



ECONOMIC RESEARCH BULLETIN

Macroeconomic Effects of Fiscal Policy
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EDITORIAL

Fiscal policy and its interactions with monetary policy have gained prominence in the environment of subdued economic activity following the recent global economic and financial crisis. This edition of the Research Bulletin focuses on four articles which analyse the macroeconomic effects of fiscal policy from different perspectives. The first article examines the interactions between monetary and fiscal policies in six industrialised countries during 1980–2008. Employing a novel empirical framework, the article documents changes in monetary-fiscal interactions over time. Next, these changes are linked to the monetary policy regime set-up. The second article assesses the extent to which fiscal discretion in the Czech Republic contributed to smoothing the real economy over the business cycle in the past decade. Using several alternative approaches, the results suggest that fiscal discretionary measures have been procyclical, that is, have amplified business cycle fluctuations. The third article analyses in an empirical framework how unexpected changes to government spending and revenues affect the Czech economy. The article detects certain regularities and at the same time shows the limits of the existing identification methods when applied to short Czech fiscal data. The fourth article takes a complementary approach by building a dynamic stochastic general equilibrium (DSGE) model to quantify the effects of fiscal measures on the expenditure and revenue sides of the Czech economy. The model, which is still rather in the development stage, demonstrates the potential for calculating fiscal multipliers and simulating the macroeconomic effects of fiscal measures for individual categories of the government budget.

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IN THIS ISSUE

Tracking Monetary-Fiscal Interactions Across Time and Space

The global financial crisis has highlighted the importance of monetary and fiscal policies, and their interaction, for macroeconomic outcomes. This article provides empirical evidence on monetary-fiscal interactions for high-income countries. The bottom line is that an explicitly stated central bank inflation target affects not only monetary policy itself, but also the actions and outcomes of fiscal policy. It may therefore reduce the risk of sovereign debt crises.

Michal Franta, Jan Libich and Petr Stehlík (on p. 2)

Fiscal Discretion in the Czech Republic in 2001–2011: Has It Been Stabilising?

Fiscal policy influences the real economy through its institutional configuration and by discretionary action. This article documents fiscal discretion in the Czech Republic in 2001–2011 based on macroeconomic data and on the authors' own extensive survey of tax legislation changes. Fiscal discretion is found to be used frequently and to be large in several years. The results signal that macroeconomic stabilisation has not been a major aim of fiscal discretion measures.

**Róbert Ambriško, Vítězslav Augusta, Dana Hájková,
Petr Král, Pavla Netušilová, Milan Říkovský
and Pavel Soukup (on p. 6)**

Macroeconomic Effects of Fiscal Policy in the Czech Republic: Evidence Based on Various Identification Approaches in a VAR Framework

This article systematically examines the sources of uncertainty associated with fiscal policy transmission. The main finding is that the fiscal policy transmission mechanism in the Czech Republic exhibits some standard features (e.g. a rise in GDP and inflation after unexpected government spending). However, the uncertainty associated with the results is substantial. This uncertainty is related to effects of fiscal policy shocks stemming from the character of fiscal data and from the absence of a consensus about the proper identification of fiscal policy shocks.

Michal Franta (on p. 10)

Assessing the Impact of Fiscal Measures on the Czech Economy

This article introduces a medium-sized DSGE model for examining the transmission of fiscal policy to the Czech economy. The model shares features of the CNB's core forecasting model, but contains a more comprehensive fiscal sector. Crucial fiscal parameters are estimated using Bayesian techniques. The article illustrates how the model could be applied to derive fiscal multipliers for individual revenue and expenditure categories and to evaluate the impact of selected fiscal measures on the real economy.

**Róbert Ambriško, Jan Babecký, Jakub Ryšánek
and Vilém Valenta (on p. 13)**

Tracking Monetary-Fiscal Interactions Across Time and Space¹

Michal Franta^a, Jan Libich^b and Petr Stehlík^c

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Fiscal and monetary policies are the most prominent tools of macroeconomic management. It is therefore surprising that the interactions between the two policies have received relatively little attention in the literature until recently

An apparent monetary-fiscal interaction can be observed whenever one authority decides directly about the policy of the other. This is the case, for example, when the monetary authority is forced to finance excessive fiscal spending. However, even if the central bank is formally independent of the government, there exist a number of indirect interaction channels deriving from the fact that both policies affect the same macroeconomic variables (such as inflation, output and the expectations of the public). Therefore, the fiscal authority can affect the conduct of monetary policy through the crowding out of private credit, exchange rate risk related to foreign financing of government debt and so on. On the other hand, the monetary authority can, for example, affect the government's debt servicing costs through interest rate changes.

The pressing policy issue concerning the monetary-fiscal interaction is whether the fiscal stress observed in many advanced countries, which is expected to grow further as populations age, can affect the outcomes of monetary policy, and if so, how. In Franta et al. (2012) we explore this question by employing a novel empirical approach based on a combination of two recent econometric procedures – time-varying parameter vector autoregression (Primiceri, 2005) with sign restrictions identification of fiscal policy shocks (Mountford and Uhlig, 2009).

From the theoretical point of view, the concerns of central bankers about possible fiscal spillovers into monetary policy have been examined via game theory methods in Libich et al. (2011). The analysis implies two hypotheses, which we examine in this paper:

Hypothesis 1: A central bank with a numerical target for average inflation is less prone to accommodate a debt-financed government spending shock than a central bank without such an explicit long-term monetary commitment.

