline, are documented by Hauptmeier et al., 2011, and Holm-Hadulla et al., 2012. Furthermore, Perotti (2003)

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7 See http://ec.europa.eu/economy_finance/articles/governance/2012-03-14_six_pack_en.htm for details.

8 From 23 ongoing Excessive Deficit Procedures in December 2011, just 9 remained in those procedures by late 2015 (EC MEMO/11/898). Note that just two countries, Estonia and Sweden, have never been subject of any step of the Excessive Deficit Procedure.

and Turrini (2008) note that the EU fiscal rules contributed to the countercyclical nature of fiscal policy in the EU. The positive effects of fiscal rules that have strong governmental commitments include lower yields on government bonds because of the positive reactions of capital markets (Afonso & Guimarães, 2015).

Heinemann et al. (2014) examine the relationship between country preferences for conservative policies and fiscal rules: if a country's voters prefers responsible fiscal policy, then a potential new fiscal rule would not change those preferences, and therefore, such rules are not the cause of sustainable fiscal policy. Asatryan et al. (2015) regard this endogeneity as a significant methodological issue related to estimations of the efficiency of fiscal rules.

Nevertheless, Heinemann et al. (2014) have learned that the rules can significantly help gain the confidence of financial markets for countries with a poor fiscal reputation. This result also holds for cases in which countries are forced to implement fiscal rules. The issue of potential endogeneity has been further addressed by Heinemann et al. (2015), who focus on the endogeneity between good governance and good rules using a meta-regression analysis. Despite the fact that those authors regard their study as "preliminary", their results point to a validity of the conclusion that fiscal rules effectively constrain fiscal policies because the positive effects of fiscal rules are identified even when controls for fiscal preferences are included.

Similarly, positive effects are also related to independent fiscal councils (Debrun-Kinda, 2014). An overview of the existing fiscal councils in the EU is provided in Schneider (2012), whereas Kopits (2011) attempts to develop the characteristics of the good practises of a fiscal council. In particular, he points to the importance of political consensus to establish the council, independence and non-partisan status, with unlimited access to timely information from the government and technical competence. Similar conclusions were drawn by both Lane (2010) and others.

However, fiscal rules can create challenges of their own, especially the risk of front-loaded fiscal consolidation that can even be pro-cyclical. Whereas before the Great Recession it was widely believed that fiscal consolidations can quite easily expand (Giavazzi-Pagano, 1990; Alesina-Ardagna, 1998 being the classical references), these results were widely revisited afterwards, when the negative effects of fiscal austerity on economic growth became more apparent. De Grauwe and Ji (2013, p. 33) warn against the austerity policies applied in the EU during previous crises, arguing that fiscal rules "forced them into recession". Guajardo et al. (2014) revises empirical estimates of effects on economic growth through fiscal consolidation. His results suggest that former estimates might have been biased towards the positive growth effects of consolidation. Auerbach and Gorodnichenko (2012) also revise previous studies, claiming that the fiscal multiplier during the crisis is higher than it should be according to standard linear models. The hypothesis of higher multipliers in the Great Recession is also advocated by Blanchard and Leigh (2013), who show that in the Great Recession, planned fiscal consolidations were closely tied to negative growth surprises so that the effects of fiscal policy were consistently underestimated. There have also been several critical observations of the relationship between fiscal rules and monetary policy. In general, these studies warn against the negative effects of fiscal consolidation in the event of overly rapid implementation of fiscal rules, highlighting the nexus between fiscal policy, government credibility and financial markets (e.g., Collignon, 2010; Ferraresi et al., 2014).

If we attempt to very briefly summarize the contemporary literature related to fiscal rules, we can conclude that although those rules are generally beneficial, they must not be overly rigid and restrictive because premature fiscal consolidation implemented in times of economic slack could have a strong recessionary impact (Marzinotto-Sapir, 2012). The rules must allow fiscal policy to relax during economic recessions. Second, fiscal rules must be credible and must account for spillovers from fiscal policy to financial markets' performance, which in turn impacts the severity of economic and/or financial crises.

We find both positive and negative experiences with fiscal rules among EU members. For example, Sweden is often cited as an example of efficient fiscal governance using numerical fiscal rules. The Swedish reform of its fiscal framework was its answer to severe economic crises in the early 1990s that resulted in high budget deficits and a sharp increase in the government debt (Jonung, 2014). Sweden's fiscal framework requires a "surplus target" for general government lending. In 2014, the target value was set to 1% of GDP over the business cycle, creating reserves in the event of negative economic development. Along with the surplus target, the government sets an expenditure ceiling that is expressed in terms of a share of GDP.[9] Additionally, in 2007, Sweden established a fiscal council that has gained a sound reputation with its ability to monitor and evaluate government fiscal policy. To some extent, the Swedish Fiscal Council serves as a "watch dog" safeguarding government policies from irresponsible behaviour.

Since the 1990s, the government debt-to-GDP ratio has fallen from nearly 70% to 40%, and the targeted surpluses and expenditure ceilings have generally been met. Thus, fiscal reform can be regarded as successful. With respect to the main reasons that the Swedish fiscal framework has been so successful, Jonung (2014) highlights the difficulties with correctly identifying causal links because it is unclear whether the direction goes from sound fiscal rules towards healthy public finances or from strong willingness to achieve sound public finances that results in following the fiscal rules. In other words, he believes that political will must be included among the key contributing factors of success. John Hassler, President of the Swedish Fiscal Council, agrees and points to a consensus in the early 1990s that Swedish public finances need not only a new fiscal framework but also other reforms (pensions, labour market, independent central bank, etc.). Most of these reforms were actually undertaken, and the positive effects of the new fiscal framework were also related to the success of the adopted policy mix (Hassler, 2015).

On the other hand, the United Kingdom represents a very different case. It adopted new fiscal rules in 1997 and 1998 that specified the so-called "golden rule": Over the economic cycle, the government was allowed to borrow only to cover investment expenditures: in other words, a structural budget balance that excluded public investment was targeted. The golden rule was complemented by the "sustainable investment rule", with an inflexible debt ceiling of 40% of GDP. According to Wren-Lewis (2013, p.44) these rules had three weaknesses: "the reliance on Treasury forecasts; the method of cyclical correction; and the target of a constant rather than declining debt-to-GDP ratio". These weaknesses resulted in overoptimistic forecasts that did not warn policy-makers to tighten fiscal policy in the 2000s. The government managed to decrease its debt-to-GDP ratio from 1997 through 2002 from 47 to 36%; however, since 2003, we observe an increase in the ratio to 52% in 2008. The debt ratio deteriorated further during the crisis, reaching 88% in 2014. Namely, it was the impossibility of financing bailouts in the banking sector and deficits arising from deteriorating economic activity that led to the 2008 decision to abandon the fiscal rules. From this perspective, the rules were regarded as not only being unable to avoid significant increase in the debt-to-GDP ratio but also being too rigid during the downturn and therefore as inapplicable.

Both examples show that any fiscal rule alone cannot save public finances. The political will to tighten fiscal policy was a crucial precondition for the success of Sweden's reformed fiscal framework. On the other side are the British rules, which were partially too rigid, and had to be abandoned for a time to cope with the downturn, and partially too loose, resulting in too-small improvements of public finances in good times. These examples teach us that successful fiscal framework must be accompanied by political effort related to responsible fiscal policy.

9 The rules also cover local governments when municipalities and regional councils are required to maintain balanced budgets.

5. The proposed fiscal rules for the Czech Republic

The Czech government has proposed a set of fiscal rules that aims to both improve Czech public finances and increase their long-term sustainability[10]. These goals shall be achieved by mitigating the persistent deficit bias and decreasing the debt-to-GDP ratio. The government's motivations are twofold. First, the rule shall secure a sufficient fiscal space for countercyclical economic policy in future recessions while not questioning the sustainability of Czech public finances. Second, the adoption of the rule should help to meet the Czech Republic's commitments to the EU legislation both in terms of numerical limits on debt and deficits and in terms of the required improvements in the institutional framework (the Stability and Growth Pact, along with the EC Directive 2011/85/EU and the Treaty on Stability and Coordination and Governance). The proposal is currently being discussed in the Lower House of the Czech Parliament.

The key elements of the proposal are as follows:

- The deficit bias shall be avoided by capping public-sector expenditures of public sectors, which are determined by predicted cyclically adjusted revenues (the expenditure rule, § 9-11 of the proposal). Thus, the expenditure rule should allow moderate expansions and fiscal stimuli in bad times and surpluses in good times.
- Debt sustainability should be safeguarded by the debt brake (§ 12 – 15) that pushes the central government towards fiscal consolidation and imposes constraints on local governments and public institutions when the debt-to-GDP ratio exceeds 55% of GDP.
- The institutional framework shall be strengthened by the newly established Fiscal Council (§ 20 - 32), which shall have supervisory power over the budgetary process, and by the increased transparency of the public sector (§ 3 – 8) and the independent monitoring of macroeconomic predictions and fiscal prognoses by the Committee for Fiscal Forecasts (§ 18 – 19).
- The proposal imposes a debt brake on regional and local governments to 60% of the 4-year average of annual revenues combined with automatic sanctions (§ 16 – 17).
- Strict functioning of the rule is somewhat relaxed by several explicit escape clauses that allow temporarily higher expenditures and debt when sharp recession occurs, when the security of the state is implicated or in the event of a natural disaster (§ 9 and § 14).

5.1 The expenditure rule

The core of the proposal is a numerical expenditure rule that caps overall public sector expenditures $\overline{G_{t+1}}$ as a sum of cyclically adjusted revenues predicted by the Ministry of Finance, 1% of predicted nominal GDP, minus the one-time and temporary operations. Additionally, expenditures and debt can be increased when the explicit conditions of the escape clause are met.

Formally, the numerical expenditure rule is given by:

$$\overline{G_{t+1}} \leq \sum_i E_t(R_{i,t+1}) \cdot E_t\left(\frac{Y^*_{t+1}}{Y_{t+1}}\right)^{\epsilon_i} + E_t(OR_{t+1}) - k_{t+1} - E_t(M_{t+1}) + E_t(U_{t+1}) + 0.01 \cdot E_t(Y^N_{t+1}), \qquad (1)$$

where the $\sum_i E_t(R_{i,t+1}) \cdot E_t\left(\frac{Y^*_{t+1}}{Y_{t+1}}\right)^{\epsilon_i}$ are expected revenues sensitive to output gap in year t+1 as predicted in year t; Y^* is the potential output, and ε_i is the sensitivity of the i-th category of revenues on output gap. The OR_{t+1} are revenues not sensitive to output gap, and expectations for t+1 are also considered. Finally, $E_t(Y^N_{t+1})$ is expected nominal GDP in t+1 as predicted in year t.

10 The ID of the proposal in the eKLEP system is KORN9KGM74YC and the proposal itself can be found here: https://apps.odok.cz/kpl-detail?pid=KORN9KGM74YC.

These terms imply that the (maximal) expenditures are set according to the expected revenues adjusted for the expected impact of the economic cycle in a manner in which higher expenditures are allowed in times of economic slack (the predicted GDP is in the denominator, whereas the potential GDP is in the nominator). Additionally, the expenditures can be higher than cyclically adjusted revenues by 1% of expected nominal GDP.

The additional terms in formula (1) include one-off and temporary operations *M*, expenditures that are allowed by the escape clauses *U* and the corrective term *k*, which represents a necessary correction for past errors in the prediction of maximal expenditures, likely due to an inaccurate forecast of economic growth or cyclical position of the economy (all terms are in expectations for $t+1$).

The escape clause U_t allows increasing expenditures related to the following additional costs:

- Cost associated with deteriorated state security,
- Costs associated with natural disasters or the fulfilment of international agreements if the ministry estimates these costs to be higher than 3 % of estimated GDP, and
- Costs associated with the economic downturn if the ministry predicts a decline in real GDP by at least 3% of GDP.

To account for prediction errors in predicted variables that are used to construct the maximal value of expenditures and (implicitly) the structural deficit, the corrective term k_{t+1} is introduced. The idea of the corrective term is that the differences between actual budget deficits and deficits that would have been consistent with the rule in addition to economic developments are accumulated over time. Whenever the accumulated value of unintentional deficits exceeds 2% of GDP, one third of this difference must be repaid through lower expenditures in the next budget.

The past expenditures consistent with the rule are defined as $\widehat{G_{t-1}}$:

$$\widehat{G_{t-1}} \leq \sum_i R_{i,t-1} \cdot \left(\frac{Y^*_{t-1}}{Y_{t-1}} \right)^{\epsilon_i} + OR_{t-1} - k_{t-1} - M_{t-1} + U_{t-1} + 0.01 \cdot Y^N_{t-1} + C_{t-1} \qquad (2)$$

with C_{t-1} being additional expenditures that are not caused by the government and are not defined via other escape clauses such as effects of the Constitutional Court decisions, etc.

The differences between realized expenditures G_{t-1} and expenditures consistent with the rule $\widehat{G_{t-1}}$ are accumulated over time to a corrective fund A_t as follows

$$A_t = A_{t-1} + (G_{t-1} - \widehat{G_{t-1}}) - k_t \,. \qquad (3)$$

The corrective term k_{t+1} in the expenditure rule implies that one third of the accumulated expenditures exceeding 2% of GDP are corrected in the subsequent budget:

$$k_{t+1} = \max\left[(A_t - 0.02 \cdot Y^N_{t-1})/3 ; 0 \right]. \qquad (4)$$

Note that the corrective term is asymmetric because only the excessive expenditures are corrected by (4) and the government cannot utilize accumulated differences between actual expenditures and their respective caps to finance a fiscal impulse. It is assumed that the rule works as a countercyclical device because of the link to cyclically adjusted revenues instead of to the utilization of past surpluses to directly finance expenditures. However, the corrective term can be decreased by an amount equivalent to other unexpected costs if it the Fiscal Council approves. Effectively, this option constitutes an additional escape clause, although neither the proposal nor the regulatory impact assessment is specific about the intended utilization of this clause and it is unclear whether the unexpected decline in economic activity is in line with this clause.[11]

11 Following our discussions with the staff of the Ministry of Finance, we believe both that it does so and that it can be used in this manner in the future.

5.2 The debt brake

The second component of the proposal is the debt brake, which should prevent the debt-to-GDP ratio from exceeding the threshold of 55% of GDP. Considering the current level of public debt at 41% of GDP, the debt brake is supposed to be an extraordinary measure that takes effect only in the event that the expenditure rule proves inefficient to stabilize the debt ratio at lower levels.
If the debt-to-GDP ratio exceeds 55%, the government must submit both a new budget proposal and medium-term fiscal outlook to the Parliament; both of these items shall be intended to achieve long-term sustainability of public finances. Only if the debt-to-GDP ratio increases beyond 60% the government will be required to propose measures to decrease the debt.
Furthermore, restrictions on health insurance companies, local authorities and other public institutions will apply: local and regional governments must balance their budgets and deficits can be run only when financed through own cash-funds from accumulated past budget surpluses or when temporary deficits are needed to pre-finance projects co-financed by the EU. Health insurance companies are also required to keep balanced budgets; moreover, those budgets cannot involve funds from previous years. Somewhat more lenient rules apply for other public institutions, which are allowed to lend to each other under the assumption that mutual borrowing between public institutions will not increase the overall public-sector debt.
The debt brake is complemented by several escape clauses. The obligation to submit a new budget proposal and constraints on public-sector finances do not apply when the following conditions exist:

- The economy experiences a severe economic slowdown, which is defined as a two-year period after real GDP decreases by 2% within one quarter or by 3% on a year-on-year basis;
- The country faces security threats or is at war; or
- The government is forced to respond to natural disasters or outlays related to the fulfilment of international agreements if such costs are predicted to be higher than 3 % of estimated GDP.

