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DOUBLE-DIP RECESSION AND POLICY OPTIONS

Ekonomске politike u novoj recesiji

Abstract

It is reasonable to expect the Serbian economy to decline up to -1% in 2012. A double-dip recession is inevitable. Lessons from the previous recession in 2009 suggest that an expansionary fiscal policy has clear limits, and that any misalignment of economic policies might be highly costly. This time, in addition to a recession and lack of policy coordination, the Serbian economy is exposed to the political risk associated with new elections. All of these risks deserve proper attention.

In this paper, we provide a growth forecast for 2012 and discuss three potential policy response options. Coordination between fiscal consolidation and monetary expansion is the preferred solution. However, no one should take this for granted, and even if it is adopted by the Serbian policy makers, the problem of unsustainable long-term growth will remain.

The model developed in this paper is a New-Keynesian model, modified to tackle the issue of fiscal consolidation. We expect that the inflation targeting policy framework will prevail in 2012, despite its poor record, and that this provides a good reason for using DSGE models to simulate policy options.

Key words: *recession, inflation targeting, counter-cyclical policy, New-Keynesian DSGE models, growth forecast*

JEL classification: E47, E58

Sažetak

Razumno je očekivati da će rast srpske privrede u 2012.g. biti negativan, sa stopom pada GDP-a do -1%. U tom smislu pojava nove recesije je neumitna. Lekcije iz prethodne recesije iz 2009.g. sugerišu da ekspanzivna fiskalna politika ima svoje granice i da je njena neusklađenost s drugim politikama višestruko štetna. Ovog puta srpskoj ekonomiji ne samo da preči recesija i nesukladjenost ekonomskih politika, nego postoji i dodatan politički rizik vezan za predstojeće izbore. Svi ovi rizici zaslužuju da im se posveti dužna pažnja.

Mi smo u ovom radu dali prognozu rasta privrede Srbije za 2012.g.

i razmatrali smo tri moguće varijante ekonomskih politika. Usaglašena monetarna i fiskalna politika su najbolje rešenje. Medjutim, ono samo po sebi nije zagarantovano, a čak i da se usvoji od strane vladajućih institucija, ostaje problem neodrživosti dugoročnog rasta (što zahteva posebna rešenja).

Model korišćen u ovom radu predstavlja jednu varijantu Novo-Kejnzijanskih modela koji je modifikovan da bi uključio uticaj fiskalne politike. Mi očekujemo da ciljana inflacija ostaje model monetarne politike u 2012.g., iako nije pružila dobre rezultate, i to opravdava upotrebu dinamičko-stohastičkog modela opšte ravnoteže (DSGE) radi simulacije efekata ekonomskih politika u 2012.g.

Ključne reči: *recesija, ciljana inflacija, anti-recesiona politika, Novo-Kejnzijanski DSGE model, prognoze rasta*

Introduction

It is 2012, and the Serbian economy is facing its second period of recession in four years. It is reasonable to expect the Serbian economy to decline by up to -1% in 2012. The initial recovery from the 2009 recession was due to an expansionary fiscal policy. This time, however, the ability to use a similar policy is significantly constrained. Fiscal deficits and public debts have in the meantime accumulated up to the limits set by the fiscal rules and the tolerance of the IMF. On the other hand, monetary policy has been controversial to the business and academic community all the time since the onset of 2009 recession. National Bank of Serbia's (NBS) monetary policy rules indicate that monetary measures would enable in practice both a

recovery from the recession and the fight against inflation. However, the effects of this policy were not proved in the literature [7]. Therefore, the question arises as to how fiscal and monetary policies will react to a fresh fall in output, as well as whether those economic policies will be coordinated or independently pursued, and whether they will in practice be pro-cyclical or counter-cyclical.

Two types of risk could materialize this year. There is a downside risk derived from the high probability that the real economy will enter into the second stage of a recession within the same business cycle. On top of that, the upcoming parliamentary election creates political uncertainty over the future course of fiscal policy. Expansionary fiscal policy is often deployed close to election dates, but this time, if it is combined with high levels of public debt, this could generate gloomy long-term outcomes.