Hypothesis 2: A change in the response of a more strongly committed central bank alters the incentives of governments by reducing their payoff from debt-financed spending, and therefore leads to an improvement in the fiscal balance.

¹ This article is based on Franta et al. (2012).

Given that changes in monetary and fiscal policies are generally gradual, and not necessarily synchronised, vector autoregression with time-varying parameters seems an appropriate modelling tool. Furthermore, to overcome the strict timing assumptions inherently presented in standard shock identification schemes, the sign restriction approach is used. To ensure that the desired fiscal shocks are identified, additional (contemporaneous and magnitude) restrictions are imposed. The model is estimated using Bayesian methods for three inflation-targeting countries: Australia, Canada and the UK, and three non-targeters: Japan, Switzerland and the US, over the period 1980Q1 to 2008Q2.

If Hypothesis 1 is correct, we should see no monetary accommodation (interest rate decreases) of fiscal shocks after a numerical inflation target is legislated, or even observe the central bank offsetting such shocks by raising interest rates. In contrast, Hypothesis 1 predicts no change or possibly more monetary accommodation in countries without a legislated inflation objective. Our results are broadly consistent with this hypothesis.

Figure 1. IRFs of the interest rate

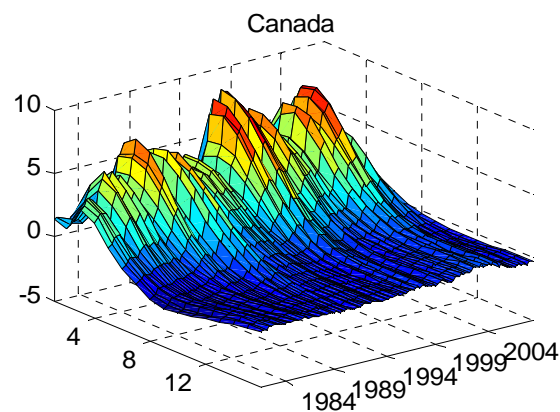
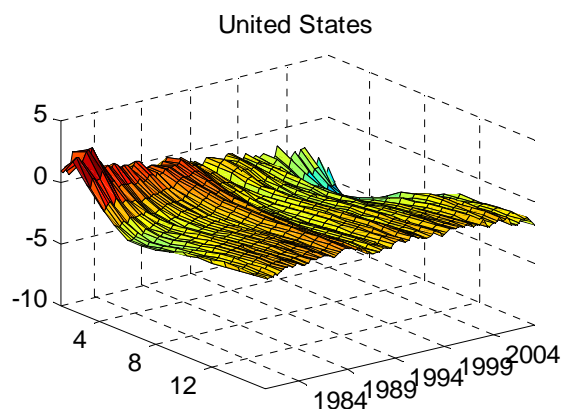
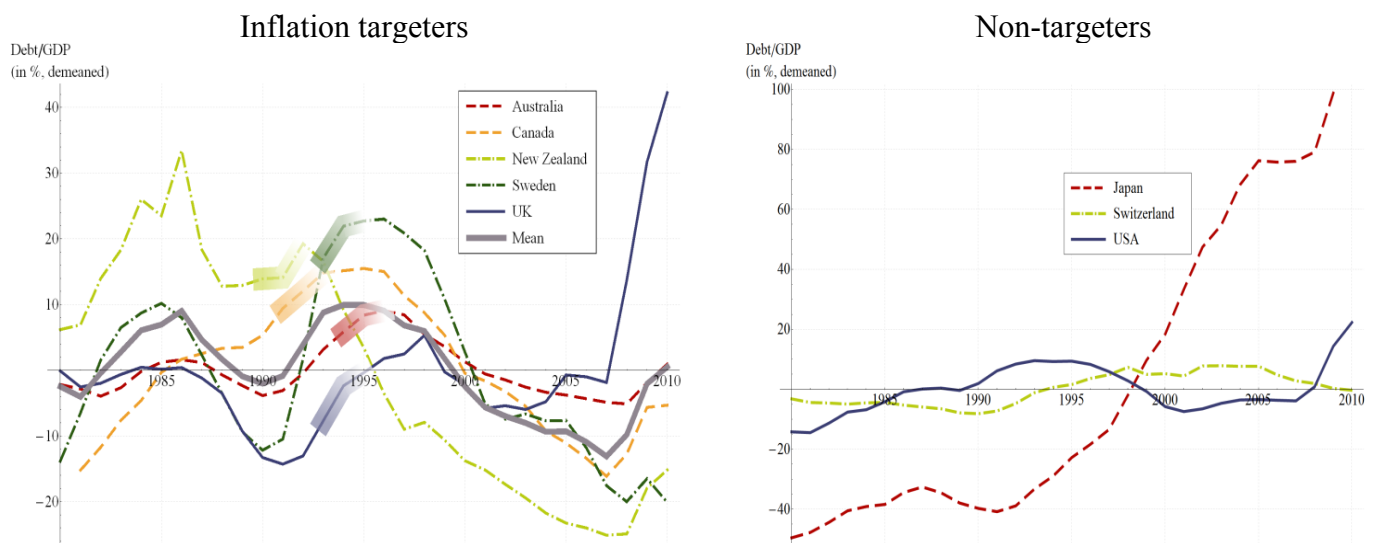


