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Scenarios of exchange rate policy in Russia: effects on economic growth and industry structure

by

Maxim Petronevich

Non-Commercial Research Foundation

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Introduction

The Russian economy is facing a problem of real exchange rate appreciation which makes domestic goods more expensive comparing to imports. Through the period 1998-2004, the Russian economy was largely supported by what we call “price umbrella” – the difference between imports and domestic prices created in 1998 as a result of more than triple devaluation of the Russian Rouble (RUR/USD). In [1] it was shown that the growth of the Russian economy that followed after the financial crisis of 1998 was driven by a number of factors one of which was a sharp decline in labor and capital costs accompanied by an improvement in price-competitiveness of domestic producers. These factors through import-substitution process gave a strong impulse to the development of those industries that are oriented towards local markets such as food, beverages, construction materials, to which one can add electronics and services. Nevertheless, by the end of 2004 two negative trends became apparent: price difference, as expected, has reversed to zero – this means that Russian goods and services now face the same level of competitive pressure from imports as it was at pre-crisis 1997, as well as unit labor costs which grew more than twice in real effective terms during 2000-2004 . In Russian statistics for 2005 this effect is represented by declining growth rates for construction materials, electronics and car industry, though the major reduction in industry growth (from 7,3% in 2004 to 4,0% by 2005) is attributed to the slowdown in the “core” of Russian economy - heavy and resource-based industries (which grew only 1,3% in 2005 comparing to the 6,8% last year).

In our analysis we use three broad aggregates for determining key drivers for economic growth. All of them consist of different components of GDP: **domestic demand** – the sum of total expenditures of households, government and non-profit institutions and gross capital formation; **domestic demand for domestic goods** which is equal to the domestic demand netting out total imports of goods and services; **foreign demand** which is equal to total exports; so **gross domestic product (GDP)** is equal to the sum of domestic demand for domestic goods, foreign demand plus net acquisitions of valuables, change in inventories and statistical discrepancies. The major concern for Russian authorities is that the economic growth is generated through foreign demand for resources, while most of domestic demand is covered by imports.

The problem is that the real exchange rate is driven not by growth in productivity in tradeables, but mainly by the rapid rise in oil prices, which do not involve growth in physical production – we expect no growth in oil exports volume in 2005. The excess foreign money supply results in excess income from exports, but this income is accumulated in the stabilization fund and

the rest of it is distributed among the enterprises, and through the growth of wages in budget sector of economy, growth of pensions, and growth in salaries it results in rising aggregate demand. We expect record growth in retail sales and services this year – they can beat 12% and 8% y-o-y respectively, what, as it seems, have to result in the rising demand for domestic goods – especially light industry, electronics and automobile industries.

Table T1. Macroeconomic fundamentals for 1995-2005.

