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Forecast Models of the RF Economic Development and Restrictions in Economic Policy
over
a Medium-Term Prospective

If one compares the situation, when for several years the international markets have been demonstrating high prices for oil and other energy carriers as opposed to the situation, when the oil prices are low, it will be noted that one of the main distinctive features characterizing the external conditions for implementing monetary, credit and exchange rate policies will be characterized by differences in the balances of payments and the equilibrium values of real exchange rate (that is, equilibrium from the point of view of balance of payments).

During the period of high prices for energy sources, an extensive capital inflow, based on high export revenues, results in strengthening of nominal exchange rate, growth of import and reduction of export. In other words, oil prices growth and surplus of trade balance contribute to strengthening of the real exchange rate, contributing to equilibrium of trade balance. Dynamics of capital flow balance also supports the above statements, and as a result, the real exchange rate is strengthened either due to domestic prices growth (under stable exchange rate), or stabilization of exchange rate. Here-with, in case of an upward breakthrough of external market, a higher value of equilibrium of real exchange rate versus the current rate is established and vice versa, a lower equilibrium value occurs under the external market downfall¹.

In our opinion, despite a seeming symmetry of situations, characterized by a decline or growth of oil prices, with regard to inflation and exchange rate fluctuations for population and their impact over economic growth, monetary and credit policy trends should be significantly different in the above situations.

Basing on certain assumptions², one can demonstrate that in the situation, when the energy sources prices in the external market are high, the most effective policy for Russia would be moderate (restrained) rates of rouble exchange policy in real terms with rather low inflation. In fact, this is a policy of one-way inflation targeting (with regard to restricted volume of foreign currency inflow and growing reserves with nominal exchange rate kept up at the same level), i.e., maintain-

¹ Basing on zero volatility of capital flows balance and exports from Russia at the real exchange rate and imports volatility with the real exchange rate accounting to 0.8–0.9, one can assess the rate, at which import will reach the volume, enough to cover the excessive foreign currency supply in the market (matching accumulated external reserves). Those simple assumptions help to define, that the nominal exchange rate to maintain the equilibrium trade balance (in case of a single rouble revaluation) made RUR 16–18 for USD 1 as of the end of 2006.

² See for ref.: Clark P.B., Logue D.E., Sweeney R.J. (1977). *The Effects of Exchange Rate Adjustments*. Washington, D.C.: U.S.; Morley S.A. (1992). *On the Effect of Devaluation During Stabilization Programs in LDCs // The Review of Economics and Statistics*. Vol. 74. Issue 1 (Feb., 1992). P. 21–27 etc.

ing the upper limit of yearly growth rates of prices preferably decreasing from year to year). The RF Central Bank policy in the external market depends on its capacity for sterilization of emission, resulting from maintaining the stable nominal exchange rate to ensure required real rouble rate growth in the situation of effective inflation. In the situation of downgrading energy sources prices, the effective measure of monetary and credit policy would be gradual, but rather fast decrease of nominal rouble rate to the values, ensuring the equilibrium balance of current account operations.

The situations with both, high and low prices for energy sources were observed within the past decades in the world market. High prices, noted in the late 1970-s and the beginning of 1980-s served for the stabilization of socialist regime, while an explicit downfall of the world prices in 1985–1988-s was a major factor of budget crisis, which has caused the breakdown of the Soviet Union³. A similar downfall of the world prices for energy sources played a significant role in development of financial crisis of 1998 in Russia.

A case study of the 1998 financial crisis can be reviewed as an example of unfavorable prices for energy sources in the external market.

The basic grounds for financial crisis, happened in summer 1998, can be categorized as fundamental factors and external shocks⁴. The fundamental factors that caused the crisis were created by the national policy of financial stabilization, pursued by the country, characterized by rigid monetary and soft budgetary measures. Quasi-fixed exchange rate of foreign currency under conditions of high inflation brought up the growth of real rouble rate, extended imports and deterioration of balance of payments. High level of budget deficit (5–8 per cent of GDP in 1995–1998) caused the high rates of government debt growth. By the year of 1998 the total debt burden accounted to nearly 50 per cent of GDP. That indicator is not so high as it is, but the domestic debt was made in the form of short-term “GKO” (state treasury bills), and the amount required monthly only for redemption of the issued GKO, have reached 10–15 per cent of monthly GDP by the first half-year of 1998.

The situation was aggravated by the external shocks: downgrading of the world market prices for energy sources, outflow of short-term capital investments from the financial markets of developing countries and transition economies, which made the financial crisis inevitable⁵. The crisis, which has reached its peak in August 1998, was characterized by the stock market downfall, banks' collapse and deficiency of external resources. Measures were taken on introduction of a flexible rouble exchange rate, three-month moratorium on redemption of the Russian banks' external debts and mandatory restructuring of GKO-OFZ liabilities. Three-fold rouble devaluation took place, and inflation rate jumped up to nearly 40 per cent in September 1998.

³ For detail of the financial and budget crisis mechanism in the USSR at the end of 1980s, see “The Empire Breakdown. Lessons for Modern Russia”, E.T. Gaydar. – M.: ROSSPEN, 2006.

⁴ Economy of Transitional Period. Outline of Economic Policy in Post-Communist Russia. 1998–2002. – M.: Delo, 2003, PP. 29–86.

⁵ Materials of Scientific Conference “Financial Crisis: Background and Consequences”. – Series “Research Works”, No. 18P. – M.: IET, 2000.

The government, headed by the Prime Minister Mr. E. Primakov, despite populist approaches, was pursuing a restrained monetary and credit policy, which allowed to stabilize the situation by the end of the year. A vast-scale rouble devaluation, which brought up the national currency exchange rate to the level of 1994, has ensured equilibrium of external trade balance and served as a basic factor of economic growth, started at the end of 1998. Nevertheless, reviewing the background of transfer to the economic growth in Russia, one should not forget the successful developments, achieved by 1997 in the sphere of financial institutions: liberalization of economy, privatization, monetary and budget stabilization and finalization of economic stagnation of transitional decay⁶. An important role played also the commenced growth of oil prices in the world market.