In this paper we provide a baseline growth forecast for 2012. In order to obtain this, we have employed a standard monetarist DSGE model. The rationale behind this is that NBS, as the monetary authority, will continue to rely on similar models when deciding how to conduct monetary policy in 2012. We expect that inflation targeting will prevail in 2012 as the monetary policy framework, and that justifies the use of New-Keynesian general equilibrium models for simulation purposes. Our main finding is that prevailing monetary policy, in combination with a passive fiscal policy and the macroeconomic conditions at hand in the Eurozone, will cause a recession in 2012. The economy might move out of recession in 2013, but some downside risk is still present.

Internally, the risk is associated with a dilemma as to what kind of fiscal and monetary policies will be adopted in response to the challenges of the recession. We have considered three policy options. The first option is based on the assumption that fiscal revenue collection will be the main priority of the Government. There will be no expenditure cuts, and the fiscal deficit will improve thanks to higher taxes and public borrowing. Monetary policy will be neutral, which together will have severe macroeconomic effects. Better results are obtained in the second scenario, which envisaged some expenditure cuts, modest public borrowing, and appropriate expansions in fiscal spending. These improvements are, however,

only transitory. The third scenario is a combination of consolidated fiscal policy and expansionary monetary measures. This option has the best record, but the problem of long-term sustainability is still present. In the Serbian economy the same imperative for restructuring was present in 2009 and amplified in 2012 - but this situation cannot be resolved with fiscal and monetary policy measures alone.

The paper is organized as follows. We will briefly present the DSGE model in the first part, then explain the baseline growth scenario for 2012 in the second part, and discuss three policy scenarios in the third part. Finally, we will provide some policy recommendations.

The model

Our model follows the recommendations of a standard New-Keynesian model [1], [3], [4] and [12] adjusted for the fundamentals of the Serbian economy [6], and extended to embrace a money demand function [7] and fiscal deficits. It has a total of 41 equations, where the first seven represent the model's key block. The only novelty is that we added equation (7), which represents a money demand function, expressed in terms of money, output and inflation growth rates. The quantity of money represents money demand corresponding to the steady state, and will not at all influence the calculation of the equilibrium solution. The quantity of money will provide the model with information on the amount of money consistently demanded by rational economic agents, and will be used as an indicator of the monetary policy stance commonly used in business.

We redefined NBS's monetary policy reaction function, i.e., the monetary rule used by the monetary authority to set the repo interest rate (policy rate). NBS's model takes into account interest rate inertia (i_{t-1}), the inflation neutral interest rate ($i_t^n = r_t^{\text{trend}} + \pi_{t+1}^e$), and deviation of forecast from target inflation ($\pi_{t+4}^e - \pi_{t+4}^{\text{target}}$). Contrary to our model, the NBS model does not consider an output gap, which actually means that the parameter C_3 is assumed to be $C_3=0$ in equation (1). We take $C_3>0$, and pay attention to the influence of the output gap on the policy rate. We skip writing here definition equations, and equations determining trends and gaps in key variables.

$$\begin{aligned}
(1) \quad i_t &= C_1 \cdot i_{t-1} + (1 - C_1) \cdot (r_t^{trend} + \pi_{t+1}^e + C_2 \cdot (\pi_{t+4}^e - \pi_{t+4}^{target}) + C_3 \cdot y_t^{gap}) + \varepsilon_t^i \\
(2) \quad y_t^{gap} &= A_1 \cdot y_{t-1}^{gap} - A_2 \cdot r_t^{gap} + A_3 \cdot z_t^{gap} + A_4 \cdot y_t^{*gap} - A_5 \cdot q_t^{gap} + \varepsilon_t^y \\
(3) \quad \pi_t &= B_1 \cdot \pi_{t-1} + (1 - B_1) \cdot \pi_{t+1}^e + B_2 \cdot [B_3 \cdot y_t^{gap} + (1 - B_3) \cdot z_t^{gap} + \varepsilon_t^\pi] \\
(4) \quad i_t &= \Delta s_{t+1}^e + i_t^* + u_t + \varepsilon_t^s \\
(5) \quad z_t &= s_t + p_t^* - p_t \\
(6) \quad r_t &= i_t - \pi_{t+1}^e \\
(7) \quad \mu_t - \pi_t &= R_5 \cdot \Delta y_t - R_6 \cdot \Delta i_t + \varepsilon_t^\mu
\end{aligned}$$