With respect to the threshold of the debt-to-GDP ratio at 60%, the proposed rule is not explicit about either the pace of fiscal adjustment or escape clauses. Nevertheless, the Regulatory and Impact Assessment specifies that the formulation is relatively declaratory and refers both to EC Directive 1177/2011 and to the Treaty on Stability, Coordination and Governance, in which the average pace of adjustment of excessive debt is set to 1/20 of the difference between the actual debt ratio and the reference value of 60% per year. The EC Directive 1177/2011 also points to the possibility of varying the pace of adjustment based on the cyclical position of the economy.

5.3 The Fiscal Council and the Committee for Fiscal Forecasts

Functioning of the fiscal framework shall be further strengthened through the establishment of an independent Fiscal Council. The aim of the Council is to monitor the development of public finances and to regularly assess compliance with the rules. The primary focus of the Council's activities is in the area of the expenditure rule: the Council is required to evaluate a proper accounting of one-off and temporary operations and the impact of the business cycle, the possible application of escape clauses and the limit on state budget expenditures consistent with the cap on public-sector expenditures. Furthermore, the Council regularly submits two reports to the Chamber of Deputies: a report on compliance with the rules and a report on long-term sustainability of public finances, which should contain an evaluation of the impact of planned policies on long-term sustainability of public finances.
The Fiscal Council has five members elected by the Chamber of Deputies. The Chairman is nominated by the government, the Vice-Chairman is nominated by the Czech National Bank and the remaining three members are nominated by the President of the Czech Republic, the Senate and the Supreme Audit Office. All the council members are supposed to be respected and experienced in the field of macroeconomics and finance. Their term is 6 years, and no member can be elected more than

twice. It is assumed that the Council's independence is secured in numerous ways. First, the nomination process is not left solely to the government or the Parliament: multiple streams of opinion can appear. Second, the proposal identifies positions that cannot be held by a member of the Council. Third, the Council's independence is further strengthened by an Office of the Council that will provide any necessary administrative and information support. The Office's expenses are covered by a separate chapter of the state budget.

Along with the Fiscal Council, it has been proposed to establish a Committee for Fiscal Forecasts. The Committee's purpose is to provide independent oversight and evaluation of macroeconomic and budgetary forecasts that are used to prepare the state budget and quantify the cap on public-sector expenditures. Unlike the Council, the Committee represents more of a formalization of an existing practice instead of the creation of a new body from scratch: the Ministry of Finance consults its forecasts with other institutions and market participants on biannual basis. Committee membership is supposed to be an honorary office.

5.4 Assessment of the proposal

There are numerous criteria by which the fiscal rule can be assessed. In this section, we closely follow the classification of fiscal rules by Kopits and Symansky (1998) and Hagemann (2012).

The primary goal of the fiscal rule is to restore and maintain low and sustainable level of public debt. Several features have been identified that help a rule satisfy these purposes. The rule must be *well-defined* in the sense that the indicators, coverage and other aspects of the rule are clearly and unequivocally identified. It should be *transparent* to be credible, otherwise the danger of governmental cheating or "creative accounting" can be anticipated. An important characteristic of the rule is *adequacy*, meaning that a rule should be appropriate to its aims and the state of the economy. Finally, any rule must be *enforceable*, otherwise it is a mere formality. Therefore, any rule must explicitly specify not only responsibilities but also sanctions.

With respect to these criteria, the proposal clearly meets the criterion of being well defined: it is a numerical rule, and its formula is analytically described in the Regulatory and Impact Assessment that supplements the proposal. The stress on restraining the growth of expenditures seems adequate for Czech public finances and the Fiscal Council can help to improve the credibility of the rule in terms of externally assessing compliance with rule and evaluating the proper accounting of non-standard operations.[12]

The expenditure rule as such does not contain an explicit mechanism of enforcement and the extent to which a budget that violates the expenditure rule could be annulled by a court is unclear. Conversely, regular violations would lead to a deficit bias, an increased debt ratio and eventually a debt brake at 55%, with sanctions to be activated.[13] The proposal does not introduce numerical rules that define how to reduce debt when the threshold is reached; however, it demands that the government prepare a budget proposal leading to long-term sustainability of public finances (also in addition, e.g., health insurance companies should have balanced budgets) and the government might choose among policy instruments without additional constraints. Even if this sanction fails, sanctions from the EC directives with automatic penalties will apply after the debt ratio exceeds the threshold of 60%.

12 However, the expenditure rule relies on indicators such as overall expenditures of public sector or cyclically adjusted revenues that are not easy to access or replicate in comparison to other fiscal indicators in the government sector. Nevertheless, we expect the Ministry of Finance and the Fiscal Council to quickly prepare efficient means of communicating the key indicators, thus improving the credibility of the new fiscal framework.

13 The debt brake set at 55% of GDP does not seem very binding: the current ratio is below the threshold. However, these favourable conditions can change relatively quickly, as all previous recessions led to substantial increases in the debt-to-GDP ratio. Note that the second transition recession and the bailouts of the banking sector of the late 1990s and early 2000s increased the debt ratio from 12% to 28%. During the Great Recession, that debt increased from 28% to 38% of GDP, and in 2012-2013, it increased by an additional 5%.

An additional enforcement mechanism is the Fiscal Council, with its soft power to communicate whether the government follows the rules to the public and the Parliament. The introduced Fiscal Council has tasks similar to those of, e.g., the Swedish council (for more information about the Swedish council, see Jonung (2014) and Hassler (2015)): primarily monitoring public finances and assessing government policy. Nevertheless, whether the Council's "power of words" will be sufficient to enforce responsible fiscal policies very much depends on the Fiscal Council itself.

The second goal of fiscal rules is to enhance the macro stabilization role of fiscal policy and to eliminate the deficit bias of public finances. Therefore, the rule shall eliminate deficit bias while being *countercyclical*. By establishing an appropriate rule, policy makers must make another trade-off between *simplicity* of the rule that makes communication easier and complexity that would assure sufficient *flexibility* towards business-cycle fluctuations and external shocks. Unpleasant and unexpected cyclical development can occur when too-simple rules stall economic recovery and deepen the downturn by not allowing necessary fiscal expansion. Thus, there arises a clear trade-off between the aim of securing lower deficits and the flexibility to react to unexpected shocks.

From the point of view of deficit reduction, the rule is relatively soft. In line with the Czech medium-term objective (MTO), the rule allows planned structural[14] deficits of 1% of GDP.[15] An additional degree of flexibility is offered through the escape clauses of both the expenditure rule and the debt brake. The escape clause for the expenditure rule provides options under which public-sector expenditures are allowed to exceed cyclically adjusted revenues for more than 1% of GDP. These options include recessions with a negative GDP growth rate worse than -3% on a year-on-year basis. In the context of other fiscal rules at the EU level, this escape clause can be considered relatively strict (see the Appendix). We explore whether this restrictive approach implies limited options for the government or whether there is a risk of premature fiscal consolidation in the following parts of our analysis.

The third requirement is to improve the efficiency of public finances. For instance, the expenditure rule does not differentiate among different types of expenditures that might be harmful to long-term growth prospects, especially if the consolidation effort affects public investment and capital expenditures that are favourable to growth.

The possibility of an unintended impact of the debt brake on public institutions is also related to the efficiency concerns, particularly with respect to companies regarded as public institutions, whose competitiveness might be negatively affected if the debt brake is activated.

Surely the efficiency of public finances is not addressed by the proposal: neither the expenditure rule nor the debt brake distinguishes among various instruments of fiscal policy. Conversely, the limited pressure on efficiency incorporated within the rule assures that there is still room for political decisions. Additionally, the Fiscal Council might also consider providing assessments of stabilization problems with respect to the efficiency criterion.

In general, the proposed fiscal framework is a welcome and overall positive step towards long-term sustainable public finances. We regard the framework as well defined, transparent, somewhat enforceable and quite adequate for the Czech Republic's public finances. Conversely, the weakest spots are the flexibility that will allow the management of business-cycle deviations and unpredictable shocks beyond government control and efficiency.

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14 Note that the cap on expenditures is derived from cyclically adjusted revenues.

15 Thus far, the Czech Republic has been allowed to set its own MTO; however a revision of MTO is not included in the proposal and the 1% structural deficit is fixed. This could, however, constitute a potential divergence between the fiscal rules of the EU and those of the Czech Republic if the fiscal rule is not updated simultaneously with the EU legislation.

5.5 Debt brake for regional governments and municipalities

Finally, the proposed fiscal rule imposes limits upon the indebtedness for regional governments and municipalities in order to secure wider coverage of the public sector using the rule. For both municipalities and regional government, an upper debt limit is set at 60% of the average total revenues for the previous four years.

In the event that the debt-to-revenues ratio of the local government exceeds 60%, the debt must be reduced by 5% of the difference between the actual amount of debt and the 60% threshold. If a decrease in the debt is refused, tax revenues are temporarily suspended in an amount equivalent to the required decrease of the debt.

Currently, approximately 500 municipalities (8% of the total number) have a debt higher than 60% of their revenues. Those municipalities include 29 towns and 3 statutory cities[16]. So far, the regional governments' debts have not exceeded 60%.

For two cities with the largest debt-to-revenues ratio (Liberec and Olomouc, approximately 100%), the rule requires decreased indebtedness by more than 40 million CZK per year, excluding interest payments.

The debt-to-revenues ratio covers total revenues and overall debts and does not differentiate among different sources and aims of revenues and debts. This approach is consistent with attempts to assure the widest possible coverage of the rule and to prevent the application of many exceptions. However, this approach has several – perhaps unintended – consequences.

First, the revenues of municipalities include not only tax revenues but also transfers from the central government with pre-specified usage. Therefore, local governments cannot freely spend the transfers, which have only limited impact on those governments' financial health. The share of transfers on total revenues differs across different local authorities. For statutory cities, this ratio is 19% on average, whereas for the regional government, it reaches 60% on average; thus, this ratio is higher than tax revenues.

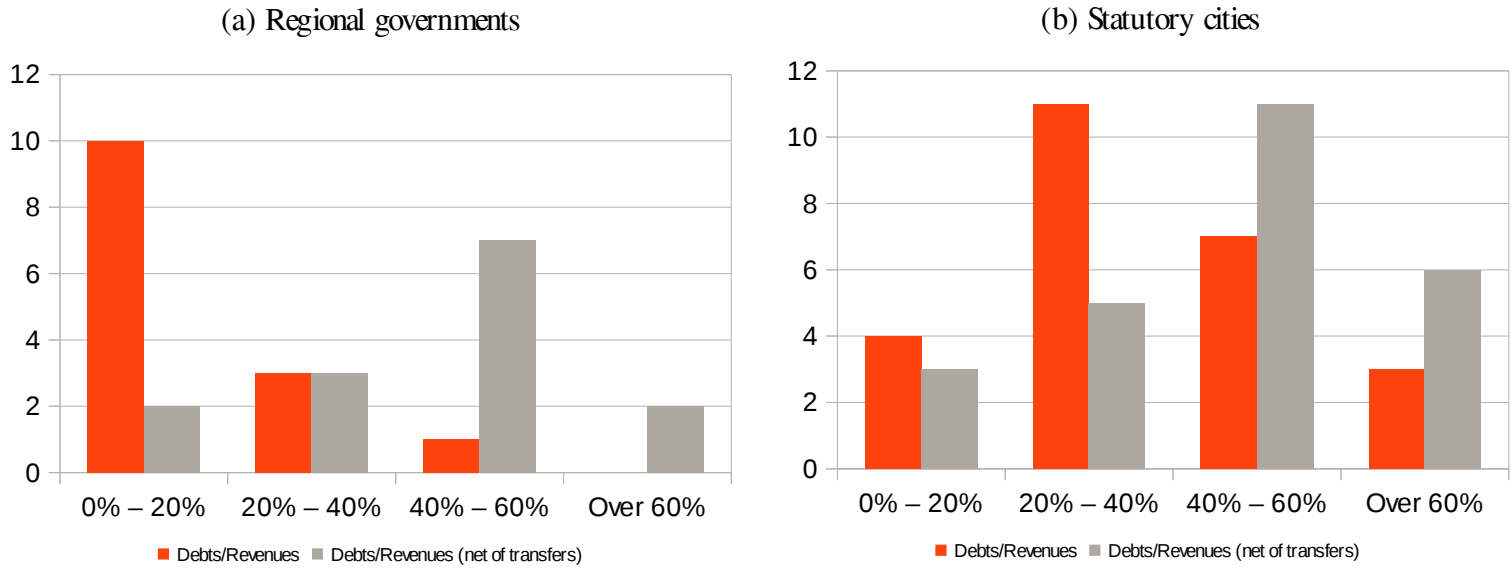
To assess the financial health of various local governments, we calculated the debt-to-revenues ratio with revenues net of transfers (Figure 5.1). Most importantly, the debt of two regional governments exceeds the 60% ratio (Olomouc region with debt at 114% of revenues net transfers, Zlín region with the ratio 81%). Additionally, the debts of two other regional governments (South Moravia and Moravia-Silesia region) are within a range of 50-60%. However, the proposed rule does not require those regional governments to improve their financial condition. With respect to statutory cities, the threshold of 60% will be binding for 6 cities if the debt-to-revenues ratio net of transfers was used as a benchmark. Second, the chosen indicators of total revenues and total debt do not cover the revenues and debts of companies owned by municipalities and regions. These companies are responsible for key services for inhabitants, therefore, it can be expected that the local authority resorts to bailout despite the previous lack of formal guarantees.[17] Additionally, the incentives for creative accounting increase because local governments might find it beneficial to delimit more activities into companies to which the debt rule will not apply.[18]

16 The three cities are Liberec (102.2%), Olomouc (95.5%) and Usti nad Labem (65.8%). The Regulatory and Impact Assessment points to 4 statutory cities; our analysis is based on data from local governments shown on the Website http://monitor.statnipokladna.cz (Revenues and expenditures of local governments; Class of expenditures: Tax revenues, Capital revenues Non-tax revenues, Transfers received; years 2011-2014. Debts are retrieved from the profiles of individual statutory cities and regional governments.

17 The risk of bailout might also appear in other sectors. In 2010, Liberec decided to bail out a company managing a ski resort at Jested Mountain by almost 250 million CZK. This price corresponded to almost 25% of the municipality's tax revenues.

18 Other possibilities for creative accounting include long-term contracts for services with part of the price being paid as related investment into the municipal property without referring to that property as a PPP project. Payments for those services could be also set progressively so that large portions of payments can be postponed.

Figure 5.1: Distribution of local governments according to debt ratios
(ratios with respect to revenues and revenues net of transfers)



Note: The City of Prague is included among regional governments. Data source: Ministry of Finance.