Figure 1 reports the estimated impulse response functions (IRFs) of the interest rate to a positive debt-financed government spending shock for Canada. It plots the medians of the posterior distributions of the IRFs. Similarly, Figure 2 presents the responses of the interest rate for the US. The Bank of Canada now tends to offset fiscal shocks slightly more aggressively on impact as well as over longer horizons. Specifically, after an episode of M1 growth targeting (ending in November 1982) and a short period without a specific anchor for monetary policy, in 1988 the Bank of Canada announced price stability to be its new monetary policy goal. This announcement corresponds to the first peak of monetary offsetting of fiscal shocks in Figure 1. Such offsetting further increased in the 1990s after the formal adoption of inflation targeting. This is especially visible around 1998 (the horizon of the second inflation target announced in 1993).

Figure 2. IRFs of the interest rate

In contrast, in the US (Figure 2) the degree of monetary accommodation of debt-financed fiscal shocks has been increasing through time over all horizons. It is interesting to note the strong monetary offsetting of such shocks in the early 1980s. This reflects the tug-of-war between Chairman Volcker's disinflation efforts and the expansionary fiscal policies of the Reagan administration.

Hypothesis 2 implies that the estimated standard deviations of debt-financed government spending shocks should decrease after a numerical inflation target is legislated. In Franta et al. (2012) only indirect supporting evidence is provided. Figure 3 plots the central government debt to GDP ratio separately for five early inflation targeters and non-targeters (to better see the trends the series are de-meaned). In all five early targeters, we can see a decrease in government debt starting about 1–3 years after the formal adoption of an explicit inflation target (in the case of the UK after the subsequent granting of central bank instrument independence). These improvements are sustained at least until the global financial crisis. In contrast, such improvements in the fiscal balance are not present for the non-targeters.

Figure 3. Debt to GDP ratios

Note: Central government debt (de-meaned) to GDP for explicit inflation targeters (the left panel, where the start of the regime is indicated by the shaded region) and non-targeters (the right panel).

This implies a tentative policy recommendation: in order to reduce the risk of inflationary spillovers from fiscal policy, the central bank should try to commit as explicitly as possible to its long-term inflation target. The fact that the Federal Open Market Committee in the USA subscribed to the 2% long-term inflation target more explicitly in its January 2012 statement is in line with this recommendation.

However, more research is required to deepen our understanding of the interaction between monetary and fiscal policies and the effect of various institutional arrangements on the outcomes of the policies and on the prosperity of individuals.

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Fiscal Discretion in the Czech Republic in 2001–2011: Has It Been Stabilising?²

Róbert Ambriško^a, Vítězslav Augusta^a, Dana Hájková^a, Petr Král^a, Pavla Netušilová^a, Milan Říkovský^a and Pavel Soukup^a

^a Czech National Bank



There have been numerous changes in Czech fiscal policy – in tax revenues and government expenditures – in past years. What was their impact on the real economy? Did they stabilise the economy to counterbalance the economic cycle? Since fiscal discretion (i.e. deliberate changes in fiscal parameters influencing government revenues and expenditures) influences both trend and cyclical economic developments, the central bank considers it when conducting monetary policy. Answers to these questions are therefore of great importance for monetary policy.

We were interested, above all, in the frequency and size of fiscal discretion and the stabilisation performance of fiscal policy. Therefore, we conducted a large stock-taking exercise of fiscal discretionary measures in the Czech Republic in the period 2001–2011 and inspected the macroeconomic data from the aggregate perspective as well. In total, we employed three methods to evaluate fiscal discretion:

1) Bottom-up approach: this sums up the estimated size of fiscal measures implemented on the revenue and expenditure sides. On the revenue side, we identify discretion by amendments to tax laws, which are well documented in the legislation. However, for expenditure measures the identification is more complicated, since expenditure discretion does not have to take a legislated form. Thus, we opted to construct a proxy for expenditure discretion, in which we examine total expenditure net of unemployment benefits and interest payments. The expenditure discretion is modelled in two versions by deviations of the adjusted total expenditure from (i) its trend, or (ii) the trend in the ratio of adjusted total expenditure to GDP. The difference between the revenue and expenditure discretions gives the total bottom-up fiscal discretion. With this approach we face uncertainty about the correct estimation of the impact of the measures identified; nevertheless, this drawback is addressed by other two methods, which work with aggregate data.

2) Top-down approach: this technique measures fiscal discretion from the aggregate perspective through annual changes in the government structural budget balance, which is the budget balance adjusted for one-off extraordinary measures and cyclical developments. We use two methods of cyclical adjustment: (i) the first method assumes that public finances as a whole