Equation (2) models aggregate demand. The output gap (y_t^{gap}) reflects the state of aggregate demand, which depends on inertia (y_{t-1}^{gap}), real interest rate gap (r_t^{gap}), real exchange rate gap (z_t^{gap}) and foreign output gap (y_t^{*gap}), i.e., GDP gap in the Eurozone, in the present case. Unexpected demand shocks are modelled via variable ε_t^y .

It is important to note that a standard aggregate demand equation is augmented by the fiscal deficit gap (q_t^{gap}). As in the case of other gap variables, the fiscal deficit gap is obtained using Hodrick-Prescott filter to extract the underlying fiscal deficit trend. Its evolution is farther modelled as autoregressive AR(1) process. There is a strong empirical negative correlation between output gap and fiscal deficit gap in the Serbian economy. Relying on that empirical association, it is possible to model fiscal consolidation as a policy option. Of course, the price to be paid for this modification is a slight deviation from a standard theoretical model. The fiscal deficit is defined as the ratio of budget expenditure over budget revenue.

Equation (3) presents a Phillips curve, which is a dynamic version of the IS curve from the traditional IS-LM Keynesian macroeconomic model, describing conditions under which the goods market achieves equilibrium. Inflation is not a monetary phenomenon, but depends on inflation inertia (π_{t-1}), inflation expectations (π_{t+1}^e), output gap (y_t^{gap}), real exchange rate gap (z_t^{gap}), and supply side shocks ε_t^π .

Equation (4) represents uncovered interest rate parity, where domestic interest rates (i_t) depend on expected changes in the nominal exchange rate (Δs_{t+1}^e), foreign interest rates (EURIBOR i_t^*), risk (u_t), and stochastic capital market shocks ε_t^s , in the framework of free cross-border movement of capital. In fact, this equation carries the effect of policy rate on the setting of nominal exchange rate.

Equation (5) provides a definition of the real exchange rate (z_t), with the following variables: nominal exchange rate (s_t), domestic prices (p_t , consumer price index) and foreign prices (p_t^* , CPI in Eurozone). All level values are expressed as logarithms.

Equation (6) is Fischer's equation for real interest rate (r_t), which depends on nominal interest rate (i_t) and expected inflation (π_{t+1}^e).

Equation (7) is obtained by differentiating relatively stable equation for money demand in a log-linear format, where M_t is the quantity of money in circulation at a point in time t , and μ_t is the money growth rate, P_t is the price level, and π_t is inflation, R_5 and R_6 are elasticity and semi-elasticity of income and interest rate, relative to money, respectively, i_t is the short-term interest rate, Δi_t is its change between two periods, and ε_t^μ is used to mark stochastic shocks affecting money demand.

Additionally, in comparison with the NBS model, our model is somewhat simpler, since it does not break down inflation into three categories (base inflation, controlled prices inflation, and fuels and food inflation).

The baseline forecast

Empirical calibration of the model is carried out using quarterly data between 2001Q1 and 2011Q3 for the Serbian economy, as well as on the Eurozone economy during the same period. Only the repo interest rate in Serbia covers a shorter timeline, as it was not introduced until 2006Q3. All other variables include complete data sets over the period. The model permits the computation of trend values for each variable separately, which means that shorter series for the NBS policy interest rate does not affect trend parameters of other variables.

One should notice that the GDP series recently provided by RSZ is a revised time series, which is adjusted to the EUROSTAT methodology, so some figures might not coincide with previously released data. Rates of growth for the first three quarters of 2011 are still estimated figures, subject to final revision. The original GDP series is normalized to 100 for 2005 as the base year. For this reason all other domestic and the EU series are similarly normalized.

