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Russian fiscal policy during the financial  
crisis



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All opinions expressed are those of the authors and do not necessarily reflect the views of the Bank of Finland.

Alexey A. Ponomarenko<sup>1</sup> – Sergey A. Vlasov<sup>2</sup>

## Russian fiscal policy during the financial crisis<sup>3</sup>

### Abstract

This study examines the expanding role of fiscal policy at a time of financial crisis. It analyses the stimulative fiscal measures of the Russian government in 2008-2010 and compares these with similar actions taken in other countries. The risks and limitations associated with the development and implementation of the measures are analyzed. The macroeconomic effects of the fiscal policy measures are estimated using a structural vector autoregressive (SVAR) model, the fiscal multipliers are calculated, and factors influencing multiplier size are examined.

Key words: fiscal stimulus, fiscal sustainability, SVAR, fiscal multiplier, financial crisis, Russia.  
JEL classification: E62, H30, H60

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<sup>3</sup> The views expressed in this paper are those of the authors and do not necessarily reflect those of the Bank of Russia. We thank Aaron Mehrotra for his helpful comments and suggestions.

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## Russian fiscal policy during the financial crisis

### Tiivistelmä

Tutkimuksessa tarkastellaan finanssipolitiikan kasvavaa roolia talouskriisin aikana. Tutkimus analysoi Venäjän hallituksen finanssipoliittista elvytystä vuosina 2008–2010 ja vertaa sitä muiden maiden elvytystoimenpiteisiin. Elvytykseen liittyviä riskejä ja rajoitteita myös arvioidaan. Lisäksi finanssipolitiikan makrotaloudellisia vaikutuksia estimoidaan rakenteellisella vektoriautoregressiivisellä (SVAR) mallilla. Tähän kuuluu finanssipolitiikan kertoimien (fiscal multipliers) laskeminen. Tutkimuksessa arvioidaan myös kertoimien kokoon vaikuttavia tekijöitä.

Avainsanat: finanssipoliittinen elvytys, finanssipolitiikan kestävyys, SVAR, finanssipolitiikan kerroin, talouskriisi, Venäjä.

# 1 Introduction

During the world financial crisis the role of fiscal policy and fiscal measures as the primary means of stabilization were extensively reviewed. This was partly due to the substantial limitations on the effectiveness of stimulative monetary policy measures under conditions of uncertainty on the financial markets. Although the policy rates of many central banks were lowered to minimum levels, deterioration of monetary transmission mechanism due to destabilization of the financial system and increased risks in the real sector prevented the achievement of fully favourable results. In this situation many central banks resorted to unconventional monetary measures (see *Minegishi and Cournède (2010)* and *Ishi et al. (2009)* for a review). At the same time, many governments developed stimulative fiscal programmes, which included measures aimed at both financial market stabilization and support of aggregate demand.

Implementation of monetary policy in Russia was faced the same and sometimes even worse difficulties. Up to the start of the second half of 2008, under a tightly managed exchange rate regime, the main source of money growth in the Russian economy was the growth of the central bank's international reserves. In 2009 the role of net claims on government in money growth increased. It is assumed that later on, after a flexible exchange rate regime is put in place, the interest rate policy of the Central Bank of Russia (CBR) will have a greater impact. But at present, with seriously disfunctional financial markets, it seems unlikely that a change in interest rates effected by the CBR would have a substantial immediate influence on dynamics of monetary and credit aggregates or on aggregate demand. It would also seem that any attempt to stimulate the economy via currency depreciation would fail, for a number of reasons, including the huge volume of foreign-currency-denominated liabilities - amounting in 2008 to 30% of private nonfinancial sector share of GDP and 19% of banking sector share. In these circumstances, fiscal measures could play an important role in macroeconomic stabilization.

In this study we examine the growing role of fiscal policy during the financial crisis. Section 2 contains an analysis of Russian stimulative fiscal measures and some risks and restrictions associated with their implementation. We present a comparative analysis of Russian stimulative fiscal measures versus those of the countries from different regions of the world. Section 3 of the study presents quantitative estimations of macroeconomic effects of stimulative fiscal measures based on a structural vector autoregressive (SVAR) model and data on the Russian economy in

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2000-2007. We evaluate fiscal multipliers and examine the factors that affect their sizes and correspondingly determine the effectiveness of fiscal stimulus. Section 4 concludes.

## 2 Assessing the efficiency of stimulative fiscal measures

Under conditions of financial crisis many countries have developed fiscal stimulative measures. The measures differ greatly from country to country depending on the scale of crisis and on the opportunity of the country to worsen its budget balance, taking into account the problem of long run sustainability of public finances. The speed at which the fiscal measures are set in motion is determined by the supposed duration of financial crisis and the time needed to achieve the desired macroeconomic impact. The composition of fiscal stimulus depends on the aims of the government as well as on the comparative effectiveness of revenue and spending measures in stimulating domestic demand.

Historical experience provides evidence on various fiscal policies of varying effectiveness in dealing with severe financial crises. During the Great Depression of the 1930s in the USA, government fiscal measures were delayed, and this led to a deterioration of the economy. It became necessary to employ additional stimulative fiscal measures later on, to overcome the crisis. The fiscal actions of the Japanese authorities at the end of the 1990s, as asset prices plummeted, provided only temporary stability - not sufficient to achieve a sustained recovery. Meanwhile, prompt and sizeable stimulative measures by the Korean authorities enabled them to overcome the crisis without the need for more extensive fiscal measures (*Spilimbergo et al. (2008)*).

Thus it appears that the optimal fiscal package should meet certain requirements. It should be timely because of the immediate need for action, large enough, well diversified according to the impact of financial crisis on the national economy, as long lasting as the downturn, and adaptable to changing conditions. Moreover, the fiscal measures should be coordinated with antirecessionary policy of other countries and sustainable so as not to lead to a debt explosion. In particular, it should include the option to reverse the measures. Several countries such as Russia should also keep in mind the high volatility of capital flows and low ratings of public and private debt.

### 2.1 Russian stimulative fiscal measures in 2008-2010

The Russian government began to implement stimulative fiscal measures to struggle with crisis consequences in the second half of the year 2008.



In 2008 the fiscal stimulus amounted to 1.8% of GDP<sup>4</sup> and included:

- Transfers to strategic public companies and financial organizations for capitalization purposes (0.8% of GDP);
- Placing funds of National Wealth Fund (NWF) in Vnesheconombank (VEB) deposits for subsequent provision of long-term subordinate loans to Russian financial organizations (1.0% of GDP).

In 2009 the Russian government implemented both revenue and spending measures<sup>5</sup> amounting to 6.4% of GDP, as follows:

- Cutting taxes on private and corporate sectors of economy (2.0% of GDP);
- Transfer payments to those affected by the crisis categories of households and sectors of the economy (2.0% of GDP) as well as to the strategic public companies and financial organizations (1.4% of GDP);
- Budget spending on final consumption (0.4% of GDP);
- Provision of loans to financial organizations, mainly via the intermediation of VEB at the expense of NWF funds (0.6% of GDP).