Rouble devaluation acted as a measure of social support to the domestic producers, which has reduced the competition of the imported goods and stimulated national production⁷. All other conditions being equal, devaluation has increased relative price of imported goods, shifting the economy to the equilibrium balance, characterized by lower welfare level with a reduced share of imported goods in the total consumption volume. The aggregate effect of lower consumption level for domestic and imported goods in the background of relative prices dynamics was formed under the influence of import restructuring and income factors (together with income dynamics, based on the changes in the structure of relative prices, a noticeable impact on the demand was provided by reduction of income, caused by the crisis).

The effect of restructuring significantly differed as per economic sectors, depending on volatility of consumption, preference in favor of imported goods, capacity for prompt regulation of import volume and extension of domestic production. One can assume that rouble devaluation in 1998 caused a transfer to consumption of competitive domestic goods (with no return to preference of imported commodities), which was kept up in the consequent years in the background of rouble strengthening in real terms. Russian economy, with its technologies and labor sources, was capable to produce a wide assortment of goods, the demand for which was almost totally covered by import. One should note, that against a considerable share of natural resources in the total export volume and favorable situation in the external market, the real exchange rate provides an insignificant impact on the exports, and restructuring is observed primarily in the domestic market. The experience of the 1998th has demonstrated that an intensive import consumption restructuring was taking place in the background of a sharp downfall of real exchange rate.

⁶ Economy of Transitional Period. Outline of Economic Policy in Post-Communist Russia 1998–2002. – M.: Delo, 2003, PP. 114–128; R. Entov, O. Lugovoy, E. Astafyeva, V. Bessonov, I. Voskoboynikov, M. Turuntseva, D. Nekipelov “Factors of Economic Growth of the Russian Economy” – Series “Research Works”, No. 70P, M.: IET, 2004.

⁷ O. Dynnikova. “Macroeconomic Perspective of Rouble Strengthening and Foreign Currency Policy // Instruments of Macroeconomic Policy for Russia” – M, 2000; O. Dynnikova “Is a Weak Ruble a Key Factor of Economic Growth? // Banking Business. – 2002. No. 1. P. Kadochnikov, S. Sinelnikov-Murylev, S. Chetverikov “Imports Restructuring in the Russian Federation in 1998–2002”, M., 2003.

Therefore, basing on the Russian experience of economic development after the financial crisis of 1998, we come to conclusion, that in the conditions of aggravated external market situation, the reaction of financial authorities should be different from the policy, pursued in favorable market conditions. Herewith we will demonstrate, that under favorable trading conditions there is no reason to use the nominal exchange rate for trading balance compensation., firstly, due to desirability to maintain a decreased real exchange rate, and secondly, to avoid excessive reaction of the nominal exchange rate to the external shocks.

In line with the analysis of the effect of import restructuring, the assessment of exchange rate upward/downward trends should take into account, that those trends have other consequences, including import restructuring due to the changes in relative prices and real income of consumers, variable rates of external debt services, different export revenues, changes in the bank interest rates, depending on the currency of deposits, etc. Among basic negative impacts of national currency devaluation one should mention accelerated inflation, caused by higher prices for imported goods, lower level of welfare of the individuals, who keep their savings in national currency; pessimistic expectations of further rouble exchange rate downgrading on the part of both, domestic and external investors, which might provoke extended demand for foreign currency and capital outflow from the country.

Moreover, one should take into regard that devaluation could be blocked by political measures, taken by high-rank officials, whose career is brought up at risk in that situation. Whereas in the period of financial crisis the state of external reserves could not restrain a transfer to the floating currency rate, in the situation of considerable currency reserves, accumulated during favorable external market conditions, financial authorities can for some time maintain (or prevent from downfall) the nominal exchange rate of national currency. Nevertheless, it should be pointed out, that vast-scale sales of foreign currency, arranged by the Central Bank (for the purpose of gradual devaluation or maintenance of stable rate of national currency, rather than an abrupt downfall), leads to reduction of the monetary base, followed by relevant depression tendencies in the economy, caused by the monetary supply deficiency, and to the crisis of financial system in general.

In view of the above considerations, one can come to conclusion that in unfavorable conditions of external trade a reasonable policy would be an accelerated downgrading of rouble nominal exchange rate (with due regard to political restrictions and a “margin”, serving as a reserve for its growth under the conditions of further cyclic growth of prices for energy carriers. Political feasibility of such model can be ensured by gradual and predictable rate of devaluation (in case that rate is denounced in advance) with the help of foreign currency interventions, made by the Central Bank to support the rouble rate, gradually decreased in the course of time.

The situation with high energy sources prices is observed currently in the Russian market, where there is a tendency to rouble strengthening, which can be beneficial to equilibrium of payment balance. However, the Central Bank is restraining this process with the help of foreign currency interventions, increasing foreign currency reserves and money supply as a result. Whereas there are no effective mechanisms of sterilization of interventions, implemented by the Central Bank, the

inflation is restraining the process of rouble strengthening in real terms.

Equilibrium of current account operations could have been reached by strengthening of nominal rouble rate in case the Central Bank would have canceled or reduced the interventions to the amount, insufficient for maintenance of a stable nominal exchange rate. The above options of the simple model of equilibrium of current account operations provide similar results in the background of dynamics of exchange rate in real terms, though detailed analysis reveals a noticeable difference between those options.

In case the nominal exchange rate is used as an instrument of adaptation to the new economic situation, is hindered by the excessive reaction of exchange rate to external changes, as well as potential negative pressure on rouble rate on the part of external participants of foreign currency market⁸. As a result, in the background of floating RUR exchange rate dynamics of the external trade markets can lead to immediate drastic changes in relative prices and competitive capacity of domestic producers, exceeding the values, required for equilibrium.

