

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Bc. Tomáš Zelený
Advisor:	PhDr. Josef Stráský
Title of the thesis:	Modelling of government spending and endogenous tax rates in New Keynesian models – the case of Czech Republic

OVERALL ASSESSMENT (provided in English, Czech, or Slovak):

Presented master thesis focuses on Dynamic Stochastic General Equilibrium (DSGE) modeling with endogenous fiscal policy rules. Brief Introduction lacks deeper motivation and wider literature review. However, its concise form brings attention to different types of policy rules that are considered throughout the thesis.

Five different fiscal policy models are introduced in the second chapter. Tax smoothing model by Barro (1979), pro-cyclical model based on Gavin and Perotti (1997) and Talvi and Vegh (2005), pro-cyclical imperfect political decision making model by Alesina et al. (2008), counter-cyclical model by Coate et al. (2010) and finally dichotomous spending model by Baxter and King (1993). The latter model has not originally been proposed as a DSGE model. Model is substantially reformulated to fit into DSGE methodology, including determination of first order conditions, steady state, log-linearization and finally computation of impulse response functions. It has been shown that experienced high persistence in government expenditures is source of long adjustment times of the whole economy.

In the third chapter the benchmark DSGE model is developed. The model is fairly standard, however, it includes several complications (transaction costs to consumption, Dixit-Stiglitz monopolistic competition, price adjustment costs etc.) making the solution of the model technically very demanding. Governmental expenditures and taxation are included as exogenous AR(1) processes – therefore benchmark model. Model parameters are calibrated for Czech republic according to the available literature and model is successfully solved.

Chapter four includes the most important results of the thesis. Exogenous AR(1) processes describing fiscal policy are substituted for fiscal policy rules described in the beginning of the thesis. Impulse response functions are computed for each case and their plausibility is briefly commented on. Pro-cyclical imperfect political decision making model by Alesina et al. (2008) gives the most plausible results, which is in accordance with the empirical evidence on pro-cyclical government spending in Czech Republic.

Literature

Literature review is relatively narrow, more results of other authors and motivation for using DSGE methodology might have been provided. On the other hand, each considered reference serves its purpose (fiscal policy model, model calibration for Czech Republic) and many references are analyzed in a very detail.

Methods

DSGE modelling is technically very demanding. Employed methodology requires understanding of advanced mathematical concepts, lengthy analytical computations and finally computer programming skill. Mastering advanced methodology is important part of the added value of presented thesis.

Contribution

The most important contribution is systematic treatment of fiscal policy (fiscal rules) as an important part of DSGE models. Pro-cyclical fiscal policy models were found to be the most appropriate, which is in qualitative accordance with data. Those findings are unfortunately based only on comparison of impulse response functions. Further model statistics (e.g. volatility of variables) should be calculated and compared to the data., but this is beyond the scope of master thesis.

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Manuscript form

Manuscript is well organized, concise and instructive. The length of the paper is appropriate and all important computational procedures are well described. More formal language may have improved the clarity of text at some parts.

Questions/discussion topics

- 1) Can describe pros and cons of the DSGE methodology regarding fiscal policy modelling?
- 2) Comparison of the models is based only on impulse-response functions. Do you plan to supplement provided results? How?
- 3) Is there any straightforward recommendation for fiscal policy making arising from your results?

I recommend overall grade **1 – excellent (výborně)**.

SUMMARY OF POINTS AWARDED (for details, see below):

CATEGORY	POINTS
<i>Literature</i> (max. 20 points)	17
<i>Methods</i> (max. 30 points)	30
<i>Contribution</i> (max. 30 points)	25
<i>Manuscript Form</i> (max. 20 points)	18
TOTAL POINTS (max. 100 points)	90
GRADE (1 – 2 – 3 – 4)	1

NAME OF THE REFEREE: *PhDr. Josef Stráský*

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Referee Signature