In 2010 stimulative fiscal measures of the Russian government are expected to amount to 5.0% of GDP and will include:

- Temporary tax measures in 2010 by maintaining tariffs on insurance payments equal to the single social tax rate (although an increase of these tariffs was intended) as well as a continuation of stimulative tax measures introduced in the previous year (3.7% of GDP);
- Transfer payments to Eurasian Economic Community (EurAsEC) antirecessionary fund (0.3% of GDP), to strategic public corporations (0.2% of GDP) and subsidies to Russian companies and financial organizations (less than 0.1% of GDP);
- Budget spending on final consumption (less than 0.1% of GDP) and on capitalization of financial organizations using the mechanism of government bonds (OFZ) (0.2% of GDP);
- Investment spending (less than 0.1% of GDP);

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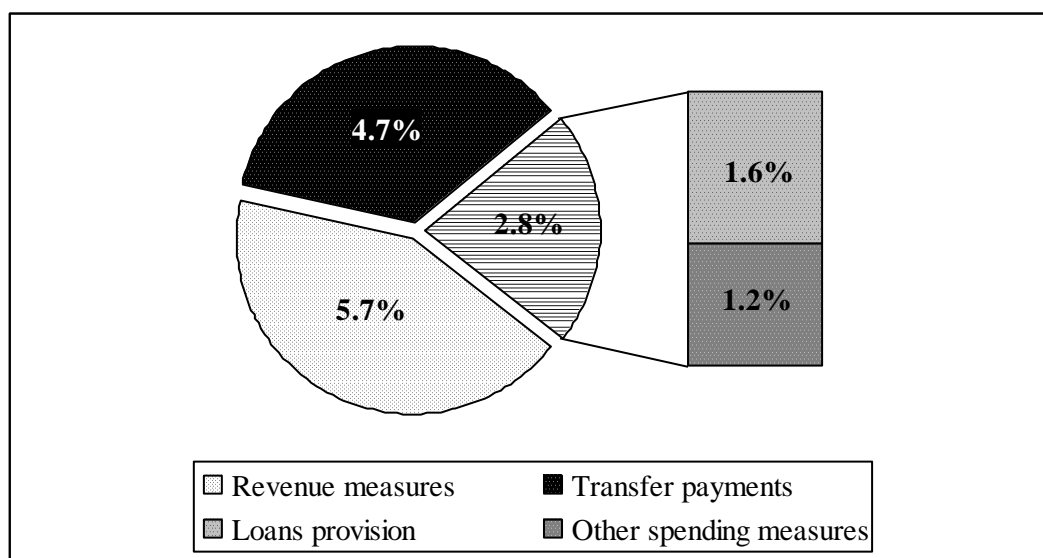
<sup>4</sup> In paragraphs 2.1.-2.2. we use estimations of GDP for 2008 to evaluate the size of stimulus. Although stimulative measures influenced the value of GDP in 2008 it is convenient to use this index to compare different countries.

<sup>5</sup> Although transfers are formally a part of government spending, taking into consideration their economic nature, they can be viewed as measures similar to tax cuts. Later in this study they are considered together with revenue measures.

- Reserved funds (0.5% of GDP).

Thus presumably, should all the projected measures be realized, the fiscal stimulative package of 2008-2010 could amount to 13.2% of GDP<sup>6</sup>, including 10.4% of GDP in revenue measures and 2.8% of GDP in spending measures (of which 1.6% of GDP for providing loans at the expense of NWF and budget funds; see Figure 1). It is important to keep in mind that in 2010 and the following years additional stimulative fiscal measures may be implemented depending on the scale of the impact of financial crisis on the Russian economy. At the same time, the Russian government is planning to work out a strategy of step-by-step coordinated exit from stimulative measures.

Figure 1. Composition of stimulative fiscal measures by the Russian government in 2008-2010 (% of 2008 GDP).



Sources: Ministry of Finance of Russia; The program of stimulative measures by the Russian government for 2009; Main directions of antirecessionary activity of the Russian government for 2010.

## 2.2 Comparative analysis of Russian stimulative fiscal measures

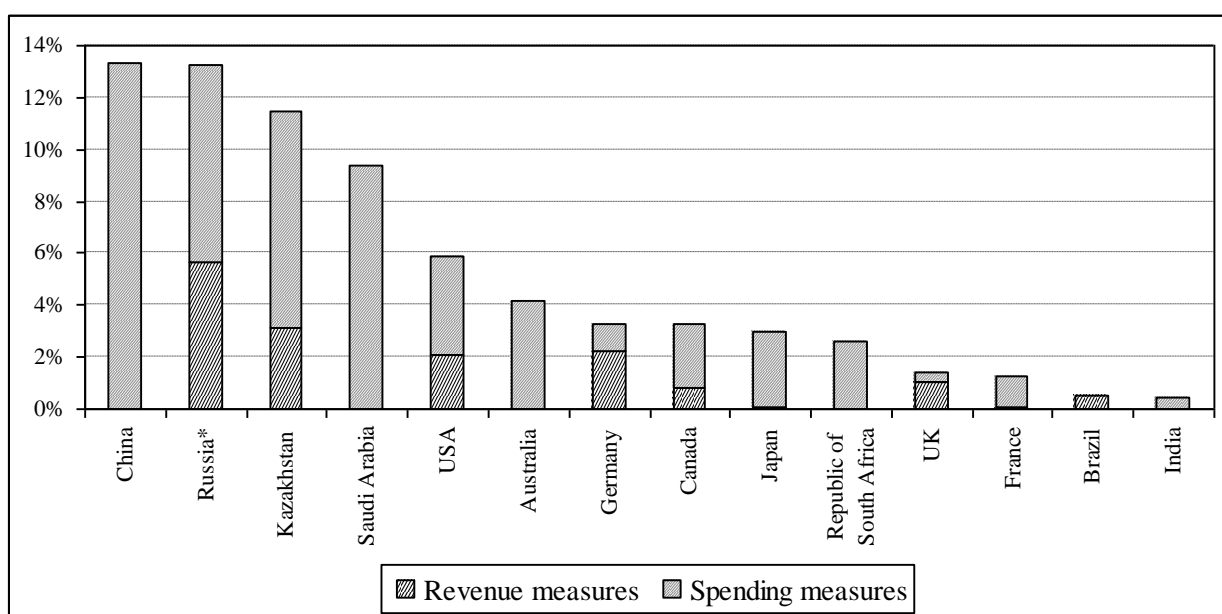
In this paragraph we present a comparative analysis of the size, composition and the speed of stimulative fiscal measures implemented by the Russian government and governments of several G20 countries. We also include Kazakhstan, one of the largest CIS economies.