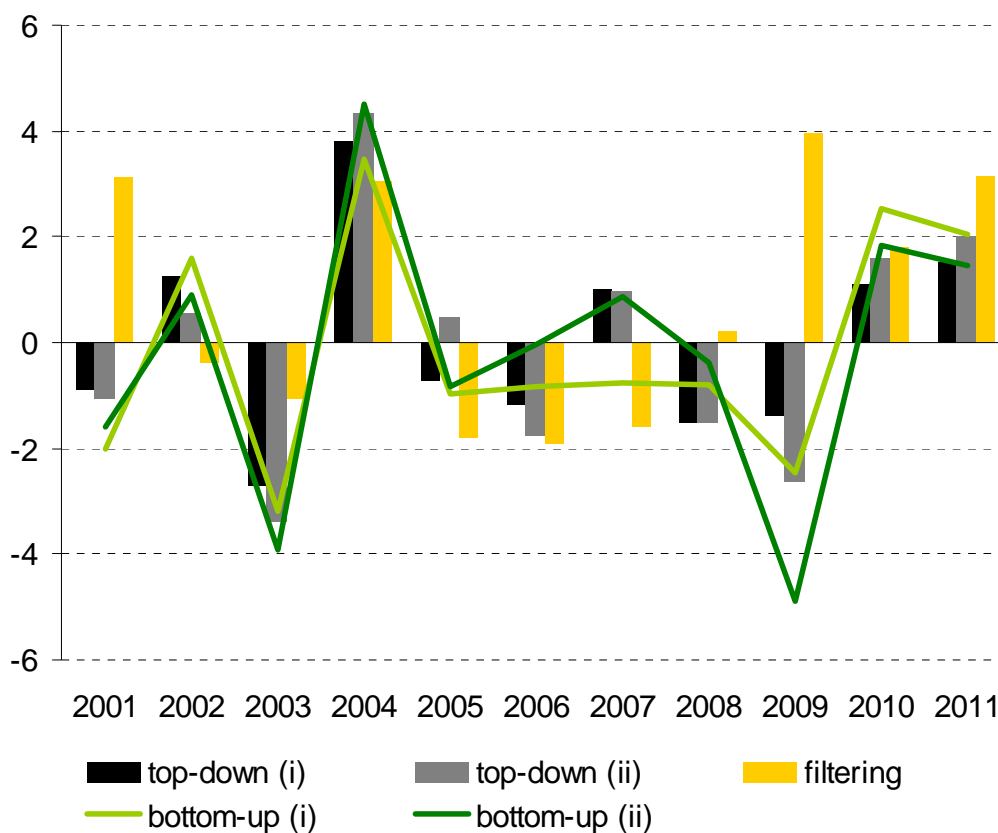
² This article is based on Ambriško et al. (2012a).

are sensitive to changes in the output gap, and the cyclical part of the budget balance is proportional to the output gap, whereas (ii) the other method links the cyclical components of individual government revenues and expenditure to cyclical developments in their relevant macroeconomic bases. The changes in the structural balance in per cent of GDP are called the fiscal stance, and positive values of the fiscal stance (i.e. improvements in the structural balance) represent tight fiscal policy.

3) Filtering approach: this method is based on filtering within a structural model of the economy (Beneš et al., 2003). We use the IS curve equation of this model, which links the output gap to its lagged value, the foreign output gap and the gaps in real interest rates and the real exchange rate. By Kalman filtering, we obtain a residual of this equation which contains a demand shock of a general nature. We tentatively assign this shock to fiscal policy so as to verify whether the size of the fiscal shock identified by the previous methods is roughly consistent with other macroeconomic data. Since the fiscal shock is just one of the possible components of the demand shock identified by the Kalman filtering, we anticipate that in some years, the total demand shock might be different from what the other methods imply. Therefore, we interpret this method with caution.

Our different measures of fiscal discretion are depicted in Figure 1.³ The measures are presented such that positive values represent tight fiscal policy and negative values stand for fiscal easing.

Figure 1: Estimated size of fiscal discretion (in per cent of nominal GDP)



³ Note that within some methods we have more than one outcome, since we do not limit ourselves to one single set of assumptions.

The bottom-up and top-down measures of fiscal direction are quite in accordance, and the correlations between them are high (around 0.9). The effects of the recent government reform packages are recognisable: the tax harmonisation in 2003–2004, the stabilisation package in 2008, the stimulative package in 2009 and the austerity packages in 2010–2011. The size of the measures was sizeable in several years, reaching $\pm 4\%$ of GDP in its extremes. As we expected, our third method is less in line with the former two, especially for the years 2001 and 2009. In these years, the observed GDP (and the implied output gap) was much lower than what the filter would predict based on its demand determinants.

