Optimal Macroeconomic Policies in a Financial and Economic Crisis: A Case Study for Slovenia

Reinhard Neck, Dmitri Blueschke, Klaus Weyerstrass

Abstract In this paper, we study different and, in particular, "optimal" reactions of fiscal (and to some extent monetary) policies to the financial and economic crisis of 2007–2009 in Slovenia, a small open economy that is part of the Economic and Monetary Union (EMU). Using an econometric model of the Slovenian economy, we simulate the effects of the global crisis under the assumption of no-policy reactions, i.e. assuming that macroeconomic policies are conducted without attempting to deal with the effects of the crisis. Next, we study the possibilities of fiscal policy reducing or even annihilating the effects of the crisis. We also investigate the optimal reaction of fiscal policies based on the assumption that Slovenian policy-makers behave as though they were optimizing an objective function. We show that optimal policies call for only a very modestly active countercyclical role of fiscal policies. There are strong trade-offs between countercyclical fiscal policies and the requirements of fiscal solvency.

Keywords *macroeconomics; fiscal policy; economics of transition; Slovenia; crisis; public debt*

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1 Motivation

Although the recent financial and economic crisis (the “Great Recession”) started in the United States, it has affected virtually all industrial countries by reducing output growth or even output and by increasing unemployment. Some Central and Eastern European countries were hit particularly severely, at least in the first few months of the crisis. This is also true for Slovenia, the first former socialist country to introduce the euro as legal tender. Figures 1 to 3 show the impact of the global recession on the Slovenian economy in 2009 against the backdrop of Slovenia’s overall development since gaining independence in 1992, which can be judged, by and large, as a successful transformation. Before the “Great Recession”, the average growth rate of real GDP was about 4 percent, which is higher than the EU or Euro Area average, and the same is true of the growth rates of the main aggregates of GDP (in real terms) such as private and public consumption (Figure 1), investment, and exports of goods and services (Figure 3). This favourable development resulted in a downward trend in the rate of unemployment from around 7 percent in the late 1990s to 4.5 percent in the last pre-crisis year 2008 (Figure 2).

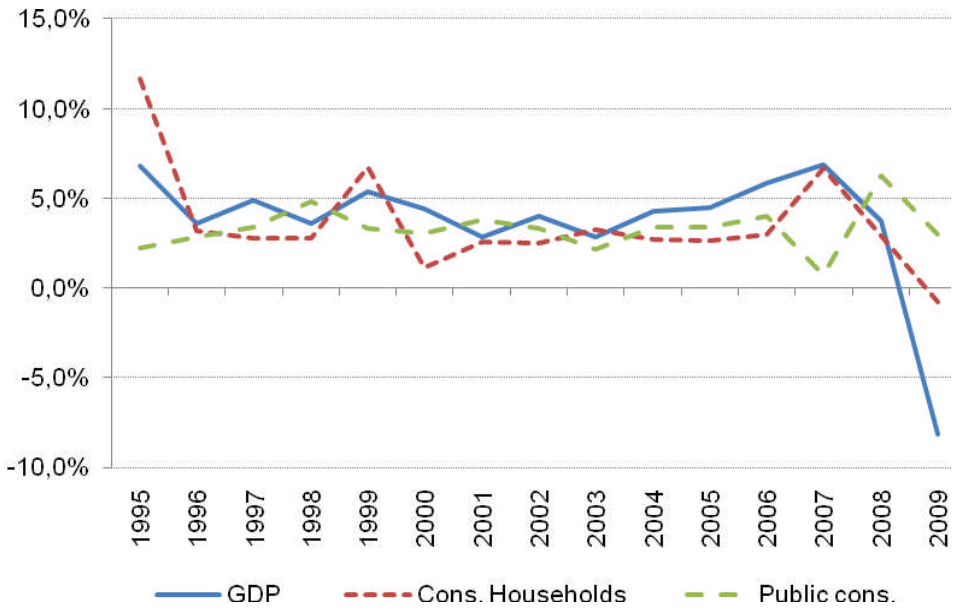

Fig. 1 GDP, private and public consumption in Slovenia, 1995–2009

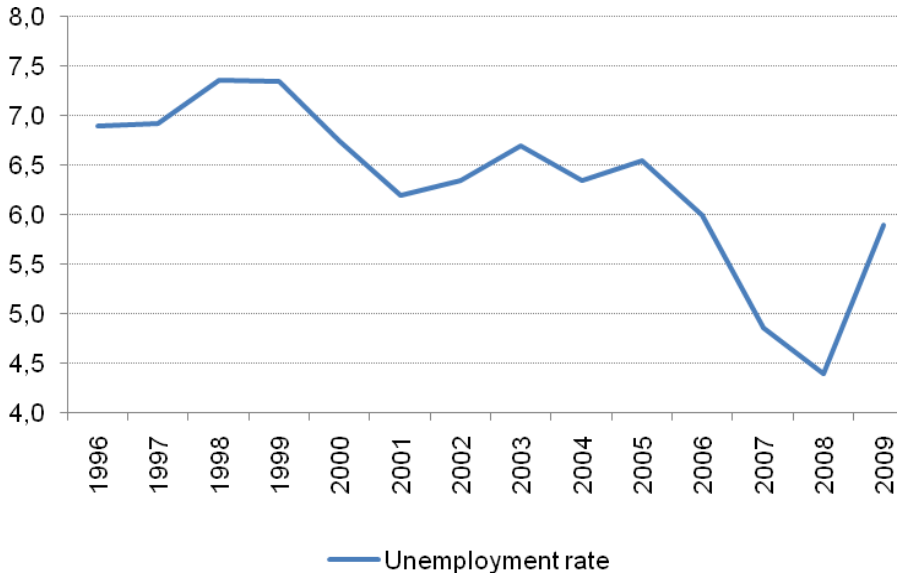

Fig. 2 Rate of unemployment, Slovenia, 1995–2009

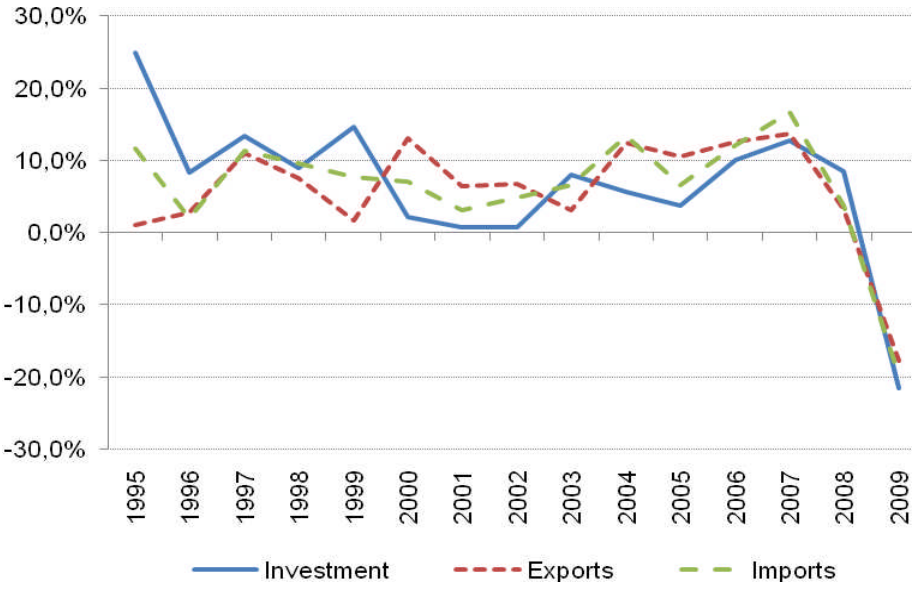

Fig. 3 Investment, exports and imports of goods and services, Slovenia, 1995–2009

The data show clearly how the Slovenian economy suffered from the "Great Recession", with a decline in GDP of 8 percent in one single year (2009) and an increase in unemployment to the level of the year before Slovenia joined the Euro Area (2006). In contrast to many "old" EU members, Slovenia's economy was not in a state of recession at the outset of the global crisis; hence its bad performance in 2009 is overwhelmingly due to the effects of international developments. The situation of the Slovenian economy can therefore be regarded as a role model for a small open economy that is part of an economic and monetary union hit by an exogenous negative shock.