The size of stimulative fiscal package as projected by the Russian government is one of the biggest, relative to GDP, in the countries reviewed in this study (see Figure 2). It is determined by

<sup>6</sup> It is noteworthy that implementation of stimulative measures is planned almost fully at the expense of federal budget funds. This should reduce the threat to long run sustainability of Russian regional budgets and extra budgetary funds.

the necessity to compensate the significant drop in aggregate demand, both domestic and external, in Russian production and to increase the stability of Russian financial markets given the substantial deterioration of borrowing conditions on the international and domestic markets. The scale of the stimulative package can be explained by the huge amounts available to the Russian government via the oil and gas funds held at the CBR. Large stimulative fiscal packages implemented by China, Kazakhstan and Saudi Arabia can also be explained by huge reserves obtained from exporting goods and commodities. Meanwhile, the stimulative fiscal packages of the European Union countries, which face tight fiscal restraints under the Maastricht treaty, are more moderate.

Figure 2 Comparison of size and composition of countries' stimulative fiscal measures (% of 2008 GDP).



\* For comparison, transfer payments are attributed to spending measures in this figure. But because of their importance in quantitative estimation of macroeconomic effects of Russian stimulative measures, we consider transfer payments together with revenue measures.

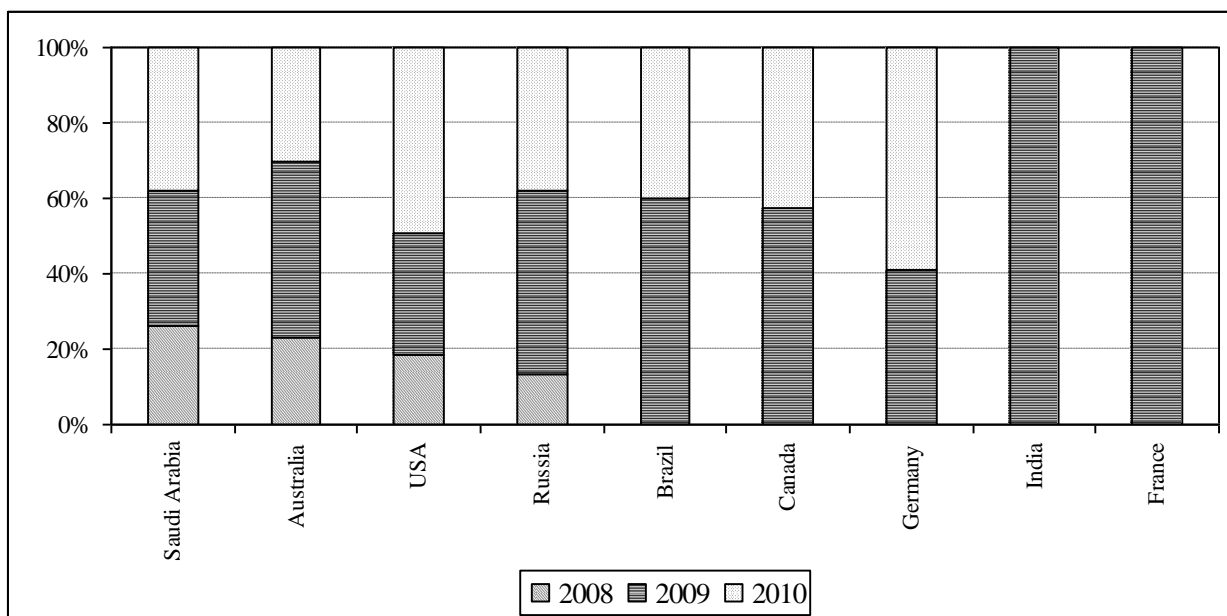
Sources: IMF, Eurostat, Reuters, Goldman Sachs, Trading Economics, Ministry of Finance of Russia, The programme of stimulative measures by the Russian government for 2009, Main directions of antirecessionary actions of the Russian government for 2010, *Nikolaev et al. (2009)*.

Spending measures are key to the stimulative fiscal packages of most of the countries (see Figure 2). In the packages of fourteen of the countries, the share of spending measures is on average a little less than three-fourths. Several countries, such as Brazil and the UK, rely more on revenue

measures. In the fiscal stimulus of the Russian government, the share of revenue measures is also larger: 78.7%, or 42.7% if transfer payments are included in spending).

Different governments use various periods for implementing fiscal stimulus, but the main part of the measures on average was realized in 2009 (see Figure 3). This can be explained by an attempt to support the economy in the most difficult period of financial crisis. The share of stimulative measures of the Russian government, which was realized in the year of 2009, is presumably 48.9%, and the respective shares for 2008 and 2010 are 13.4% and 37.7%. For 2010, most of the national authorities are planning to limit their fiscal stimuli. Several countries - in particular USA, Germany and China - are planning to realize the bulk of stimulus in 2010, probably reflecting the assumptions of the governments of longer crisis duration and correspondingly of the need for a longer period of government support. It is also noteworthy that some countries, including Russia, realized part of stimulative measures already in 2008.

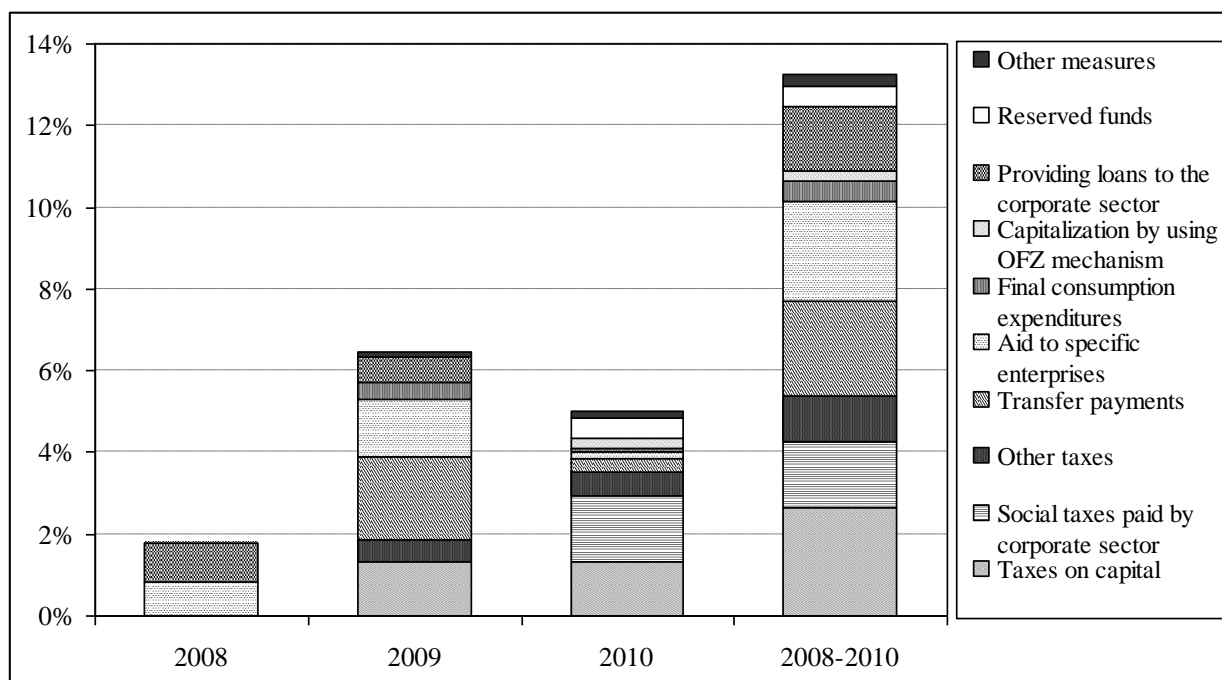
Figure 3 Comparison of temporal patterns of stimulative fiscal measures in 2008-2010, share of total package)



Sources: IMF, Eurostat, Reuters, Goldman Sachs, Trading Economics, Ministry of Finance of Russia, The program of stimulative measures by the Russian government for 2009, Main directions of antirecessionary activity of the Russian government for 2010.