Furthermore, the total debts of local authorities also include short- or long-term loans utilized solely for financing projects supported by EU funds despite the fact that these loans are likely to be repaid in the near future by revenues and are not truly harmful to the financial conditions of the municipality in the event that the project is well managed.

Despite these somewhat critical remarks, the limits of municipalities and regional governments' debts are a welcome addition to the legal system, establishing important constraints on some local governments' irresponsible behaviour.

6. Accuracy of the macroeconomic and budgetary forecasts in the Czech Republic

Implicitly, the numerical expenditure rule is based on the assumption that the Ministry of Finance can obtain precise and relatively unbiased forecasts of the variables included in the rule. Therefore, we evaluate the past forecasts of nominal GDP, revenues and the cyclical position of the economy[19]. Next, the ability to forecast a fiscal policy stance and the implications for the expenditure rule are discussed.

6.1 GDP and revenues

Until 2007, the Czech Ministry of Finance was consistently conservative in its forecasts of GDP and revenues (Figures 6.1 and 6.2). In the Ministry's predictions for 2005-2007, nominal GDP was underestimated by 2-3.5%. Soon thereafter, the prediction for 2009 revealed the highest prediction error in the entire sample, with nominal GDP overestimated by 10.7%. Since 2010, forecast errors have alternated. The mean absolute percentage error (mean absolute errors over GDP) is 3.52%, and within three years, the forecast error has been lower than 1%.

19 Note that due to data availability, our assessment of forecast accuracy does not account for all discretionary measures adopted within given budgetary year. This is particularly relevant for the 2009 stimulus that affected revenues already in 2009. Hence, rather than forecast accuracy of revenues, we provide comparison between predicted and actual revenues.

Figure 6.1: Forecast accuracy of nominal GDP

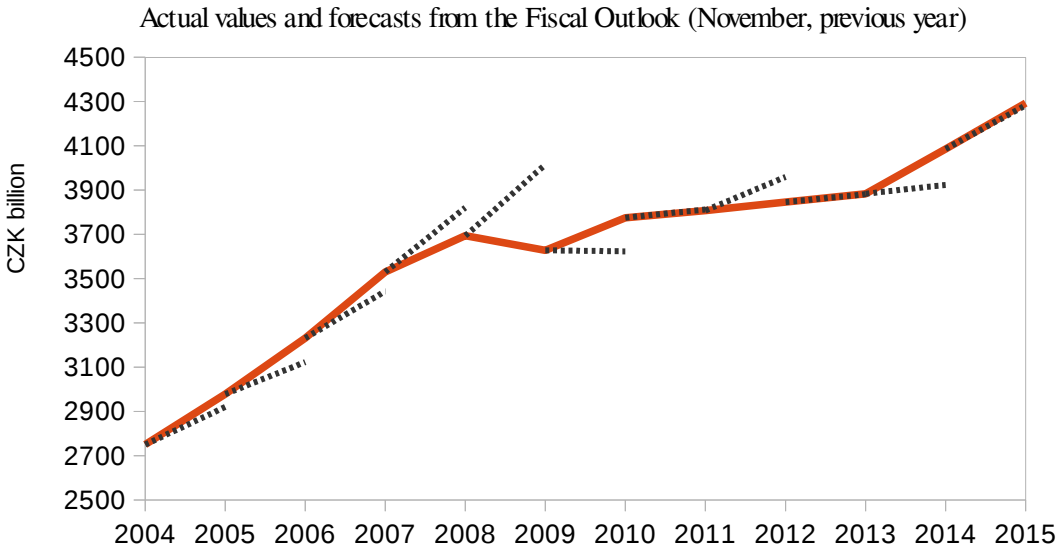
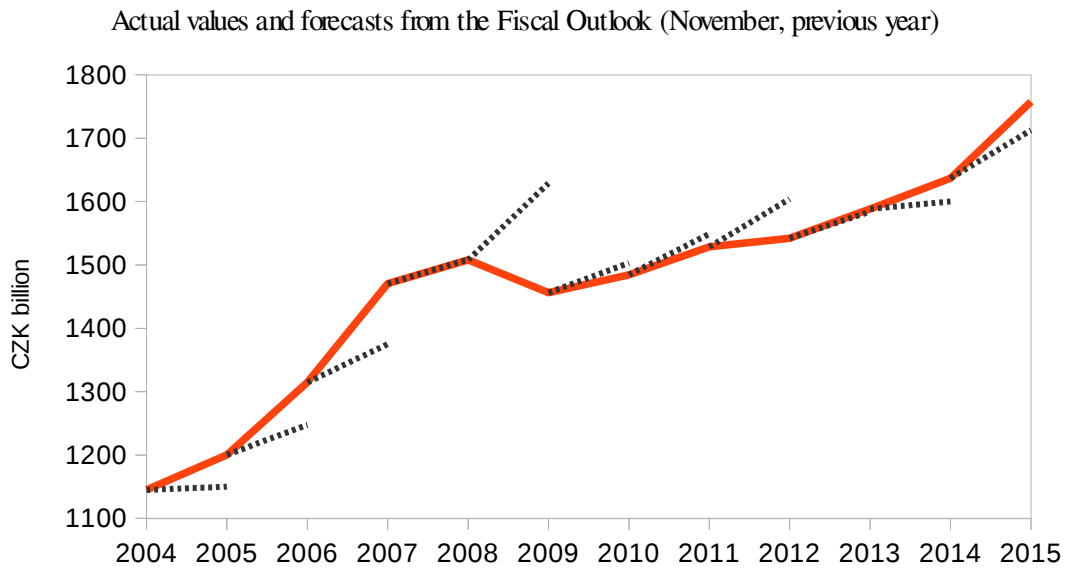


Figure 6.2: Actual and budgeted revenues



The forecast accuracy of nominal GDP is closely related to the difference between predicted and actual revenues, which is determined not only by inaccurate forecasts but by discretionary measures adopted within a year as well. Consistently with forecasts of nominal GDP, revenues were relatively conservative for the 2005-2007 budgets. However, since 2008, revenue predictions shifted to the optimistic side, and until 2013, actual revenues were lower than predicted. Again, the largest difference between predicted and actual revenues appears in 2009, partly caused by fiscal stimulus of the early 2009[20]. The 2014 economic recovery has brought faster revenue growth over expectations again. The mean absolute percentage error equals 3.57% (2% since 2010). Correspondingly, the mean absolute error decreased from 50 to 30 billion CZK.

The previous narrative description points to the pro-cyclical nature of prediction errors in GDP and revenues, as illustrated in Figure 6.3: Although the sample is relatively short, the correlation coefficient of relative prediction errors in revenues and GDP at 84% (54% since 2010) is surprisingly high.

20 The impact of the stimulus package of 2009 on revenues has been 61 billion CZK (Fiscal Outlook, 2009/5).

Similar to the nominal GDP, the highest negative prediction errors in revenues appear in 2009 and 2012, as in the forecasts of nominal GDP. Somewhat interestingly, the growth rates of revenues were expected to accelerate in both years compared to previous years, therefore, it is possible that the sizes of the prediction errors might not be fully explained by an occurrence of peaks in business cycles; however, their decomposition is over the scope of this study.

The dynamics of forecast errors is also reflected by the differences between predicted and actual budget deficits (Figure 6.4). Before 2008, the realized budget deficits were consistently better than budgeted. Thus, the moderate level of deficits during this period has been driven by robust economic growth that had not been fully anticipated. In sharp contrast, the budget deficit in 2009 was much higher than expected. Since 2010, the differences between expected and actual developments have decreased, and the actual deficits were better than the budgeted deficits.[21]

Figure 6.3: Prediction errors (% of GDP)

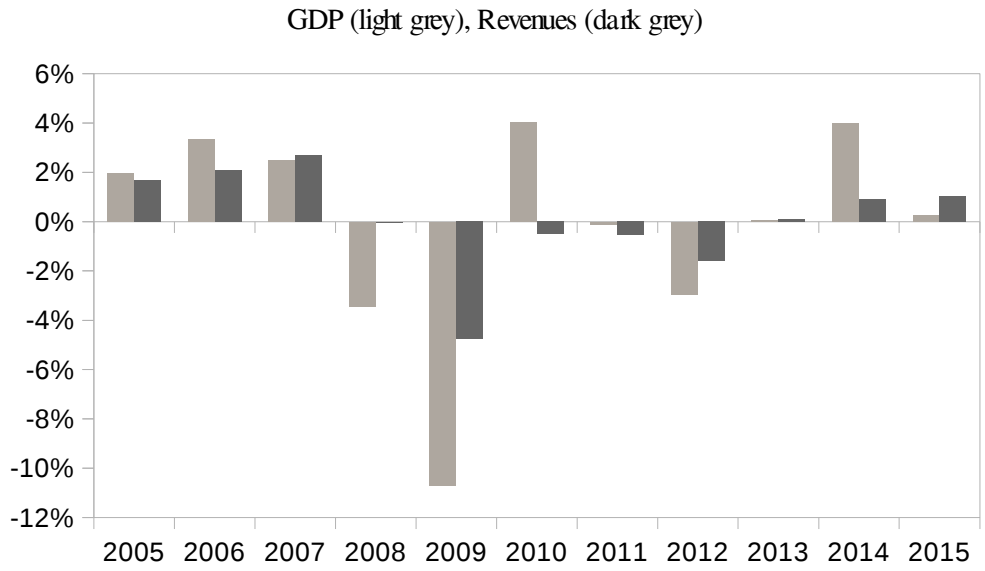
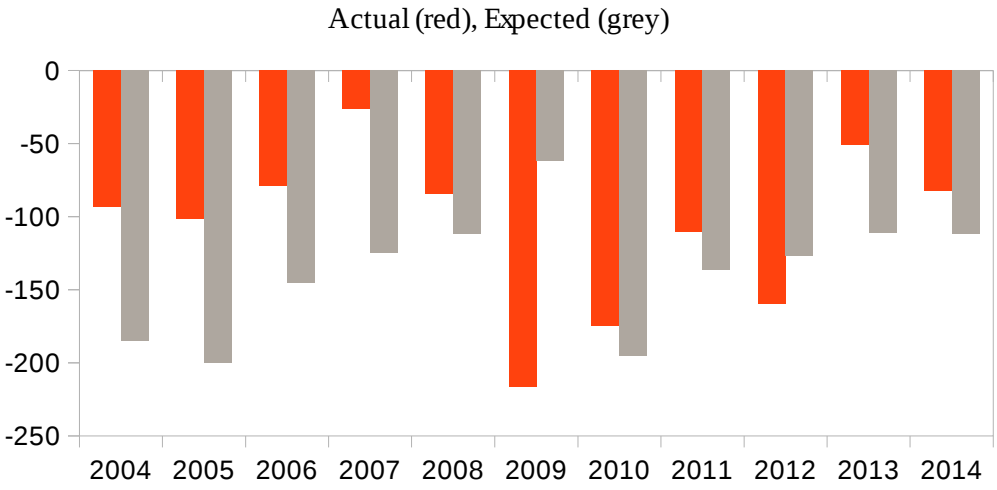


Figure 6.4: Budget Deficit, nominal



21 Note that the actual deficit of 2012 is negatively affected by the compensation of churches that was approved by the Parliament in 2012 (59 billion CZK), along with other one-off operations. Without these one-off operations of 79.7 billion, the deficit also would have been lower than expected.

6.2 Cyclical position of the economy

The countercyclicality of the fiscal rule presented in Chapter 5 shall be achieved by deriving the cap on overall expenditures of public sector from the expected cyclically adjusted revenues instead of from the expected revenues themselves. However, the real-time estimation of the cyclical position of the economy and the size of the output gap is somewhat challenging. In practise, there are three main complications related to real-time estimation and forecast of the output gap that are difficult to overcome. First, there is uncertainty about the proper method to identify the cycle and the trend from the original series and the alternative methods. Second, there is an issue related to data revisions and publication lags. Third, there is a problem referred to as an end-sample bias.

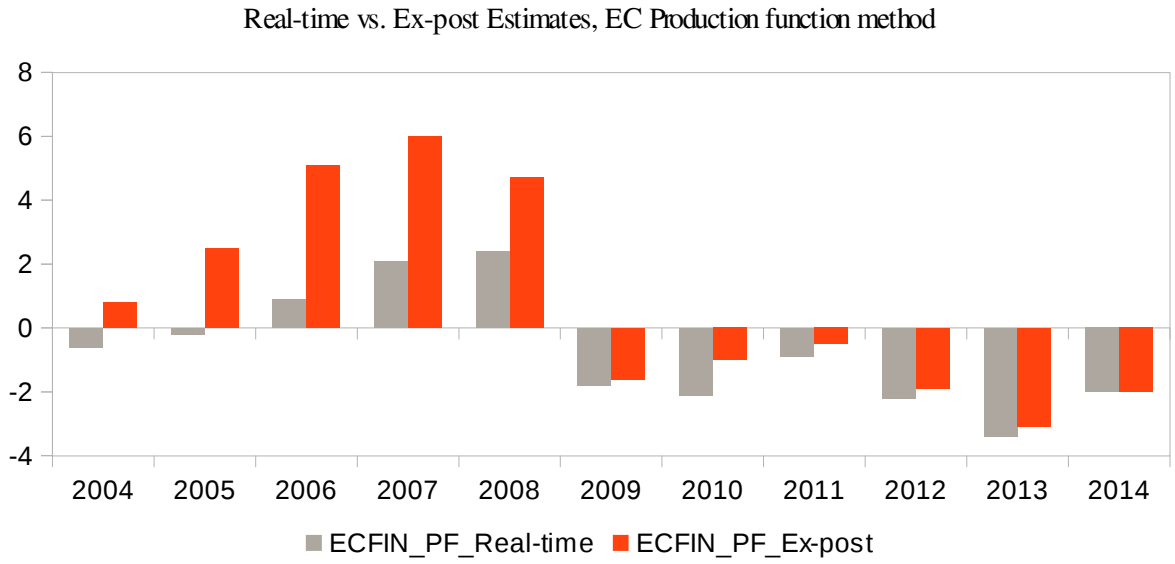
With respect to the alternative methods of estimation of the trend and cyclical components of GDP, the most popular alternatives range from the Hodrick-Prescott filter (HP filter) or its modified versions to more complicated methods based on production function. The comparison of trends and cycles derived from the Czech Republic's alternative approaches are compared in Lang and Mareš (2015) who show that in 2000-2015, the differences among the alternative methods were usually below 1% of GDP. Still, none of these methods implies consistently higher or smaller gaps than the other, and these methods are relatively consistent in terms of periods above and below the identified potential.