As is always the case, any forecast is conditional and based on certain assumptions, and it is relevant insofar as the underlying assumptions are valid. In this particular case, assumptions relating to surrounding macroeconomic conditions in the Eurozone are vital. We have assumed the following:

- Positive output gap will prevail in the Eurozone in 2012 even if its magnitude will be rather modest, which is consistent with expectations that the average growth rate will be between 0.5% and 1%
- CPI in the Eurozone will be well above 2%, which is the ECB's target inflation rate, but we expect that this will slowly decline from the recent peak in October and November of 2011 and
- The ECB's refinancing rate will remain at 1%.

Of course, the said macroeconomic conditions can worsen during the course of the year. In addition to the baseline scenario, it is reasonable to take a worst case scenario into account. However, we will not report this in this paper, since we are focused on domestic policy options only. As far as the baseline scenario is concerned, we have assumed the following:

- The inflation targeting policy pursued by the NBS will continue, and the NBS will defend its position as an independent policy maker in relation to the Government
- Inflow of capital will be driven by differentials of domestic and foreign interest rates as assumed by the uncovered interest rate parity hypothesis
- It is also assumed that the sovereign debt rating, and generally speaking, the country's risk, will not deteriorate, which could have negative effects on interest rates and inflow of capital
- NBS's interventions on the foreign exchange market will be done only to remedy exchange rate volatility,

and not for the purpose of building up official reserves or managing real exchange rates

- As far as fiscal policy is concerned, we assume that the Government will obey fiscal rules and will not destabilize the money or credit markets.

Based on the above assumptions, the model generates a general equilibrium solution of the policy rate, which will reduce actual inflation to the target level in the medium term. The simulation starts at the beginning of the fourth quarter of 2011 and ends at the same quarter a year later. The forecast period comprises five quarters.

We have set target inflation at 4.5% at the end of adjustment period (the 4th quarter of 2012). Also, we have assumed that target inflation will slowly adjust to its final level. In that sense, the path of target inflation is shown as a smooth declining line in Figure 1.9. At the start of the simulation, long-term trend of prices, which describes the path of target inflation, was at 6.1%, while actual inflation was 10.3%. After five quarters, these two lines strongly converged, but did not cross. The simulation indicates that double digit inflation should have been dying out by the end of 2011, which actually happened. The path of reducing inflation rate is evident from the inspection of Figure 1.9.

Hence high inflation is not envisaged as a crucial problem for the Serbian economy in 2012. Instead, after a quick period of growth, the Serbian economy will fall back into recession once again. The baseline forecast is summarized in Figure 1.

- A rising long-term output trend broke at the end of 2011, and started to decline (Figure 1.1). Even before the breaking point it indicates a slowdown. The growth trend shows signs of weakness but continues to show positive rates of change. That tendency finally died out at the end of the previous year. At the same time, the output gap has widened, pouring cold water on the prospects of an easy recovery.
- We estimated that the GDP growth rate in the fourth quarter of 2011 was already negative in the range of – 0.9% (Figure 1.4). That gives the estimated annual growth rate of 1.4% instead of officially announced 2% in 2011. The short-term downward trend of output continues into 2012 and lasts for the first

three quarters. A zero growth rate finally emerged in the last quarter. The forecast average annual growth rate is in the range between -0.9% and -1%.

- Consistent with those forecasts is a flat path of the real exchange rate level, despite the presence of a declining long-term trend (Figure 1.2). Such a tendency indicates the existence of persistent pressure on the real appreciation of the domestic currency. That effect did not materialize this time, since the interaction of domestic and foreign prices, together with a weakening of the nominal exchange rate, did not result in real appreciation. Under slightly different circumstances this could easily happen.
- Figure 1.5 shows the y-o-y rates of real currency change. Positive value means currency depreciation, while negative value indicates currency appreciation. Real appreciation slowly diminishes and definitely ceases at the end of 2012.
- Due to declining inflation (Figure 1.9), the policy rate will also decline (1.3).
- However, the path of real interest rates is volatile with a clear cyclical pattern (Figure 1.8). After a

declining initial period, the real interest rate resumes its upward trend.

