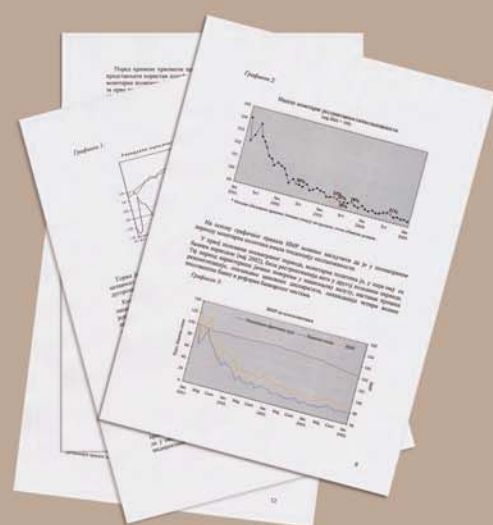


NATIONAL BANK OF SERBIA

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On Fiscal Policy Effects and Mechanisms in Serbia

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ON FISCAL POLICY EFFECTS AND MECHANISMS IN SERBIA

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* The views expressed in this paper are those of the author, and do not necessarily represent the views of the National Bank of Serbia.

Abstract

Theory has more than one answer to a question of how fiscal policy influences inflation. There are also more than one explanations of mechanisms through which this happens. On top of standard disagreements in literature, Serbia is in many ways specific in its fiscal policy at the moment, which makes the answer even more difficult to find. But one should find a way to credibly model inflation reactions to different fiscal policies, in order to be able to react to them appropriately. The goal therefore is to recognize the effects of fiscal policy, its transmission mechanisms, and to build a model which would reflect them and enable future predictions. This paper is a first step towards that goal.

KEY WORDS: FISCAL POLICY, MECHANISMS, EFFECTS, SERBIA.

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1. INTRODUCTION

When it comes to fiscal policy transmission mechanisms, contemporary literature can be divided into two general schools of thought. One theory, the neo-classical, claims that the expansionary fiscal policy decreases output and inflation. The mechanism of such influence is the following: government increases public debt, and in response to that, interest rates on public debt increase (due to increase of perceived default risk), which increases the market interest rates, which in turn decrease output and inflation. Other line of reasoning of this school explains that the expansionary fiscal policy, through increasing public debt, increases public expectations of future taxes, which in turn increases labor supply (because people want to work more to be able to pay for the future taxes), which in turn brings down real wages and consumption, and along with it activity and inflation¹.

New Keynesian school on the contrary explains that the increase in public spending increases demand, which in turn increases activity, i.e. output. This is a so called "crowding in" effect, and in my belief the one in effect in Serbia today².

And then there is "fiscal theory of price level", claiming that the fiscal policy (and not monetary policy) is determining the price level, so that it equates present value of its outstanding debt and future fiscal surpluses. In other words it is only the level of public debt, which determines the price level (i.e. inflation). One nice example of this theory would be the case of hyperinflation in Yugoslavia in 1993, when the government adjusted inflation to its financing needs through printing money. The "fiscal theory of price level" does not have printing money in mind, when it talks about equating present value of its outstanding debt and future fiscal surpluses, but the point is the same. It is however my opinion that this theory only works under specific conditions, like those in 1993.

Common grounds to all these theories is the proposition that the key point in fiscal policy transmission mechanism is most often public debt, a level of which determines the market interest rates, and sets the process of market adjusting in motion. Serbia however currently has a very low level of domestic debt which was generated recently, and a substantially higher level of debt which is inherited from the previous periods, and on which interest rates are not determined on the market, but by law. As the level of new public debt creation is negligible³, one can claim that the mechanism of fiscal policy transmission through money market interest is not active in Serbia at the moment (which does not mean it could not become active when the government starts using public debt more, as it announced in its memorandum of fiscal policy of the period of 2008 to 2010). One could also debate over influence of old debt (frozen foreign currency savings and debt to pensioners) on risk and hence the cost of public debt, but this is another issue. Here, we would like to see which other channel of fiscal policy transmission, if the public debt interest rates are not really of importance, might be in place in Serbia today?