Nevertheless, Lang and Mareš perform their exercise on the ex-post data from 2015 so that the output gap estimated for each period utilizes not only information known at time t (the *real-time* data) but also the entire sample from t_0 to T (the *ex-post* data). It is known that the estimation of the output gap using the ex-post data might provide a distorted picture of the cyclical position of the economy in times when decisions had to be made. For the United States, Orphanides and van Norden (2002) show that the ex-post revision of output gaps retrieved using a family of statistical approaches were of the same magnitude as the output gap itself, and in particular, the output gap estimates are severely biased around business cycle turning points. The first source of this severe bias is data revisions, stemming from the fact that the values of GDP and other aggregates are not only published with a lag but also revised, sometimes substantially. However, McCallum (2000) analyses the contribution of data revisions to errors in real-time output gap estimates and shows that even if data revisions were negligible, substantial differences might appear among real-time and ex-post gaps, which are measured with an often substantial delay of several years. This end-sample bias points to the fact that detrending works as a local filter, and as new data arrive, past potential output is affected.

More strikingly, the output gap estimates derived from structural models using the Cobb-Douglas production function are of little help, as shown by the recent contributions by Kempkes (2014), Habinak (2015), and McMorrow et al. (2015); others show that the uncertainty of the real-time output gaps is of the same magnitude regardless of whether the HP-filter or production function is used. Habinak (2015) studies properties of real-time output gaps in the euro area, demonstrating that the uncertainty about the size of the output gap is both substantial and independent of a choice between the HP filter and production function method.

Similar concerns are expressed by Kempkes (2014), who explicitly questions the applicability of standard cyclical adjustment procedures to determine borrowing limits via fiscal rules in the EU-15 countries. He proves that the errors between ex-post and real-time data are systematically pro-cyclical across countries, which implies that the magnitude of positive output gaps in periods of robust growth is systematically underestimated. These results are in line with the most recent evidence for all EU countries provided by McMorrow et al. (2015), who compare the ex-post and real-time output gaps derived from the European Commission's production function methodology.

Figure 6.5: Output gap - Czech Republic (% of GDP)



Data source: Mc Morrow, et al. (2015), Annex 2, p. 67.

Importantly, both studies identify the largest deviations between real-time and ex-post estimates of output gaps in the period of robust growth of 2006-2008, when the magnitude of the output gap was underestimated by almost 2% of GDP. These findings have important implications for fiscal rules: the principle of accumulating sufficient surpluses in good times to allow for larger expenditures in bad times cannot be achieved if conventional cyclical adjustment methods based on production function output gaps are used because these methods are unable to identify the extraordinary good times when they are relevant to preparing budgets[22]. With respect to the Czech Republic, McMorrow et al. (2015) report that the errors in 2006-2008 approach a difference of 3.4% of GDP between the real-time and 2014 ex-post estimates (Figure 6.5). Additionally, we illustrate the importance of trend revisions for output gap predictions in Appendix II, Figure A.1.

6.3 Overall fiscal policy stance

Next, we shall discuss the relevancy of the difficulties of output gap estimations to the fiscal rule, particularly with respect to the fiscal policy stance. More specifically, we shall evaluate the Ministry of Finance's ability to predict the cyclical component of budget deficits, which in the Czech case is equivalent to the cyclical component of revenues[23] in the past decade. Finally, we ask whether the corrective term incorporated in the proposed expenditure rule might help attenuate the problem of the uncertainty of real-time estimated output gaps.

For this assessment, we compiled a new real-time fiscal dataset for the Czech Republic. From Ministry of Finance publications we retrieved the data for planned budget deficits, expected cyclical components, one-time and temporary operations, predictions of revenues and GDP. Additionally, the dataset was complemented by the actual budget deficit and the estimates of the cyclical component and the GDP published four quarters after the end of the relevant year to obtain data relevant to the

22 The extent to which these problems with real-time assessment of the cyclical position will be solved by recent advances in the methodologies of estimating the production function, e.g., reliance on NAWRU rather than total factor productivity, remains unclear.

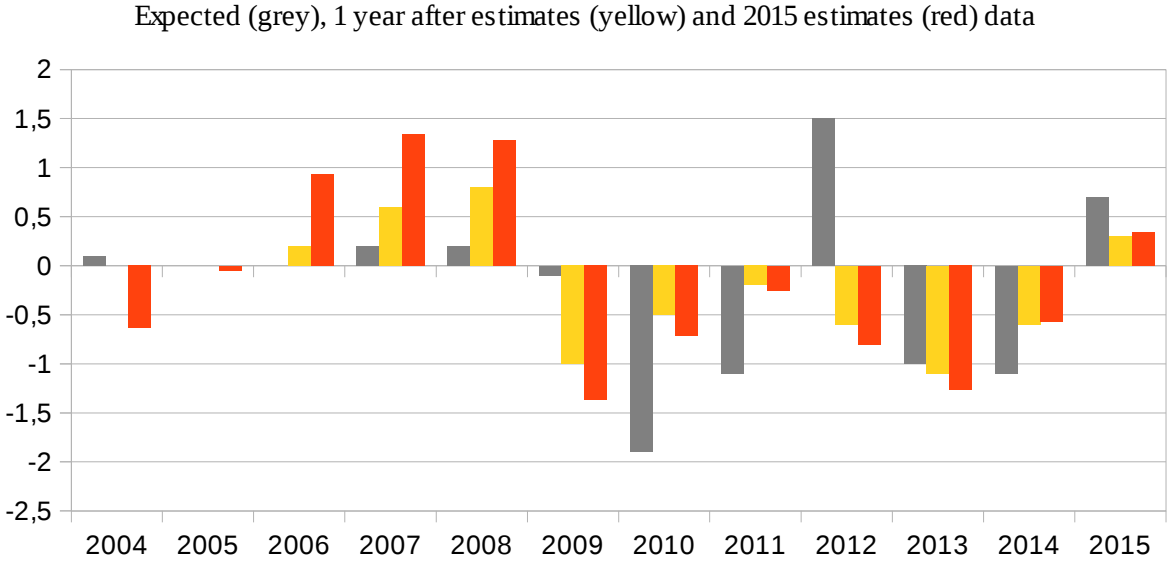
23 Note that Lang and Mareš (2015) discuss elasticities of various components of public finances on output gap and they state that the cyclical sensitivity of expenditures is very small, relevant only to unemployment benefits so that the cyclical sensitivity of expenditures is not considered in the Ministry of Finance's cyclical adjustment.

corrective term in the fiscal rule (equations 2 to 4). This dataset mimics the information available to the Ministry of Finance in times relevant to setting the budgets.

The principal data source was the Fiscal Outlook (November edition), which has been published regularly since 2007[24]. The data for 2004-2006 were obtained from Macroeconomic Predictions of the Ministry of Finance (October edition) and Convergence Programmes. Evolving views on the size of the cyclical components are presented in Figure 6.6, which presents the expected cyclical component of the budget deficit (grey), its ex-post estimates as observed after one year (orange) and the estimates from the last quarter of 2015 (red). It can be observed that the differences among the estimates of the cyclical component are large compared to the size of the cyclical component itself.

In line with the findings about real-time output gaps presented in the previous section, the differences between predicted and revised values are large not only in the volatile period of 2009-2013 but also in times of the robust but steady growth of 2006-2008. In those years, neither predictions nor the estimates performed one year after the relevant year indicated substantial deficit reduction that should have occurred if the current estimates of output gap were known. Therefore, the predicted cyclical components do not ensure countercyclical fiscal policy.

Figure 6.6: Cyclical component in budget deficit, %GDP

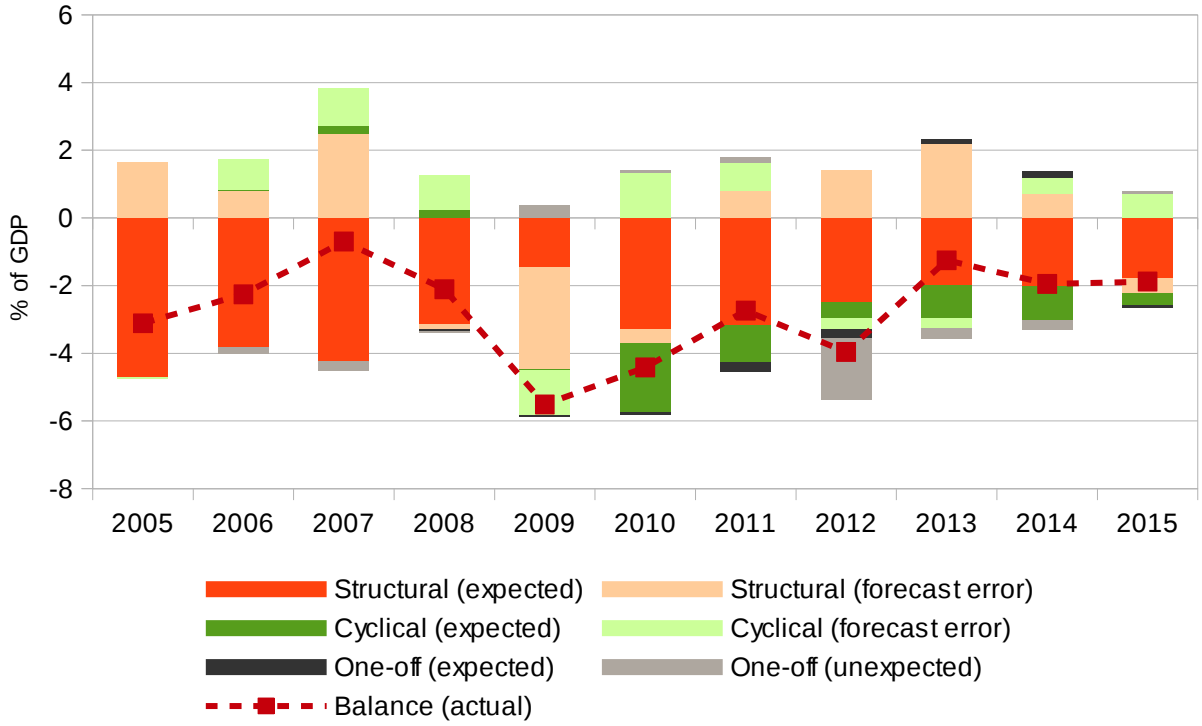


Yet another perspective on the relative importance of prediction errors in actual budget deficits is presented in Figure 6.7, which shows the actual deficit decomposed into structural and cyclical components estimated with data as of 2015 and predictive errors from the real-time data. The largest prediction error appears in 2009; the dominant part of the increase of the budget deficit in 2009 was the structural component instead of the cyclical one. The impact of the sharp decrease in economic activity in 2009 results in a cyclical component of as little as 1.6% of GDP while the overall deficit was 5.6% of GDP. The small contribution of the cyclical balance to the overall balance might initially be considered somewhat surprising because one would expect a large cyclical component given that the increased deficits were clearly caused by a sharp fall in the economy. However, the impact of the 2009 recession was so strong that even the underlying trend decreased, and consequently, the ex-post cyclical component is derived from this lower revised trend. In effect, most of the balance is evaluated

24 In 2014, the national accounts were significantly revised to the new ESA 2010 standards, and the new systems of national accounts changed the calculation of GDP and the coverage of government expenditures and revenues. To obtain predictions for 2015 consistent with the old ESA 95 standards, we utilized the estimate of the impact of the revision at 4.4% provided by the Czech Statistical Office (http://www.statistikaamy.cz/2014/07/po-20-letech-dochazi-k-revizi-narodnich-uctu/).

as structural, and any fiscal rule based on the concept of cyclical adjustment would have enforced fiscal consolidation for 2010 unless additional expenditures are permitted by escape clauses or other mechanisms that increase the flexibility of the rule.

Figure 6.7: Budget balance - components; expected a prediction errors



Note: All components sum to actual deficits.

Overall, the analysis of forecast accuracy confirms that it is difficult to forecast the cyclical position of the Czech economy and that the predictions of cyclically adjusted fiscal variables are prone to large and systematic errors. However, these errors are linked to most of the methods of cyclical adjustment that are currently used. Our recommendations are to use a more diverse set of methods to assess the cyclical position of the economy in real time and to consider not only estimates of output gaps but also growth rates of GDP; some leading indicators can also provide informative insights.

7. Past Compliance of the Czech Public Finances with the Proposed Rule

In this section, we assess whether the public finances would have been in line with the proposed rules had they been in place during the past decade. We do so by calculating the cap on expenditures using historical data starting in 2004. The year 2004 is quite convenient for our analysis: in 2004, the Czech Republic entered the EU, revised its fiscal framework and ran structural deficits that were close to current levels. Thus, the year 2004 represents an ideal candidate for experimenting with how the Czech Republic's public finances would have evolved with the currently proposed rule.

Our approach is straightforward: We obtained the data for expected GDP, revenues, expenditures and the cyclical position of the Czech economy from the official publications of the Czech Republic's Ministry of Finance[25]. These data allowed us to calculate the cap on expenditures given by the expenditure rule (Chapter 5, equations 1-4). In this framework, we did not allow for endogenous changes in GDP and other macroeconomic variables caused by fiscal tightening that could have been necessary to make the expenditures consistent with the rule. Thus, our study is purely static. We relax

25 Details about the dataset are provided in Chapter 5.3.

the assumptions of fixed macroeconomic variables in the next chapter. It should be also noted that the results presented in this section depend on the methodology of calculation cyclically adjusted revenues currently employed by the Ministry of Finance and that the legislative proposal allows modifications of this framework in the future.

The first budget for which the expenditure rule has been assumed to operate was for the year 2005. The adjustment towards the expenditures given by the rule was not via a one-unit shock but gradual: in 2005, the structural deficit was allowed to be 1.75% of GDP, in 2006, it was 1.5% of GDP, and in 2007, it was just 1.25% of GDP.[26]

Figure 7.1: Compliance with the rule I

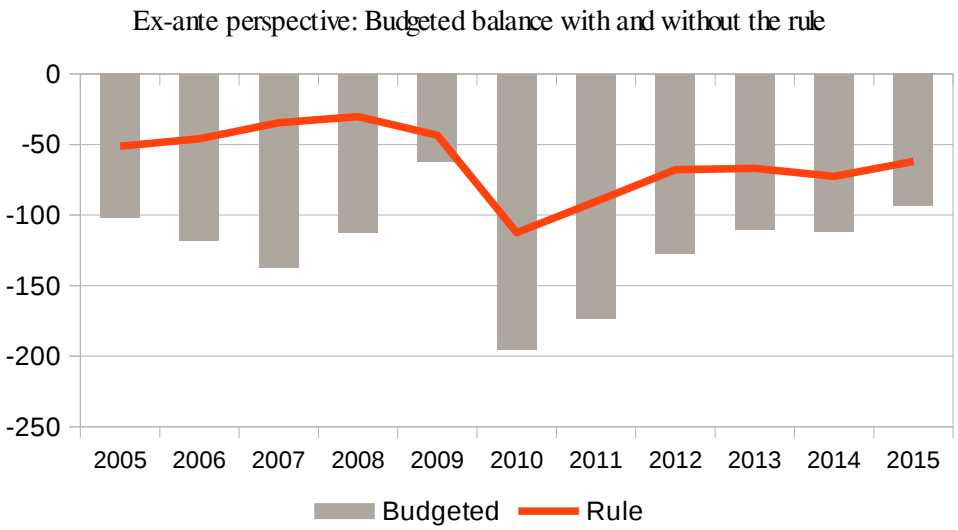


Table 7.1: Fiscal policy with and without the rule (budgeted values, CZK billion)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenues	1150	1248	1375	1509	1629	1503	1549	1604	1584	1600	1788
Expenditures	1252	1366	1513	1621	1691	1698	1722	1731	1695	1712	1885
Cyclical component	0	1	8	9	-1	-74	-41	-18	-39	-40	-17
One-time operations	0	0	0	-2	-2	-2	-11	-10	5	7	-3
Balance	-102	-118	-137	-112	-62	-195	-173	-127	-110	-112	-97
Expenditures (rule)	1201	1294	1410	1539	1672	1615	1639	1672	1651	1673	1853
Balance (rule)	-51	-46	-35	-30	-44	-113	-90	-68	-67	-73	-65
Difference	***-51***	***-72***	***-103***	***-82***	***-19***	***-83***	***-83***	***-59***	***-43***	***-39***	***-32***

Note: Since 2015, the data are based on the ESA 2010 methodology. "Difference" measures a distance of the budgeted deficit from the deficit consistent with the rule ("-" implies non-compliance with the rule).