Different macroeconomic theories offer divergent suggestions on how to deal with such a situation in terms of policy recommendations for fiscal policy (and for monetary policy by the monetary union). There is also a lively ongoing debate about empirical evidence on the effectiveness of macroeconomic policies in the "Great Recession"; for the US, see, for example, Romer and Romer (2010),

Romer (2009) for an optimistic position, and Cogan et al. (2010), Taylor (2009) for a sceptical position. In general, fiscal policy effects are smaller ceteris paribus in an open economy than in a less exposed one, but empirical evidence is also mixed for open economies. To the best of our knowledge, no such study is available for Slovenia. Therefore an investigation of potential macroeconomic policy effects for that country in a situation like the "Great Recession" should be of interest.

In this paper, we examine possible effects of fiscal (and, to a much lesser extent, monetary) stabilization policies in Slovenia as reactions to the recent financial and economic crisis. We do so by determining the effects of these policies on the main macroeconomic aggregates under alternatives scenarios. In addition, we calculate "optimal" paths of macroeconomic policies under (postulated) objective functions and their effects on macroeconomic targets. A macroeconometric model, SLOPOL8, is used for this purpose; it is described in Section 2. Sections 3 and 4 outline the different scenarios for the simulation and the optimization experiments conducted, with their results given in Section 5. Section 6 concludes. A more detailed presentation of the SLOPOL8 model is given in the Appendix.

2 The macroeconometric model SLOPOL8

SLOPOL is a medium-sized macroeconometric model of the small open economy of Slovenia. In its current version (SLOPOL8), it consists of 61 equations, of which 24 are behavioural equations and 37 are identities. In addition to the 61 endogenous variables that are determined in the equations, the model contains 29 exogenous variables.

The exogenous variables include those which are beyond the influence of Slovenian policy-makers, fiscal policy instruments, and some dummy variables. Among the first group of exogenous variables are international aggregates (oil price, world trade, Euro Area interest rates) and Slovenian variables that are not under the government's control (e. g. population). Fiscal policy instruments are public consumption, public investment and transfer payments to private households, as well as tax rates and social security contribution rates.

The behavioural equations were estimated by ordinary least squares (OLS), and most of them were specified in error correction form. This requires inspecting the time series properties to ensure that the variables are either stationary or cointegrated. Most of the variables passed these tests; hence it was decided to use the error correction specification. The results of these unit root and cointegration tests are not reported here; see Weyerstrass and Neck (2007) for these tests as used in a previous version of the model. In an error correction model, the behavioural equations are defined in terms of the growth rates of the respective endogenous variables; the equations comprise both the short-run dynamics of the endogenous variables and the long-run equilibrium between the endogenous and the explanatory variables.

The behavioural equations were estimated using quarterly data for the period 1995:1 until 2008:4. Although the database consists of time series until the end of 2009, it seems appropriate to exclude data for 2009 from the estimations. In 2009, real GDP in Slovenia plummeted by 8.1 % due to the collapse in world trade, badly affecting Slovenian exports, and as a consequence investment slumped at double digit rates. This exceptional event would exert undue influence on the estimation results. Hence, the equations were estimated for data up to an endpoint of 2008:4. Data for Slovenia were taken from databases and publications issued

by the Slovenian Statistical Office, the Bank of Slovenia, and Eurostat. Euro Area data were taken from the Eurostat database, the oil price was taken from a database provided by the Energy Information Administration (EIA) of the US Department of Energy, and world trade comes from the OECD Main Economic Indicators.

The model contains behavioural equations and identities for several markets and sectors: the goods market, the labour market, the foreign exchange market, the money market and the government sector. Rigidities of wages and prices are taken into account. The model combines Keynesian and neoclassical elements, the former determining the short and medium run solutions in the sense that the model is demand-driven and persistent disequilibria in the goods and labour markets are possible.

The supply side incorporates neoclassical features. Potential output is determined by a Cobb-Douglas production function with constant returns to scale. It depends on trend employment, the capital stock and autonomous technical progress. Trend employment is defined as the labour force minus natural unemployment, the latter being defined via the non-accelerating inflation rate of unemployment (NAIRU). In line with the literature on production functions as well as international practice in macroeconometric modelling, the elasticities of labour and capital were set at 0.65 and 0.35 respectively. These elasticities correspond approximately to the shares of wages and profits, respectively, in national income. The NAIRU, which approximates structural unemployment, is estimated by applying the Hodrick-Prescott (HP) filter to the actual unemployment rate. For forecasts and simulations, the structural unemployment rate is then extrapolated with an autoregressive (AR) process. The capital stock enters the determination of potential GDP not with its trend but with its actual level.

Several steps are required to determine technical progress. First, ex post total factor productivity (TFP) is calculated as the Solow residual, i.e. that part of the change in GDP that is not attributable to the change in production factors, labour and capital, weighted with their respective production elasticities. In a second step, the trend of technical progress is then determined by applying the HP filter, in similar procedure to the NAIRU. For forecasts, technical progress is extrapolated exogenously.

On the demand side, the consumption of private households is explained by a combination of a Keynesian consumption function and a function in accordance with the permanent income hypothesis and the life cycle hypothesis. Thus, private consumption depends on current disposable income and on lagged consumption. In addition, the long-term real interest rate enters the consumption equation with a negative sign. Real gross fixed capital formation is influenced by the change in total domestic demand (in accordance with the accelerator hypothesis) and by the user cost of capital, where the latter is defined as the real interest rate plus the depreciation rate of the capital stock. Changes in inventories are treated as exogenous in the SLOPOL model, as in many macroeconomic models in use around the world.

Real exports of goods and services are a function of the real exchange rate and of foreign demand for Slovenian goods and services. Foreign demand is approximated by the volume of world trade. The real exchange rate captures the competitiveness of Slovenian companies on the world market. Real imports of goods and services depend on domestic final demand and on the real exchange rate. A real appreciation of Slovenian currency (the Slovenian tolar until the end of 2006, the euro following Slovenia’s entry into the Euro Area on 1 January

2007) makes Slovenian goods and services more expensive on the world market. On the other hand, foreign products become relatively cheaper; hence domestic production is substituted by imports. Thus a real appreciation stimulates imports while exerting a negative effect on exports. Even when part of the Euro Area, Slovenia's real exchange rate can, of course, still appreciate or depreciate, not only against other currencies but also against other Euro Area countries due to inflation differentials.

On the money market, the short-term interest rate is linked to its Euro Area counterpart so as to capture Slovenia's Euro Area membership and the resulting gradual adjustment of interest rates in Slovenia towards the Euro Area average. In the same vein, the long-term Euro Area interest rate is included in the equation determining the long-term interest rate in Slovenia. In addition, the long-term interest rate is linked to the short-term rate, representing the term structure of interest rates. The foreign exchange market is modelled by the real effective exchange rate against a group of 41 countries. As the time series on which the estimations of the behavioural equations are based include the period before Slovenia's Euro Area accession in 2007, the bilateral exchange rate between the Slovenian tolar and the euro is included as one of the explanatory variables in the real effective exchange rate equation. In addition, the exchange rate between the euro and the US dollar is considered. As the real exchange rate takes the nominal exchange rate and price developments into account, the consumer price index (CPI) in Slovenia (in the long-run relationship between the levels of the variables) and the inflation rate (in the part of the equation capturing the short-run dynamics) are included as further explanatory variables.

Turning to the labour market, the labour demand of companies (actual employment) is influenced by the final demand for goods and services and by unit labour costs, the latter being defined as the nominal gross wage divided by labour productivity. Labour productivity in turn is calculated as real GDP per employee. Labour supply by private households is defined as the participation rate, i.e. the labour force (employed plus unemployed persons) divided by the working-age population (the population aged 15 to 64 years). The participation rate depends positively on the real net wage.

In the wage-price system, gross wages, the CPI and various deflators are determined. The gross wage rate depends on the price level, labour productivity and the difference between the actual and the natural rate of unemployment (or the NAIRU). The latter relationship ensures that the output gap is closed in the long run, i.e. actual output converges towards potential GDP. If actual production exceeds its long-run sustainable level, actual unemployment will be lower than structural unemployment. In such a situation, trade unions have a stronger position in wage negotiations and enforce higher wage increases. These higher wages are higher costs for the companies, which either reduce their investment activity or are passed on to the consumers in the form of price increases. In either case, real effective demand is reduced, thus pushing actual towards potential production. In the case of a negative output gap, i.e. if actual output falls behind its long-run level, the unemployment rate exceeds the NAIRU and the adjustment process goes in the opposite direction via lower prices and costs and, ultimately, higher real demand.