Having in mind the size of public spending in Serbia today (with 2007. consolidated budget spending likely to reach 45% of GDP), it is possible that the state influences the economy by increasing the public demand with its spending. This could of course only be true if the state is not crowding out private consumption and investment (and its pressure on aggregate demand), which in turn would be true if the state had a source for its spending other than taxation.

By looking at the data we see that this is likely the case in Serbia, and that the Serbian budget indeed does have and spend substantial amounts stemming from sources other than taxation, in which way it creates extra pressure on aggregate demand and through it on prices. A discussion of these issues is organized in the paper as follows: section 2 reviews relationship between fiscal deficit and current account deficit, showing that the former causes an increase in the later, also looking at the problem of whether a fiscal deficit is the right measure of fiscal policy, section 3 reviews the relationship between the

¹ This line of reasoning can be found in a model developed by Baxter and Kind (1993).

² For a debate on new keynesian theory of fiscal policy transmission mechanisms see for example Pappa (2005) or Galí, López-Salido and Vallés (2005).

³ Total amount of outstanding government bonds with maturity of 3 months stands at about 1.5 dinar billion, while the level of government dinar deposits exceeds 100 billion, and fx deposits exceed USD 3 billion.

fiscal policy and inflation, indicating that the link is difficult to find, section 4 looks at the interest rates on government debt and in the money market, finding that although there seems to be a link between the government bonds rate and corresponding (3 months) money market rate, the volume of newly issued debt is still too low to influence the money market rates, and section 5 concludes.

2. FISCAL POLICY AND CURRENT ACCOUNT DEFICIT IN SERBIA

Theory recognizes a connection between fiscal deficit and current account deficit, calling a positive correlation between the two a “twin deficit” phenomenon. One can statistically prove the influence of budget deficit on current account deficit in Serbia, for the period since 2001. The results of a regression are given in a table bellow. The regression includes a dummy variable for fourth quarter of 2004, to account for the VAT introduction⁴, and a trend. Test statistics are not stellar, but given the sample they make a point.

Regression: current account deficit and fiscal deficit

Dependent Variable: Current account deficit (real)

Method: Least Squares

Sample: 2001:1 2007:3

Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Trend	-1402.789	97.59527	-14.37354	0.0000
Fiscal deficit (real)	0.352722	0.226148	1.559690	0.1319
Dummy 04/04	-38226.98	9300.568	-4.110178	0.0004
R-squared	0.708419	Mean dependent var	-25974.53	
Adjusted R-squared	0.684121	S.D. dependent var	16216.39	
S.E. of regression	9114.115	Akaike info criterion	21.17748	
Sum squared resid	1.99E+09	Schwarz criterion	21.32146	
Log likelihood	-282.8959	Durbin-Watson stat	1.757073	

However given that the fiscal deficit is only a matter of convention, and not an actual macroeconomic variable⁵, it is more useful to take into consideration a relationship between the capital account deficit and fiscal expenditures.

In this way one takes care of the possibility that the fiscal deficit may stem not from increased government spending (which could cause goods and services deficit if directed to imports directly, or indirectly - through personal consumption of budgetary beneficiaries), but from a fall in income (due to change in tax rates, or slowdown in activity for example).

Results of such a regression are given in a table bellow. Sign of the coefficient is negative as expenditures are entered with a positive sign, and current account deficit with negative. We also see that the test statistics are more reliable.

⁴ It is observed in practice that in periods preceding VAT introduction countries experience sharp increase in imports, and a subsequent fall of it thereafter. This comes because the businesses are trying to avoid typically higher tax burden on imported goods ones the VAT is introduced, coming from the fact that both VAT rate is usually higher then the sales tax rate that existed before its introduction, and because VAT usually offers fewer tax exemptions for the import of equipment and machinery. Such tendencies were clearly present in Serbia upon VAT introduction and hence the dummy variable.

⁵ For a debate on meaningfulness (or lack thereof) of fiscal deficit as a variable in macroeconomics see Green and Kotlikoff (2005).