The impact of the expenditure rule on the persistent deficits in Czech public finances is illustrated in Figure 7.1 and Table 7.1, that show the budgeted balance and the balance consistent with the expenditure rule. It is clear that the Czech budget balance was always worse than the rule would have required. The smallest difference was in 2009, when the difference was approximately 19 billion CZK. On average, the difference in the ex-ante perspective is 60 billion CZK, or less than 40 billion from 2013-2015. Overall, had the expenditure rule been adopted in 2004, either expenditures should have been lower by 1-2% of GDP to comply with the rule or the revenues would have to be higher by the same amount.[27]

26 Note that this gradual adjustment is consistent with the currently proposed rule, see § 33 of the proposal.

27 When looking at the expenditures themselves, the implications are the same.

Furthermore, the planned balance would have never been in surplus in the event that the entire fiscal space provided by the rule had been exploited. This result is driven primarily by uncertainty in the future output gap and by the fact that the expenditure rule allows structural deficit of 1% pf GDP. The budgeted balances derived using alternative assumptions are presented in Appendix, Figure A.2. In particular, the alternatives include assumption of no uncertainty in future output gap and expenditure rule targeting balanced structural budget rather than 1% structural deficit.

Figure 7.2: Compliance with the rule II

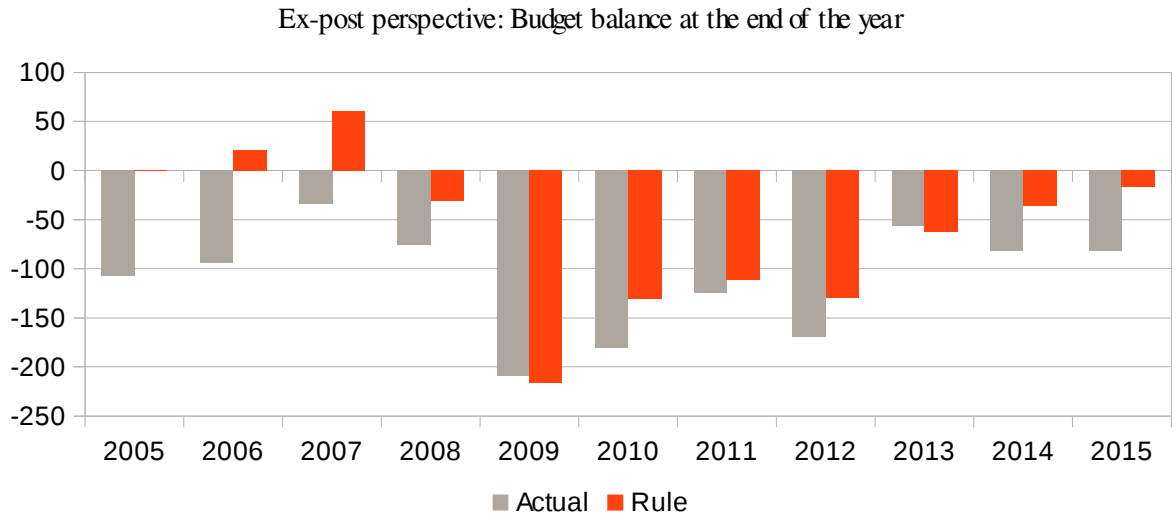


Table 7.2: Fiscal policy with and without the rule (ex-post perspective, CZK billion)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenues	1200	1315	1470	1508	1456	1485	1528	1542	1588	1709	1835
Expenditures	1308	1409	1504	1583	1665	1665	1653	1712	1645	1794	1920
Cyclical component	-1	7	20	29	-38	-19	-8	-24	-37	-26	13
One-time operations	0	-6	-10	-3	12	1	-5	-80	-8	-4	-13
Balance	-107	-95	-34	-76	-209	-181	-125	-169	-56	-85	-85
Expenditures (rule)	1201	1294	1410	1539	1672	1615	1639	1672	1651	1746	1853
Balance (rule)	-1	21	61	-31	-216	-131	-111	-130	-63	-37	-18
Difference	***-107***	***-116***	***-95***	***-44***	***7***	***-50***	***-14***	***-40***	***7***	***-48***	***-67***

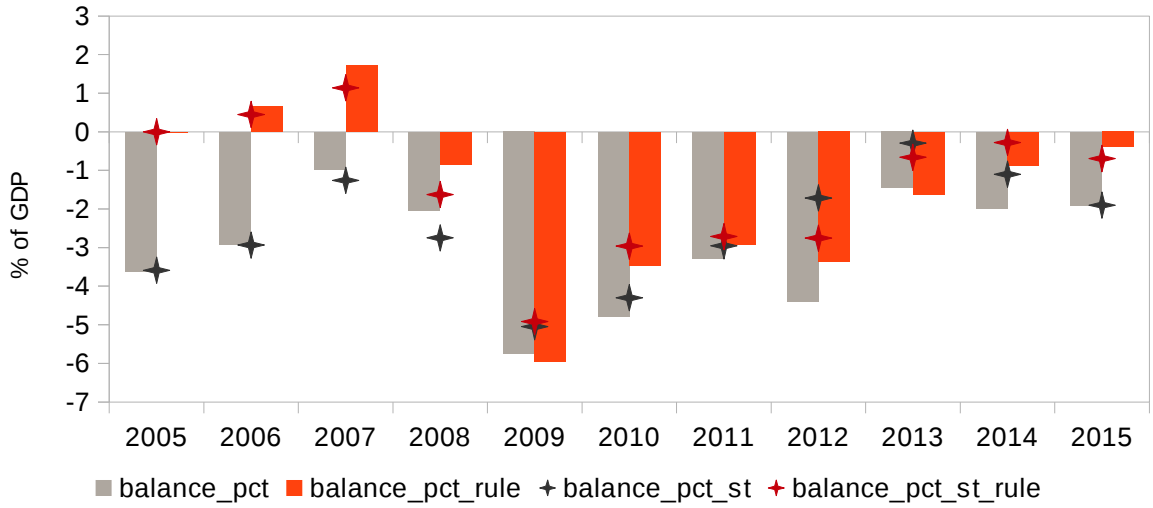
Note: Since 2014, the data are based on the ESA 2010 methodology. Data for 2015 preliminary, as of Fiscal Outlook, November 2015. "Difference" measures a distance of the actual deficit from a deficit that would have been if rule had been applied ("-" implies worse deficit).

Next, Figure 7.2 and Table 7.2 present both actual budget balances and budget balances at the end of the given year had expenditures been set to the maximum level consistent with the rule so that the balance is a difference between actual revenues and budgeted expenditures. Interestingly, the budget balance would have resulted in more countercyclical fiscal policy than the ex-ante perspective might suggest. The occurrence of positive growth surprises and higher-than-expected revenues in the 2005-2008 period would have caused strong improvements in public finances. In 2006 and 2007, even surpluses would have appeared because once the expenditure cap has been achieved, expenditures are not allowed to rise regardless of revenue developments. Consequently, the debt-to-GDP would have been decreasing before the Great Recession (Figure 7.4).

Since 2009, the difference between actual deficits and deficits consistent with the rule has decreased to an equivalent of 50 billion or less - approximately one half of the pre-crisis difference - and therefore compliance with the rule actually improved. Interestingly, the expenditure rule would have allowed

higher-than-actual deficits in 2009 and in 2013 because of recessions that were not predicted during the preparation of the relevant budgets[28]. Finally, Figure 7.3 indicates that the improvement in budget balances is primarily driven by improvements in structural deficits, which is expected given the persistence of the deficit bias in Czech public finances.

Figure 7.3: Balance and structural balance



Conversely, we document some risk of premature fiscal consolidation that would have been prescribed for the 2010 budget when the cap on government expenditures decreases by 60 billion CZK from the 2009's level.[29] The decrease in government expenditures appears despite the expectations of a negative output gap for the year 2010 because the corresponding cyclical component of the budget balance is relatively small and does not fully account for the impact of the 2009 recession due to the downward revision of the underlying trend of GDP. In 2008, the projection of revenues for 2009 was based on the assumption of ongoing economic growth (see Figure 6.7; the expected cyclical component of budget balance for 2009 is almost at zero). The subsequent decrease in economic activity led not only to an emergence of a cyclical deficit but - because of the revision of an underlying trend – the structural deficit emerged as well. In 2009, the ex-post structural deficit actually dominates the cyclical component. Consequently, the ex-post estimates of cyclical components in 2009 and 2010 reflect deviations from the revised trend but not the impact of the recession as a whole that changed the underlying trend itself, too. The revised trends are presented in Appendix II. Furthermore, the revisions of trend cause a drop in cyclically adjusted revenues below the 2009 level, therefore, the expenditure rule would have enforced fiscal consolidation as early as the 2010 budget.

The escape clauses in the expenditure rule would have been little help in avoiding this expenditure adjustment to lower cyclically adjusted revenues: Deviations of expenditures from cyclically adjusted revenues that result in deficits that exceed the medium-term objective of 1% of nominal GDP are allowed only when the real GDP is expected to decrease by more than 3%. In 2009, however, a weak recovery was projected for 2010 so that the escape clause would not have applied. The additional escape clause related to the corrective term of the expenditure rule (equation (4)) would not have affected the 2010's budget due to definition of the corrective term. If the expenditures were overestimated given the level of actual cyclically adjusted revenues in year t, the corrections will apply for the year t+2 budget prepared in t+1. More detailed description of functioning of the corrective term is provided in Box 2.

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28 Projections of budget balances using alternative assumptions are provided in Appendix II, Figure A.3.

29 Although the expenditures are required to decrease by an equivalent of 2% of GDP, they will still remain above the cap on expenditures set for 2008.

Box 2: The Impact of the Corrective Term

The expenditure rule contains a corrective term that aims to assure continuous corrections for the deviations between projected and actual budgetary developments (see Ch.5, equation 4; denoted as k_{t+1}). The effects of the corrective term on the expenditure rule depend however on the choice of the year when the rule begins to constrain fiscal policy because the corrective term k_{t+1} applies if the accumulated past deviations between budgeted and actual deficits exceed 2% of GDP.

Whereas the corrective term is effectively zero if the rule had been adopted in 2004, it would have affected the expenditures if the rule had been adopted more recently. In general, presence of the corrective term in the rule implies lower expenditures in 2011 and 2012 if adoption of the rule would have been postponed to 2006-2008. The reason is that under the benchmark, the positive growth surprises of 2005 - 2007 contribute to accumulation of negative corrective fund, hence the higher than expected deficit of 2009 brings the corrective fund to positive values that would have been below 2% of GDP most of the time (see Table B.1).

Table B.1: Expenditures (*G*), corrective fund (*A*) and corrective term (*k*)

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Baseline	G_{t+1}	1201	1294	1410	1539	1672	1615	1639	1672	1651	1673	1775
	A_t	0	0	-52	-121	-216	-196	-42	33	93	75	60
	k_{t+1}	0	0	0	0	0	0	0	0	6	0	0
Adoption 2006	G_{t+1}			1427	1558	1682	1615	1637	1646	1620	1652	1766
	A_t			0	0	-95	-74	81	153	188	138	103
	k_{t+1}			0	0	0	0	3	26	37	20	8
Adoption 2008	G_{t+1}					1702	1634	1621	1640	1609	1642	1759
	A_t					0	0	157	203	221	170	124
	k_{t+1}					0	0	28	42	48	31	16

On the other hand, the negative impact of the corrective term for the 2011 and 2012 budgets could had been lower if the Ministry of Finance, jointly with the Fiscal Council, had attributed part of the 2009 deficit to extraordinary fiscal measures and called for application of the respective escape clause. This scenario is illustrated in Table B.2 with escape clause at 78 billion CZK, equivalent to the 2009 fiscal stimulus.

Table B.2: Evaluation of the impact of the escape clause

		2007	2008	2009	2010	2011	2012	2013	2014	2015
Adoption 2006	G_{t+1}	1427	1558	1682	1615	1639	1672	1637	1664	1774
	A_t	0	0	-95	-74	2	77	137	105	80
	k_{t+1}	0	0	0	0	0	0	20	9	1
Effect of clause		0	0	0	0	***3***	***25***	***17***	***11***	***7***
Adoption 2008	G_{t+1}			1702	1634	1647	1657	1630	1659	1772
	A_t			0	0	78	150	186	147	118
	k_{t+1}			0	0	2	25	37	23	14
Effect of clause				0	0	***26***	***17***	***21***	***18***	***13***

The overall effect of the escape clause exceeds 20 billion CZK (0.5% of GDP) in 2011-2013, depending on scenario. Note that the respective escape clause related to the correction fund A_t and correction term k_t would have had only marginal effect in case of our baseline scenario with adoption of the rule in 2004 since the k_t remains zero or very close to zero.

Two alternative narratives for fiscal tightening of 2010 can be provided. Under the first narrative, the requirement for fiscal tightening proves that the expenditure rule is able to correct deviations in predictions of revenues quickly and that the rule provides a timely signal for policy makers that fiscal expansion in recession should be temporary, not long-term, to avoid accumulation of excessive debts. The second narrative interpretation points to the fact that the higher cap on expenditures in 2009 would have been a consequence of predicted growth in revenues that did not materialized and so the structure of excessive expenditures is not related to fiscal stimulus, rather to current and capital expenditures planned for normal times. As a result, the fiscal tightening required by the rule would have correspond to consolidation timed just one year after a very sharp recession.

Figure 7.4: Debt ratio

Finally, we performed a stock-flow adjustment to quantify the impact of lower deficits on the overall debt ratio (Figure 7.4). Our analysis shows that adoption of the fiscal rule in 2004 would have contributed to a rapid decrease in the debt ratio before the Great Recession and as of 2015, the debt ratio would have been below 30% of GDP. However, the difference between the path of the planned budget balance and the realized budget balance implies that the surpluses in 2006 and 2007 originate in positive growth surprises. Thus, the rule does not seem to lead to strong countercyclical profile with surpluses accumulated over good times driven by the cyclical component in the rule. Instead, the countercyclical pattern observable in Figures 7.2 and 7.4 is caused by prediction errors in revenues and GDP, which are strongly correlated.

It shall be noted that it is not clear whether the “countercyclicality-due-to-errors” was intentional. The formulation of the corrective term seems to support the hypothesis of intentional design because the corrective term is designed in an asymmetric manner: it requires repayment for negative surprises but accumulates positive surprises. Nevertheless, the static analysis is of little help here, and we shall explore the impact of different forecasts in the next chapter.