Consumer prices depend on domestic and international factors. The former comprise unit labour costs and the capacity utilisation rate. In addition, Slovenian prices depend on the oil price, converted into domestic currency. The inclusion of the capacity utilisation rate in the price equation represents a second channel for

closing an output gap by increasing prices in the case of over-utilisation of capacities and decreasing prices if actual production falls behind potential GDP. The GDP deflator and the deflators for private and public consumption are linked to consumer prices. The export deflator depends on unit labour costs in Slovenia and on world trade. The former relation assumes that Slovenian companies can pass increases in domestic costs on to output prices, provided that international competition allows this. The inclusion of world trade follows the idea that world market prices are, to a large extent, determined by the global economic situation. Hence, in a situation of a high growth rate in world trade, world inflation is also higher than in a world-wide recession. Finally, the import deflator is influenced by the oil price in euros as a proxy for international raw material prices, which constitute an important determinant of the price level in a small open economy like Slovenia.

In the government sector of the model, the most important expenditure and revenue items of the Slovenian budget are determined. Social security contributions by employees are calculated by multiplying the average social security contribution rate by the gross wage rate and the number of employees. In the same vein, income tax payments by employees are determined by multiplying the average income tax rate by the gross wage rate and the number of employees. In a behavioural equation, social security payments by companies are linked to social security contributions by employees. Profit tax payments by companies are explained by nominal GDP as an indicator for the economic situation, taking account of the fact that profits and hence profit tax payments display a strongly pro-cyclical behaviour. Value added tax revenues depend on the value added tax rate and on private consumption. Finally, the remaining government revenues are explained by nominal GDP, considering that they are also pro-cyclical.

On the expenditure side of the budget, interest payments depend on the stock of public debt and on the long-term interest rate. Public consumption according to fiscal statistics is linked to public consumption according to national accounts; the two are very closely related but not identical due to some differences in the statistical definitions. Finally, the remaining government expenditures are, as in the case of the revenues, determined by nominal GDP as an indicator of the economic situation. The budget balance is given by the difference between total government revenues and expenditures. The public debt level is extrapolated using the budget balance. The model is closed by a number of identities and definition equations.

Although the SLOPOL model is used for forecasting and policy simulations, it should be noted that the model – like every structural econometric model – is subject to the famous Lucas critique. Lucas (1976) argued that the relations between macroeconomic aggregates in an econometric model should differ according to the macroeconomic policy regime in place. This implies that the effects of a new policy regime cannot be predicted using an empirical model based on data from previous periods when that policy regime was not in place. As Sargent (1981) argues, the Lucas critique is partly based on the notion that parameters of observed decision rules should not be viewed as structural. Instead, structural parameters in Sargent's conception are just "deep parameters" such as preferences and technologies. These parameters would be invariant, even under changing policy regimes. Providing for such "deep parameters" requires a different class of macroeconomic models, namely Computable General Equilibrium (CGE) models.

An approach taking the Lucas critique into account in structural models like SLOPOL emerged in the so-called London School of Economics tradition, initiated by Sargan (1964). According to this approach, economic theory guides the determination of the underlying long-run specification, while the dynamic adjustment process is derived from an analysis of the time series properties of the data series. Error correction models involving cointegrated variables combine the long-run equilibrium and the short-run adjustment mechanism.

3 Simulation Experiments

First, the SLOPOL8 model is simulated over the period 2008–2015 under alternative assumptions about global developments. The simulation period was chosen so as to include the period of the "Great Recession" and to outline its effects on Slovenia as well as the effects of alternative policy reactions. To do so, we depart from the standard procedure of policy simulation analysis and construct a counterfactual baseline scenario of what would have happened to Slovenia if the crisis had not occurred. This is then followed by scenarios involving the crisis with alternative policies in Slovenia. By doing so, we attempt to separate the overall successful transformation of the Slovenian economy as reflected in the data up to 2008 (on which the model rests) from the effects of the largely exogenous shock of the global crisis. Moreover, we also want to isolate the effects of possible policy measures on Slovenian macroeconomic variables under the conditions of the crisis.

Although the transmission of the global crisis to the Slovenian economy is certainly more complex, the data used show that a major channel was the dramatic fall in world trade growth, which heavily affected Slovenian exports of goods and services, explaining a large part of the slump in growth and the rise in unemployment. Therefore we assume that this development is solely responsible for the crisis effects in the Slovenian economy. The baseline scenario therefore assumes "business as usual" with respect to world trade growth, that is, a continuation of the increase in world trade for the simulation period 2008–2015 as in the years immediately preceding them. In particular, we build our baseline scenario (to be called Scenario 0) on the assumption of a sustained world trade growth rate of 7% p.a. over this period, which is the average rate over the years leading up to 2008. To close the model, we further assume that all other exogenous variables grow at the average rates observed pre-2008, including, in particular, the fiscal policy instruments, especially public consumption and transfers to households. Scenario 0 is tailored to mimic a continuation of the development of Slovenia's economy as if the "Great Recession" had not happened.

Next, we construct a scenario isolating the macroeconomic effects of the crisis. For this scenario (Scenario 1), we assume that world trade grows at the actual rate of 3 percent in 2008, declines by the actual rate of 12.6 percent in 2009, and grows again at a rate of 7 percent from 2010 onwards. For the Slovenian (and the ECB) policy variables, we assume a "no policy reaction", that is, the same developments as in Scenario 0. This serves to depict the effects of a completely exogenous negative shock (largely a demand shock) on Slovenia originating from the global economy and transmitted through international trade alone. Due to a lack of data, we could not model the financial sector of the Slovenian economy in more detail; hence transmission through these channels has to be ignored.

Starting from the results of this scenario, we then investigate two alternative policy reactions to the crisis. Scenario 2 assumes that Slovenian policy-makers use fiscal policy to extinguish the negative effects of the global shock. This implies an extremely expansionary and countercyclical course of fiscal policy in the period 2008:4–2010:1. The Slovenian fiscal policy variables used (here and in the following scenarios) are public consumption and transfers to households. As Slovenia lost its monetary policy instrument on entering the euro zone, we do not assume any monetary policy reaction; there is also no policy reaction by the ECB in Scenario 2. It could be interpreted as isolating the stabilization need of fiscal policy when Slovenia acts on its own under an extremely high priority for achieving growth and employment targets.

Scenario 3 entails a less countercyclical and expansionary fiscal policy than Scenario 2, avoiding the drastic increases in the budget deficit and public debt from Scenario 2 but still putting the main emphasis of the (hypothetical) Slovenian policy-maker on employment and growth. Now we assume (again more realistically) that the ECB supports Slovenia by conducting an expansionary monetary policy in the EMU. In particular, we assume that the EMU short-run and long-run rates of interest fall such as to drive the Slovenian interest rates close to zero. The actual stance of the ECB's monetary policy is closer to this scenario than to Scenario 2, but the latter can be regarded as more appropriate when evaluating the power of isolated fiscal policy actions.

4 Optimization Experiments

Although simulations are the main instruments of empirical analyses of macroeconomic policy with econometric models, they suffer from the arbitrary character of the assumptions to be made about the policy instruments and the lack of a systematic choice of scenarios. An alternative consists in determining "optimal" policies. This requires formulating an objective function summarizing the time paths of the different objective variables (instruments and endogenous target variables) into one scalar to be optimized (maximized or minimized) by the (hypothetical) policy-maker. As the theory underlying the formulation of such an objective function is much less developed than the theory used for building the econometric model, it is advisable to experiment with various specifications of the objective function to check whether the optimal policies determined under one particular objective function are robust with respect to alternative specifications of that function.

For a dynamic econometric model such as SLOPOL8, optimum control theory provides the mathematical tools for obtaining optimal policy trajectories. As usual in economic policy applications (although not uncontroversially so), we assume a quadratic intertemporal objective function involving deviations of the values of the respective variables from some pre-specified "ideal" paths; this function has to be minimized subject to the set of constraints given by the econometric model. With the nonlinear econometric model SLOPOL8, this results in a multivariable nonlinear-quadratic optimal control problem. An exact solution to such a problem is not possible, so we have to resort to approximations. Here we use the OPTCON2 algorithm, which was developed based on previous work by Chow (1975, 1981) and Kendrick (1981); see Blueschke-Nikolaeva et al. (2010). Although this algorithm allows for a rather elaborate menu of stochastic extensions, here we confine ourselves to deterministic optimal control, assuming the model parameters and the model equations to be exactly true. Apart from a

considerable reduction in computing time achieved by this simplification, the main reasons for it are the limited amount of reliable information about the stochastics of the model and our experience that stochastic control results often come close to deterministic ones.
In this paper, we concentrate on two optimization experiments, resulting in Scenarios 4 and 5; more experiments showing the robustness of the main results will be reported elsewhere. Scenario 4 assumes that the policy-maker has four main target variables, which he wants to drive as closely as possible along some "ideal" path: the rate of unemployment, the rate of inflation, real GDP and public debt (its ratio to GDP). To do so, he/she uses 2 control variables (policy instruments): public consumption and transfers to private households, as explained in Section 3. "Ideal" paths are also specified for these control variables, so there is a trade-off between using the instruments to achieve the desired targets and the costs of using these instruments, in addition to the various trade-offs implied by the SLOPOL model. The "ideal" paths imply smooth growth in the income variables and low values for the rates of unemployment and inflation. The six objective variables (two controls, four endogenous) are given the same weight for this optimization experiment (although the weights are normalized to the average of the respective variable).
For an alternative optimization experiment (Scenario 5), we introduce the variable *GR* (real government consumption) as an additional target and assume a higher weight (5:1) for the control variable *GN* (nominal government consumption) than for the other variables. This will show the effects of intending to keep public consumption closer to its target path, corresponding to the modification of Scenario 2 obtained in Scenario 3. As can be seen in the next Section, this has only limited effects on the optimal policy, which is a first indication that the results are fairly robust.