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 est. |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------|
| GDP, % | 95.9 | 96.4 | 101.4 | 94.7 | 106.4 | 110.0 | 105.1 | 104.7 | 107.3 | 107.1 | 106.3 |
| Domestic demand, %* | 96.2 | 93.1 | 100.7 | 96.1 | 100.0 | 107.8 | 107.6 | 106.1 | 107.7 | 108.9 | 110.7 |
| Incl. for domestic goods, %* | 92.4 | 91.8 | 101.4 | 90.3 | 103.5 | 109.9 | 105.0 | 99.8 | 102.4 | 104.5 | 104.2 |
| Foreign demand, %* | 103.1 | 103.7 | 99.5 | 101.9 | 111.3 | 109.5 | 104.2 | 110.3 | 112.5 | 112.3 | 105.9 |
| Industry, % | 96.7 | 96.0 | 102.0 | 94.8 | 111.0 | 111.9 | 104.9 | 103.7 | 107.0 | 106.1 | 104.0 |
| Investments, % | 90.0 | 81.9 | 95.0 | 93.3 | 105.3 | 117.4 | 110.0 | 102.8 | 112.5 | 110.8 | 111.0 |
| Retail sales, % | 93.8 | 100.3 | 104.9 | 96.8 | 94.2 | 109.0 | 111.0 | 109.3 | 108.4 | 112.1 | 112.0 |
| Real personal disposable income, % | 85 | 100.6 | 105.8 | 84.1 | 87.7 | 112 | 108.7 | 111.1 | 114.9 | 108.3 | 109.1 |
| Exports, bil. \$ | 82.4 | 89.7 | 86.9 | 74.4 | 75.6 | 105.0 | 101.6 | 107.3 | 135.9 | 183.5 | 249.7 |
| Growth of exports (physicla volumes), % | 114.0 | 100.2 | 98.8 | 101.7 | 110.2 | 108.4 | 103.4 | 109.8 | 114.4 | 109.1 | 104.2 |
| Imports, bil. \$ | 62.6 | 68.1 | 72.0 | 58.0 | 39.5 | 44.9 | 53.8 | 61.0 | 75.4 | 96.3 | 124.1 |
| Growth of imports (physicla volumes), % | 107.8 | 106.2 | 115.5 | 88.4 | 84.9 | 120.5 | 139.5 | 119.1 | 122.6 | 122.7 | 125.4 |
| Trade balance (exports-imports), bil. \$ | 19.8 | 21.6 | 14.9 | 16.4 | 36.0 | 60.2 | 47.9 | 46.3 | 60.5 | 87.2 | 125.6 |
| Price of oil URALS, \$/barr. | 15.1 | 18.1 | 15.4 | 15.3 | 17.2 | 26.6 | 22.9 | 23.6 | 27.3 | 34.6 | 51.0 |
| M2, % | 225.8 | 133.7 | 126.7 | 121.3 | 157.5 | 161.5 | 139.7 | 132.4 | 150.5 | 135.8 | 126.4 |
| Reserve money, % | 277.6 | 114.6 | 127.9 | 133.9 | 170.0 | 187.7 | 127.4 | 130.7 | 145.6 | 145.0 | 150.0 |
| Budget deficit (+), % of GDP | 3.0 | 4.0 | 7.5 | 5.6 | 1.1 | -1.3 | -3.0 | -1.4 | -1.7 | -4.3 | -7.0 |
| Reserves, bil. \$ | 15.1 | 14.8 | 17.2 | 12.2 | 12.5 | 28.0 | 36.6 | 47.8 | 76.9 | 124.5 | 182.0 |
| Nominal exchange rate (RUR/USD) (eoy) | 4.6 | 5.6 | 6.0 | 20.7 | 27.0 | 28.2 | 30.1 | 31.8 | 29.5 | 27.8 | 28.6 |
| Growth of real exchange rate (RUR/USD), % (eoy) | -43.5 | -1.6 | -3.4 | 87.9 | -4.2 | -13.2 | -9.8 | -8.4 | -17.3 | -15.6 | -7.8 |
| Growth of nominal exchange rate (RUR/USD), % (eoy)* | 30.7 | 19.8 | 7.2 | 246.5 | 30.8 | 4.3 | 7.0 | 5.5 | -7.3 | -5.8 | 2.9 |
| Inflation rate, % (eoy) | 231.3 | 121.8 | 111.0 | 184.4 | 136.5 | 120.2 | 118.6 | 115.1 | 112.0 | 111.7 | 111.6 |

Source: Development Center

* – for years 1995-2000 this fundamentals are calculated in constant 1995 prices, for 2001-2003 in constant 2000 prices, for 2004 in constant 2003 prices.

But as it occurred, the growth in domestic demand for domestic goods was rather small comparable to the growth of imports,¹ which we attribute to the strengthening of the Rouble and widening market of consumer credits (the volume of credits is doubling every year for the last 2 years and accounted for 10% of retail sales and services in 2005). Though Russian electronics is less expensive and possess a comparable functionality and technology as foreign analogues, consumers often feel that Japanese or West European electronics are of far better quality and try to get the credit to buy it, instead of buying cheaper domestic goods. And this finding justifies that income effect in Russian economy is greater for imports and could be sufficiently small for domestic consumption – we expect 22% growth for imports in 2005, growth of domestic consumption and industry will amount about 4,3% and 4,0%, the growth of GDP and real disposable income will be 6,3% and 9,1% respectively. The growth of manufacturing production slowed down from 10,5% in 2004 to 5,7% in 2005. On the other hand we do not necessarily suggest that if manufacturing industry growth is rather small, then our economy is suffering from a Dutch disease. If we look at a more detailed statistics we find that in 2005 the growth of food industry was the same as in 2004 (+4,4%), clothing and textile industry are rising for 4,5% for the last half a year ever since 2000, production of consumer electronics is growing by 20% (though last year it was 37%), the growth of metal fabrics is rising for 5,7% from 3,9% last year, the car production decreased, but production of cars with more than 90hp engines increased by 9%. So, we can suggest that the total production of consumer goods is falling due to the large share of cheap low-value-added Soviet-quality goods that experience low or even negative income effect, whereas a small competitive part of the Russian economy formed in 1998-2005 demonstrates a sustainable growth.