If the Central Bank restrains the nominal exchange rate volatility with the help of foreign currency interventions, the trend of real exchange rate to shift to equilibrium can be implemented gradually. In this case high competitive potential of economy involves high growth rates in the periods, when the real exchange rate is getting close to equilibrium. As a result, one can expect that when the real exchange rate comes up to equilibrium value, the economy will reach the peak level (in terms of GDP share per capita). In its turn, it will form an additional demand for transactions with real cash balances, resulting in the background of low inflation to the reduced equilibrium of real exchange rate, than in case of immediate nominal devaluation.

Considering the option of restraining the nominal exchange rate and strengthening of real exchange rate (with regard to inflation) as the most reasonable one, we proceed from the assumption that currently the reduced RUR real exchange rate makes for sustainable economic growth, as compared with the value, ensuring the trade balance equilibrium. Under conditions of pronounced strengthening and maintenance of national currency rate, the majority of businesses, not involved in highly-effective resource exports (under current business indicators), might become uncompetitive. As a result, the economy will be specialized in mineral resources extraction and primary processing (similar processes were observed in Netherlands upon discovery of Slokhteren natural gas deposits in 1960s). The policy, which does not provide countermeasures against displacement of domestic production, processing industries, agriculture and other sectors, when rapid price

⁸ The "marginal" effect in R. Dornbusch's basic model (under conditions of open economy, in the absence of necessary flexibility of prices in the short-term prospect) is associated with the established equilibrium in the monetary market, while the interest rate is being changed, due to the inflow/outflow of capital, which affects the nominal rate, results in the external equilibrium in the changed competitiveness of economy. Herewith, the rate has an excessive trend at the beginning of the process, but in view of further income changes the exchange rate rolls back. As a result, a new equilibrium value is established, equal to the previous one in real terms. Ref.:Dornbusch, R., Expectations and Exchange Rate Dynamics, The Journal of Political Economy, Vol. 84, No. 6. (Dec., 1976), pp. 1161–1176.

growth in the sector of non-trading production is happening, can not be regarded as reasonable on in the conditions of high volatility of the world markets of natural resources and limited economic resources thereof.

The necessity to pursue a restrained budget policy in the background of favorable external market situation is commonly recognized in both, highly industrialized and developing countries. Thus, within 2002–2005, in such countries as Algeria, Azerbaijan, Bahrain, Iran, Kazakstan, Kuwait, Libya, Oman, Catarrh, Saudi Arabia, United Arab Emirates the share of government oil revenues in the total to non-oil GDP has grown from 41 per cent to 81 per cent by average. At the same time, government expenditures have been raised from 56 per cent of non-oil GDP to 63 per cent. On average, only 26 per cent of surplus revenues were addressed to the current needs, 74 per cent were reserved (45 per cent were spent for acquisition of financial assets, 29 per cent – for recovery of external debts). As a result, the budget surplus has grown in those countries from 2 per cent of GDP in 2002 to nearly 15.5 per cent in 2005 on average⁹.

The growth of non-interest budget expenditures in the conditions of extremely favorable external market situation for the Russian export creates a threat of serious socio-political disturbances in case of oil prices decline. Understanding of this threat has brought Russia to creation of Stabilization Fund (starting from the budget year of 2004), serving as a mechanism of restriction of budget expenditures excessive growth in the periods of high world prices for energy sources. The assessment of budget expenditure portion was made on the assumption that the budget revenues will be equal to the level of an average long-term level of oil prices (USD 18–20 per barrel for URALS). In this case LUKOIL surplus budget expenditures are regarded as temporary ones, caused by favorable external market situation, and are addressed to the Stabilization Fund. The assets of the Fund can be used for compensation of reduced tax proceeds of the federal budget under conditions of downfall of oil prices and for financing of non-interest expenditures and external debt redemption in the periods of peak pressure of the debt burden on the budget.

Until current time the Russian government was pursuing the policy of strengthening the stabilization of the budget system and would not accept the offers for expansion of non-interest expenditures in the situation of revenues growth. However, it looks that extremely favorable external market situation is maintained for a too long period, creating an illusion of further maintenance of high oil prices and high budget revenues in the long-term prospective.

However, an analysis of oil prices within the preceding 20 years shows that those prices are rather unstable, and there is no expressed trend of one-way dynamics. The statistical analysis of oil prices within a certain period of time demonstrates their instability, and mathematical estimates (average values) and dispersion (deviation from average values) of oil prices are being changed with time. Sustained oil prices at the level exceeding an average long-term values for quite a long time (about four years) is supporting the theory of strengthening the volatility of prices from year to year. As one can see from the experience, the prices for energy sources tend to decrease, whereas the financial agents come to understanding

⁹ Regional economic outlook. September 2005, IMF, pp. 19–20.

that the high level of prices is set up for a long term, and basing on that idea, they review their investment plans, addressing extra resources to extended extraction of energy sources and energy saving policy.

In such situation one can expect in future a dramatic and long-term downgrading of oil prices (at least USD 15 per barrel in stable dollars). Lower prices are hardly reachable in the nearest 5–10 years due to the growing demand for oil and oil products on the part of China and India). Apparently, the federal budget revenues will be reduced in the background of oil prices downgrading, Russian oil fields exhaustion and higher costs for oil extraction from the new and hardly accessible oil wells.

Despite the forecasts of international centers for oil market investigations, which do not expect a drastic downfall of oil prices, one can not completely ignore such a possibility. An extra threat to the stability in the budget sphere and in socio-economic situation in general is added by an opportunity of price downfall at the end of 2007–2008, coinciding in time with the new political and economic development cycle in the RF. It is evident, that in the pre-election period the Russian government will not be able to cut down the non-interest expenditures, increased in the period of high oil prices. Under those circumstances Russia can again find itself in the situation of an acute budget crisis (which might be delayed due to quickly growing government debt)¹⁰.