Regression: current account deficit and fiscal expenditure

Dependent Variable: Current account deficit (real)

Method: Least Squares

Sample: 2001:1 2007:3

Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Fiscal expenditures (real)	-0.441650	0.097459	-4.531650	0.0001
Dummy 04/04	-30207.68	11306.06	-2.671814	0.0133
C	26430.17	11434.43	2.311455	0.0297
R-squared	0.585065	Mean depend var	-25974.53	
Adjusted R-squared	0.550487	S.D. dependent var	16216.39	
S.E. of regression	10872.40	Akaike info criterion	21.53028	
Sum squared resid	2.84E+09	Schwarz criterion	21.67426	
Log likelihood	-287.6588	F-statistic	16.92019	
Durbin-Watson stat	1.531473	Prob(F-statistic)	0.000026	

Introducing sluggishness (with a first order lag) in current account deficit improves test statistics somewhat, as we can see in the following table.

Regression: current account deficit (with inertia) and fiscal expenditure

Dependent Variable: Current account deficit (real)

Method: Least Squares

Sample: 2001:1 2007:3

Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CA deficit (real) (-1)	0.283198	0.134282	2.108980	0.0460
Fiscal expenditures (real)	-0.349608	0.101044	-3.459965	0.0021
Dummy 04/04	-36790.69	11023.32	-3.337534	0.0029
C	22932.37	10820.05	2.119433	0.0451
R-squared	0.652303	Mean depend var	-25974.53	
Adjusted R-squared	0.606952	S.D. dependent var	16216.39	
S.E. of regression	10166.63	Akaike info criterion	21.42756	
Sum squared resid	2.38E+09	Schwarz criterion	21.61954	
Log likelihood	-285.2721	F-statistic	14.38320	
Durbin-Watson stat	1.680434	Prob(F-statistic)	0.000017	

The goal of this exercise is not to model perfectly the movement of current account deficit (which obviously depends on factors other than public spending and deficit), but to point to a fact that an increase in public spending influences current account. Having concluded that part of the increase in public spending worsens current account, we turn to the other potential victim of increased spending and deficit – inflation.

3. FISCAL POLICY AND INFLATION IN SERBIA

When it comes to detecting an influence of fiscal policy on inflation, it is not a clean cut case. Inflation is not only another macroeconomic variable under more than one influence, but also a policy target, which makes it even harder to detect the influence of fiscal policy on it. What one can do is model the influence of fiscal variables on aggregate demand and inflation, in such a way that the model can produce credible results of changes in fiscal policy. This will be a subject of a separate paper, and here we review which measure of fiscal policy might be affecting the aggregate demand, and through it inflation.

Fiscal deficit is not only a debatable measure as such (as we already noted when talking about its relation to current account deficit) but also must not automatically mean pressure on aggregate demand and prices. Take for example a case where a large deficit is created and financed by domestic borrowing. If the debt is incurred by bonds issuance, it could almost have the same effect as if no deficit was created (since the funds that would be directed to savings by the citizens or companies buying the bonds, would be redrawn from consumption, same as it would be if these funds were taken away as taxes). Of course the long term effect of increased taxation and increased debt would not be the same, but as for the immediate influence on inflation it might even be the same in these two cases. For this reason fiscal deficit is not an adequate measure of effects of fiscal policy.

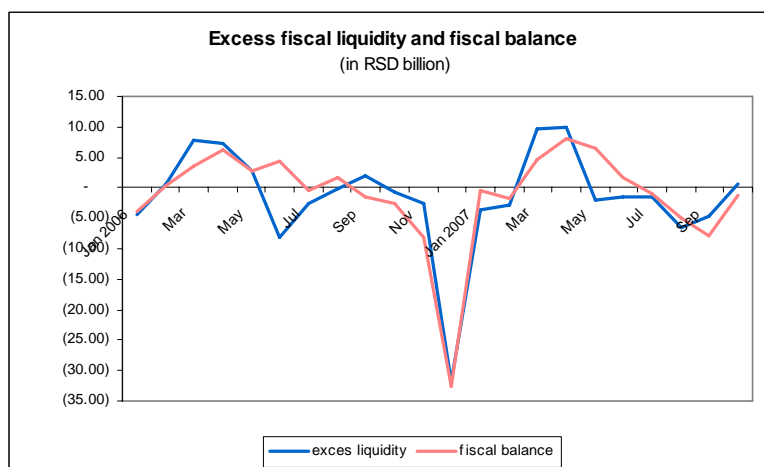
One approximation that might serve this purpose is something we might call an extra liquidity created by the government budget. It would consider all domestic spending (all spending excluding repayment of foreign debt), reduced by all income which is incurred domestically (i.e. all fiscal income other than foreign grants, plus all domestic borrowing except for borrowing from National Bank – as this type of borrowing at home is the only one that does not crowd out some other potential use of these funds).

