

Optimal Fiscal Policies in Booms and in Recessions: A Case Study for Slovenia

Reinhard Neck

University of Klagenfurt, Department of Economics, Austria
Reinhard.neck@aau.at

Dmitri Blueschke

University of Klagenfurt, Department of Economics, Austria
Dmitri.blueschke@aau.at

Klaus Weyerstrass

Institute for Advanced Studies Vienna, Macroeconomics and Business Cycles Group, Austria
Klaus.weyerstrass@ihs.ac.at

Miroslav Verbič

University of Ljubljana, School of Economics and Business, Slovenia
Miroslav.verbic@ef.uni-lj.si

Abstract. Optimal fiscal policies for the next few years are determined for Slovenia under alternative assumptions about the global development. In particular, we distinguish between a baseline scenario, two scenarios of a recession (one demand side and one supply side) and a scenario of boom (assuming increased global growth due to technological innovations and no crisis over the next few years). We use the macroeconometric model SLOPOL11 and assume an intertemporal objective function for Slovenian policy makers containing output, unemployment, inflation, the budget deficit, public debt, and the current account as main arguments. Using the OPTCON algorithm, approximately optimal policies are calculated under both scenarios. It turns out that the design of fiscal policies is rather similar in both cases, showing the relatively low effectiveness of the fiscal instruments with respect to their influence on the small open economy of Slovenia in the Euro Area.

For this study we used SLOPOL11, a medium-sized macroeconometric model of the small open economy of Slovenia. SLOPOL11 consists of 73 equations, 21 of which are behavioural equations and 52 identities. In addition to the 73 endogenous variables, the model contains 37 exogenous variables. The behavioural equations were estimated by ordinary least squares (OLS), except for the labour demand and supply equations, which were estimated as censored Tobit models. Stationarity tests indicate that almost all the variables are either stationary or cointegrated. We conducted three unit-root tests, namely the Augmented Dickey Fuller (ADF) test, the Phillips-Perron (PP) test, and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test. By performing these three tests, the results of the unit root tests can be regarded satisfactorily robust. Therefore, we opted for OLS estimations of error correction equations except for the labour supply and demand equations.

The model contains behavioural equations and identities for the goods market, the labour market, the real effective exchange rate, the money market (albeit only rudimentary) and the government sector. It combines Keynesian and neoclassical elements. In the short run, the model is demand driven, while in the long run the growth path is determined from the supply side via potential output. Potential GDP is determined via a Cobb-Douglas production function with the potential labour force, the capital stock and the trend of total factor productivity (TFP) as factors of production. Trend TFP is determined in a behavioural equation, depending on public expenditures on research and development, the share of people with tertiary education, and the investment-GDP ratio. With public R&D expenditures and the

education attainment (although the government can influence it only indirectly), two supply-side policy instruments targeted primarily at potential GDP can be considered in the simulations.

For determining the paths of optimal fiscal policies, we assumed a quadratic intertemporal objective function with an annual discount factor of 3% and solved the resulting nonlinear-quadratic optimal control problem approximately by using the OPTCON algorithm. The OPTCON algorithm allows to calculate numerical solutions (approximately) for optimum control problems with a quadratic objective function and a nonlinear multivariate dynamic system under additive and parameter uncertainties.

Keywords: economics, fiscal policy, dynamic optimization, Slovenia