8. Simulation

The analysis of the Czech Republic's past compliance with the proposed fiscal rule implies that expenditures should have been consistently lower given the existing revenue levels. On average, the difference in planned expenditures and in planned balances would have been 60 billion CZK, which corresponds to 1-2% of GDP. In the following section, we attempt to estimate the effects of the expenditure rule on output growth with a help of a rolling VAR model not only to account for the potential effects of changes in fiscal policy on GDP and other macroeconomic variables but also to assure that the expenditure rule is followed. Furthermore, the forecasts of future revenues and GDP are also estimated so that we can control for potential systematic biases in predictions. By this, we can show the extent to which the debt reduction of 2005-2008 presented in the previous section would have been driven by the fiscal rule itself and assess the relative role of then-conservative forecasts of GDP and revenues. Finally, we investigate how sharp fiscal consolidation would have been required in order to follow the rule after the Great Recession.

8.1 Methodology

We use a VAR model with a set of variables that follows the conventional specification in the literature on the empirical estimation of fiscal multipliers (e.g., Perotti, 2005). The model includes real government expenditures, real GDP, GDP deflator, real government revenues, and an interest rate. With the exception of the interest rate, all the variables are in logs. The real government revenues and expenditures are obtained by dividing nominal values by GDP deflator. Additionally, we included the nominal effective exchange rate as another dependent variable to account for an additional transmission channel that is particularly relevant to small open economies such as that of the Czech Republic. Because the proposed expenditure rule considers overall revenues and overall expenditures, we do not follow the common practise of pre-processing them and subtracting both transfers and one-time and temporary operations from the aggregate figures. We discuss the potential effect of composition of the fiscal consolidation plan in a discussion of the relevancy of our results.

Our estimation procedure proceeds as follows:

1. The VAR model is estimated on a vintage that ends in the 4th quarter of year *t*.

$$Y_t = A(L)Y_{t-1} + \varepsilon_t$$

2. Forecasts for year *t+1* are derived:

$$Y_{t+1} = A(L)Y_t + E(\varepsilon_{t+1}) = A(L)Y_t$$

Nominal GDP, revenues and expenditures are obtained by multiplying the real variables in VAR by the GDP deflator.

3. Predicted real GDP is decomposed into trend and cyclical components (using the HP filter) to obtain the expected cyclical component of revenues. In line with Lang and Mareš (2015) we assume that the elasticity of overall revenues on output gap equals to 0.43.

4. The expenditure rule for year *t+1* is applied in line with equations 1-4 in section 5. If the predicted expenditures are higher than the cap on expenditures, the expenditures consistent with the rule are considered as the expenditures for year *t+1*.

5. The VAR-X model with expenditures set by the rule as exogenous variables is estimated:

$$Y_t = A_1(L)Y_{t-1} + B_1(L)X_{t-1} + \varepsilon_t^x \quad ,$$

to update predictions for the year *t*+1 under the assumption that the expenditure rule has been applied:

$$Y_{t+1} = A_1(L)Y_t + B_1(L)X_t + E(\varepsilon_{t+1}^x) = A(L)Y_t + B_1(L)X_t \quad .$$

Note that $E(\varepsilon_{t+1}^x) = 0$ and the number of lags in *B(L)* equals to the number of lags in *A(L)*. The difference between forecasts from the original VAR model and this VAR-X model can be attributed to

the effect of the expenditure rule.

6. To track the evolution of the endogenous variables over time, it is necessary to update forecasts for prediction errors that would appear regardless of whether the rule had been followed (e.g. the oil shock, the impact of changes in VAT on price level, the fall in external demand during the Great Recession and the quick recovery thanks to the internationally coordinated stimulus of 2009). Define the difference between actual data for year $t+1$ and forecasts from the VAR of the step 1 for year $t+1$ as $\hat{\varepsilon}_{t+1}$ and the simulated values for year $t+1$ are calculated as

$$Y_{t+1} = A_1(L)Y_t + B_1(L)X_t + \hat{\varepsilon}_{t+1} \quad .$$

7. These VAR-based forecasts are repeated on the next vintages of the data.

8.2 Data

The model is estimated on quarterly data, with the first vintage covering the sample 1996 1Q-2004 Q4 to obtain forecasts for 2005; the last vintage ends in 2014:4 with forecasts for 2015. The length of the sample was given by the data availability. The interest rate is first the PRIBOR 1Y: since the vintage used for the 2008 forecasts, that rate has been replaced by the 10-year government bond rate and the beginning of the sample shifts to the first quarter of 1998.

The original series are non-stationary and because of the limited sample, the VAR model performed on variables in levels reveals unstable characteristic roots for some vintages. Thus, we estimated the model in first differences. Because the expenditure rule considers nominal GDP and nominal revenues, the forecasts were un-differenced and multiplied by the GDP deflator in each period. The number of lags has been selected by the BIC that pointed to 2 lags in most data vintages.

Visual analysis of the time series of revenues and expenditures reveals peaks in the first quarter of 2003 in both time series. These peaks are related to the Czech Republic's accession to the European Union and are of an administrative nature; therefore, we included dummies for 2003Q1 and 2003Q2 to avoid the influence of the administrative increase in government spending.

As the second source of potential bias, we consider the unexpected and negative effects of the fiscal tightening of 2012/2013. Our simulation does not imply a need to cut expenditures in these years, which points to a stark contrast between the counterfactual simulation and the actual conduct of fiscal policy[30]. However, the economic sentiment in the euro-area had been generally pessimistic so that a portion of the unfavourable developments of 2012 was likely to appear regardless of the domestic policy stance.

Keeping in mind the negative developments in the euro area, we decided to augment the predictions for 2012 and 2013 by only the part of the prediction errors that has not been related to the fiscal-consolidation policy. However, no consensus about the effect of fiscal tightening in these years has been reached. According to the IMF (2013b), the plausible impact of the Czech fiscal consolidation in 2012 and 2013 varies from -0.4% to -1.5% of GDP in 2012. With respect to 2013, the IMF (2013b) expected a negative impact up to 0.6% of GDP; however, the IMF (2014) points to a sharp reduction in government capital expenditures in 2013 and government investment is believed to have the highest multipliers; accordingly, the actual impact of the 2013 consolidation could have been significantly higher.[31] After some experimentation, we have found that considering 50% of the prediction error for 2012 - 2013 is consistent with the potential impact of fiscal tightening on GDP by 1.5% in both years.

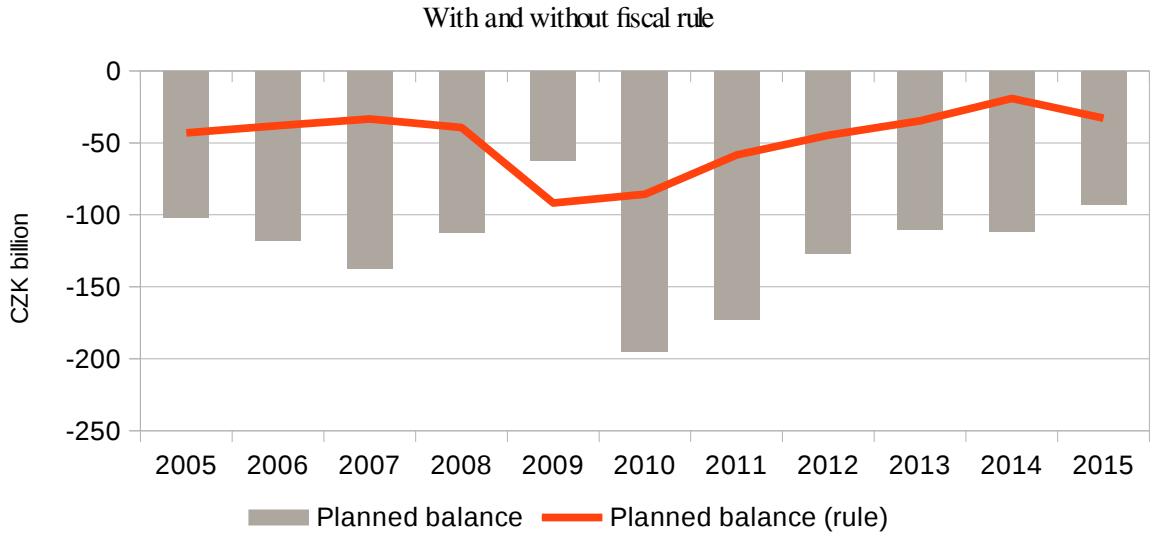
30 Note that the fiscal tightening in 2012 and 2013 was also entailed by the corrective requirements for the Czech Republic by the Excessive Deficit Procedure.

31 The government expenditures were smaller by 1.5% of GDP in 2013 compared to 2012. Unfortunately, no specific estimate for 2013 is provided in IMF (2014). Nevertheless, even the cut in government consumption could have had a significant impact on economic growth. Kilponen et al. (2015) suggest that in bad times (at ZLB), the multipliers of government consumption exceed 1.5 in the first and second year after the fiscal shock, whereas the multiplier of VAT remains negligible.

8.3 Results

The results of our simulation in terms of planned (budgeted) balance are presented in Figure 8.1.[32] Overall, the planned budget deficits would have been significantly lower in all years except 2009, when a larger budget deficit is allowed because of a predicted mild slowdown in economic activity. The increased deficits also would have been allowed for 2010, and their gradual elimination would have begun in 2011. Nevertheless, the rule would have already required fiscal tightening in 2010, when expenditures should have been cut by 60 billion CZK (an equivalent of approximately 1.5% of GDP), which would have been caused by a significant drop in cyclically adjusted revenues projected for 2010 compared to 2009 levels.[33] However, the counterfactual simulation does not imply fiscal consolidation in 2012 and 2013 driven by cuts in public expenditures. Still, the deficits would have been milder because of higher simulated revenues and GDP[34]. More details are provided in Table 8.1.

Figure 8.1: Budget balance (planned)



Note: Worsened fiscal balance for 2015 is caused by expected one time and temporary operations.

Table 8.1: Fiscal policy – counterfactual simulation (budgeted values, CZK billion)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenues	1278	1330	1446	1535	1577	1522	1574	1650	1693	1772	1808
Expenditures	1321	1368	1480	1575	1669	1607	1632	1695	1728	1791	1841
Cyclical component	14	14	14	1	-48	-43	-6	8	3	18	16
One-time operations	0	0	0	-1	-2	-2	-11	-10	5	7	-3
Balance	-43	-38	-33	-39	-92	-86	-58	-45	-35	-19	-33
Balance (actual, budgeted)	-102	-118	-137	-112	-62	-195	-173	-127	-110	-112	-97
Difference	***-59***	***-80***	***-104***	***-73***	***29***	***-110***	***-115***	***-82***	***-76***	***-92***	***-64***

Note: The data are based on the ESA 2010 methodology. "Difference" measures a distance of the budgeted deficit from value consistent with the rule ("-" implies non-compliance with the rule).

32 To ensure comparability between the budgeted balance and the simulated balance, the simulated balance has been augmented by one-time and temporary operations of the same size as expected by the Ministry of Finance.

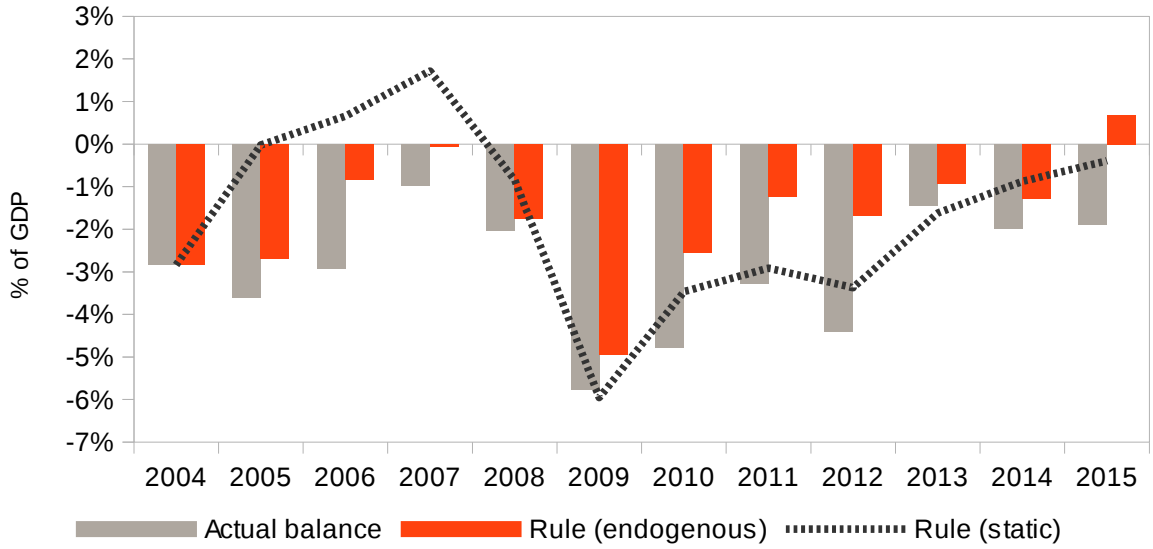
33 Lower cyclically adjusted revenues are caused by revisions in the underlying trend, see the discussion in Ch. 7.

34 Note that the budgeted expenditures were expected to decrease from 1731 billion in 2012 to 1694 billion in 2013.

Figure 8.2 and Table 8.2 show the realized budget balance with and without the fiscal rule. Additionally, the dotted line represents the budget balance implied by the analysis of compliance with the rule (Figure 7.2; denoted as Rule (static)). The resulting budget balance points to a significantly slower reduction in deficits in the pre-crisis period. Indeed, no significant surpluses would have appeared even with the fiscal rule.

The reason for more gradual elimination of deficits lies in the predictions of future revenues and GDP, which were consistently conservative until 2007. Thus, the counterfactual simulation confirms our hypothesis that if the forecasts are not on the conservative side, the rule might not enforce significant surpluses even in periods of robust growth. Conversely, since 2009, deficits are more rapidly eliminated even without a need for decreased expenditures in 2012/2013. Furthermore, our analysis shows that in times of economic growth, reduction in deficits can be achieved by restraining growth in overall expenditures, not necessarily by cutting them.

Figure 8.2: Budget balance (realized)



Note: The dotted line presents the static analysis of the past compliance with the proposed fiscal rule. The simulated budget deficits do not cover the one-off operations of 2012 of (79 billion CZK., approx. 2%HDP), including compensation of churches. Data for 2015 preliminary, follow the Fiscal Outlook, November 2015.