In this way one would get the measure of funds that government placed in the economy, exceeding the funds it redrew from it.

Typical cases where this measure would differ greatly from fiscal deficit / surpluses, is the case where government would declare some foreign income as a regular budgetary income (a case like GSM licenses collected from abroad but declared as regular non tax income), or opposite cases where government would hypothetically pay large interest on foreign loans, which would count towards deficit, but would not really create any pressure on domestic demand.

In cases like this one, we would have a situation where large surpluses would be declared, but budget would actually exert pressure on demand and prices, or where a deficit would be declared, but there would actually be a contractionary effect of fiscal policy.

Table bellow presents excess liquidity and fiscal balance of the Republic of Serbia consolidated budget, from January 2006 to October 2007. We can see that in some periods budget balance, and excess liquidity budget is producing, do not match even in sign. In most pronounced cases in this example, like around June and July 2006, the reason for this are mostly the payments of frozen foreign currency deposits, which do not count towards budget deficit, but do create significant excess liquidity in the market (as they present direct transfers to citizens).



However due to a regime change (inflation targeting introduction), many shocks in the data (with country going through a transition), and a short timeframe of available data, one can hardly link these movements to inflation, even though there is every reason to believe that the link exists.

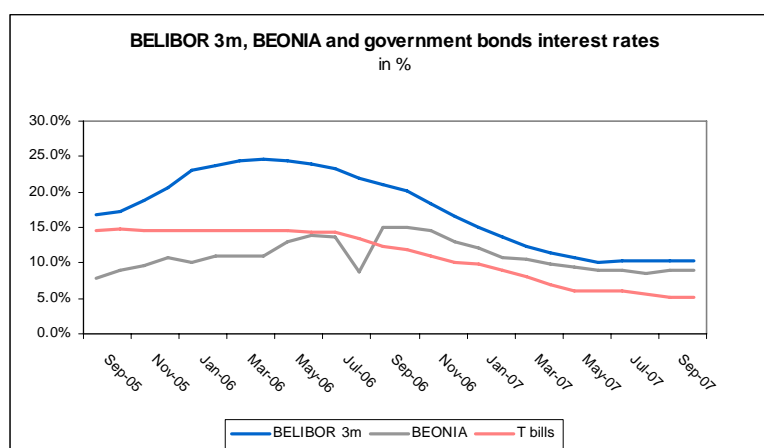
I do however expect that the link will show itself in the data, and that the modeling of fiscal policy pressure on inflation, through aggregate demand, will in time be possible.

Lets now go back to a link going through money market interest rates.

4. GOVERNMENT BONDS AND MONEY MARKET INTEREST RATES IN SERBIA

The following graph shows interest rate on government bonds, and two money market rates – 3 months BELIBOR and BEONIA. We can see that the movement of BEONIA and government bonds rate is completely unrelated, but that a 3 months BELIBOR and government bonds rate do seem to have a common factor of influence.

This however can be due to the fact that both rates (government bonds and 3m BELIBOR) are following movements of reference REPO rate, or that they are both adjusting to the falling inflation, which we will only be able to tell after a longer series of data is available.



Statistical analysis indicates a significant codependence of BELIBOR 3m and government bonds rate development, but the direction of influence is not straightforward, moreover there are more signs of BELIBOR influencing government bonds rate, than the other way around, although such tendencies could barely find support in economic theory.

The following three tables show results of two regressions, and a Granger causality test for the two variables. One should off course be cautious with these results as they are obtained from a very short sample, and the Durbin Watson statistic indicates auto correlation in residuals.