Nevertheless, by the end of 2005 two negative trends became apparent: unit labor costs in manufacturing reached their pre-crisis (1997) level while the price-competitiveness demonstrated significant deterioration (real effective exchange rate almost reached the level of 1998). So, further development of the Russian economy depends nowadays on the industry's ability to optimize costs and improve productivity which will be impossible without large-scale restructuring. That means the government should create necessary conditions for the fast capital restructuring and favorable terms of trade with imports.

¹ Though in January Rosstat claimed that in 2005 the real growth of imports amounted only 16% (comparing to the 22% last year), we think that this figure (as well as exports) is under-estimated and will be corrected later, because the nominal growth rate in 2005 remain the same as in 2004, but import year deflator "suddenly" grew by 6% with no support for it in monthly data.

One of the most common ways to create such conditions and to induce firms to innovate is the proper exchange rate policy.² The stronger real exchange rate could reduce the price of investments imports, and, therefore, lessen the unit capital costs. The weak Rouble will have the opposite effects.

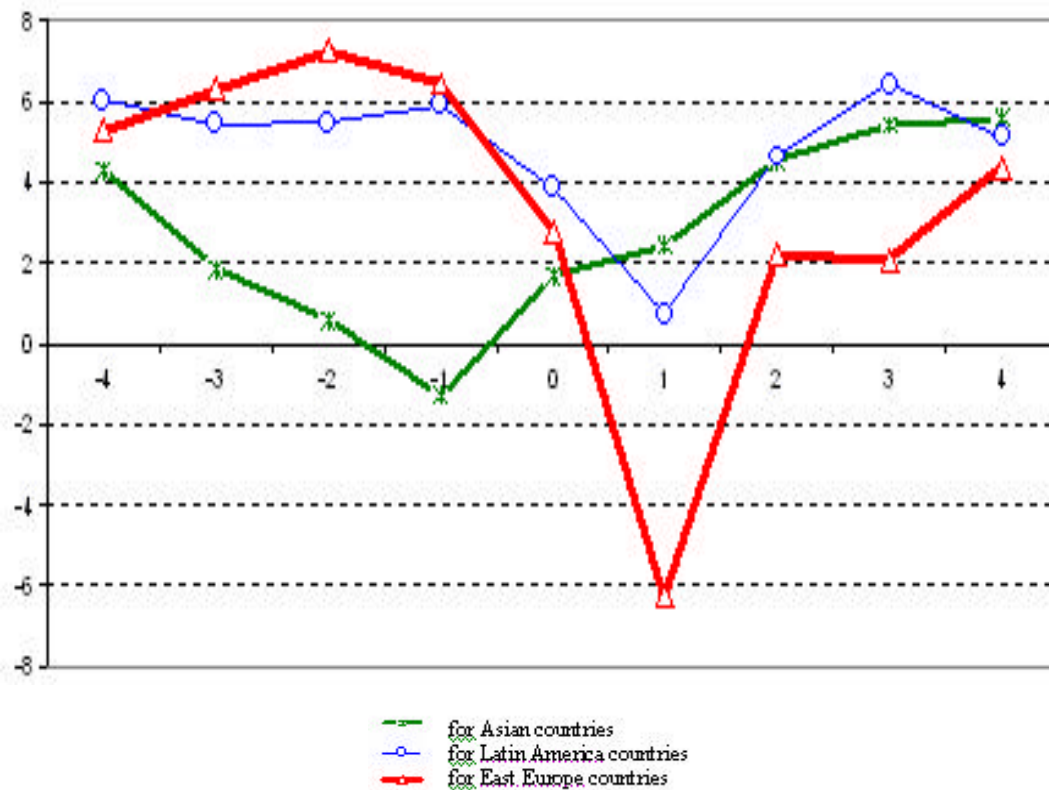
² That does not mean that exchange rate policy is most influential on the competitiveness of the economy. But, at least in Russian circumstances, comparing to the fiscal policy, it is easier to carry out and experiencing no bureaucratic misdealing opportunity behavior.