Analysis of the realization of the fiscal stimulus package is essential for assessing its overall macroeconomic effect. Here we discuss the magnitudes of different types of stimulative fiscal measures by the Russian government (on the basis of approaches used by IMF experts in *Horton et al. (2009)*). Figure 4 presents Russian stimulative fiscal measures by type for 2008-2010.

Figure 4 Structure of Russian stimulative fiscal measures in 2008-2010, % of 2008 GDP



Sources: Ministry of Finance of Russia, The programme of stimulative measures by the Russian government for 2009, Main directions of antirecessionary activity of the Russian government for 2010.

Tax cuts constitute a substantial part of the fiscal stimulus package in Russia. These include cuts for capital tax (in the form of a profit tax cut), in export duties on fuel and energy, as well as a new payment procedure (included in “other tax” cuts in Figure 4) and a reduction in social taxes paid by corporate sector. The latter being implemented even though in recent years the balances of extra budgetary funds have been negative although the Russian government plans to stabilize them within the next few years (particularly via tax-rate increases).

No significant increases in spending on final consumption and investment are planned as part of fiscal stimulus. Furthermore, planned investment spending is being reduced substantially or postponed in exchange for expenditures that produce quicker impacts on economic activity and are easier to discontinue.

Transfer payments are also used extensively by the Russian government to overcome the crisis. Russian authorities had started to implement measures of support of strategic corporations of selected economic sectors such as military-industrial and banking spheres already in 2008. These includes financing of interest payments, granting additional subsidies and installment tax payment and capitalization. The latter is partially implemented by issuing government bonds as well as re-

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purchases of “bad assets”. For 2010, the Russian government intends to issue a substantial amount of OFZ in Russian financial organizations in exchange for voting shares. Loan provision, especially long-term, makes up a large part of Russian fiscal stimulus and is almost entirely financed at the expense of NWF funds. These types of discrete measures could potentially benefit from being better targeted and easier to reverse in the following years. At the same time, although these measures will obviously improve the financial health of the corporative sector, the overall macroeconomic effect is questionable and will be determined by the efficiency of their implementation.

On the whole the composition of fiscal stimulus package in Russia indicates the lack of measures that have unambiguous direct effects on aggregate demand, which obscures its overall macroeconomic effect. Yet this composition also means that most of measures (apart from tax cuts and certain transfer payments) can be relatively easily discontinued and therefore pose little risk to the sustainability of public finance.

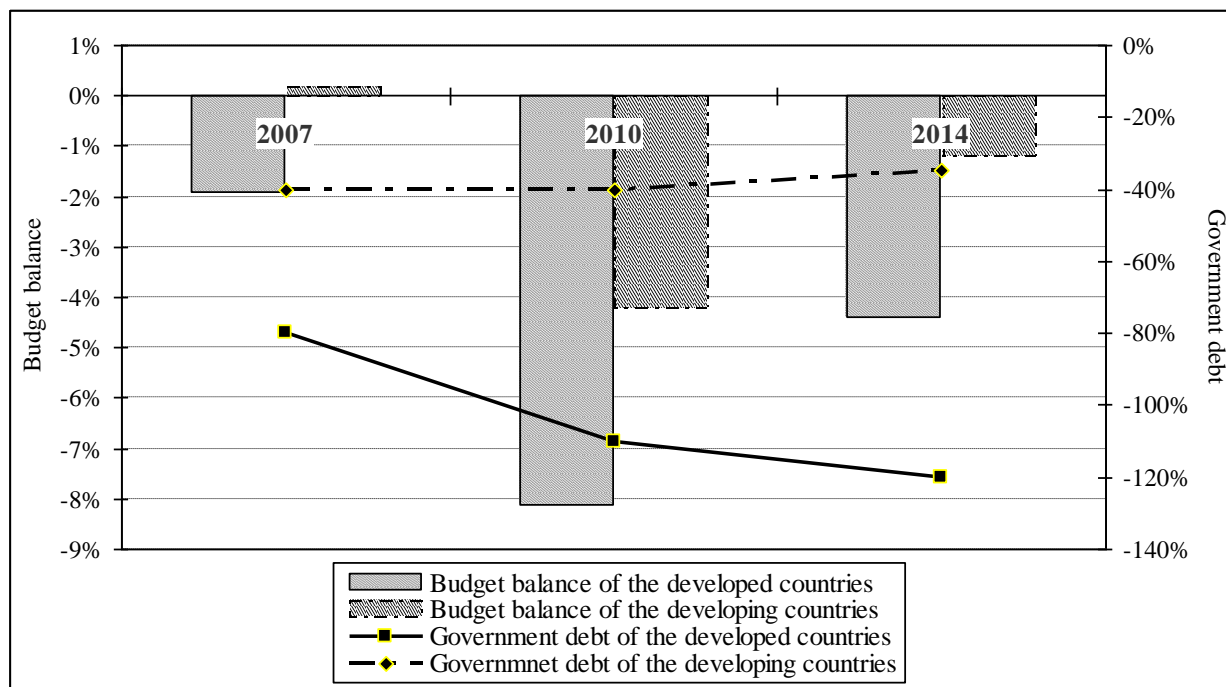
## 2.3 Common risks and limitations associated with realization of fiscal measures

A number of risks and limitations on implementation of stimulative fiscal packages related to size and composition are to be taken into account. It is important to compare desirable size of the package with the country’s ability to reduce its budget balance and the ensuing impact on long-run sustainability of public finances.

In order to reduce these risks, it is necessary to implement with caution tax cuts as well as increases in transfer payments and budget spending, especially wages and welfare payments. It may be inappropriate to make these changes on a continual basis. Moreover it is important not to extend fiscal measures of a short-term nature to the long run. For this it is useful to stipulate the period of validity of each type of measures (*IMF, 2009b*).

Authorities of most countries have implemented stimulative fiscal measures in the short run but have plans to tighten fiscal policy in the medium run in order to improve the sustainability of public finances. IMF experts suppose that deterioration of main budget indicators in developed countries would be larger than in developing countries (see Figure 5) (*Horton et al., 2009*).