5 Results of the Experiments

Figures 4 to 10 show the resulting time paths of the main variables of the model in the scenarios described. Although the model is a quarterly one, we only show annual results. The quarterly time paths show a strong seasonal pattern (as do the data), which is irrelevant from the point of view of policy-making and obscures the relevant outcomes. For both optimization experiments, the OPTCON algorithm converged. For Scenario 4, it required 10 nonlinearity loops and achieved a reduction in the value of the objective function from 1,337,407,992 in the simulated solution to 873,196,971 in the optimal solution. In Scenario 5, it took 9 nonlinearity loops until convergence; the optimal value of the objective is 908,178,294 (as compared to the simulated 1,339,695,664).
In short, it can be noticed that the effects of the crisis on GDP and unemployment are pronounced but still weaker than the historical effects, the discrepancy being mainly due to neglecting transmission through the financial sector. There is not much hysteresis in the model (and the underlying data); under our assumptions, the crisis is largely over after 2 or 3 years at the most, even without policy intervention (Scenario 1 as compared to the baseline Scenario 0). The main effect of the crisis is the drop in the growth rate (of real GDP and its components), see Figure 5; the rate of inflation drops to near price stability, with modest deflation for a few years. The downward trend in the unemployment rate is reversed only for the two years of the crisis proper, converging to virtual full employment at the end of the simulation period under all scenarios.

From the point of view of economic policy analysis, the most striking result is the low effectiveness of fiscal policy and the high cost of its use. Attempting to keep the growth rate at non-crisis values (Scenario 2) requires doubling public consumption in 2009 and a permanent budget deficit of 40 percent of GDP. The resulting public debt increases to two and a half years' GDP within 7 years. Clearly, such a policy would not be feasible, not only because it violates the Maastricht criteria of the EU but also because a country with such disastrous public finances would be unable to obtain credit on reasonable conditions, as the current examples of Greece, Ireland, but also Portugal and Spain indicate. Note that there is also a massive deficit in the current account; hence this policy results in a high twin deficit. The simulation of Scenario 2 must not be regarded as a realistic possibility; instead, it serves to illustrate the infeasibility of a fiscal policy erasing the growth-reducing effects of such a negative demand shock.
Scenario 3, which entails a more moderate expansionary fiscal policy than Scenario 2, nevertheless leads to unsustainable budget deficits of over 20 percent of GDP and an increase in public debt to over 150 percent of GDP – more than any EU country has at present. The twin deficit appears again. So together these simulations shows that, at least for the Slovenian economy, fiscal policy is a very weak instrument against a crisis, and its use should be very carefully planned and implemented in a moderate way.
The last conclusion is reinforced by the results of the optimizations (Scenarios 4 and 5). An optimal fiscal policy is only slightly more countercyclical than the benign neglect no-policy reaction, without having much to compromise for its lack of vigour. Both optimization experiments produce very similar results, with Scenario 5 prescribing a slightly more expansionary and smoother fiscal policy than Scenario 4. In any case, our results for Slovenia are much closer to the position of John Taylor and other authors sceptical about discretionary fiscal policies than to those of fiscal stabilization optimists like Christina Romer.