1. Exchange policy and economic growth

This paper examines three possible regimes of exchange rate policy which have their own advantages and drawbacks.

Sufficient weakening of domestic currency in order to try to hold increasing real exchange rate and to fix the price competitiveness of Russian economy in this way to stimulate demand for domestic goods. If we examine history of developing countries which experienced large currency devaluations, we'll find that currency devaluation can be regarded only as a "temporary stimulator" of economic growth. For the last 30 year most of these countries are characterized by S-shaped dynamics of GDP growth. Just before the crisis and immediately after that the GDP growth rates are at their lower values, and then they accelerate to their maximum values for approximately 3 years. Then the mean growth rates are approaching back the mean values for those countries which did not experience devaluation.

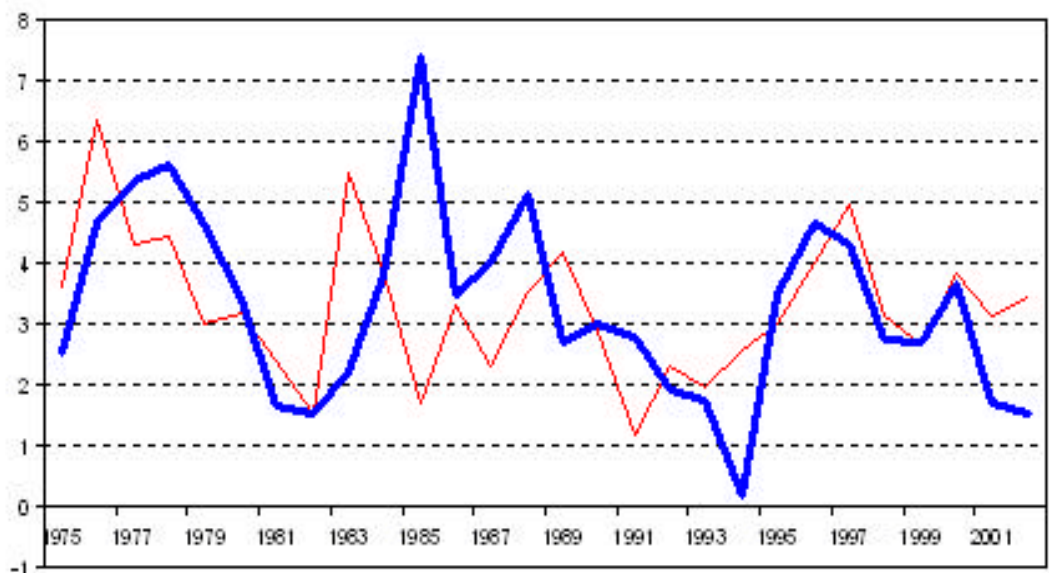
Figure F1. GDP growth patterns for countries experienced large devaluation (>50%), %



Source: IMF.

In the last decade the positive growth effect of exchange rate devaluation reduced sharply – in 1990-2005 national currency devaluation are no longer a source for the continuing above-the-mean economic growth.

Figure F2. Real GDP growth, %



Blue bold line – GDP growth for countries experiencing large devaluation (more than 50%)
 Red line – GDP growth for other countries (more than 50%)

Source: IMF.

According to the IMF (1998), the following causes for weakening influence of devaluation on GDP growth might be distinguished:

- *Effect of low foreign demand.* If the devaluation occurs in the lower phase of economic cycle, then it will poorly stimulate growth of exports and economic growth.
- *Effect of lowering real disposable income.* Real disposable income growth substantially falls under the rising import prices. It might not be compensated by increasing net exports revenue.
- *Effect of financial markets.* Rising interest rates favor decreasing domestic demand and might cause substantial inflow of speculative financial capital which will force exchange rate to appreciate, leading to imports growth, and economic slowdown.
- *Lags.* Net exports might respond to the weaker exchange rate with substantial lags, resulting in longer economic recovery.

Today's Russian economy could face the first three effects. First, resource exports are poorly connected to the exchange rate. Second, import products cover more than 30% of national

retail sales, which result in large CPI dependence on import prices. Third, Russian economy is indeed found attractive for foreign investments, which could result in boosting capital inflow.