Besides a retreat from the principle of “average long-term price” in formation of federal budget expenditure part, i.e., a violation of one of the conditions of the federal budget stability in the situation, when the budget revenues are highly dependant on oil prices volatility, the negative impact of expansion of non-interest budget expenditures is an accelerated inflation and growth of RUR exchange rate in the background of low sterilization. The second basic task of Stabilization Fund is to prevent those processes. IET assessments confirm that return of the assets, deposited at the Bank of Russia on government accounts, to the economy, will lead to excessive growth of monetary base and later on – to multiplier growth and inflation acceleration due to enlarged volume of uncommitted funds at the banks. Apart from evident social consequences, expansion of inflation will negatively affect the rates of economic growth in general through the accelerated process of RUR exchange rate strengthening in real terms and tougher competition with imports.

Therefore, basing on the assumption of necessity to maintain the low RUR rate in real terms in the conditions of surplus balance of external trade, the policy, pursued by the RF Central Bank and the Ministry of Finance, is basically rather sound. Nevertheless, due to the extremely high prices for energy sources, sustained within the past two years, financial authorities experience the lack of instruments for sterilization of excessive money supply, resulting from Central Bank in-

¹⁰ As per IET assessments, downgrading of the world oil prices to the level of an average long-term level of USD 20 per barrel will result in the budget deficit in the amount of 4.5–5.0 per cent of GDP. Stabilization Fund of the Russian Federation will be completely expired within 3–4 years (in case of expenditures maintained at the level of 2006).

interventions of foreign currency¹¹. As a result, the inflation, which has not come down lower than 9–10 per cent within recent years, brings forward accelerated RUR strengthening by 8–10 per cent per year.

Coping the inertial inflation and formation of counter-inflation expectations are the key measures for inflation reduction. The international experience shows that reduction of inflation expectations is a slow process. The actions of monetary and credit authorities provide an impact over the financial agents' behavior only after a long-term lag (up to 1 year).

The absence of negative reaction on the part of the RF government and Central Bank (adherence to moderately strict monetary and credit policy, avoidance of extra budget expenditures, maintenance of stability in foreign currency market and banking sector, restricted growth rates in regard to prices and tariffs) can ensure inflation reduction by 1 p.p. per year.

The growth of monetary supply ensures a comparable share of total price growth in line with the inertial inflation. Despite active sterilization measures, taken by the RF government and Central Bank, within the past two years the average yearly growth rates of money supply M_2 made 35–40 per cent, GDP in monetary terms has grown from 15.8 per cent (as of end of 2000) to 28.0 per cent (as of end of 2005).

Reduction of price growth flexibility in regard to money supply growth restricts attainable level of inflation downgrading with the help of tightening of monetary and credit policy. However, extended monetary supply can provoke an outburst of consumer prices, i.e., in the background of inflation upswing its flexibility versus money supply growth will be considerably higher.

As per our estimates, under conditions of yearly monetary supply growth decrease at the rate of 20–25 per cent, which will maintain and strengthen the trend to GDP monetization, required to support high economic growth rates, the current inflation level can be reduced by 1.5–2 p.p. per year within 2–3 years.

Sterilization of excessive monetary supply in Russia is achieved by several instruments: surplus of the extended government budget (accumulated assets at the accounts of government bodies and Stabilization Fund), accumulated reserve fund of commercial banks with Central Bank¹² and securities of the Bank of Russia.

In monetary policy one should take into account, that sterilized interventions, though have no immediate impact over the monetary base and inflation, do have an influence¹³, first of all, on a higher growth of RUR assets (versus foreign

¹¹ Ref. P. Kadochnikov "External Factors of Monetary and Credit policy in the RF" – "Research Works" Series, No. 49P. – M.: IET, 2002; S. Drobyshevsky, P. Trunin. Correlation of Capital Flows and Basic Macroeconomic Indicators in the Russian Federation. – IET Research Works, No. 94P. – M.: IET, 2006.

¹² IET estimates point out, that there is a coordination in dynamics of funds, accumulated at the accounts of government authorities and excessive reserves of commercial banks; i.e., accumulation of commercial banks' reserves is most likely implemented with due account to financial authorities' policy.

¹³ Ref. the Survey (Sarno, Taylor, 2001).

currency funds) and its impact on interest rates and capital inflow. Moreover, even sterilized interventions, means of their implementation, their time frames and volumes serve as indicators of current priorities of monetary and credit policy to the market participants, who can also affect the interest rates and market balance.

To cut down the growth of monetary supply under favorable external market situation and transparent Russian economy in general and in view of complete liberalization of financial operations, planned for 2007, in particular, the following measures can be proposed.

Firstly, preservation of Stabilization Fund functions as a basic instrument for sterilization. There should be considered an issue of allocation a section within the Fund or formation of a special fund (based on similar principles) to be used for accumulative pension fund for the Russian citizens (in favorable market conditions). When the amount of deductions to Stabilization Fund is being determined, the cut-off price should not be increased, it should be rather decreased to an average yearly value (USD 20 per barrel), as the upgrading of the cut-off price reduces the budget system sustainability and pretty soon will lead to the federal budget deficit, even in case the oil prices are higher than long-term average values.

Secondly, upgrading of interest rates and transfer to the policy of "tight money" are necessary, namely, expansion of variety of instruments for commercial banks' assets involvement with the help of the Bank of Russia securities or increase of interest rates on commercial banks' deposits with the Bank of Russia.

Naturally, in view of additional sterilization of potential capital inflow and monetary supply adjustment for the amount of interest rates to be paid to commercial banks, those measures will complicate the implementation of monetary and credit policy. The correlation between the amount of funds involved and interest rates upgrading can be assessed by analysis of input/output effects of such policy and its benefits in terms of inflation reduction and a slow-down of the process of RUR real exchange rate strengthening¹⁴.

However, such policy might have a negative impact over credit processes in the real sector, but in favorable external market situation the majority of businesses are capable to finance the investments at their own expense.