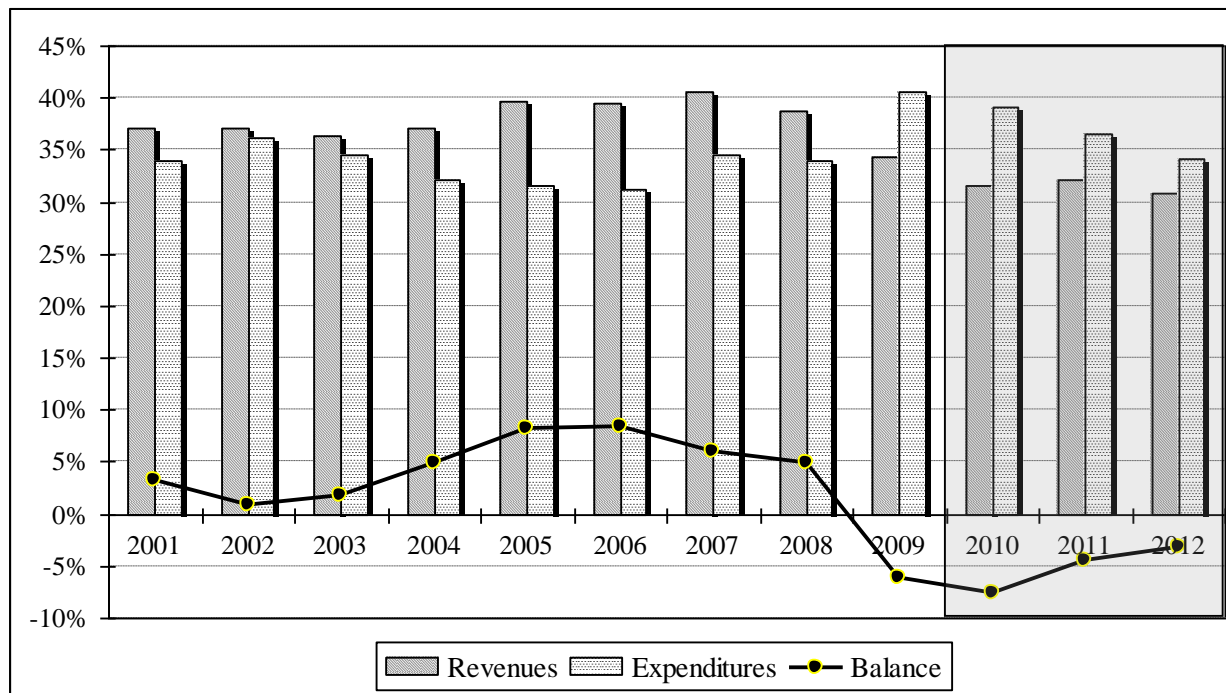
Figure 5. Budget balances (deficit (-) / profit (+)) and government debts of developed and developing countries in 2007 and as forecasted for 2010 and 2014, % of GDP



Source: Horton et al., 2009.

Following realization of the massive fiscal expansion and general deterioration of the macroeconomic environment, the issue of long term fiscal sustainability in Russia has also begun to come under scrutiny. The revenues of the federal budget and general budget have noticeably decreased, mainly because of the fall in oil and gas revenues. Additional decrease in revenues and the growth of budget spending measures are projected as part of the fiscal stimulus. This will lead to a large deficit, registered for the first time since 2000. In 2009 the deficit on the general budget reached 6.2% of GDP and was financed using of substantial part of the reserves as well as by increasing the internal public debt. On the other hand, Russia possesses considerable reserves in oil and gas funds as well as funds in national currency at the CBR. At the end of 2009, net CBR liabilities to general government amounted to 14.3% of GDP (of which the combined size of the two funds was 11.8% of GDP). This substantially exceeds the level of Russian general public debt (10.6% of GDP at the end of 2009). Moreover, in the medium run the Russian government is planning to tighten gradually its fiscal policy by decreasing the size of the deficit of federal budget to 1.0% of GDP (starting with 2013) as stated in the Budget Code of the Russian Federation. This could be achieved partly by means of a number of tax increases in 2010 (see Figure 6).

Figure 6. Main indicators of Russian budget system for 2001-2009 and forecasted to 2012, % of GDP



Source: Ministry of Finance of Russia, Treasury of Russia.

Although the growth of government borrowing for budget deficit financing will presumably lead to an increase in interest payments on the federal debt amounting to as much as 1.0% of GDP by 2012 (0.4% of GDP in 2008), the Russian public debt by the end of 2012 will amount to 15.4% of GDP and thus remain at a reasonably low level.

Thus not only in the short run but also in the medium run there is almost no threat to the sustainability of Russia's public finances, even with a large budget deficit. Although additional stimulative fiscal measures could be implemented should the financial crisis be elongated, that could worsen the sustainability of public finances in the long run.

### 3 Assessing the macroeconomic effects of stimulative fiscal measures

Analysis of the macroeconomic effects of fiscal policy is a central issue in modern macroeconomic modeling exercises. According to most relevant economic theories, expansionary fiscal policy positively affects aggregate demand and can thus be effectively used to stimulate economic growth. At the same time, the empirical findings regarding the macroeconomic effects of fiscal policy in differ-



ent countries and time vary considerably<sup>7</sup>. There is evidence of non-linear and even reverse effect of the fiscal policy changes (see *Giavazzi et al. (2000)* and *Alesina and Ardagna (1998)* for examples). It is therefore essential to understand the degree of uncertainty surrounding the quantitative outcome of fiscal stimulus measures. In our study we will try to estimate the macroeconomic effect of fiscal policy basing on pre-crisis historical data and will review the factors that may affect the performance of fiscal measure under the current circumstances.

### 3.1 Econometric approach and initial data

In recent macroeconomic studies several different approaches are used to estimate the macroeconomic effects of fiscal policy. These include case-by-case narrative studies, econometric modeling and construction of large scale general equilibrium models. Yet one of the most versatile, while not exactly free of criticism (see, for example, *Ramey (2009)*), and therefore applicable to both developed and emerging economies<sup>8</sup> methods is the SVAR model.

In our study we estimate SVAR using the identification scheme proposed by *Blanchard and Perotti (2002)*, which has since then become a benchmark specification of fiscal SVARs. The basic specification of the model is:

$$X_t = A(L)X_{t-1} + U_t \quad (1)$$

, where  $X_t \equiv [T, G, Y]'$  is a three-dimensional vector of government net revenues, government expenditures and output;  $A(L)$  is a lag polynomial;  $U_t \equiv [u_t^T, u_t^G, u_t^Y]$  is the corresponding vector of reduced form residuals. These residuals have little economic significance but can be presented as the linear combinations of mutually uncorrelated structural revenues, expenditures and output shocks ( $v_t$ ):

$$u_t^T = a_1 u_t^Y + a_2 v_t^G + v_t^T \quad (2)$$

$$u_t^G = b_1 u_t^Y + b_2 v_t^T + v_t^G \quad (3)$$

$$u_t^Y = c_1 u_t^T + c_2 u_t^G + v_t^Y \quad (4)$$

Equation (2) shows that unexpected movements in net revenues are a function of unexpected movements in output and structural shocks to government spending and net revenues. Equation (3) states that unexpected movements in government spending also derive from unexpected movements in output and structural shocks to net revenues and government spending. Finally, equa-

<sup>7</sup> See, for example, *Perotti (2005)* who finds that the macroeconomic effect of fiscal stimulus had decreased starting in the 1980s.