Moreover, currently the devaluation policy is hardly feasible because Russian has a strong trade balance and balance of payments: if the Central Bank of Russia (CBR) will try to weaken the Rouble by the same rate as inflation (i.e. 10%), it will have to buy all the foreign currency and to increase sharply the money supply (reserve money will grow more than 60%). Growing amount of money demand in the economy will result in inflation growth and lead to devaluation of disposable personal income in the economy, lowering domestic demand and savings rate, and decreasing investment growth. Furthermore, it will unfold an inflation-devaluation spirale and uncontrolled price movements. If the CBR will be incapable to weaken the Rouble gradually with the same rate as inflation in order to keep the real exchange rate fixed, it could face the necessity to devalue substantially (i.e. 1.5 - 2 times). Our calculations show that this policy would result in higher money demand (more than 35% a year) and to growing inflation – by 2008 it could amount 18-20%, which is inconsistent with the primary target of lowering rate of inflation. Therefore, under the assumption of relatively high oil prices (more than 30USD/barrel), we regard this policy unlikely and exclude it from further analysis.

Inflation targeting scenario. The second possible policy is the opposite one - strengthening of the Rouble even more than today. The rationale for this is that a strong Rouble will support lowering inflation and interest rates, stimulate the consumer purchasing power and welfare, forcing the growth of savings in domestic currency (instead of in foreign currency). Moreover, lower import prices will stimulate less expensive capital accumulation and could entail lowering unit capital costs. Income effect still have to provide enough space for domestic goods demand (rising physical volumes of imports will be partially compensated by lower prices of imports), growing imports will intensify the economic selection of competitive producers, increase the return on investments and stimulate capital reinforcement. From this point of view a strong Rouble is very attractive because it will lower the price of investment imports, and possibly attract more foreign direct investments (for the last two years FDI more than doubled). Another source of optimism is a growing attractiveness of domestic market for oil-exporting sector as internal and external prices will tend to converge.

But there are some points of risks, which include:

- possible incapability of small and medium size Russian businesses to attract and then to efficiently allocate large investments;

- income from exports forms the most part of the Russian government budget. Strong Rouble will decrease government income and might reduce government spending on R&D, education and social support;
- inflation is largely supported by the growth of governmentally supervised prices (for gas, heating, transport, housing, e.t.c.), making inflation rate rather unpredictable. For example, increasing exchange rate will reduce base inflation, but this decrease can be easily overcome by positive price shocks from supervised prices;
- it is difficult to determine the level of maximum strengthening of the Rouble: if we increase the real exchange rate too much than the economy can collapse sooner than advantages from capital reformation appear. Maybe it would be less risky to lower import tariffs on machinery?
- consumer prices may be less dependent on the Rouble exchange rate, because in 2005 large share of inflation was explained by poorly supervised grows of natural monopoly tariffs on transport, gas, electricity, housing e.t.c.. *In our scenarios we assume that in 2006 the government will be incapable to suppress tariffs, but by 2007 the Ministry of Economic Development and Trade will have developed and approved some rules, regulating maximum increase in consumer prices for most governmentally controlled production of services and goods.*

The baseline scenario: CBR continues to support some balanced effective exchange rate, ensuring suppression of the real exchange rate growth along with reserve and stabilization fund accumulation sufficient for fast (by 2008) external government debt repayment. Additional bounding condition is that the suppression of RER requires decreasing nominal exchange rate which in turn requires widening monetary base. Then, this rate of monetary growth will have to be sustainable with a primary goal of lowering inflation. So, in the case of moderate oil prices such a balanced exchange rate is expected to be at 28-29.5 RUR/USD. This policy is pursued today. In the case of growing oil prices (to 60 USD/barr.) we expect this exchange rate to increase to 25.5-27 RUR/USD. We regard the baseline scenario as an inertial one, where the economic growth will fully rely on domestic investment and credit resources, using mostly domestic machinery and equipment for capital accumulation. The structure of economy is expected to be unchanged, in case of growing oil prices economic structure may move towards gas-oil sector at the expense of reducing light and food-producing industry.

We investigate the above 2 possible scenarios: two scenarios of different exchange rate regimes (i.e. inflation targeting and baseline scenario) for two different oil market scenarios under

assumption of oil price of 40 USD/barr and 60 USD/barr. In our analysis we use the economic model of Russian economy developed by Development Center.³

2. Brief model description

The model used in the present scenario analysis has been developing over the last 5 years within Development Center by the Andrey Klepach⁴ and Maxim Petronevich. This model represents a dynamic computable partial equilibrium model with a time horizon 2015 and consists of several independent blocks (total more than 400 equations), divided by the institutional agents principle.