Thirdly, some limitations could be introduced in regard to external loans for government companies. That measure looks effective as a supplementary instrument for cutting down an excessive foreign currency supply in the domestic market. Moreover, the growth of those loans might result in an upswing of the future government budget expenditures, if the debts of government companies will have to be recovered from the federal budget.

There are restrictions in the effective sterilization of foreign currency interventions with the help of shares of the

¹⁴ The analysis of monetary and credit policy, pursued in USA in 1980s shows, that the high interest rates make for sterilization of excessive money supply, resulting from budget deficit monetization and external credits' involvement, with the help of substantial reserve funds of the banks. Moreover, high interest rate allows to increase the volume of assets in national economy, which firstly, reduces the necessity of emission for recovery of budget deficit, and secondly, raises the demand for money in view of transactions, necessary for the accumulated assets transfer to investments or agents' current expenses.

Bank of Russia and increased interest rates on the deposits of commercial banks with the Central Bank in the form of practical difficulties of control over the investments made by non-residents, enlarging the volume of foreign currency inflow to the national economy, which is reflected in capital account balance of payments. If non-residents' assets are admitted only through certain banks, placements of the Bank of Russia securities will result in reduction of monetary supply and depend on the volume of excessive capital inflow, which will raise the demand for interventions, made by Central Bank in foreign currency, and hence, the need for sterilization.

Various measures of limitation of foreign capital inflow, transferred to the RF in view of the interest rate growth (such as supervision of banks activities in involvement of external loans, limited share of external obligations for the banks, a demand for reserve guarantees on short-term foreign investments in the national economy, etc.), get in conflict with the effective policy of financial operations liberalization. Therefore, the above measures are rather restricted.

Apparently, the requirement for higher volumes of guaranteed reserve can not be regarded as an effective instrument of control over monetary supply growth in the nearest future. This is explained by essential differentiation of the Russian banks' financial position in the background of underdeveloped market of inter-bank credits and poor mechanisms of refinancing for commercial banks, implemented by the Central Bank. In such a situation tightening of FMR requirements (Fund of Mandatory Reserves) aggravates the risk of liquidity crisis. Therefore, before wide implementation of FMR standards as instruments of monetary management, measures should be taken for improvement of credit mechanisms for the banks, which are in need for liquidity assets.

Abolishment of a requirement for obligatory repatriation of a part of foreign currency revenue can be considered as an instrument that reduced the demand for sterilization of the Central Bank operations in the foreign currency market. However, the application of that measure depends on the effectiveness of the system of tax control over operations of the national companies, made through their foreign accounts, which is currently far from being perfect.

In general, the common trend of monetary and credit policy in medium-term prospective should apparently become a more distinctive differentiation between the instruments of monetary and credit and fiscal policies. Currently the basic tasks of monetary and credit policy in management of monetary assets are resolved through budget instruments. In the recent years those instruments include as accumulation of surplus in the budgetary sphere and Stabilization Fund, as well as budget expenditures, for instance, expenses for the support (crediting) of various economic sectors.

To estimate quantitative and qualitative results of the above instruments of monetary and credit policy in the situations with high and low oil prices, IET has reviewed seven optional models of the RF economic development in the medium-term prospective (5 years, up to 2011).

The first four models are based on the situation the situation, when oil prices are rather high in the international

market within the period under review (no less than USD 45 per barrel¹⁵ for Brent oil).

Model I describes, in fact, an inertial option of economic development in the RF. It is assumed, that upon President's election in 2008 the government will keep the growth of federal budget expenditures within the level of 18.5 per cent of GDP (growth of budget expenses within pre-election period will not exceed 2 p.p. of 2006 GDP). The existing tax system will be sustained, the guidelines of Stabilization Fund accumulation will not be reviewed and the yearly growth rates of prices and tariffs for goods and services, provided by big natural monopolies, will exceed the inflation rate maximum by 2–2.5 p.p. The RF Central Bank will maintain the policy of accumulating gold and foreign currency reserves, making for relevant growth of monetary supply, including the funds for the support of high GDP growth rates, as well as restraining the RUR real exchange rate. Therefore, in that model there are no provisions for the trend to nominal RUR strengthening at the expense of gold and foreign currency reserves. We presume, that favorable external market situation and macroeconomic indicators will make for both, direct investments inflow and financial capital to the country. To facilitate estimations, exchange rate for the entire period under review is understood as EURO 1 to USD 1.2–1.30.

The other three models, where high oil prices are regarded, are based on dynamics of certain indicators of Model I, whereas other parameters stay unchanged.

Model II differs from Model I in terms of expanded budget expenditures at the background of sustained high oil prices and budget revenues. For instance, we assume some extension of federal budget expenditures (by 2–2.5 p.p. of GDP i.e., up to 21.0 per cent of GDP by 2009). Therefore, the trend to extended federal budget expenditures under high oil prices is maintained.

Model III presumes achievement of yearly inflation in the amount of 4 per cent by 2011, which allows to estimate the level of required extra volume of sterilization of foreign currency interventions, effected by the bank of Russia.

In 2006 the Central Bank has implemented nominal RUR strengthening versus USD by 8.5 per cent. Model IV regards the version of policy changes on the part of the RF Central Bank, when financial authorities abandon the policy of accumulation of gold and foreign currency reserves and allow nominal RUR strengthening in regard to foreign currencies, resulting in the zero balance of the RF current account.

Models V–VII are based on the situation, when oil prices in the international market get down to the average long-term level (USD 25 per barrel of Brent).

In Model V such a decrease is happening gradually (by 2009), whereas in Model VI and VII an aggressive downfall takes place already in 2007. The basic approaches of economic policy are the same, that are taking place under high oil prices, and the Stabilization Fund is used for replenishment of federal budget deficit. Nevertheless, we presume that a noticeable capital outflow will take place in the course of oil prices downgrading.