<sup>8</sup> See, for example *Sturm et al. (2009)* who use VAR model to assess the effectiveness of government investment in oil exporting countries, including Russia.

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tion (4) states that unexpected movements in output are related to unexpected movements in net revenues and government spending and to structural shocks to output.

The  $a_1$  coefficient, which gives the impact of output shock on government revenues, can be estimated on the basis of the institutional characteristics of the Russian tax system. Apart from social taxes, all Russian taxes are proportional flat-rate taxes. This means that in theory the tax base elasticity of tax revenues should be equal to unity. Some simple empirical exercises<sup>9</sup> can provide general confirmation of this assumption. We therefore set the  $a_1 = 1$  for the purposes of SVAR structural identification.

Following Blanchard and Perotti we set  $b_1 = 0$ , since the use of quarterly data virtually eliminates the possibility of immediate discretionary fiscal policy decisions made in response to output fluctuations. As regards the automatic fiscal stabilizers that could mechanically alter the government spending (such as various forms of social benefits), they can be considered negligible in Russia.

Thus, with  $a_1$  and  $b_1$  established,  $c_1$  and  $c_2$  may be estimated. We need however to make an assumption regarding the priorities of the government when it determines the size of revenues and expenditures and set  $a_2$  and  $b_2$  accordingly. We believe that it is more likely that (at least during the period 2000-2007) the government decided on the amount of revenues first and then determined the amount of expenditures. We therefore set  $a_2 = 0$  and estimate  $b_2$ , allowing for the revenues shocks to affect government spending but not vice versa.

We base our data choices on SNA instead of public finance statistics, since the former provide much more economically homogenous time series. We use taxes net of net transfers and subsidies as the government revenue variable (T) and interpolate the annual SNA data to get the quarterly dynamics proportionally using the public finance statistics indicator of general government revenues. The sum of government final consumption and government fixed capital investment was used as an indicator of government spending (G), which was also interpolated into quarterly dynamics using the public finance statistics indicator of general government expenditures. The base index of GDP was used as the third variable (Y). In addition to these variables, the indicator of oil prices in ruble terms<sup>10</sup> (OIL), which presumably had a significant influence on both public finance indicators and the economic growth, was added to the model as an exogenous variable. All indicators are

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<sup>9</sup> We compared the average growth rates of revenues from different taxes and the average growth rates of respective tax bases during the period 2000-2008 and found close matches in the majority of cases.

<sup>10</sup> See *Restrepo and Rincon (2006)* for an example of augmenting the fiscal SVAR for Chile and Columbia with terms of trade variable.

in logs, in real terms (deflated with GDP deflator) and seasonally adjusted with X-12. For the estimation, we used the time sample of 2000-2007.

Unit root tests indicate that the oil price variable may be considered as stationary in levels, the indicators of government revenues and government expenditures are trend-stationary, while the results for GDP are ambiguous. Based on these results and international experience, we decided to use the variables in levels and to add the deterministic linear trend and a constant to the SVAR, which is consistent with the specification initially proposed by Blanchard and Perotti.

Table 1 KPSS unit root tests results

<i>Variable</i>	<i>Test specification</i>	<i>LM-Statistic</i>
T	constant	0.485*
	constant and trend	0.143
G	constant	0.755*
	constant and trend	0.126
Y	constant	0.751*
	constant and trend	0.181**
OIL	constant	0.155
	constant and trend	0.154**

\* – rejection of the null of stationarity at 1%-level

\*\* – rejection of the null of stationarity at 5%-level

The number of lags in the model was set to 3. The information criteria prescribed longer lag length but increasing it beyond 3 caused the model's instability and the presence of unit roots in the model's autoregressive polynomials. Accordingly we decided to limit the lag length to 3 and ensure the adequate performance of the model. One lag of oil prices indicator was also added to the model.

### 3.2 Results of SVAR estimation

The estimates of contemporaneous coefficients of the SVAR model are presented in Table 2. The contemporaneous effects of fiscal policy on GDP are represented by  $c_1$  (the impact of revenues on GDP) and  $c_2$  (the impact of spending on GDP) coefficients. Both are positive and statistically significant. The positive effect of government spending on GDP is in line with the theoretical assumptions, while positive effect of government revenues is not. This unexpected result may be explained by the fact that during the reviewed (rather short) period both GDP and government revenues were growing rapidly. The government revenues growth however was mainly due to the commodities