Table 8.2: Fiscal policy – counterfactual simulation (ex-post values, CZK billion)

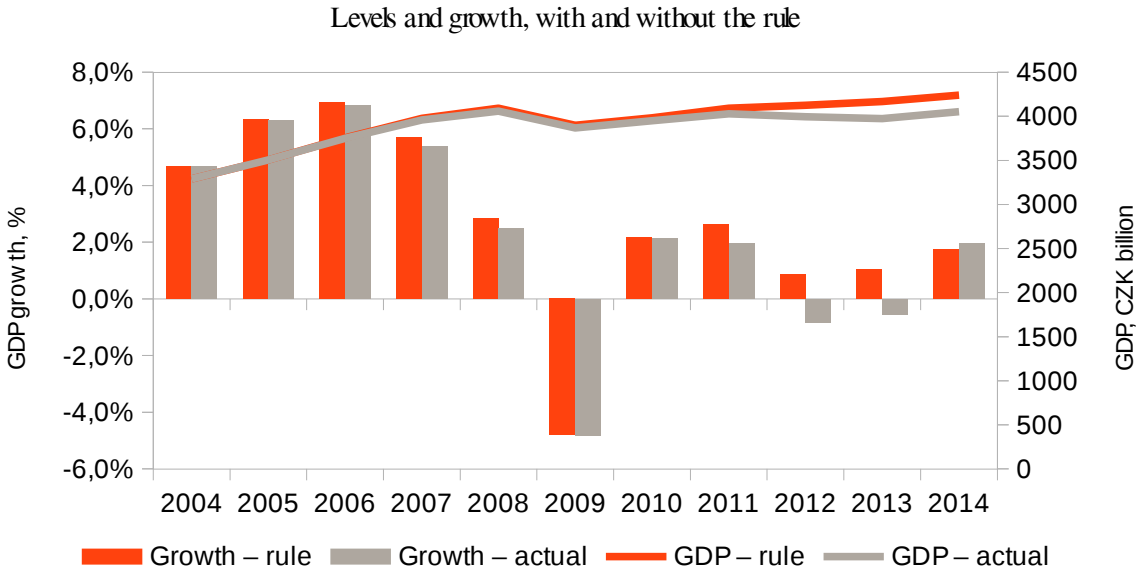
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenues	1251	1339	1477	1503	1476	1507	1582	1625	1687	1735	1873
Expenditures	1321	1368	1480	1575	1669	1607	1632	1695	1728	1791	1841
Cyclical component	12	15	13	23	-44	-31	-12	-7	-17	-8	29
One-time operations	0	-6	-10	-3	12	1	-5	0	-8	-4	13
Balance	-69	-29	-3	-72	-193	-101	-50	-70	-41	-56	32
GDP growth (actual)	6,3%	6,8%	5,4%	2,5%	-4,8%	2,1%	2,0%	-0,8%	-0,5%	2,0%	4,2%
GDP growth (simulation)	6,3%	6,9%	5,7%	2,8%	-4,8%	2,2%	2,6%	0,9%	1,0%	1,7%	4,4%

Note: The data are based on the ESA 2010 methodology.

The effects on growth of real GDP are depicted in Figure 8.3 and the lower part of Table 8.2. According to our simulations, the growth of real GDP would have not been lower with the fiscal rule than it has been without; indeed, the opposite is true. This result is in line with economic intuition and points to the importance of timing to the effects of fiscal consolidation on economic growth. During the first period of fiscal consolidation, in 2005-2007, the Czech economy benefited from an inflow of FDIs and accelerating exports. The restrictive effect of lower expenditures would have led to a slightly

lower growth of GDP deflator and lower appreciation of the Czech koruna (the nominal effective exchange rate would have been lower by approximately 1%), which also would have contributed to low effects of the restrained growth of public expenditures.

Figure 8.3: Real GDP



Additionally, we already mentioned that the better state of public finances would have not required the fiscal consolidation of 2012 and 2013; Consequently, the growth of real GDP would have been higher with the rule than it was without by 4% of GDP in 2015.

These results can be compared with the existing literature on fiscal multipliers in the Czech Republic, notably with the results derived from the DSGE studies. The DSGE models with the fiscal sector usually allow for more types of revenues and expenditures, all of them with different multipliers. Thus, the comparison of our results with these studies can help us determine whether fiscal consolidation shall be oriented more towards revenues or expenditures. Klyuev and Snudden (2012) utilize the GIMF model of the IMF to estimate the impact of the fiscal consolidation of the 2011 budget of 1.95% of GDP (¾ of the package cuts in expenditures). They find that the impact of the package was -0.7% with multipliers on government expenditures and investment approximately 0.4 and on revenues between -0.1 and -0.3. Ambriško, et al. (2015) arrive at slightly higher expenditure multipliers with the multiplier of government investments equal to 1 and the multiplier of government consumption equal to 0.66. The multipliers of different taxes are within a range from -0.5 to -0.6.

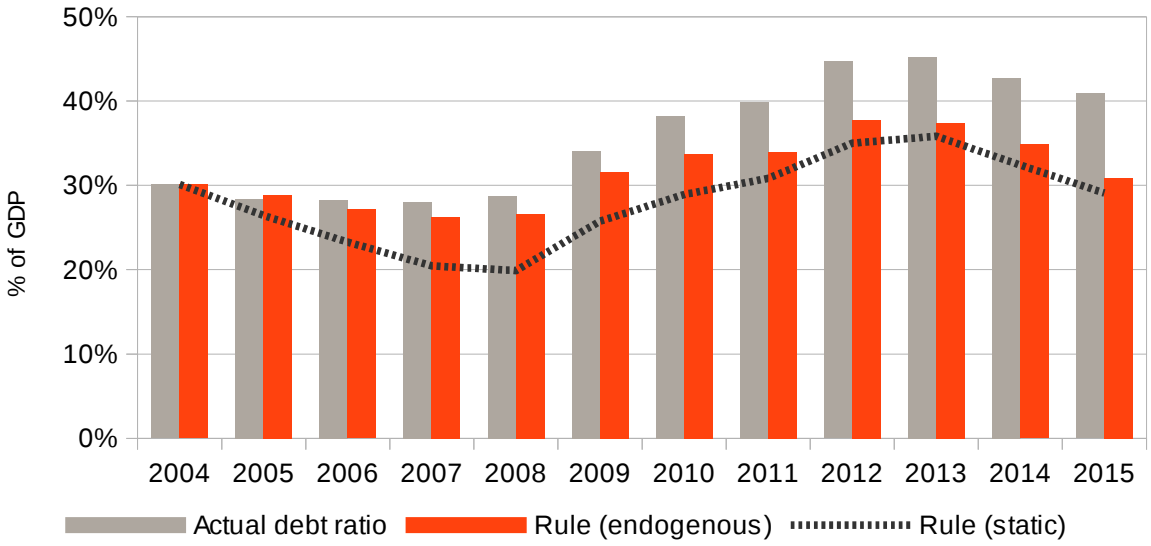
These studies, however, do not consider the potential dependence of multipliers on the state of the economy. The international evidence shows that the negative impact of fiscal consolidations can be rather small or even positive in times of robust growth with high external demand; however, in times of economic slack and broad decline in economic activity, the costs of fiscal consolidation in terms of lower output growth are more pronounced (see Guajardo, et al. (2014) and Gerchert and Rannenberg (2014) for recent evidence on the effects of fiscal consolidation and state-dependent multipliers). The estimates of the state-dependent multipliers for the Czech Republic appear in Kilponen et al. (2015). Those authors document significant differences in the multipliers of government consumption being 0.54 in normal times, whereas with zero-lower-bound interest rates the expenditure multiplier jumps to 1.79. The differences in tax multipliers are substantially smaller.

When considering the evidence on fiscal multipliers, we must point to downward risks to economic growth, particularly the risks associated with the estimated negligible impact of fiscal consolidation on growth in 2010. Government expenditures should have decreased by 1.5% of GDP to meet the fiscal

rule and as Blanchard and Leigh (2013) show, growth forecasts and planned fiscal consolidation were highly correlated with each other in the Great Recession. However, the year 2010 was characterized by economic recovery and increased external demand that could have offset the potential negative impact of fiscal tightening. Depending on the composition of the possible fiscal consolidation plan for 2010, we suppose the size of the negative risks could reach up to -1% of GDP.

Our analysis of the rule in 2009/2010 again points to the limited ability of the cyclical component of revenues to ensure countercyclical policy. Although the expected cyclical component for 2010 was substantial (74 billion in the static counterfactual, 48 billion in the dynamic simulation), it remained too small to avoid the need to cut expenditures for 2010 compared to their 2009 level. The escape clauses would not have allowed for fiscal expansion, either: GDP was expected to remain close to the 2009 levels (still far below 2007/2008 levels), whereas the escape clause would have required growth forecasts below -3% of GDP. Therefore, if the external conditions of the Czech economy were less favourable in 2010, the possibilities of resorting to fiscal stimulus would have not been available, and the risk of stagnation would have been higher.

Figure 8.4: Debt ratio



Note: The dotted line presents the static analysis of the past compliance with the proposed fiscal rule (Chapter 7). The simulated debt ratio is augmented for one-off operations in 2012 of approx. 2%HDP in all three trajectories.

Table 8.3: Debt ratios – actual and counterfactuals (% of GDP)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Actual	30,1%	28,4%	28,3%	28,0%	28,7%	34,1%	38,2%	39,9%	44,7%	45,2%	42,7%	40,9%
Counterfactual I (static)	30,1%	26,4%	23,3%	20,5%	19,9%	25,7%	28,9%	30,8%	35,0%	35,8%	32,4%	29,1%
Counterfactual II (simulation)	30,1%	28,9%	27,2%	26,2%	26,6%	31,6%	33,7%	33,9%	37,8%	37,4%	34,8%	30,8%

Finally, the development of the debt ratio (Figure 8.4, Table 8.3) reveals the lower pace of the decrease in the debt-to-GDP ratio compared to the results in Chapter 7.[35] The positive impact of the rule appears since 2010. Overall, our estimates imply a debt ratio at 30.8% in 2015 with a main decrease in the latter part of the sample that is driven especially by higher GDP growth in 2013-2015. If the growth had not been faster or if the fiscal consolidation of 2010 had had larger effects on growth, the positive impact of the fiscal rule on the debt ratio arguably would have been smaller.

35 In 2005, the ratio exceeds the actual debt ratio; nevertheless this discrepancy is driven by the stock-flow adjustment (lower GDP deflator) and not an increase in the overall debt or a decrease in the real GDP.

9. Conclusions

This paper has attempted to assess the new set of fiscal rules proposed for the Czech Republic that are currently in the process of Parliamentary approval. If approved, the new fiscal framework will consist of an expenditure rule that binds the expenditures of public sector to the cyclically adjusted revenues so that the difference between them shall be limited to 1% of GDP. As a further measure to avoid unsustainable debt levels, a debt brake at a level of debt corresponding to 55% of GDP is also incorporated. Additionally, the expenditure rule and the debt brake are complemented by the establishment of an independent Fiscal Council with the power to evaluate compliance with the rules.

Our assessment has focused on an evaluation of the fiscal rules using two types of counterfactuals had the rules been implemented a decade ago. In both counterfactuals, we have assumed that the rule had been adopted in 2004 so that it would have already affected the 2005 budget proposal. The first counterfactual has been static, and we have assumed that the change in fiscal policy stance did not affect other macroeconomic variables, primarily that of GDP. These assumptions have been relaxed in the second counterfactual, which is based on a simulation that itself is based on a rolling-VAR model in which the GDP and other variables were allowed to evolve endogenously.

We have found that the proposed fiscal rules shall deliver lower deficits, primarily because of improvements in structural balance. Our simulations have revealed that deficits would have been lower by 30 to 60 billion CZK in recent years if the expenditure rule had already been followed, which corresponds an improvement in the budget balance by 1-1.5% of GDP. In line with milder deficits, the debt ratio also decreases by approximately 10% of GDP compared to the current levels. Thus, the expenditure rule can contribute to mitigating the persistent deficit bias of Czech public finances. Efficient monitoring by an independent fiscal council can also be helpful as well, whereas the debt brake will affect the public sector in the event of non-compliance with the expenditure rule because the current level of the debt/GDP ratio is somewhat below the limit of the 55% of GDP.

However, we have shown that the improvements in budget balances after adoption of the expenditure rule might not be sufficient both to ensure the accumulation of surpluses in periods of robust growth and to create a room for fiscal expansion in recessions. Thus, the potential macro-stabilization role of fiscal policy constrained by the expenditure rule is somewhat limited. We have identified the following reasons for that conclusion. First, in line with the current official medium-term budgetary objective, the expenditure rule implicitly aims for 1% structural deficits. It does not impede the long-term sustainability of public finances, but it is not enough to achieve large surpluses even in periods of robust growth. Second, the size of the cyclical component of budget balance is too hard to forecast with precision and rather small to account for the impact of business cycle on fiscal position. Third, the escape clauses allowing for temporary deviations from the rule are rather restrictive to prevent pro-cyclical tightening in recessions.

With respect to the ability to forecast the cyclical component in budget balances, we have shown that these forecasts are prone to large revisions that are often of the same size as the cyclical component itself. These errors are, however, linked to most of the methods used for cyclical adjustment that are currently used; therefore, they are not specific to the methods used by the Ministry of Finance of the Czech Republic. In spite of inherent countercyclicality of the proposed expenditure rule based on structural balance, the practical difficulties with output gap estimation affect the potential macro-stabilization role of fiscal policy quite significantly. Following our analysis, we have shown that most of the observed countercyclical pattern of fiscal policy is primarily caused by unexpected positive or negative growth surprises instead of the fiscal rule as such. The corrective term embodied within the expenditure rule operates as an incentive not to consistently overestimate revenues rather than being designed to deal with growth surprises and to strengthen countercyclical function of the rule.

Our recommendations point to the use of a more diverse set of methods to assess the cyclical position of the economy in real time and to consider not only estimates of output gaps but also growth rates of

GDP and other indicators e.g., current account deficits or developments in the labour market or housing instead of relying on a single concept of potential product. Since the future revisions of the framework for estimation of output gap and cyclically adjusted revenues are allowed by the legislative proposal, we believe these policy recommendations can be addressed in the future without a need to revise the legislative framework approved by the Parliament.

Furthermore, we have estimated a relatively negligible negative impact of the fiscal rule on GDP growth if it had been implemented a decade ago in the period of robust growth of the mid 2000s with strong domestic and external demand. Nevertheless, we have identified possible risks of pro-cyclical tightening for the year 2010 for which we have documented expenditure cuts compared to 2009 levels. This result has been robust over various patterns of forecasts for 2009. The escape clauses incorporated in the rule are relatively strict: they would not have been applied to the 2010 budget, and reliance on escape clauses might not have helped avoid a pro-cyclical tightening of fiscal policy. Nevertheless, we have found that following the expenditure rule during the past decade would have led to stronger GDP growth because the expenditure rule would not have called for fiscal consolidation in 2012 and 2013.

These results are in line with the recent literature on the macroeconomic effects of fiscal policy that points to the importance of timing of consolidation efforts that are potentially costly in terms of potential output losses when they commence during recessions. However, the negative impact of adoption of restrictive fiscal policies in good times on growth can be negligible and even positive, and non-Keynesian effects can appear. Based upon our expectations of economic growth in 2016 and 2017, we consider the timing of implementation of the fiscal rule in the Czech Republic as adequate.

We have also evaluated the limits of municipalities and regional governments' debts as a welcomed addition to the legal system that establishes important constraints to the irresponsible behaviour of some of the local governments. However, we note that the constraints are substantially less severe for regional governments than for municipalities and that the rules leave some space for creative accounting and off-balance operations, primarily through companies owned by the local government.