¹⁵ As USD in 2006.

Model VI, together with a presumption of oil prices downfall from USD 65 to USD 25 per barrel already in 2007, reviews the policy of the RF Central Bank, which releases the RUR exchange rate, preserving the volume of gold and foreign currency reserves, resulting in the brief RUR denomination.

Model VII presumes an opposite policy: RUR nominal rate maintenance (versus USD for simple computation) and interventions, until gold and foreign currency reserves are totally expired.

It should be noted, that we are using formal mathematic computation for quantitative analysis of economic models, basing on the assumption of reliable and conservative behavior of economic agents to get equilibrium values of variables under given conditions for each model, which is unattainable in practice. This assumption is especially true for the models, applicable under decreasing oil prices.

IET estimates provide rather prudent valuations of basic macroeconomic indicators' dynamics for both situations, under high and low oil prices. In case of low oil prices the situation will be developing in a negative direction, so the financial authorities should be ready to take measures for affordable mitigation the negative consequences, detected in the estimates. Potential models, developed for the situations of high oil prices, are conservative and provide a lower margin of economic development.

Modeling of the RF basic economic indicators dynamics in general, and monetary sphere in particular, was performed on the basis of IET approximation of medium-term socio-economic indicators modeling¹⁶. The basic parameters were taken from initial estimates of the year 2006 results. Dynamics of macroeconomic indicators by models are given in Table 21.

Table 21

**Dynamics of Macroeconomic Indicators by Models
of Economic Development in the RF in 2007–2011**

Optional Model	GDP in real terms % (growth within the period)	Inflation % (2011)	Share of population with the income below minimum living level % (15.8 % in 2006)	Share of monetary income of the first 20%-group of population, % (5.4 % in 2006)	Nominal exchange rate RUR/USD (2011)	Real effective exchange rate, % (growth within the period)	Gold and foreign currency reserves (2011), USD bln	RF Stabilization Fund (% in GDP, 2011)
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¹⁶ Model description in detail is published in the works by M. Turuntseva, A. Yudin, S. Drobyshesky, P. Kadochnikov, S. Ponomarenko, P. Trunin "Some approaches to economic indicators modeling", "Research Works", No.89P, M.: IET, 2005, and some model elements are provided also in the works by S. Drobyshesky, V. Nosko, R. Entov, A. Yudin "Economic Analysis of Basic Macroeconomic Indicators Dynamic Series" "Research Works" No. 34P, M.: IET, 2001; R. Entov, V. Nosko, A. Yudin, A. Kadochnikov, S. Ponomarenko "Some Macroeconomic Indicators Approximation", "Research Works" N^o 46P, M.: IET, 2002.; G. Karasev, S. Chetverikov "Structural Models of RUR Exchange Rates", No. 88P, M.: IET, 2005.

I	+25–26	6.0	12.1	4.9	29.5–30.5	+34–35	405–415	26
II	+21–21.5	7.0	17.0	5.7	29–30	+39–40	310–320	17
III	+26–27	4.0	11.0	4.8	28.5–29.5	+29–30	440–450	27
IV	+11–12	4.0	15.0	5.2	22–23	+44–45	300	25
V	+5.5–6.5	6.0	16.3	5.4	40–42	–8–9	90–100	0 (2010)
VI	–0.5–1	4.5	16.7	5.4	37–38	–6–7	300	0 (2009)
VII	–3–4	3.0 (2009)	18.3	5.7	27.0	+19–20	0 (2009)	0 (2009)

According to the estimates, under inertial model of the RF economy development (Model I) the aggregate growth of GDP in real terms within 5 years (2007–2011) will make about 25 per cent, with regard to the decrease of yearly GDP in real terms by 3.5 per cent by the end of the period. The reduction is explained by downgrading of cost-effectiveness of oil and gas sector and stabilization of export volumes in the conditions of sustainable structure of natural resource industry. With regard to RUR growth rate in real terms, by 2011 Russia will reach the GDP volume of USD 1.5 trillion (as per current exchange rate).

Despite some decrease of national revenues (approximately to 22.5–23 per cent of GDP) due to a decline of tax rates for the oil sector and general decrease of cost-efficiency level in the economy, there is still a surplus in the federal budget balance (at least 4 per cent). As a result, by the end of 2011 the Stabilization Fund will reach 25–26 per cent of GDP (USD 380–390 bln).

The Central Bank policy in terms of accumulation of gold and foreign currency reserves accumulation and in view of restriction of RUR yearly rates of strengthening with the help of sterilization of foreign currency interventions will result in achievement of the level of gold and foreign currency reserves in the amount of USD 405–415 bln. Within five years the total effective growth of RUR in real terms will make about 35 per cent (+48 per cent versus the pre-crisis period of 1998). Herewith, the nominal RUR rate will make by the end of 2011 about 29.5–30.5 for USD 1.

As a result of that policy, the trading account balance will reach a zero value by 2009–2010, i.e., the growth of gold and foreign currency reserves will be made purely due to capital inflow. Starting from 2010, the growth rates of money supply, though somewhat decreased (to 9–10 per cent in 2010–2011), will stay higher than inflation rates. Monetization will be sustained at the level of 34–35 per cent of GDP. According to our estimates, the inflation can not be reduced in such a situation lower than 6.0 per cent. The aggregate growth of prices within five years will make at least 40 per cent.

Sustained high oil prices, revenue growth in economy in general and real wages in particular, at the background of rather high inflation, as well as RUR strengthening will keep up a trend to stronger differentiation between incomes of population and higher living standards. We presume, that within five years, by 2011, the share of income of the first group of population (20 per cent with the lowest level of income) will be decreased from 5.4 per cent to 4.9 per cent, while the share of population, whose income is beyond the minimum living standard, will be cut down from 15.8 per cent to 12.1 per

cent¹⁷.