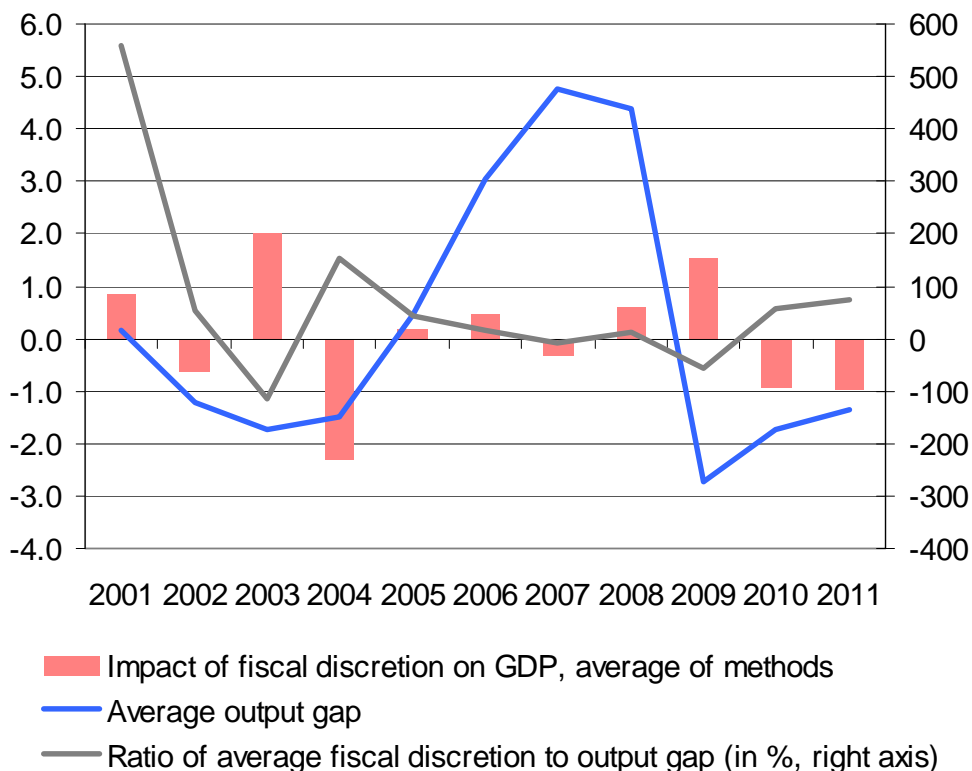
In the second step, we estimated the real economic impact of the fiscal discretion measures and compared it with the cyclical development of the economy. By this comparison we can infer whether the government targeted macroeconomic stabilisation goals in the short- and medium-run (counter-cyclical effect) and/or long-term goals (consolidation of public finances).

We use fiscal multipliers from the current literature to derive the macroeconomic effects of the fiscal discretion identified. Since uncertainty holds also for the values of fiscal multipliers, we calculated several variants of the economic impacts of fiscal discretion. We work with the fiscal multipliers estimated by Klyuev and Snudden (2011) for the Czech Republic and with the common fiscal multiplier used by the CNB (Král et al., 2005). These multipliers are also in line with Ambriško et al. (2012b). The GDP impacts⁴ resulting from the various versions of fiscal discretion and fiscal multipliers gave a similar picture (the average of the methods is depicted in Figure 2) and are consistent with our perceptions regarding the fiscal packages adopted by the government.

If public finance were stabilising, a negative correlation between the economic cycle and the impact of fiscal policy on the economy would be observed. Therefore, we compare the GDP impacts of fiscal discretion with the output gap (Figure 2). For ease of interpretation, we add a variable to Figure 2 which comprises the ratio of the two. Positive values of this ratio mean that fiscal discretion was procyclical.

⁴ The GDP impacts of fiscal discretion have the opposite sign to the size of fiscal discretion in Figure 1.

Figure 2: GDP impact of fiscal discretion and the output gap (in per cent of GDP) and their ratio



Our results signal that fiscal discretion measures were not stabilising the economy. We find a frequent occurrence of fiscal discretion and large discretion in several years, with a procyclical incidence in most cases. The procyclical periods were also longer lasting than the counter-cyclical periods. This reflects a different-than-stabilising focus of Czech fiscal policy. For example, in 2010 and 2011 the government put an emphasis on consolidation at a time of economic recession.

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Macroeconomic Effects of Fiscal Policy in the Czech Republic: Evidence Based on Various Identification Approaches in a VAR Framework⁵

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Fiscal policy affects many variables important for monetary policy decision-making, such as output and inflation. Therefore, examination of the effects of fiscal policy shocks is of great importance for central bankers. At first sight, estimating the impact of fiscal shocks on the main macroeconomic variables could be viewed as analogous to estimating the impact of monetary policy shocks. Then the task would be relatively easy, as the framework for the examination of monetary policy shocks is already well established. However, there are several important differences between

the analysis of monetary and fiscal shocks that make the estimation of the effects of fiscal policy shocks difficult. Most importantly, there is no broad consensus on the proper identification of fiscal shocks. Next, to capture fiscal policy adequately, more than one variable has to be used, unlike in the case of monetary policy. Finally, the estimation and identification problems are more severe in the case of a country such as the Czech Republic with a short time series of fiscal data available.

In Franta (2012) the above-mentioned problems are addressed and the macroeconomic effects of fiscal policy shocks in the Czech Republic are analysed. The uncertainty about the appropriate identification scheme is addressed by employing all the identifications known in the literature and applicable to the Czech Republic. If all the identification approaches agree on an affect (or at least on the sign of the effect), the conclusion is viewed as more reliable.

Next, the short time series of fiscal data as well as the higher number of variables necessary to capture fiscal policy are dealt with as follows. To save degrees of freedom, the smallest model in terms of the number of endogenous variables is estimated. The model includes two variables describing fiscal policy (government spending and government revenues) and is closed up by GDP, inflation and the interest rate. Furthermore, the model is estimated using Bayesian techniques that allow us to impose prior information not available in the data and thus represent a way of responding to the problem of short time series possibly containing less information.