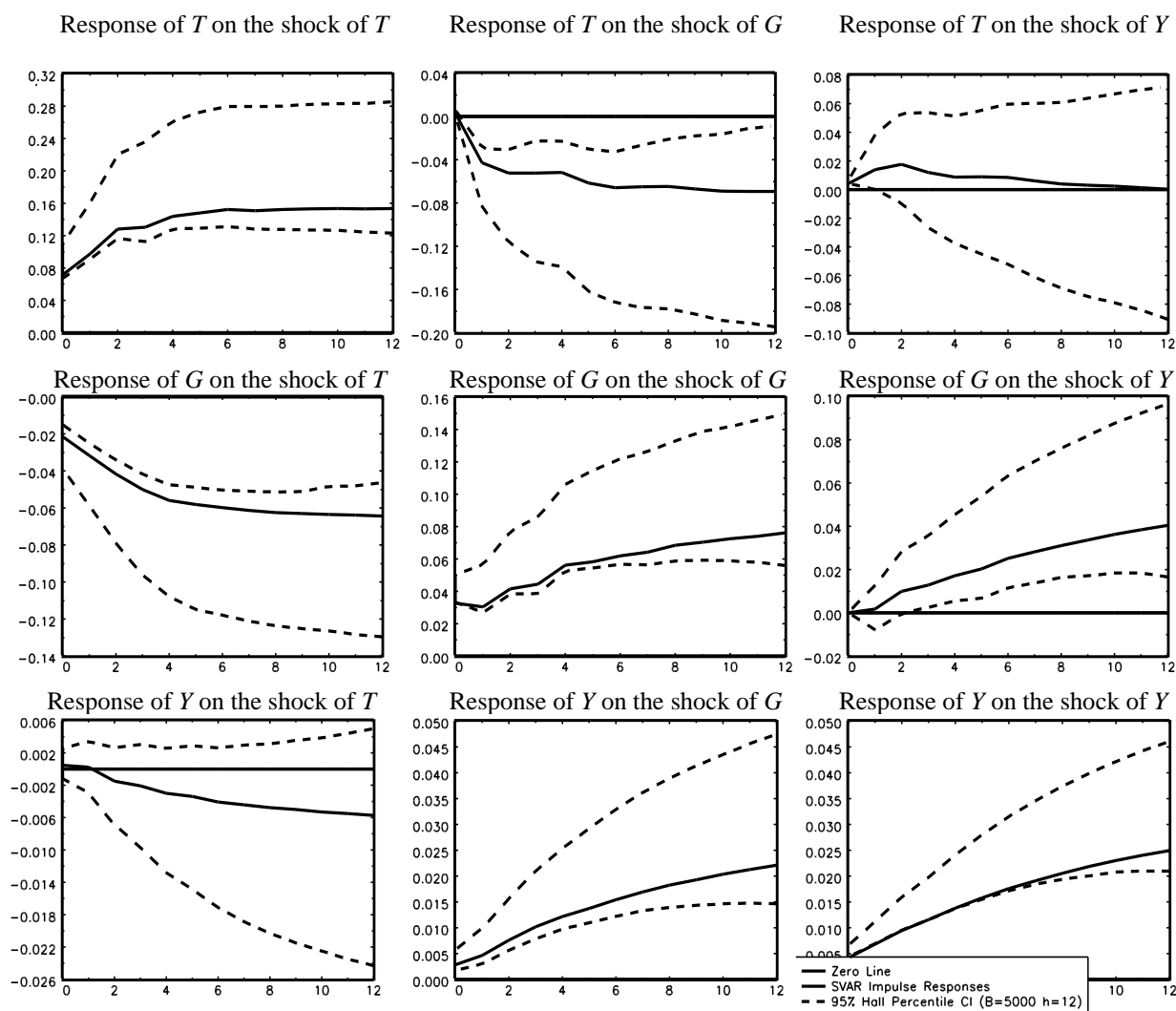
price growth (in fact the tax system was designed to automatically compensate these kinds of shocks). Therefore even with the indicator of oil prices included into the model it may difficult to empirically distinguish between the positive oil price effect and negative government revenues effect, since these two were occurring simultaneously and we have very little data to assess pure (i.e. not followed by the government revenues growth) oil price shock or pure (i.e. not caused by oil price fluctuations) tax shock. Yet we may conclude that we see no empirical evidence of any pronounced negative effect of government revenues shocks. Besides the contemporaneous effects of fiscal variables on GDP we also estimate the  $b_2$  coefficient that reflects the interrelationship between government revenues and expenditures. The estimated coefficient is negative meaning that the spending and tax shocks were codirectional (which may be relevant for meaningful fiscal stance changes, but may not be consistent with long run fiscal sustainability).

Table 2 Estimated contemporaneous coefficients

	$c_1$ (impact of revenues on GDP)	$c_2$ (impact of spending on GDP)	$b_2$ (impact of revenues on spending)
Coefficient estimation ( <i>z</i> - statistic)	0.032 (2.58)	0.083 (3.71)	-0.028 (-3.2)

In order to assess the overall dynamic impact of fiscal shocks on GDP we look at impulse response functions, with bootstrapped Hall 95% percentile confidence intervals (Figure 7). The estimated impulse responses are generally in line with theory. GDP declines in response to government revenues shock and increases after government expenditure shock and the overall impact of government expenditures is substantially larger than of government revenues. The responses of fiscal variables to GDP shocks are unclear signifying the absence of evident pro(counter-)cyclical fiscal policy, although the suggested model is not very well suited for assessing that matter.

Figure 7 Impulse responses

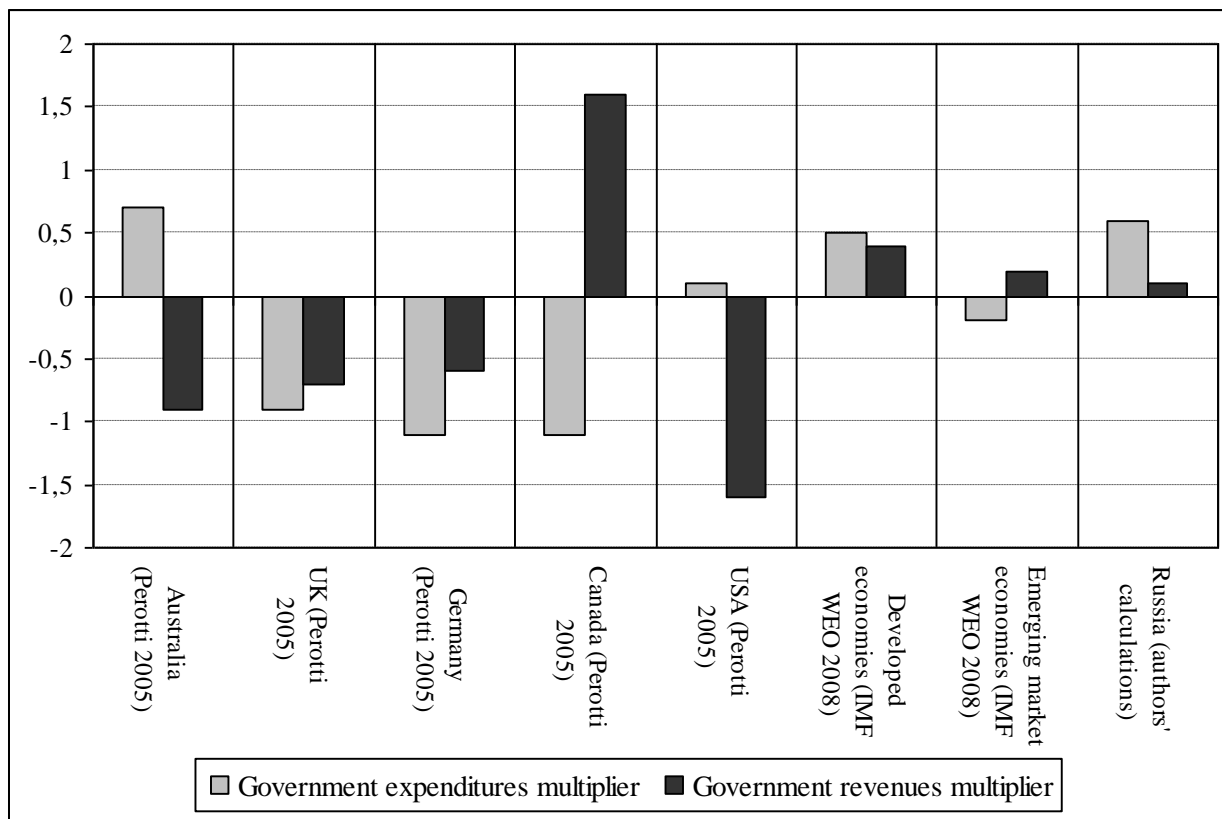


### 3.3 Assessment of values of fiscal multipliers for the Russian economy

In order to obtain the measure of the overall magnitude of fiscal policy effect we also estimate the absolute size of the macroeconomic impact and compare it with the respective indicators estimated for other economies. We use fiscal multipliers as a measure of the absolute value of the fiscal shocks' macroeconomic impact. The multiplier is defined as cumulative GDP growth in 3 years after the fiscal shock (which is government revenues decrease or government expenditures increase) relative to the size of the change of the fiscal variable. Basing on the estimated impulse responses the government revenues and government expenditures multipliers in Russia amounted to 0,1 and 0,6 respectively. These results may be compared with the estimates of fiscal multipliers given as a benchmark for developed and emerging market economies by the IMF (*IMF WEO, 2008*). The re-

sults obtained by *Perotti (2005)* for a number of developed economies<sup>11</sup> also reveal the scope of possible diversity in the fiscal multipliers estimates.