Extra budget expenditures (expected in the amount of two per cent points of GDP according to Model II) will negatively affect a number of indicators. Thus, an aggregate GDP growth will not exceed 21.5 per cent, and inflation will be not less than 7.0 per cent within the period under review.

Accordingly, differentiation of income as per population groups will be reduced: the share of income of the first group of population (20 per cent of population with the lowest income) will grow from 5.4 per cent to 5.7 per cent. However, despite the increased budget expenditures, the share of population with the income lower than the minimum living standard will be also increased from 15.8 per cent to 17.0 per cent.

Federal budget surplus will be relevantly reduced by 2011 to 1.0 per cent of GDP, the aggregate RUR growth in real terms will reach 39 per cent (+52 per cent versus the pre-crisis period of 1998), the amount of Stabilization Fund will not go beyond 17 per cent of GDP.

Compared with the inertia model, achievement of lower inflation rates by 2011, (up to 4 per cent as per Model III) without budget expansion will require surplus sterilization of monetary supply in the amount of RUR 200 bln per year. That level of sterilization can be reached with the help of Stabilization Fund assets and additional monetary instruments of the Central Bank policy, described above. The aggregate CPI within the five years will not exceed 35 per cent. Herewith, due to slower growth RUR rate in real terms (not over 30 per cent), the aggregate growth of GDP within the five years will be not higher than under Model I.

Like in the first Model, the trend is kept up to stronger differentiation of income by population groups and higher living standard, which will result in increased share of income of the first group population (20 per cent with the lowest income) from 5.4 per cent to 4.8 per cent by 2011 and the share of population with the income lower than the minimum living standard will be increased from 15.8 per cent to 11.0 per cent.

In Model IV, where the nominal RUR strengthening is foreseen, changes in the dynamics of macroeconomic indicators are more expressed. Thus, at the sustained volume of Central Bank reserves at the level of the end of 2006 (approximately USD 300 bln), the nominal RUR rate by the end of 2007 will be strengthened to RUR 18 for USD 1 (by 30–35 per cent within a year), which will result in trading account balance deficit at the turn of 2007–2008. The growth of RUR in real terms within 2007–2011 will make up to 45 per cent (55–60 per cent versus July 1998).

Accordingly, the aggregate growth of the RF GDP in real terms will not exceed 11.5 per cent within five years, and the trading account balance deficit can reach USD 35–40 bln by 2011 (about 15 per cent of exports). At the same time, in

¹⁷ It is assumed in the framework of the Model, that the minimum living standard is varied in proportion to GDP per capita, though it is generally incorrect. Under conditions of high oil prices and excessive regulated tariffs GDP deflator should be higher than the minimum living standard growth rates. Therefore, our estimates of reduced share of population with minimum income level are rather pessimistic.

view of moderate scale of foreign currency acquisition and monetary emission, the yearly rate of money supply growth will be reduced to 4.5–5 per cent, which will result in reduction of inflation yearly growth rate to nearly 4 per cent per year (not over 35 per cent within five years).

Thereafter, differentiation of income as per population groups will be slowed down: the share of income of the first group of population (20 per cent of population with the lowest income) will get down from 5.4 per cent to 5.2 per cent. However, the share of population with the income lower than the minimum living standard will be stay rather high, not lower than 15.0 per cent.

According to Model IV, the volume of the Stabilization Fund will reach 20–25 per cent of GDP by 2011.

Therefore, the analysis of four Models in the situation with high oil prices brings us to the following conclusions in terms of consequences of alternative measures of economic policy.

Under the terms of inertia Model rather high economic indicators are demonstrated. The rates of real GDP growth are the highest among other models, and in our opinion, the inflation is within reasonable limits. RUR growth rate in real terms results in decreased balance of trading account, but in the background of sustained average growth of GDP there created favorable conditions for external capital inflow and expansion of natural resource sector of the economy.

The Model, where extended budget expenditures are foreseen, demonstrates, in fact, according to the estimates, insignificant differences in macroeconomic indicators from those ones of the basic model. It can be explained by relatively moderate scale of extra expenditures and suspended budget expansion under stabilized oil prices at the level of USD 45 per barrel. Nevertheless, the estimates evidently demonstrate, that with such scale of downgrading of rigid budget policy the government actions provide negative impact over the economy in general.

Comparative analysis of the two versions of economic policy under high oil prices (which differ by extra sterilization and admitted increase of RUR exchange rate in nominal terms) shows, that the first version is preferable. The level of additional sterilization is not excessive as compared with the inertia model, and in view of additional measures, mentioned above, the sterilization volume could have been even higher. In other words, under this model lower inflation level could be achieved, comparable with the level of the model, where strengthening of RUR exchange rate in nominal terms is foreseen. However, in the fourth model such low inflation level is achieved through downgrading of economic growth rates.

Model V (where gradual decrease of oil prices is considered) outwardly demonstrates the dependence of the RF economy on oil prices. In fact, there is a threat of a crisis, even regardless the drastic qualitative changes in expectations and behavior of economic agents in case of oil prices downfall.

According to the estimates, under such model, when oil prices are getting down, the aggregate growth of real GDP within five years (2007–2011) will make no more than 6 per cent, whereas in 2010–2011 the yearly rates of real GDP growth will be in deficit (up to – 2.0 per cent). In 2011 GDP will not exceed USD 900 bln (as per currently effective exchange rate), i.e., nearly 40 per cent less than in the first model.

Federal budget revenues will be decreased lower than by 14.5 per cent, so that the deficit of the federal budget is expected already by 2008 (under oil prices at the level of USD 30 per barrel). In such a case Stabilization Fund assets will be totally expired by 2010 at the background of federal budget deficit in the amount of at least 4.5 per cent of GDP in 2010–2011.