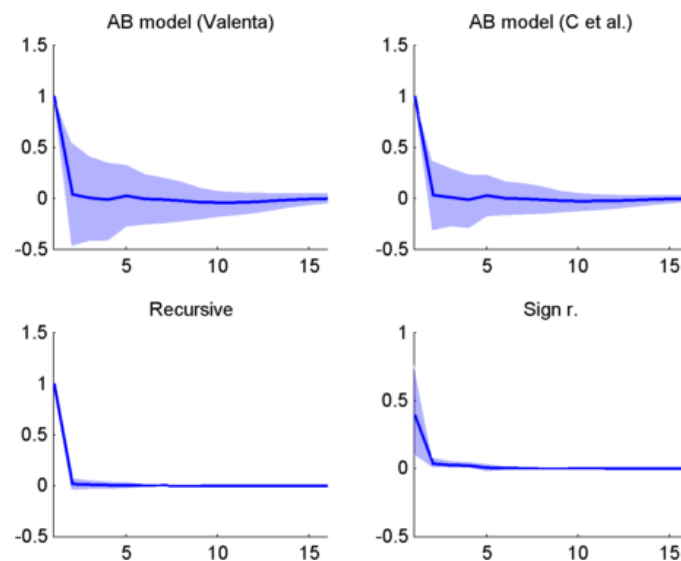
The following figures present selected impulse response functions for a government spending shock, i.e. the dynamic reaction of endogenous variables to an unexpected change in government spending. The responses implied by four identification approaches are reported: the recursive approach, the AB model with two specifications of matrices A and B according to Cuaresma et al. (2011) and Valenta (2011), and the sign-restrictions approach. The responses of government spending and GDP are reported as percentages of GDP. The responses of inflation are expressed in percentage points. The shock is normalised to be 1% of GDP in size, except when the sign-restrictions identification approach is applied, as sign restrictions cannot estimate the standard deviation of a shock. To summarise the distribution of the impulse responses, the median is

⁵ This article is based on Franta (2012).

presented along with the 16th and 84th quantiles of the impulse responses (credible intervals) at a particular horizon. Complete results and results for a net revenues shock can be found in Franta (2012).

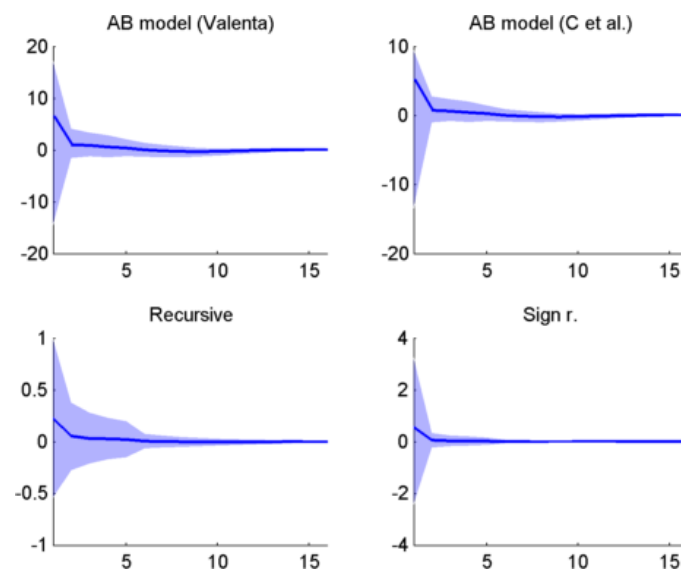
Figure 1 shows the effect of government spending after the government spending shock. The figure suggests that the government spending process is not persistent and the effect of the shock is almost zero from the second quarter onwards. Nevertheless, the uncertainty – reflected by credible intervals – means that the possibility of a persistent effect of the shock for identifications based on the AB model cannot be ruled out.

Figure 1: Responses of government spending after the government spending shock



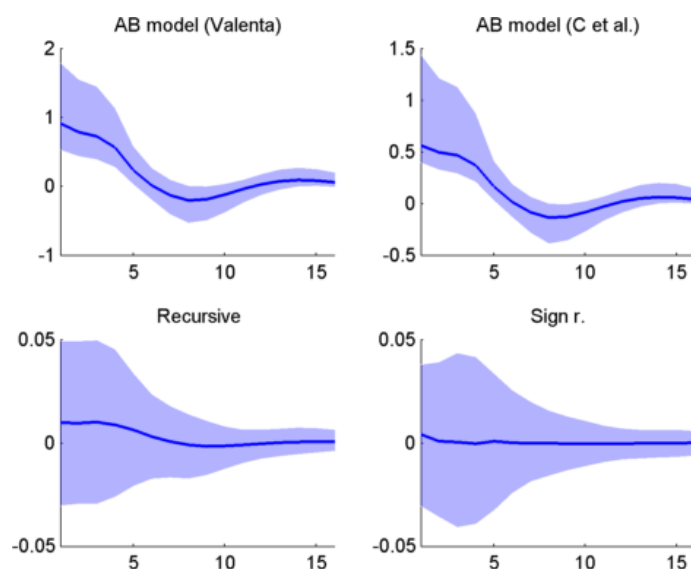
The immediate median reaction of GDP after the unexpected spending shock (Figure 2) is positive for all identifications. However, the uncertainty is very high, especially for both identifications based on the AB model.

Figure 2: Responses of GDP after the government spending shock



Both specifications of the AB model provide an immediate positive reaction of inflation after the spending shock (Figure 3). In the quarter when the spending shock occurs inflation rises by 0.5–1 p.p. and the effect dies out after five quarters. The credible intervals do not cover zero in the quarter of the shock, so the conclusion of a positive response of inflation can be viewed as relatively strong. On the other hand, the sign restrictions and recursive identification imply a very weak response of inflation. Nevertheless, we do not observe the puzzle of decreasing prices after a government spending shock that can be found in the literature for recursive identification and for sign-restrictions identification.