Figure 8 Fiscal multipliers



Thus, the estimated size of fiscal multipliers for Russia is generally in line with existing empirical studies. Both multipliers are positive, meaning that we could not find evidence of an adverse effect of fiscal expansions on output. At the same time, the fiscal multipliers are not very large (the revenues multiplier in particular, which may be due to tax revenue and oil price comovements, as discussed above, and should therefore be interpreted with caution), signifying the limited efficiency of fiscal policy in increasing real economic growth. Based on these estimates, we would expect that, should the whole projected stimulus package be realized, the induced effect on GDP growth would amount to 0.5-1% growth in 2009 and 1-1.5% in 2010. This supposition is generally in line with the *IMF (2009a)* estimates of world GDP growth of 0.8-3.2% in 2009 and 0.1-0.9% in 2010<sup>12</sup>.

The results obtained by means of econometric analysis and presented above reflect developments in 2000-2007. It is natural to expect that the dramatic changes in general macroeconomic

<sup>11</sup> We present the results obtained by Perotti on the time sample of 1980-2001.

<sup>12</sup> Fiscal multipliers used by IMF experts in these estimations were 0.3-0.6 for government revenues, 0.5-1.8 for government investments and 0.3-1.0 for other government expenditures.

conditions would influence the macroeconomic impact of fiscal policy. In these circumstances, the estimated multipliers should be used cautiously, and the factors that could affect them should also be taken into account.

The size of fiscal multiplier is to a large extent determined by various types of “leakages” (*Spilimbergo et al (2009)*), which can prevent the GDP increase from even matching the size of fiscal expansion (resulting in some fiscal multipliers of less than unity). It is possible to find a number of macroeconomic indicators determining the size of these leakages and to separate them into groups depending on the “leakage” type.

*Propensity to save.* Obviously, the larger the share of funds injected into the economy via fiscal expansion that is subsequently saved and not spent on consumption and investment, the smaller the macroeconomic effect of the fiscal measure. The impact of economic crisis on this indicator is ambiguous. On the one hand, the economic agents may, for precautionary reasons, increase their propensity to save, because of the greater uncertainty regarding future incomes. On the other hand, the propensity to save may decrease because of confidence regarding the future economic recovery and entirely rationale behavior or simply because of the necessity to maintain consumption at a hand-to-mouth level in conditions of declining welfare. The statistical data are more likely to confirm the former proposition (according to Rosstat, the propensity to save in the first three quarters of 2009 amounted to 13% compared to 7.2% in the first three quarters of 2008). This may reduce the effectiveness of fiscal stimulus. The process of financial wealth accumulation, not only in the household sector but also in NFC and banking sectors, may just as well impede the effectiveness of fiscal stimulus. In these circumstances, CBR actions aimed at reducing the yields of financial assets (including the lowering of interest rates and stabilization of foreign exchange rate) are essential.

*Propensity to import.* It is also clear that the spending of the funds provided by the fiscal expansion on imports would diminish the stimulating effect on the domestic economy. While in the pre-crisis period import growth rates were exceptionally high in Russia, they dropped sharply in 2009, one reason being ruble depreciation. We therefore assume that, under current circumstances, the leakages into import purchases will be smaller than in 2000-2007.

*Composition of public finance variables.* It is generally assumed that an increase in government expenditures (particularly government investment) would be the most effective stimulus, rather than tax cuts or transfers. Considering that government investment makes up only an insignificant part of the fiscal stimulus package as well as the government’s plans to reduce the budget deficit mainly at the expense of these types of expenditures, we would expect to see a reduction in

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the share of spending on final consumption and investment in the total volume of government expenditures. Although more precise targeting of the remaining expenditures may hopefully increase their efficiency, we conclude that generally the changes in the composition of public finance indicators will make direct macroeconomic stimulus more difficult to achieve.

*Inflation.* Another substantial “leakage”, which impedes efficient fiscal stimulus, is the transformation of aggregate growth not into real GDP but into prices growth. In this regard, current fiscal expansion could be expected to be rather efficient since it takes place in a much less inflationary environment and while the actual output is probably well beyond potential.

*Monetary conditions.* The interactions between fiscal and monetary policy may be extremely important and may determine the sizes of fiscal multipliers (see *Christiano et al. (2009)*). Fiscal expansion may only be effective if it is not followed by monetary tightening. The tightening may result from crowding out by increased government demand, either in the money markets via a rise in interest rates in connection with deficit financing, or in the goods and services markets (see *Ducoudré (2005)*). This however will occur only if the money supply is kept constant during the fiscal expansion. In the case of Russia, the sovereign funds will be the main sources of deficit financing (implying automatic increase of money supply) with no intent to rely much on the domestic money markets. Therefore we do not expect the fiscal expansion to trigger a tightening of monetary conditions.



## 4 Conclusions

The world financial crisis, which caused the dysfunction of financial markets, has substantially reduced the effectiveness of monetary policy. The necessity of adapting to new external conditions was an additional factor that impeded the financial intermediation by the Russian banking system and accordingly the effectiveness of monetary policy measures undertaken by the Central Bank of Russia. In this situation, the role of fiscal policy as an instrument of economic stimulation has increased notably. Large fiscal stimulus packages and consequent increases of budget deficits have come to play a major role in the macroeconomic policies of many countries.

Russian stimulative fiscal measures are large scale and, according to our estimation, are potentially among the most sizeable ones in the world. At the same time, because of substantial sovereign funds, a low level of public debt and apparent dedication to consequent gradual lowering of the budget deficit, we see no serious threat to sustainability of the Russian public finances in the medium run. The substantial part of fiscal stimulus consists of targeted transfer payments, such as financial aid to strategic public companies and financial organizations, which should contribute to financial stabilization of the private sector. These fiscal measures however do not stimulate aggregate demand unconditionally, and they include few components that influence the GDP indicator directly, such as investment spending and spending on final consumption. Moreover, according to projections by the Russian government, the share of this type of spending in total budget spending will be reduced during 2010-2012. This corresponds to the task of maintaining sustainability of public finances but reduces the effectiveness of government spending as an instrument of macroeconomic stimulation. Thus the fiscal stimulus package creates the necessary prerequisites for economic recovery but may not fully compensate for the decline in aggregate demand that occurred during the crisis. The effect of the proposed fiscal measures estimated based on the SVAR model are positive contributions to GDP growth of 0.5-1.0% in 2009 and 1.0-1.5% in 2010.

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