Overall, we regard the proposed framework as well defined, transparent in terms of coverage of the public sector as a whole and somewhat enforceable not only because of external pressure from EU-wide rules but also because the Fiscal Council can evaluate compliance. Thus, the proposed fiscal rules have the potential to improve the state of Czech public finances and our remarks on caveats and catches shall be considered as policy recommendations for implementing the rule.

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Appendix I: Escape Clauses in Fiscal Compact

The "Treaty on Stability,Coordination and Governance in the Economic and Monetary Union" (TSCG)[36] allows countries to deviate from their medium term objective only in "exceptional circumstances" (TSCG, Article 3, 1.c). An exceptional circumstance is defines as a: "case of an unusual event outside the control of the Contracting Party concerned which has a major impact on the financial position of the general government or to periods of severe economic downturn as set out in the revised Stability and Growth Pact, provided that the temporary deviation of the Contracting Party concerned does not endanger fiscal sustainability in the medium-term" (TSCG, Article 3, 3.b).

Excessive debt procedure: "Special consideration can be given to countries whose fiscal positions have worsened due to exceptional events outside their control, such as in the case of natural disasters or as a result of a severe economic downturn, but under the double overarching condition that the excess over the deficit is close to the reference value and temporary."[37]

Investment clause: "Member States in the preventive arm of the Pact can deviate temporarily from their MTO or adjustment path towards it to accommodate investment, provided that: their GDP growth is negative or GDP remains well below its potential; the deviation does not lead to an excess over the 3 % deficit reference value and an appropriate safety margin is preserved; investment levels are effectively increased as a result; the deviation is compensated within the timeframe of the Member State's Stability or Convergence Programme. Eligible investments are national expenditures on projects co-funded by the EU under the Structural and Cohesion policy, Trans-European Networks and the Connecting Europe Facility, as well as national co-financing of projects also co-financed by the European Fund for Strategic Investments."[38]

Structural reforms: "In line with the existing rules of the Pact, Member States implementing major structural reforms are allowed to deviate temporarily from their MTO or the adjustment path towards it. This allows them to cater for the short-term costs of implementing structural reforms that will have long-term positive budgetary effects, including by raising potential sustainable growth".[39]

Fiscal effort over the economic cycle under the preventive arm: "In principle, Member States not having yet reached their MTO are required, as a benchmark, to pursue an annual improvement in the structural budget balance of 0.5 % of GDP. The rules also provide that the Commission needs to take into account whether a higher adjustment effort is made in good economic times, whereas effort may be more limited in bad times. The Commission has thus designed a matrix which clarifies and specifies the fiscal adjustment requirements under the preventive arm of the Pact. This matrix is symmetrical, differentiating between larger fiscal effort to be undertaken during better times and a smaller fiscal effort to be undertaken during difficult economic conditions. This should make it possible to better capture cyclical conditions. It should also smoothen the required fiscal effort over time and avoid unwarranted discontinuities as economic circumstances change."[40]

Corrective arm and unexpected fall in economic activity "If a country has taken effective action by delivering the structural fiscal effort recommended by the Council, it may be given additional time to correct the excessive nominal deficit without incurring financial sanctions (euro area Member States), or a suspension of commitments/payments of European Structural and Investment Funds (all Member States)."[41]

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36 http://europa.eu/rapid/press-release_DOC-12-2_en.htm

37 http://ec.europa.eu/economy_finance/economic_governance/sgp/corrective_arm/index_en.htm

38 http://ec.europa.eu/economy_finance/economic_governance/sgp/pdf/2015-01-13_communication_sgp_flexibility_guidelines_en.pdf

39 http://ec.europa.eu/economy_finance/economic_governance/sgp/pdf/2015-01-13_communication_sgp_flexibility_guidelines_en.pdf

40 http://ec.europa.eu/economy_finance/economic_governance/sgp/pdf/2015-01-13_communication_sgp_flexibility_guidelines_en.pdf

41 http://ec.europa.eu/economy_finance/economic_governance/sgp/pdf/2015-01-13_communication_sgp_flexibility_guidelines_en.pdf

ANNEX 2 - MATRIX FOR SPECIFYING THE ANNUAL FISCAL ADJUSTMENT TOWARDS THE MEDIUM-TERM OBJECTIVE (MTO) UNDER THE PREVENTIVE ARM OF THE PACT

		Required annual fiscal adjustment*	
	Condition	Debt below 60 % and no sustainability risk	Debt above 60 % or sustainability risk
Exceptionally bad times	Real growth <0 or output gap <-4	No adjustment needed	
Very bad times	-4 ≤ output gap <-3	0	0.25
Bad times	-3 ≤ output gap < -1.5	0 if growth below potential, 0.25 if growth above potential	0.25 if growth below potential, 0.5 if growth above potential
Normal times	-1.5 ≤ output gap < 1.5	0.5	> 0.5
Good times	output gap ≥ 1.5 %	> 0.5 if growth below potential, ≥ 0.75 if growth above potential	≥ 0.75 if growth below potential, ≥ 1 if growth above potential

* all figures are in percentage points of GDP

Severe economic downturn in Eurozone as a whole "This provision has so far never been applied – although it de facto reflects the logic used at the time of the 2008 financial crisis when the adjustment paths were re-designed for several Member States. The activation of this provision would not mean putting on hold the fiscal adjustment, but rather re-designing the adjustment path on a country-specific basis, both in terms of the adjustment effort and the deadlines to achieve the targets, to take into account the exceptional circumstances of the severe economic downturn in the euro area or the Union as a whole. The use of this provision should remain limited to exceptional, carefully circumscribed situations to minimise the risk of moral hazard."

Corrective arm and unexpected fall in economic activity

"If a country has taken effective action by delivering the structural fiscal effort recommended by the Council, it may be given additional time to correct the excessive nominal deficit without incurring financial sanctions (euro area Member States), or a suspension of commitments/payments of European Structural and Investment Funds (all Member States)."[42]

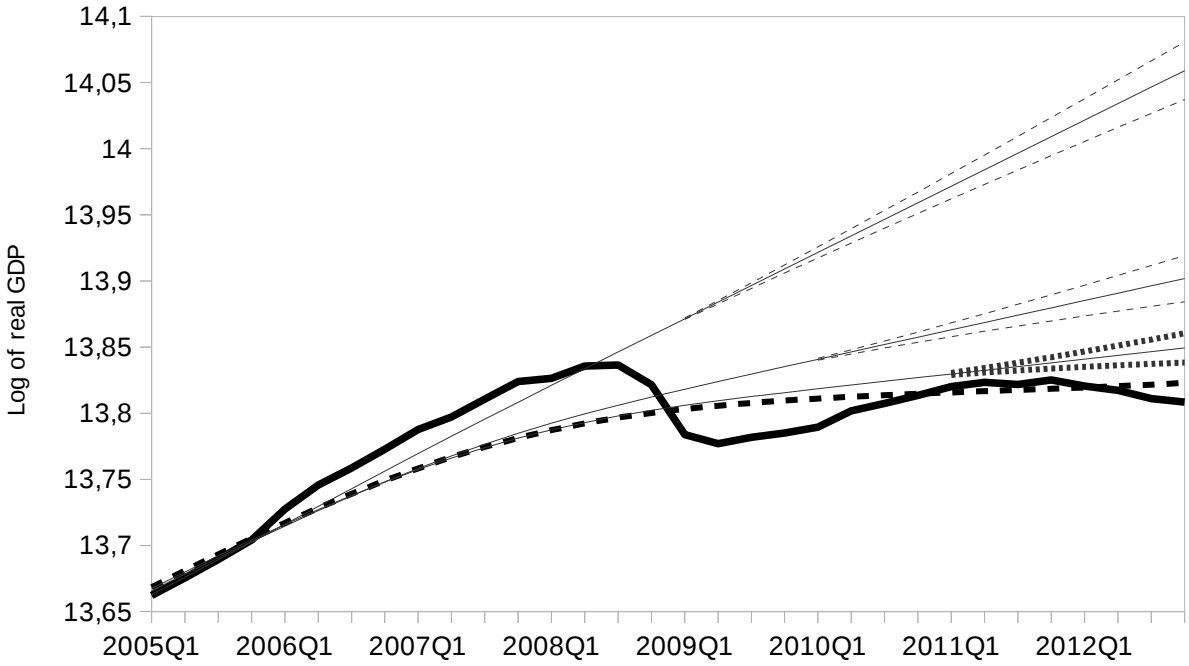
Severe economic downturn in Eurozone as a whole

"This provision has so far never been applied – although it de facto reflects the logic used at the time of the 2008 financial crisis when the adjustment paths were re-designed for several Member States. The activation of this provision would not mean putting on hold the fiscal adjustment, but rather re-designing the adjustment path on a country-specific basis, both in terms of the adjustment effort and the deadlines to achieve the targets, to take into account the exceptional circumstances of the severe economic downturn in the euro area or the Union as a whole. The use of this provision should remain limited to exceptional, carefully circumscribed situations to minimise the risk of moral hazard."

42 http://ec.europa.eu/economy_finance/economic_governance/sgp/pdf/2015-01-13_communication_sgp_flexibility_guidelines_en.pdf

Appendix II – Additional Figures

Figure A.1: Trend revisions and the Great Recession



Note: Trends are derived using the HP-filters estimated on samples till 2008Q4, 2009Q4, 2010Q4 (thin lines) and 2015Q3 (dashed). Trends are extrapolated using forecasts based on ARIMA(1,1,0) forecasts of trends, 95% confidence bands

Figure A.2: Expenditure rule targeting balanced structural budget - II

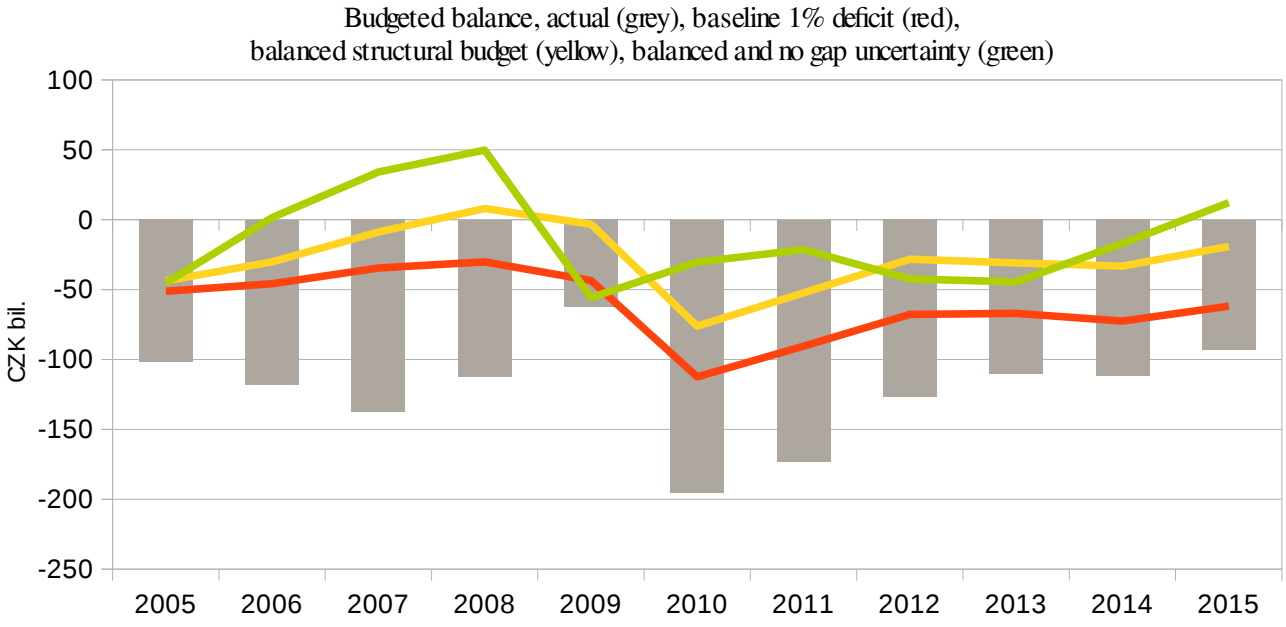
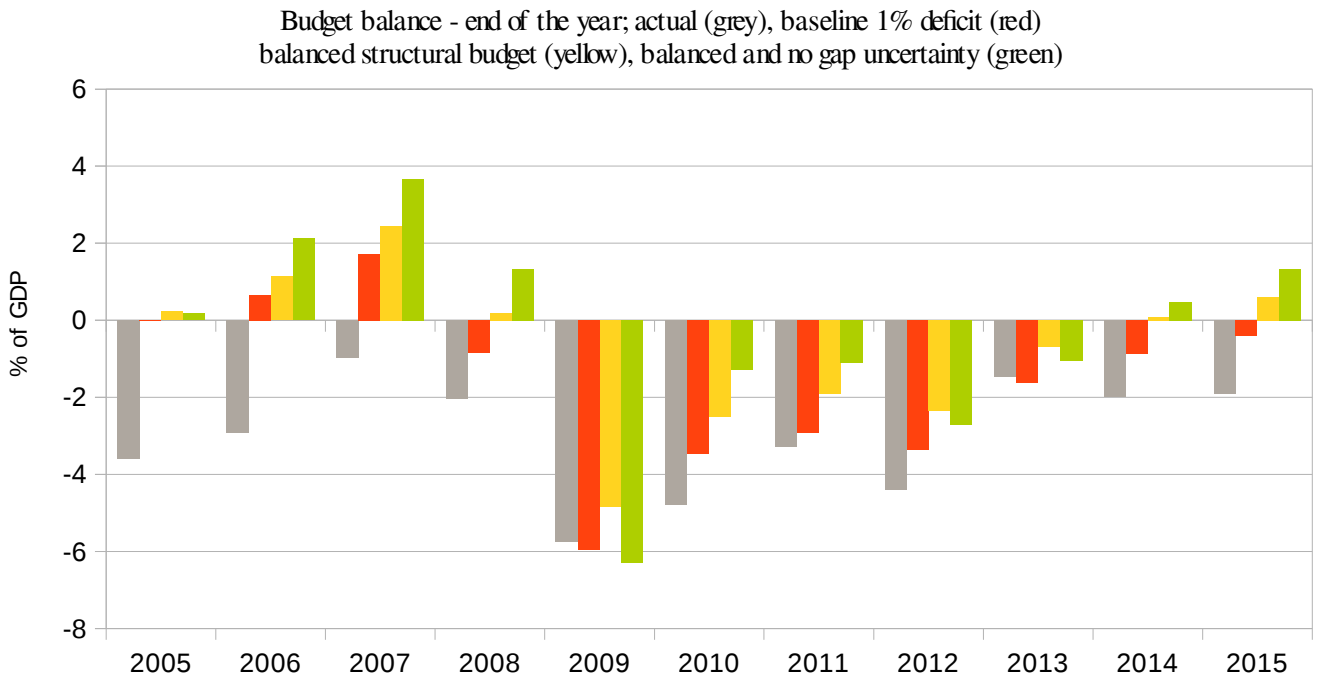


Figure A.3: Expenditure rule targeting balanced structural budget - I



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