Figure 3: Responses of inflation after the government spending shock



The results demonstrate that the uncertainty associated with the results is very large. This uncertainty is a consequence of the short span of fiscal data available as well as the identification procedures themselves. Nevertheless, some positive conclusions about the transmission of fiscal shocks can be made. The findings suggest that the transmission channel of fiscal policy is in many respects standard in the Czech economy, i.e. GDP and net revenues increase after an unexpected increase in government spending, and inflation behaves similarly. Regarding the net revenues shock, a subsequent increase of government spending can be observed.

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Assessing the Impact of Fiscal Measures on the Czech Economy⁶

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Assessment of the macroeconomic effects of fiscal policy has recently gained considerable attention among central banks, as the environment of low interest rates in the aftermath of the

global crisis has reinforced the transmission of fiscal measures to the real economy. Furthermore, there has been renewed interest in quantifying the effects of individual fiscal measures on the revenue and expenditure sides, since each tax or expenditure category can have different impact on the economy. Further topical issues include the assessment of reform packages, when several fiscal measures are adopted simultaneously, and the interaction between fiscal and monetary policies.

Assessing the impact of fiscal measures on the Czech economy also represents one of the challenges of the CNB's core forecasting model, g3. This model is based on the Dynamic Stochastic General Equilibrium (DSGE) framework described in Andrlé et al. (2009). Currently, the CNB's core g3 model comprises a rather streamlined fiscal sector, which, for example, does not allow us to distinguish between individual fiscal categories. However, the CNB needs to have a tool for analysing the macroeconomic effects of alternative fiscal scenarios on economic activity, including output and inflation. Therefore, the aim of this study is to build a satellite structural model that is in the same DSGE framework as g3 and shares a number of features with it, but allows us to perform various fiscal policy simulations.

Based on a review of literature, and accounting for data availability, the following fiscal extensions are proposed:

- A rich set of fiscal policy instruments is added, comprising four categories on the expenditure side and five categories on the revenue side. The four expenditure categories are government consumption, government investment, unemployment benefits and other social benefits. The five revenue-generating instruments are represented by a consumption tax, a wage tax, a capital tax, social security contributions paid by employees and a lump-sum tax.
- The assumption of homogeneous representative households is relaxed, allowing for two different types of households: Ricardian households or “optimisers”, who can save, and non-Ricardian households called “rule-of-thumb” consumers, who cannot save and thus consume all their disposable income. As argued in the literature (e.g. Galí et al., 2007,

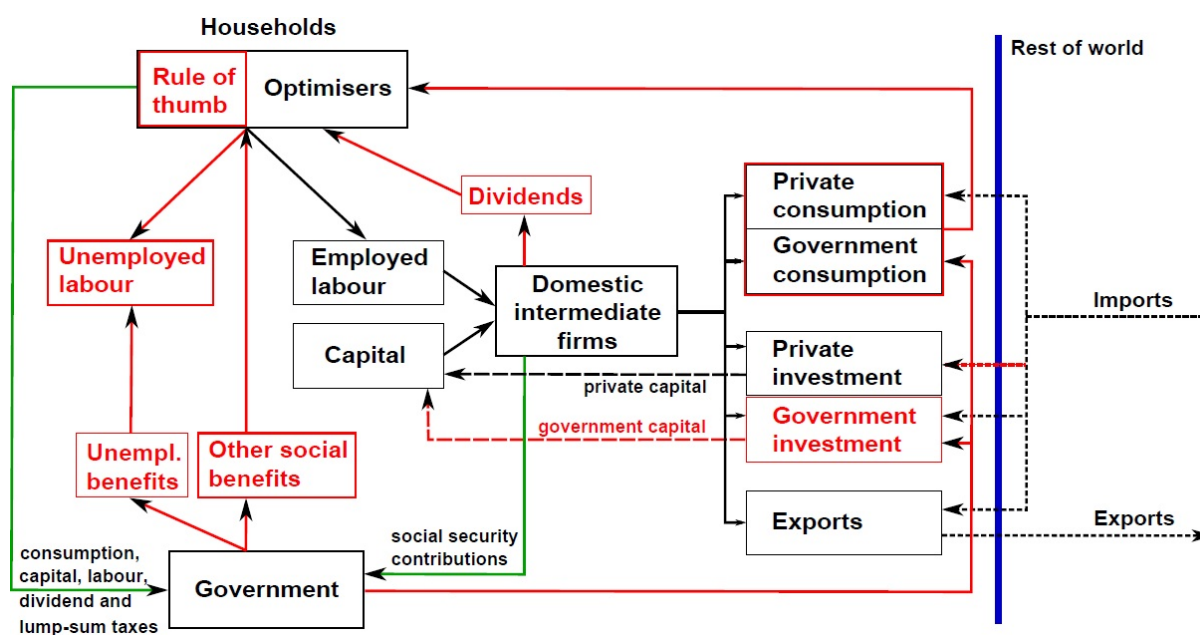
⁶ This article is based on Ambriško et al. (2012).

and Coenen et al., 2012), the presence of non-Ricardian households is key for modelling the transmission of fiscal policy to the economy.