Regression: BELIBOR 3m and Government bonds rate

Dependent Variable: 1st diff BELIBOR
 Method: Least Squares
 Sample: 2005:09 2007:10
 Included observations: 26

Variable	Coefficient	Std. Error	t-Statistic	Prob.
@TREND	-0.000515	0.000228	-2.257858	0.0338
1 st diff G Bonds rate	1.102487	0.058801	18.74944	0.0000
C	0.008737	0.003500	2.495957	0.0202
R-squared	0.951914	Mean dependent var		0.003982
Adjusted R-squared	0.947733	S.D. dependent var		0.035239
S.E. of regression	0.008056	Akaike info criterion		-6.696552
Sum squared resid	0.001493	Schwarz criterion		-6.551387
Log likelihood	90.05517	F-statistic		227.6550
Durbin-Watson stat	0.920773	Prob(F-statistic)		0.000000

Regression: Government bonds rate and BELIBOR 3m

Dependent Variable: 1st diff G Bonds rate
 Method: Least Squares
 Sample: 2005:09 2007:10
 Included observations: 26

Variable	Coefficient	Std. Error	t-Statistic	Prob.
1 st diff BELIBOR	0.812083	0.041150	19.73462	0.0000
R-squared	0.939398	Mean dependent var		0.001988
Adjusted R-squared	0.939398	S.D. dependent var		0.029647
S.E. of regression	0.007298	Akaike info criterion		-6.964622
Sum squared resid	0.001332	Schwarz criterion		-6.916234
Log likelihood	91.54009	Durbin-Watson stat		0.840464

Granger causality test

Pairwise Granger Causality Tests
 Sample: 2005:09 2007:10
 Lags: 3

Null Hypothesis:	Obs	F-Statistic	Probability
GBonds does not Granger Cause BELIBOR	23	0.69789	0.56685
BELIBOR does not Granger Cause GBonds		2.67532	0.08224

Again, the goal of the exercise is not to model the movement of interest rates on the market, which is at the moment very difficult to do, but to indicate that there is a co-movement present, which indicates that the interest rates channel of fiscal policy transmission mechanism might work, once public debt becomes a tool, fiscal policy will use.

This will allow a much easier modeling of inflation reaction to fiscal policy, through introduction of government bonds rate as an exogenous variable, as opposed to introducing an excess liquidity created by the government.

5. CONCLUSION

Theory does not offer a unique position when it comes to effects of fiscal policy, nor when it comes to the transmission mechanisms of such effects. To make the matters more complicated, Serbian economy is going through a transition which makes many of its processes ambiguous. For example, government has high level of debt, but most of it is old debt (such as frozen foreign currency debt) which is regulated by law, and whose interest rates do not directly reflect its level. Also due to privatization process government has substantial funds at disposal, which often come from abroad, and influence economy differently than would the regular public income. On the other side, variables of interest for this analysis, like market interest rates and inflation, are also undergoing a process of adjustment, and hence exhibit movements that are not typical and well described in theory. For example government bonds interest rate is at the moment when this paper is written negative in real terms, and the market interest rates are recording a constant decline, which can not be explained by the decline in country risk alone (as the country rating was hardly changed in the observed period). Inflation itself is in the observed period, due to policy change, going through a transmission channel change, where the previously key transmission channel – exchange rate – is steadily losing its influence over it.

In such circumstances it is difficult to pinpoint an effect or a transmission channel of fiscal policy. What we can do, and what this paper hopefully did, is to point to relationships in macroeconomic variables in question, in order to identify most likely effects and most likely transmission channels in place.

Paper comes to a conclusion that it is evident that the fiscal policy is widening the current account deficit, at times when it produces deficits (or rather at times when it goes through periods of increased public spending).

It is not possible to empirically prove, but it is straightforward, that at times fiscal policy created excess liquidity in the economy, which exerted pressure on the aggregate demand and through it inflation. The open question here is how (or rather to what extent) inflation in Serbia reacts to excess demand at present, or some other factors are still in play (expectations, exchange rate development, monopoly etc.) If the connection between the inflation and aggregate demand could be established, then the link between the fiscal policy and inflation could be established by introducing the exogenous variable of excess liquidity fiscal policy is creating.

It is also evident in the data, though still not easily modeled, that there is a co-movement between the money market interest rates and the government bonds rate. Once this connection is clear (the intensity of dependence) one will be able to model fiscal policy influence on inflation through its influence on money market rates.

There is still a long way to go before these connections are made and empirically proven, but some signs along the road are visible.

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