- The monetary policy index is presented in Figure 1.6. If it is positive, it indicates a tight monetary policy. In the opposite case, if it is negative, monetary policy is easing. The figure shows persistent but modest tightening of monetary policy in 2012.
- An alternative indicator of monetary policy stance is the level of real money balances, and its rate of change. Figure 1.7 plots the level of real money balances. After a short rise at the end of 2011, the real quantity of money goes down for the next two quarters. However, in the second half of the year it begins to rise again. Those figures illustrate glum expectations of aggregate demand, since the real money balance fairly well approximates the position of aggregate demand.

In the baseline forecast, a recession can reasonably be expected in 2012, and the monetary policy will not prevent this. Reducing inflation at any cost is the legal mandate of the monetary authority. Unless the law on the National Bank is changed, it is hard to complain about such a policy. Hence, all attention is focused on the new Government and its fiscal policy.

Figure 1: Model forecast for period 2011:4 – 2012:4, level variables 2005 = 100

Policy options

It has been evident for some time that there are numerous voices publicly calling for higher taxing on consumption and property rights. Since increasing the tax burden on property is politically delicate, an increase in VAT seems an easy alternative. A few countries in Europe have already done this, and hence such a policy will not be exceptional. Additionally, the IMF missions to the country reiterated this proposal several times, but the outgoing Government turned it down. If the VAT rate is now increased by 3% from 18% to 21%, this would not exceed the fiscal burden in many European countries. In that sense, it is possible to find comparative cases in order to support the argument.

Anticipated or unanticipated, a one-off increase in VAT rate will be an adverse supply shock to the Serbian economy. A shock of similar magnitude can be imagined if prices controlled by the Government are sharply increased in the first quarter of the year, as if this process is already taking place. Many other state-aid beneficiaries are also expecting the introduction of administrative taxes for protecting health, ecology or intellectual property rights. Hence, there are plenty of new tax initiatives. Common to all of them is a policy stance that fiscal consolidation should be effected mainly through the channel of fiscal revenue, since there is no option to make any tax and expenditure cuts in an election year. We can directly model this policy scenario by allowing a unitary supply shock to residuals in equation (3) and adjust the model for corresponding impulse response functions. Solutions are deviations around the steady state, which indicate paths of adjustment for all concerned model variables. It is important to note the pattern of adjustment, not its magnitude, since in reality these shocks might be of different sizes.

Additional state borrowing can be modelled indirectly by introducing appropriate shocks to the interest rate in equation (1). Public borrowing has two effects on the credit market. Firstly, it crowds out funds from the private sector. Many private companies are either heavily indebted already or have some non-performing loans or arrears to commercial banks. Lending funds to them is more costly than lending funds to the Government. Secondly, interest rates on treasury bills are higher than on repo operations.

The state is also heavily indebted and it can raise additional funds only if it offers higher rates on treasury bills.

It is highly likely that crude oil prices will rise, as a consequence of political instability in the Persian Gulf. If the Government does not reduce excise taxes on gasoline, another shock from foreign prices will materialize in the domestic market. We have not printed the corresponding foreign price equation and its residuals among model equations (1)-(7), but it has been included in the exercise.

If the fiscal policy is aimed at a reduction of the fiscal deficit by increasing fiscal revenue, and if it is combined with the monetary policy of inflation targeting as it was conducted in 2011, we obtain a policy scenario with the outcomes reported in Figure 2.1. We call it a pro-cyclical fiscal and monetary policy option. Impulse response functions are truncated to the first four quarters in order to highlight their immediate effects.

The reaction of the model to external fiscal and monetary shocks worsens the state of economy which is already in the stage of distress. The output gap has a tendency to increase by steering the output level out of the long-term steady state growth path. Cumulative output change is going down, or to put this in an alternative way, cumulative output losses are increasing. This is an indicator of welfare losses associated with the policy option. The interest rate slows down its speed of increase after the initial rise produced by combined shocks, and afterwards begins to decline. Inflation slightly increased, while the real exchange rate appreciated. Monetary policy index (Mps) has a positive value revealing a restrictive monetary policy stance. Real money balances declined (which was not presented in Figure 2.1 due to limited space). Monetary and fiscal shocks deepened the recession, and this was the rationale for calling this a policy mix a pro-cyclical option.