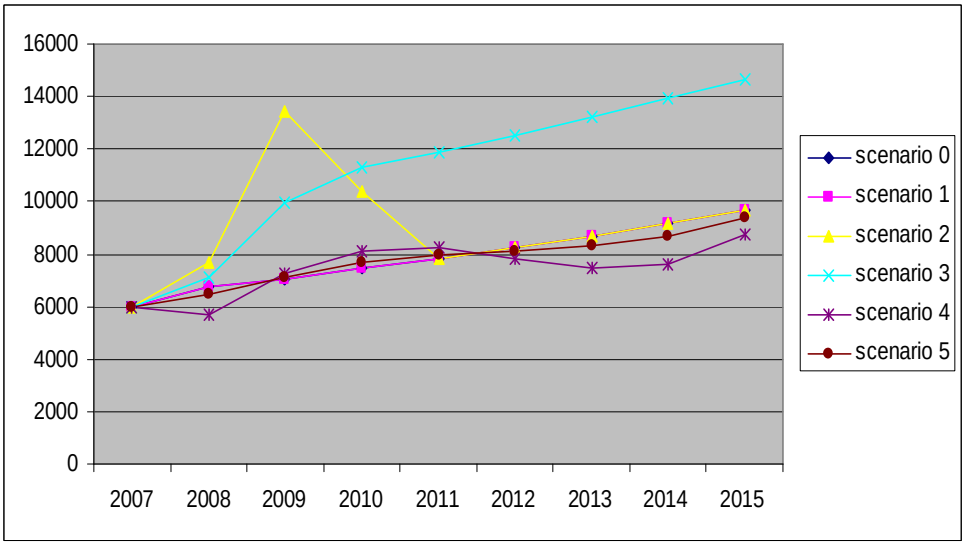

Fig. 4 Government consumption

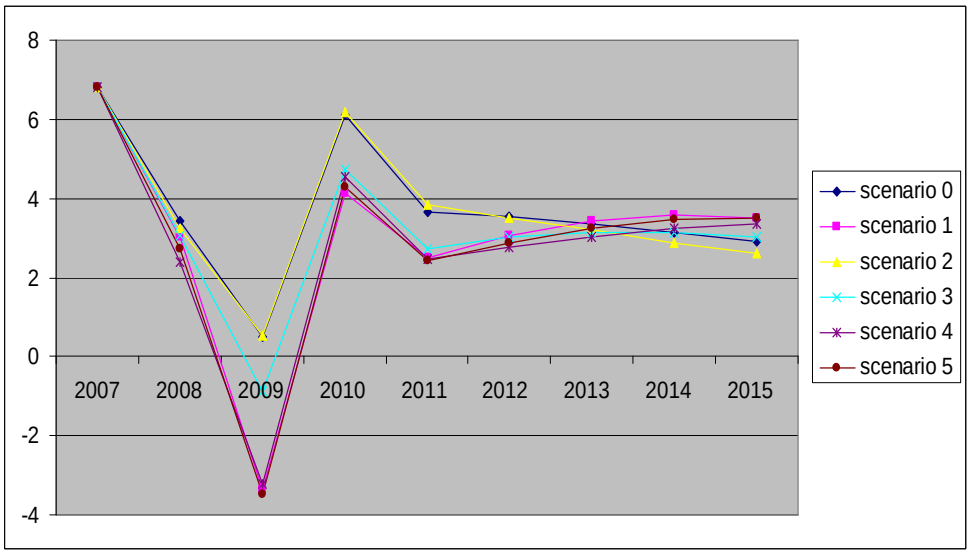

Fig. 5 Real GDP growth rate

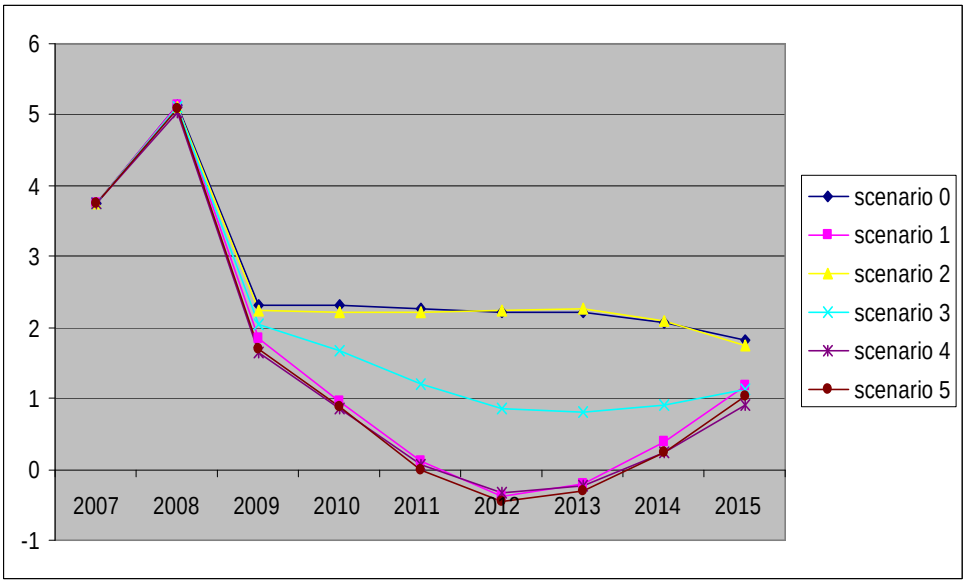

Fig. 6 Inflation rate

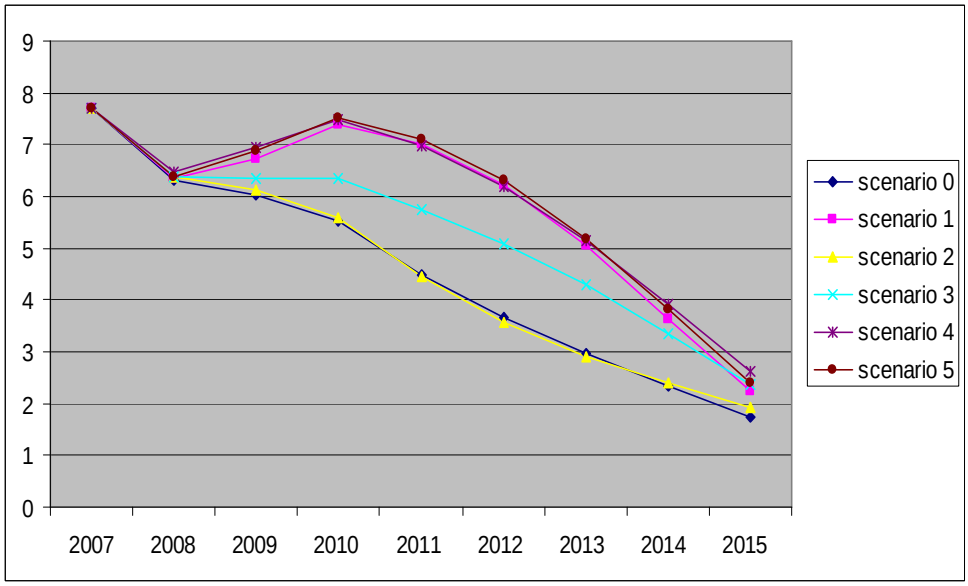

Fig. 7 Unemployment rate

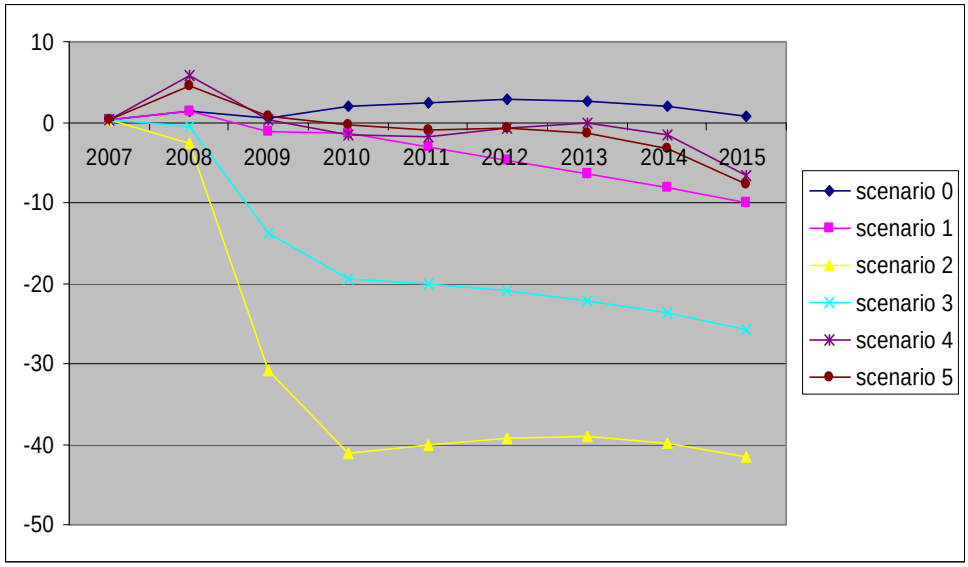

Fig. 8 Budget balance in relation to GDP

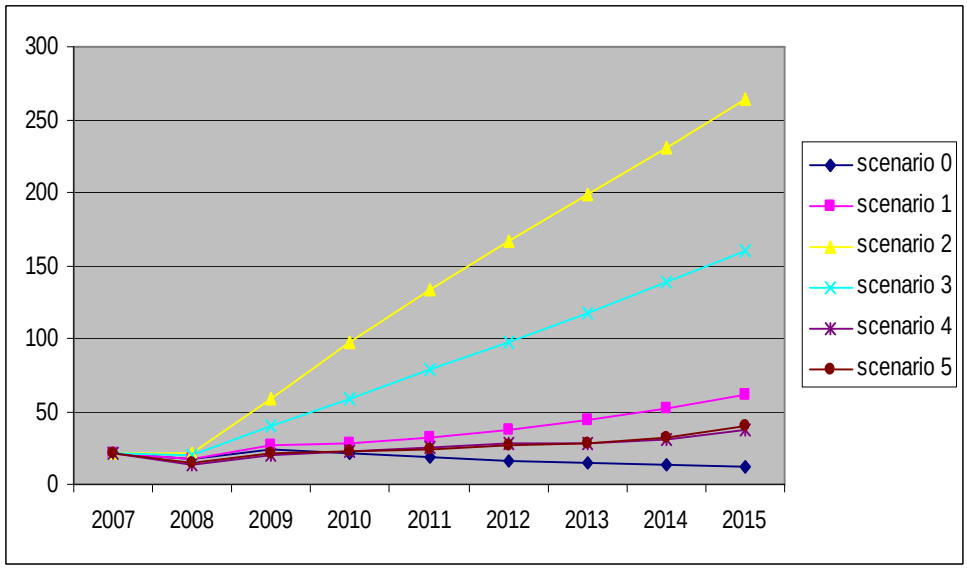

Fig. 9 Debt level in relation to GDP

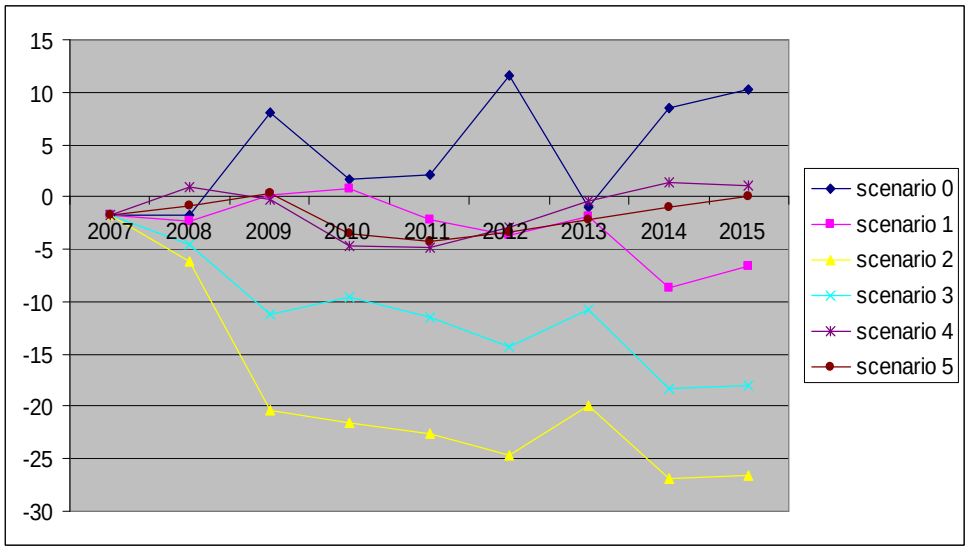

Fig. 10 Current account balance in percent of GDP

6 Conclusions

In this paper, we investigated the effects of the "Great Recession" on the Slovenian economy and the scope of fiscal policies to deal with the resulting turbulences. It turns out that the world-wide economic and financial crisis hit Slovenia mainly via exports and fixed capital formation. It is remarkable that even without an expansionary fiscal policy, the budget deficit would increase in the medium term, reaching 9% of GDP in 2015. Full compensation of the slump in private demand by public demand would require an extremely expansionary fiscal policy, resulting in a drastic deterioration in public finances, with a budget deficit of 40% of GDP over several years. A partly compensating fiscal policy, supported by an expansionary European monetary policy, could mitigate the contraction in GDP and narrow the budget deficit to about 20% of GDP, which is still non-sustainable and violates the Stability and Growth Pact; as in the previous scenario, it brings about a twin deficit. "Optimal" fiscal policies are not strongly expansionary and countercyclical, which is especially remarkable given the rather

"Keynesian" character of the macroeconometric model (no rational expectations, no assumption of permanent market clearing). Instead, optimization calls for balancing the loss through higher budget deficit and public debt against the (modest) gain through higher GDP growth and lower unemployment. If policy-makers can learn from the results of this paper, the advice given to them should be: "Do not prevent automatic stabilizers from working and refrain from fiscal activism – it is not worth while!"