In the framework of that model we assumed, that the RF Central Bank policy will be restricted to gradual RUR devaluation through foreign currency interventions. It is evident, that such policy is hard to be implemented due to potential attacks at rouble. However, regardless expectations of economic agents, according to the estimates, by the end of 2011 RUR will be devaluated 1.5-fold as compared with 2005 and reach more than RUR 40 per USD 1, which will run the Central Bank “in the expense” of USD 200 bln of gold and foreign currency reserves (with the balance of gold and foreign currency reserves by the end of 2011, not exceeding USD 110 bln).

Within five years the effective RUR exchange rate in real terms will get down by approximately 8–9 per cent, but due to oil prices decline there will occur a deficit in the trading account balance.

As far as an option of surplus recovery of budget deficit and monetary emission in the economy in the critical situation are not considered in the framework of the model, the growth rates of money supply will practically reach zero, GDP monetization will drop down to 30–31 per cent. Nevertheless, in the background of exchange rate impact on prices, there will be no adequate reduction of inflation rates. The accumulated index of consumer prices within five years will reach nearly 40 per cent, and in 2011 the trend to lower inflation rate will be broken, prices will grow faster than in 2010.

As mentioned before, Model six, where the Central Bank restrains from the control over the exchange rate in the background of oil prices downfall, is rather conventional. Practically, in view of qualitative changes in behavior of market participants and clear political prospects of such events to financial authorities, such situation is hardly possible.

According to our estimates, in the situation of stable position of other market participants, in the background of preset downgrading of prices for energy sources, the yearly decrease of nominal RUR exchange rate versus USD will exceed 25 per cent, within total period under review RUR will be devaluated approximately by 40 per cent, i.e., less than in the model, where gradual oil prices decline is foreseen.

Under the negative impact of the collapse, the rates of GDP growth in real terms will come to negative value already by 2008 and remain at that level within the total period (aggregate GDP decrease will not exceed one per cent within five years), but already in 2011, due to imports restructuring and adaptation of the economy to low oil prices, there will be observed a trend to rehabilitation of GDP growth rates. Remarkably, export surplus balance will be sustained within all those years.

The worst impact of oil prices downfall will be provided on budgetary sphere: Stabilization Fund assets will be expired already by the end of the third year upon prices landslide (in 2009), while the budget deficit will be within 5.0–5.5 per cent of GDP (with no regard to prepositions of reduced expenditures of federal budget, required in that situation).

In that model we do not make assumptions of surplus emission addressed at recovery of the federal budget deficit, and relatively, the rates of money supply growth are lower than in Model five. Rigid monetary and credit policy allows to reduce the impact of the declined exchange rate on the prices, and in 2011 the inflation get down to 4.5 per cent.

In terms of living standard of population, according to our estimates, that model makes for maintenance of the situation to a large extent. Thus, the share of population of the first group (20 per cent of population with lower income) will stay practically at the same level (about 5.4 per cent) and the share of those, whose income is below the living standard, will be increased up to 16.7 per cent.

An alternative to the policy of nominal devaluation is the policy of keeping up the RUR exchange rate at a fixed level (Model VII). According to the estimates within the framework of that model, gold and foreign currency reserves will be sufficient to keep up the exchange rate for four years, in case the RUR rate is maintained at the level of RUR 27 for USD 1, and by the beginning of 2011 those reserves will be expired. Nevertheless, as mentioned above, quantitative results, obtained for that model, are rather conventional, as in practice the policy of keeping up the fixed RUR rate in the situation of oil prices downfall means, that RUR will be inevitably attacked within the first year, and gold and foreign currency reserves will be expired faster, than is forecasted by the model estimates.

Moreover, the level of living standard decline is also underestimated within the model. According to the model estimates, the share of monetary income of the first group (20 per cent of population with the lowest income) will be somewhat increased from c 5.4 per cent to 5.7 per cent, while the share of those whose income is below the living standard, will grow from 15.8 per cent to 18.3 per cent.

Comparative analysis of the results of three crisis models brings us to the following conclusions in terms of their consequences.

In the situation, when oil prices are getting down, there is no chance to avoid a severe decline of growth rates and stagnation in economy. However, there is a chance for Russia to avoid the crisis, comparable with the situation of the second part of 1998.

The minimum losses for economy will take place, if in case of oil prices downfall the choice is made in favor of policy of nominal RUR devaluation, though political limitations should be taken into regard in implementation of such policy option. Moreover, in this case one can expect a trend to economic growth due to the effect of import restructuring in the background of national currency downgrading, like in the IV quarter of 1998–1999.

Alongside with that, it should be noted that preset conditions for critical situations were rather rigid in terms of time frames. Thus, we were considering the case of low oil prices within three-four years in a row.

There is a low probability for a steep (two-fold) downfall of oil prices within one year. Therefore, the fifth model is most likely in terms of oil prices dynamics, and apparently, economic policy measures will be applied within the framework of that model. Accordingly, releasing of RUR rate by the Bank of Russia under the higher, though declining, oil prices,

when the economy is rather sound, reduces impartial difficulties of practical implementation of such policy.

It should be also noted, that the model might overestimate the dependence of Russia on oil prices, as for a number of preceding years an important factor of economic growth were investments, and in the first turn, the model reflects interrelations between the dynamics of natural resources prices and the economic growth of Russia.

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Analysis of various optional models of economic development in Russia in the situations with high and low energy prices allows to chose those policy measures, which will ensure the best results in economic development in both situations.

The best policy in the situation with high oil prices is the highest sterilization of Central Bank interventions in foreign currency markets in line with accumulation of gold and foreign currency reserves. The basic disadvantage of such policy is that positive results of its implementation are observed in a long- and medium-term prospective, whereas all difficulties of rigid monetary policy, implemented by financial authorities, are experienced immediately.

The best policy measure in the situation with lower oil prices is RUR devaluation. It is very important to declare at the initial stage of energy sources price decline, before they reach the lowest point, that financial authorities will make no efforts to support the RUR rate at a certain level with the help of gold and foreign currency reserves, regardless any political consequences. This measure will bring potential attacks to RUR to minimum and reduce the crisis impact in the economy.