- Unemployment benefits are related to the situation on the labour market, and unemployment is incorporated into the model in a tractable way proposed by Galí (2011).
- Government consumption is allowed to be productive, meaning that an increase in it yields utility to households, leading in turn to an increase in aggregate demand and a rise in aggregate production. Furthermore, government capital is allowed to be productive, that is, contributing to firms' production.
- Individual fiscal instruments (taxes or expenditures) are allowed to react to deviations of government debt and output from their respective targets through the specified fiscal rule as advocated by Leeper, Plante and Traum (2010). To account for Czech-specific feedback effects, the coefficients of the fiscal rule are estimated on Czech data using Bayesian techniques.

Figure 1 depicts the scheme of our structural model, where black parts show overlap with the CNB's g3 model, red parts represent the extended fiscal sector and green parts depict the flows of tax revenues.

Figure 1. The scheme of the model



Note: Black parts show overlap with the g3 model, red parts represent the fiscal sector and green parts depict tax revenues.

The model is built along the lines of the g3 model described in Andrlé et al. (2009), with fiscal and labour market extensions based on Coenen et al. (2012), Galí (2011) and Galí et al. (2007). The small open economy is populated by two types of representative households, “optimisers” and “rule-of-thumb” consumers. The households consume a final consumption good, which is made from private consumption and government consumption goods. The members of households monopolistically supply a differentiated unit of labour to an employment agency, and wage setting follows Calvo contracts. Besides private capital, there is government (public) capital, which freely enters intermediate domestic goods production. Government expenditures

are divided into government consumption, government investment, unemployment benefits and other social benefits. Government revenues come from consumption, labour, capital, dividend and lump-sum taxes, and social security contributions paid by employers. The government balances its budget by issuing bonds or by adjusting taxes. The central bank operates under an inflation-targeting regime and follows a standard Taylor interest rate rule. Two alternative fiscal rules are modelled: the baseline version implements a relatively simple fiscal rule proposed by Galí (2007), where only lump-sum transfers adjust to deviations of real debt and government consumption from their targets. Alternatively, a richer fiscal rule by Leeper et al. (2010) is applied. Under this rule, all fiscal instruments react to deviations of output and debt from their targets.

The model is estimated on a total of 25 series for the period from 1996 to 2011 at quarterly frequency. As the model contains quite a large number of associated parameters, about half of them are calibrated (in particular those related to the common block with the g3 model), while the parameters associated with the fiscal feedback rules are estimated on actual data.

The effects of fiscal policy on the Czech economy are then investigated in terms of impulse responses and the implied fiscal multipliers. In particular, fiscal multipliers measure the change in the variable of interest (e.g. real GDP or domestic output) with respect to the change in the corresponding fiscal instrument (e.g. government consumption) over some time period, where both changes are expressed in Czech koruna. A rich set of fiscal multipliers obtained from the implemented fiscal model is provided in the paper, including a sensitivity analysis with respect to the underlying assumptions, for example the share of rule-of-thumb households, the type of the fiscal rule and the type of monetary policy. According to our main results, the largest real GDP fiscal multipliers in the first year are associated with government investment (0.4) and social security contributions paid by employers (0.3), followed by government consumption (0.2). In times of consolidation, these results could be interpreted as meaning that fiscal consolidations based on cuts in government investment and increases in social security contributions paid by employers are most costly in terms of the real GDP loss, at least over a time scale of up to several years.

Nevertheless, the multipliers obtained with our DSGE model are relatively low, as can be seen in the context of a meta analysis of fiscal multipliers from 89 studies by Gechert and Will (2012). We find several groups of factors that could explain this. According to the meta analysis, the size of fiscal multipliers depends *inter alia* on: (i) the method chosen (e.g. DSGE models typically imply lower values of multipliers as compared to single-equation approaches or vector autoregression); (ii) the fiscal instrument (e.g. the highest multipliers are associated with government investment); (iii) the share of non-Ricardian or “rule-of-thumb” households, who consume all their disposable income (the higher the share of such households, the higher the fiscal multipliers). These are features we also observe in our results. In addition, the meta analysis reveals that economies with a high import intensity of GDP are characterised by lower fiscal multipliers. This is relevant for the Czech economy, which is particularly dependent on international trade.

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Forthcoming Journal Publications

Babecký, J. and Havránek, T. (2013): Structural Reforms and Growth in Transition: A Meta-Analysis. *Economics of Transition*, forthcoming.

Baruník, J., Franta, M., Horváth, R. and Šmídková, K. (2013): Are Bayesian Fan Charts Useful? An Evaluation of Macroeconomic Forecasts and Financial Stability Stress Tests. *International Journal of Central Banking*, forthcoming.

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The CNB Economic Research Department will announce its regular Call for Research Projects 2015 on **14 April 2014**. Follow the link: http://www.cnb.cz/en/research/research_projects/.

An information meeting for prospective authors of CNB research projects will be held in the Czech National Bank's Commodity Exchange (Plodinová Burza) building **at 2.00 p.m. on Monday, 12 May 2014**.

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The tenth CNB Research Open Day will be held in the Czech National Bank's Commodity Exchange (Plodinová Burza) building on **Monday, 12 May 2014**. This half-day conference will provide an opportunity to see some of the best of the CNB's current economic research work, to learn about the CNB Call for Research Projects 2015 and to meet CNB researchers informally.

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