The second policy option calls for adjustments to fiscal policy, but leaves the monetary policy untouched. Less excessive public borrowing and some constraints on the fiscal revenue side, with a redesign of public expenditure channelling it in order to boost aggregate demand are key elements of the new policy package. Fiscal adjustments are simulated by adding short-term fiscal deficit shock $\varepsilon_t^{\text{gap}}$ to the previous set of shocks.

The effects of the new policy package are presented in Figure 2.2 and are labelled as an anti-cyclical fiscal policy and pro-cyclical monetary policy mix. There is no doubt that such a policy change might provide temporary relief from the immediate consequences of the economic crisis. Initially, this would push up GDP growth rates and produce the illusion that recession can be easily avoided. This will again create a public impression that “Serbia is doing better than its peers”. However, that impression will not last for long before growth rates turn red. Another episode of recession would take place, with a deeper fall in cumulative output. The inflation impact will be stronger than in the first policy case, and the monetary policy reactions will be more vigorous. The final decline in the real money balances will be deeper and the rate of real exchange rate appreciation will be higher. All macroeconomic variables will be pushed farther from the steady state path. Misalignment of monetary and fiscal policies will resemble the recovery pattern after the first recession episode. The economy will not resume a stable long-term growth path, and it will fluctuate around a level of prolonged stagnation.

The third policy option is presented in Figure 2.3. It is based on a coordinated fiscal and monetary anti-cyclical policy mix. There is no doubt that fiscal policy must include a reduction in unproductive public expenditure, and lessen pressure on public borrowing. That is one of the key factors in reducing high interest rates. Another factor has to do with fiscal and quasi-fiscal debts. The Government budget should settle its arrears to the private sector, which will in turn improve liquidity of the private sector, and even its solvency. Banks will benefit as well since provisions for bad loans will fall, along with interest rates. A review of price controls and public sector pricing policy is also essential. Fiscal consolidation is modelled through short-term and long-term fiscal deficit shocks ε_t^{qgap} and ε_t^{qnd} . Both shocks are parts of the corresponding fiscal deficit gap equation and fiscal deficit trend equation (which are not reported due to lack of space).

However, fiscal consolidation alone cannot avert the upcoming recession. Monetary policy should mitigate it, however. The quantity of real money is due to inflate due to some non-standard monetary operations. Monetizing fiscal debt by re-purchasing treasury bills at the longer

Figure 2: Three policy options, impulse response functions

Figure 2.1: Pro-cyclical fiscal and monetary policies

Figure 2.2: Anti-cyclical fiscal policy and pro-cyclical monetary policy

Figure 2.3: Anti-cyclical fiscal and monetary policies

terms is not appropriate in the present case. There is an alternative, increasing money supply by reducing mandatory banking foreign exchange reserves. Additionally, the NBS should monitor the real exchange rate, and reasonably depreciate it using foreign exchange interventions. This is the price to pay for boosting exports and realigning domestic and foreign interest rates. Monetary policy is to be realistically expansionary, at least until the real economy escapes from recession. Exposure to inflation pressure comes mainly from the supply side as Figure 2.3 demonstrates that rising GDP growth rates are compatible with declining inflation rates. The key is the lower real interest rates. On technical grounds, the new monetary policy is modelled using the residuals from equations (1) and (4) and ε_t^i and ε_t^s .

Recommendations

It is obvious that the best short-term policy option is based on coordinated fiscal consolidation and monetary expansion. However, even such a policy has its limits. If we stretch the simulation horizon in Figure 2 from 4 to 12 quarters, the cumulative output change becomes negative after eight quarters. In the long run, structural policy measures are, therefore, inevitable, pointing to a reduction of quasi-fiscal debts in the pension fund, other public funds and public enterprises, implementation of the new growth strategy based on export, domestic savings and investment, reduction in the country's risk, and improvements in the business climate. This is the only way to achieve sustainable growth in the long-run. In the

meantime, new elections are expected, followed by better coordination between fiscal and monetary authorities.

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