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Appendix: The Econometric Model SLOPOL8

A.1 Model Equations

A.1.1 Behavioural equations

Private consumption

$$\log(CR_t / CR_{t-1}) = 0.5011 - 0.1598 \bullet \log(CR_{t-1} / CR_{t-2})$$
$$(2.5097)\ (-3.4131)$$
$$+ 0.5464 \bullet \log(INCOMER_t / INCOMER_{t-1}) - 1.0832 \bullet \log(CR_{t-1})$$
$$(8.7936)\ (-7.8847)$$
$$+ 0.9293 \bullet \log(INCOMER_{t-1}) - 0.0038 \bullet GOV10YR_t - 0.0577 \bullet SEAS(1)$$
$$(7.8005)\ (-2.4301)\ (-7.7748)$$
$$\text{Adj. } R^2 = 0.9644 \qquad DW = 1.9126$$

Gross fixed capital formation (excl. public investment)

$\log(PRINVR_t / PRINVR_{t-1}) = -2.1330 + 0.4649 \bullet \log(PRINVR_{t-1} / PRINVR_{t-2})$
$\quad (-4.8227) \quad (6.3233)$
$+ 1.1981 \bullet \log(DEMAND_t / DEMAND_{t-1}) - 1.6495 \bullet \log(PRINVR_{t-1})$
$\quad (11.2813) \quad (-13.1836)$
$+ 1.5416 \bullet \log(DEMAND_{t-1}) - 0.0234 \bullet UCC_{t-1} + 0.1230 \bullet DUM992$
$\quad (11.6682) \quad (-5.4499) \quad (2.9444)$
$- 0.0653 \bullet DUM024$
(-1.7456)
Adj. $R^2 = 0.8866$ $DW = 1.6349$

Exports

$\log(EXR_t / EXR_{t-4}) = 0.5362 + 0.2807 \bullet \log(EXR_{t-1} / EXR_{t-5})$
$\quad (0.9232) \quad (2.4689)$
$+ 0.7918 \bullet \log(WTRADE_t / WTRADE_{t-4}) - 0.2961 \bullet \log(EXR_{t-4})$
$\quad (6.3003) \quad (-3.2111)$
$+ 0.3731 \bullet \log(WTRADE_{t-4}) - 0.2403 \bullet \log(REER_{t-4}) - 0.0503 \bullet DUM031$
$\quad (3.4085) \quad (-1.5702) \quad (-2.0778)$
Adj. $R^2 = 0.7367$ $DW = 1.6003$

Imports

$\log(IMPR_t / IMPR_{t-4}) = -2.4145 + 0.2354 \bullet \log(REER_t / REER_{t-4})$
$\quad (-3.6823) \quad (2.0689)$
$+ 1.9489 \bullet \log(DEMAND_t / DEMAND_{t-4}) - 0.3829 \bullet \log(IMPR_{t-4})$
$(16.8053) \quad (-4.3348)$
$+ 0.1293 \bullet \log(REER_{t-4}) + 0.5414 \bullet \log(DEMAND_{t-4}) - 0.0605 \bullet DUM052$
$\quad (0.9232) \quad (4.2694) \quad (-3.0380)$
Adj. $R^2 = 0.8677$ $DW = 1.9048$

Employment

$\log(EMP_t / EMP_{t-1}) = 0.7734 + 0.0432 \bullet \log(GDPR_t / GDPR_{t-1})$
$\quad (1.7367) \quad (2.1049)$
$- 0.0834 \bullet \log(EMP_{t-1}) + 0.0796 \bullet \log(GDPR_{t-1}) - 0.0380 \bullet \log(ULC_{t-1})$
$(-2.0643) \quad (3.7542) \quad (-3.4803)$
$+ 0.02570 \bullet DUM051 + 0.0097 \bullet SEAS(2)$
$\quad (6.0825) \quad (3.6951)$
Adj. $R^2 = 0.6278$ $DW = 1.8981$

Labour supply

$(LFORCE_t / POP_t - LFORCE_{t-1} / POP_{t-1}) = -0.0243$
(-2.3538)
$+ 0.1904 \bullet (LFORCE_{t-1} / POP_{t-1} - LFORCE_{t-2} / POP_{t-2})$
(1.9416)
$+ 0.0248 \bullet (NETWAGER_t / NETWAGER_{t-1}) - 0.0068 \bullet DUM001$
(2.4336) (-2.8606)
$- 0.0054 \bullet DUM031 + 0.0152 \bullet DUM051$
(-2.2603) (6.2846)
Adj. $R^2 = 0.5549$ $DW = 2.1367$

Wages

$\log(AGWN_t / AGWN_{t-4}) = 0.3408 + 0.3342 \bullet \log(AGWN_{t-1} / AGWN_{t-5})$
(2.4482) (2.8561)
$+ 0.4083 \bullet \log(CPI_{t-1} / CPI_{t-5}) + 0.1843 \bullet \log(PROD_t / PROD_{t-4})$
(2.8851) (2.3074)
$- 0.0914 \bullet \log(AGWN_{t-2} / CPI_{t-2}) - 0.0122 \bullet (UR_t - NAIRU_t)$
(-2.3925) (-3.7608)
Adj. $R^2 = 0.8817$ $DW = 1.8753$

Consumer price index CPI

$\log(CPI_t / CPI_{t-4}) = -0.0579 + 0.7865 \bullet \log(CPI_{t-1} / CPI_{t-5})$
(-0.4662) (7.7498)
$+ 0.1150 \bullet \log(ULC_t / ULC_{t-4}) + 0.0121 \bullet \log(OILEUR_t / OILEUR_{t-4})$
(1.6045) (3.7280)
$+ 0.1235 \bullet \log(UTIL_t / UTIL_{t-4}) - 0.0588 \bullet \log(CPI_{t-2})$
(1.2730) (-2.3535)
$+ 0.0385 \bullet \log(ULC_{t-2}) - 0.0170 \bullet DUM992 + 0.0096 \bullet DUM07$
(1.3917) (-2.5837) (2.1381)
Adj. $R^2 = 0.9329$ $DW = 1.7903$

GDP deflator

$\log(GDPDEF_t / GDPDEF_{t-1}) = 0.5832 + 0.7473 \bullet \log(CPI_t / CPI_{t-1})$
(7.0167) (4.9829)
$- 0.8394 \bullet \log(GDPDEF_{t-1}) + 0.7606 \bullet \log(CPI_{t-1}) - 0.02721 \bullet DUM004$
(-7.5444) (7.5449) (-3.0813)
$- 0.0155 \bullet SEAS(1)$
(-5.4199)
Adj. $R^2 = 0.7709$ $DW = 1.7332$

Deflator of private consumption

$\log(CDEF_t / CDEF_{t-1}) = 0.4371 + 0.7362 \bullet \log(CPI_t / CPI_{t-1})$
(5.0740) (5.8918)

$$- 0.6997 \bullet \log(CDEF_{t-1}) + 0.6439 \bullet \log(CPI_{t-1}) - 0.077 \bullet SEAS(1)$$
$$(-5.0903) \qquad (5.0597) \qquad (-2.8839)$$
Adj. $R^2 = 0.6875$ $DW = 1.9687$

Deflator of public consumption

$$\log(GDEF_t / GDEF_{t-4}) = -0.0584 + 0.6692 \bullet \log(GDEF_{t-1} / GDEF_{t-5})$$
$$(-1.0602) \quad (8.0068)$$
$$+ 0.3811 \bullet \log(CPI_t / CPI_{t-4}) - 0.2835 \bullet \log(GDEF_{t-4}) + 0.3137 \bullet \log(CPI_{t-4})$$
$$(3.1913) \qquad (-3.8259) \qquad (3.8655)$$
Adj. $R^2 = 0.8701$ $DW = 1.9953$

Deflator of exports

$$\log(EXPDEF_t / EXPDEF_{t-4}) = -0.1171 + 0.6741 \bullet \log(EXPDEF_{t-1} / EXPDEF_{t-5})$$
$$(-1.3023) \quad (9.0264)$$
$$+ 0.2090 \bullet \log(ULC_{t-2} / ULC_{t-6}) + 0.2688 \bullet \log(WTRADE_t / WTRADE_{t-4})$$
$$(1.9484) \qquad (4.3427)$$
$$- 0.0986 \bullet \log(EXPDEF_{t-4}) + 0.0715 \bullet \log(WTRADE_{t-4})$$
$$(-1.9011) \qquad (2.1043)$$
Adj. $R^2 = 0.8058$ $DW = 1.5452$

Deflator of imports

$$\log(IMPDEF_t / IMPDEF_{t-4}) = 0.6163 + 0.4624 \bullet \log(IMPDEF_{t-1} / IMPDEF_{t-5})$$
$$(3.1737) \quad (5.0224)$$
$$+ 0.0680 \bullet \log(OILEUR_t / OILEUR_{t-4}) - 0.1610 \bullet \log(IMPDEF_{t-4})$$
$$(6.3425) \qquad (-3.0240)$$
$$+ 0.0442 \bullet \log(OILEUR_{t-4})$$
$$(2.4852)$$
Adj. $R^2 = 0.7921$ $DW = 1.9227$

Short-term interest rate

$$(SITBOR3M_t - SITBOR3M_{t-4}) = 0.4983 \bullet (SITBOR3M_{t-1} - SITBOR3M_{t-5})$$
$$(4.3449)$$
$$+ 0.5446 \bullet (EUR3M_t - EUR3M_{t-4}) - 0.0500 \bullet (SITBOR3M_{t-4} - EUR3M_{t-4})$$
$$(2.8134) \qquad (-1.3975)$$
Adj. $R^2 = 0.6730$ $DW = 1.1084$

Long-term interest rate

$$(GOV10Y_t - GOV10Y_{t-1}) = -2.7091 + 0.6278 \bullet (SITBOR3M_t - SITBOR3M_{t-1})$$
$$(-2.5622) \ (4.2644)$$
$$+ 1.3809 \bullet (EUR10Y_t - EUR10Y_{t-1}) - 0.5231 \bullet GOV10Y_{t-1}$$
$$(3.8355) \qquad (-3.4498)$$

$$+ 0.3065 \bullet SITBOR3M_{t-1} + 0.9150 \bullet EUR10Y_{t-1}$$
$$(2.5290) \qquad (2.7708)$$
Adj. $R^2 = 0.7213$ $DW = 1.7816$

Real effective exchange rate

$$\log(REER_t / REER_{t-4}) = 1.7579 + 0.1705 \bullet \log(REER_{t-4} / REER_{t-8})$$
$$(3.3302) \quad (3.1744)$$
$$+ 1.3617 \bullet \log(SITEUR_t / SITEUR_{t-4}) + 0.1452 \bullet \log(EURUSD_t / EURUSD_{t-4})$$
$$(8.0222) \qquad (6.7783)$$
$$+ 0.1321 \bullet \log(CPI_t / CPI_{t-4}) - 0.4418 \bullet \log(REER_{t-4})$$
$$(1.0911) \qquad (-3.9152)$$
$$+ 0.4452 \bullet \log(SITEUR_{t-4}) - 0.1127 \bullet \log(EURUSD_{t-4}) + 0.1480 \bullet \log(CPI_{t-4})$$
$$(3.4909) \qquad (-5.7393) \qquad (2.1618)$$
Adj. $R^2 = 0.9250$ $DW = 1.1019$

Corporate income tax payments

$$\log(INCTAXCORP_t / INCTAXCORP_{t-4}) = -2.7297$$
$$(-2.4413)$$
$$+ 0.3514 \bullet \log(INCTAXCORP_{t-1} / INCTAXCORP_{t-5})$$
$$(3.4548)$$
$$+ 1.8756 \bullet \log(GDPN_t / GDPN_{t-4}) - 0.1968 \bullet \log(INCTAXCORP_{t-4})$$
$$(2.0482) \qquad (-3.2285)$$
$$+ 0.4111 \bullet \log(GDPN_{t-4}) + 0.3941 \bullet DUM032 + 0.6538 \bullet DUM062$$
$$(2.6960) \qquad (3.2380) \qquad (5.2063)$$
Adj. $R^2 = 0.5283$ $DW = 1.8717$

Social security contributions by companies

$$\log(SOCCOMP_t / SOCCOMP_{t-4}) = -0.5179 + 1.0206 \bullet \log(SOCEMP_t / SOCEMP_{t-4})$$
$$(-12.0280) \quad (16.1099)$$
$$- 0.6013 \bullet \log(SOCCOMP_{t-4}) + 0.6551 \bullet \log(SOCEMP_{t-4})$$
$$(-23.4134) \qquad (27.4695)$$
Adj. $R^2 = 0.9491$ $DW = 0.9583$

Value added tax (VAT) revenues

$$\log(VAT_t / VAT_{t-1}) = -1.4217 + 0.1361 \bullet \log(VAT_{t-2} / VAT_{t-3})$$
$$(-2.3041) \quad (2.6937)$$
$$+ 0.6517 \bullet \log ((VATAXRATE_t \bullet CN_t) / (VATAXRATE_{t-1} \bullet CN_{t-1}))$$
$$(4.8917)$$
$$- 0.8419 \bullet \log(VAT_{t-1}) + 0.6093 \bullet \log(VATAXRATE_{t-1} \bullet CN_{t-1})$$
$$(-8.8104) \qquad (6.9298)$$
$$- 0.4481 \bullet DUM001 - 0.7608 \bullet DUM011 - 1.0712 \bullet DUM021$$
$$(-3.2349) \qquad (-5.5438) \qquad (-7.7109)$$
Adj. $R^2 = 0.8825$ $DW = 1.9424$

Remaining government revenues

$$\log(REVREST_t / REVREST_{t-1}) = -3.5756 + 1.7365 \bullet \log(GDPN_t / GDPN_{t-1})$$
$$(-3.3682)\ \ (4.5827)$$
$$- 0.5738 \bullet \log(REVREST_{t-1}) + 0.8373 \bullet \log(GDPN_{t-1}) - 0.3563 \bullet DUM021$$
$$(-3.5607) \qquad (3.5416) \qquad (-2.1257)$$
Adj. $R^2 = 0.5957$ $\quad DW = 2.0195$

Interest payments on outstanding public debt

$$\log(INTEREST_t / INTEREST_{t-1}) = -5.6844$$
$$(-2.2045)$$
$$+ 0.8385 \bullet \log(INTEREST_{t-1} / INTEREST_{t-2})$$
$$(7.5339)$$
$$- 0.57536 \bullet \log(DEBT_t \bullet GOV10Y_t / (DEBT_{t-1} \bullet GOV10Y_{t-1}))$$
$$(-7.1341)$$
$$- 1.7735 \bullet \log(INTEREST_{t-1}) + 1.4548 \bullet \log(DEBT_{t-1} \bullet GOV10Y_{t-1})$$
$$(-11.7388) \qquad (5.1181)$$
Adj. $R^2 = 0.7228$ $\quad DW = 1.5934$

Public consumption according to fiscal statistics

$$\log(GNFIN_t / GNFIN_{t-4}) = -0.0341 + 0.3298 \bullet \log(GNFIN_{t-1} / GNFIN_{t-5})$$
$$(-2.0150)\ \ (3.2717)$$
$$+ 0.8887 \bullet \log(GN_t / GN_{t-4}) - 0.0905 \bullet \log(GNFIN_{t-4} / GN_{t-4}) - 0.1462 \bullet DUM004$$
$$(5.6313) \qquad (-1.5968) \qquad (-4.2778)$$
Adj. $R^2 = 0.6656$ $\quad DW = 2.2343$

Remaining government expenditures

$$\log(EXPREST_t / EXPREST_{t-1}) = -3.6981 - 0.7787 \bullet \log(GDPN_{t-1} / GDPN_{t-2})$$
$$(-3.9813)\ (-1.7883)$$
$$+ 1.3353 \bullet \log(GDPN_{t-2} / GDPN_{t-3}) - 0.6055 \bullet \log(EXPREST_{t-1})$$
$$(3.0361) \qquad (-4.5976)$$
$$+ 0.8439 \bullet \log(GDPN_{t-1}) - 0.2800 \bullet SEAS(1)$$
$$(4.4921) \qquad (-4.8856)$$
Adj. $R^2 = 0.7275$ $\quad DW = 2.1068$

NAIRU

$$D(NAIRU)_t = -0.0002 + 3.7808 \bullet D(NAIRU)_{t-1} - 5.7252 \bullet D(NAIRU)_{t-2}$$
$$(-2.2026)\ (26.4779) \qquad (-10.9483)$$
$$+ 4.3497 \bullet D(NAIRU)_{t-3} - 1.6677 \bullet D(NAIRU)_{t-4} + 0.2604 \bullet D(NAIRU)_{t-5}$$
$$(5.5869) \qquad (-2.9807) \qquad (1.6204)$$
Adj. $R^2 = 0.9999$ $\quad DW = 1.7734$

A.1.2 Identities

$AGWR_t = AGWN_t / CPI_t \cdot 100$
$BALANCEGDP_t = BALANCEN_t / GDPN_t \cdot 100$
$BALANCEN_t = VAT_t + SOCTOTAL_t + INCTAX_t + REVREST_t - GNFIN_t - GINVN_t - TRANSFERSN_t - INTEREST_t - EXPREST_t$
$CAGDP_t = CAN_t / GDPN_t \cdot 100$
$CAN_t = EXR_t \cdot EXPDEF_t / 100 - IMPR_t \cdot IMPDEF_t / 100$
$CAPR_t = (1 - DEPR_t / 100) \cdot CAPR_{t-1} + INVR_t$
$CN_t = CR_t \cdot CDEF_t / 100$
$DEBTGDP_t = DEBT_t / (GDPN_t + GDPN_{t-1} + GDPN_{t-2} + GDPN_{t-3}) \cdot 100$
$DEBT_t = DEBT_{t-1} - BALANCEN_t + DEBTADJ_t$
$DEMAND_t = INVR_t + CR_t + GR_t + EXR_t$
$GDPN_t = GDPR_t \cdot GDPDEF_t / 100$
$GDPR_t = CR_t + GR_t + INVR_t + INVENTR_t + EXR_t - IMPR_t$
$GINVR_t = GINVN_t / GDPDEF_t \cdot 100$
$GOV10YR = GOV10Y - INFL$
$GRGDPR_t = GDPR_t / GDPR_{t-4} \cdot 100 - 100$
$GR_t = GN_t / GDEF_t \cdot 100$
$GRYPOT_t = (YPOT_t / YPOT_{t-4} - 1) \cdot 100$
$INCOMER_t = INCOME_t / CPI_t \cdot 100$
$INCOME_t = GDPN_t + TRANSFERSN_t - INCTAX_t - SOCTOTAL_t$
$INCTAXPERS_t = INCTAXRATE_t \cdot (AGWN_t \cdot EMP_t / 1000) / 100$
$INCTAX_t = INCTAXPERS_t + INCTAXCORP_t$
$INFL_t = (CPI_t / CPI_{t-4} - 1) \cdot 100$
$INVR_t = PRINVR_t + GINVR_t$
$NETWAGEN_t = AGWN_t - WEDGE_t$
$NETWAGER_t = NETWAGEN_t / CPI_t \cdot 100$
$OILEUR_t = OIL_t / EURUSD_t$
$PROD_t = GDPR_t / EMP_t \cdot 100$
$SOCEMP_t = SOCEMPRATE_t \cdot (AGWN_t \cdot EMP_t / 1000) / 100$
$SOCTOTAL_t = SOCCOMP_t + SOCEMP_t$
$TRENDEMP_t = LFORCE_t \cdot (1 - NAIRU_t / 100)$
$UCC_t = GOV10YR_t + 1.7$
$ULC_t = AGWN_t / PROD_t$
$UN_t = LFORCE_t - EMP_t$
$UR_t = UN_t / LFORCE_t \cdot 100$
$UTIL_t = GDPR_t / YPOT_t \cdot 100$
$WEDGE_t = AGWN_t \cdot (INCTAXRATE_t / 100 + SOCEMPRATE_t / 100)$
$YPOT_t = (TRENDEMP_t)^{0.65} \cdot \log(CAPR_t)^{0.35} \cdot \mathrm{EXP}(TRENDTFP_t)$

A.2 List of Variables

A.2.1 Endogenous variables

AGWN	Average gross wage per employee
AGWR	Average gross wage real
BALANCEGDP	Budget balance in relation to GDP
BALANCEN	Budget balance
CAGDP	Current account balance in percent of GDP
CAN	Current account balance
CAPR	Capital stock, real

CDEF	Private consumption deflator
CN	Private consumption, nominal
CPI	Harmonized consumer price index for Slovenia
CR	Private consumption, real
DEBT	Public debt
DEBTGDP	Debt level in relation to GDP
DEMAND	Final demand, real
EMP	Employed persons
EXPDEF	Export deflator
EXPREST	Remaining government expenditures
EXR	Exports, real
GDEF	Deflator of public consumption
GDPDEF	GDP deflator
GDPN	GDP, nominal, Mio euro
GDPR	GDP, real, Mio euro, chained volumes, reference year 2000
GINVR	Real government investment
GNFIN	Government consumption, financial statistics
GOV10Y	Yield of 10 year government bonds (before 2002:2 linked with *LTIRLN*)
GOV10YR	Real yield of 10 year government bonds
GR	Government consumption, real
GRGDPR	Real GDP growth rate
GRYPOT	Growth rate of potential GDP
IMPDEF	Import deflator
IMPR	Imports, real
INCOME	Disposable income of private households, nominal
INCOMER	Disposable income of private households, real
INCTAX	Total income tax revenues
INCTAXCORP	Corporate taxes on income and profit
INCTAXPERS	Individual taxes on income and profit
INFL	Inflation rate
INTEREST	Interest payments
INVR	Gross fixed capital formation, real
LFORCE	Labour force
NAIRU	Non-accelerating inflation rate of unemployment
NETWAGEN	Gross wage minus average income taxes and social security contributions
NETWAGER	Gross wage minus average income taxes and social security contributions, real
OILEUR	Oil price in euros
PRINVR	Real private investment
PROD	Labour productivity
REER	Real effective exchange rate
REVREST	Remaining government revenues
SITBOR3M	Interest rate for 3 months; from 2007 on: EURIBOR
SOCCOMP	Social security contributions by companies
SOCEMP	Employees' social security contributions
SOCTOTAL	Total social security contributions
TRENDEMP	Trend of employment
UCC	User cost of capital
ULC	Unit labour cost

UN	Unemployed persons
UR	Unemployment rate
UTIL	Capacity utilization rate
VAT	VAT and sales tax revenues
WEDGE	Tax wedge on gross wages
YPOT	Potential output

A.2.2 Exogenous variables

DEBTADJ	Difference between change in public debt level and budget balance
DEPR	Capital stock depreciation rate
EUR10Y	10 year government bond yield – Euro Area average
EUR3M	3 months EURIBOR
EURUSD	Exchange rate USD per EUR
GINVN	Government investment, nominal
GN	Government consumption, nominal
INCTAXRATE	Average personal income tax rate
INVENTR	Change in inventories (+ statistical discrepancy), real
OIL	Oil price, USD per barrel Brent
POP1564	Population aged 15 to 64
SITEUR	Exchange rate EUR per 100 tolar
SOCEMPRATE	Average social security contribution rate, employees
TRANSFERSN	Total transfers to households and individual
TRENDTFP	Trend of total factor productivity
VATAXRATE	Value added tax rate
WTRADE	World Trade; Source: OECD MEI
DUM001	Dummy variable, 1 in 2000:1, 0 otherwise
DUM004	Dummy variable, 1 in 2000:4, 0 otherwise
DUM011	Dummy variable, 1 in 2001:1, 0 otherwise
DUM021	Dummy variable, 1 in 2002:1, 0 otherwise
DUM024	Dummy variable, 1 in 2002:4, 0 otherwise
DUM031	Dummy variable, 1 in 2003:1, 0 otherwise
DUM032	Dummy variable, 1 in 2003:2, 0 otherwise
DUM051	Dummy variable, 1 in 2005:1, 0 otherwise
DUM052	Dummy variable, 1 in 2005:2, 0 otherwise
DUM062	Dummy variable, 1 in 2006:2, 0 otherwise
DUM07	Dummy variable, 1 in the year 2007, 0 otherwise
DUM992	Dummy variable, 1 in 1999:2, 0 otherwise