These blocks are:

1. Monetary authorities and the Central Bank.
2. Banking system.
3. Households
4. Budget and government expenditures
5. Private, corporate and government debt.
6. Foreign trade, balance of payments and external pre-conditions.
7. Financial markets
8. Industry production and finance.
9. GDP formation.

All of these blocks could be used independently from each other: in this case all outer variables can be treated as exogenously given (e.g. from the official forecast of socio-economic development of Russia prepared by Ministry of Economic Development and Trade).

In these blocks we use econometric analysis and, where possible, we used balancing equations. The separate block of prices is conceptually missing in this model, because necessary equations for price indexes and deflators are included in the corresponding “institutional” blocks. One of the most important features of the model used is that such variables as exchange rate and inflation are endogenously determined within the model.

³ Mainly contributed by Andrey Klepach and Maxim Petronevich.

⁴ Mr. Andrey Klepach is now the head of department of macroeconomic forecasting at the Ministry of Economic development and Trade.

Also one of the most important aspects is that this model is not “fixed” – it evolves along with economic development, and some blocks are continuously changing in order to reflect changing drivers. For example, the volume of imports before 2004 was largely determined by dollar disposable income, profits of organizations and the difference between price level in Russia and worldwide (captured by branch-specific real exchange rate). Nowadays, the key driver for imports is rising market of consumer credits, which quadrupled for 2004-2005 period, and we change a model accordingly.

As an equilibrium condition we use such variables as GDP deflator and exchange rate – in order to obtain the equality between these variables in output of the model and the figures we assign as inputs.

3. Scenario analysis

Short-run development: year 2006-2008

In the *baseline scenario* we suggest that oil prices will be stable at 40 USD/barrel level in the whole period of 2006-2008. An economic background, agreed to our analysis, will be favourable for searching for new directions for sustainable economic growth: the growth rates will be moderate, but stable. A bit lower level of oil prices would be still sufficient for Russian oil-producers and may support a stable export by 6% on annual average. Under the balanced foreign exchange rate policy the growth of investments will amount 10.3%, and taking into account growth of net exports, it supports GDP growth at the level of 5.8% per annum. The exchange rate appreciation, which has taken place for last 3 years, reverses for the exchange rate devaluation (up to 29,5-30,5 RUR/USD), and Russian economy will still experience RER strengthening.

Table T2. Short-run dynamics of macroeconomic fundamentals: 2006-2008

| Growth of | 2004 | 2005 estimate | Averages 2006-2008 | | | |
|---|-------|------------------|--------------------|-------|-------|-------|
| | | | (1) | (2) | (3) | (4) |
| GDP, % | 107.1 | 106.3 | 105.8 | 106.0 | 106.0 | 105.7 |
| Domestic demand, % | 108.9 | 110.7 | 107.1 | 107.9 | 109.1 | 109.5 |
| incl. for domestic goods, % | 104.5 | 104.2 | 105.2 | 105.2 | 105.5 | 104.6 |
| Foreign demand, % | 112.3 | 105.9 | 106.7 | 107.1 | 106.8 | 107.2 |
| Industry, % | 106.1 | 104.0 | 104.9 | 105.2 | 105.1 | 104.5 |
| Investments, % | 110.8 | 111.0 | 110.3 | 111.6 | 113.0 | 112.5 |
| Retail sales, % | 112.1 | 112.0 | 107.4 | 108.3 | 109.2 | 109.8 |
| Real personal disposable income, % | 108.3 | 109.1 | 106.5 | 107.2 | 107.9 | 108.3 |
| Exports, bil. \$* | 183.5 | 249.7 | 8.1 | 6.8 | 80.0 | 78.8 |
| Growth of exports (physical volumes), % | 109.1 | 104.2 | 106.0 | 105.8 | 105.3 | 105.2 |

| | | | | | | |
|--|-------|-------|-------|-------|-------|-------|
| Imports, bil. \$* | 96.3 | 124.1 | 50.4 | 68.4 | 77.6 | 91.0 |
| Growth of imports (physical volumes), % | 122.7 | 125.4 | 111.2 | 114.7 | 116.7 | 119.3 |
| Trade balance (exports-imports), bil. \$ | 87.2 | 125.6 | -42.3 | -61.6 | 2.4 | -12.1 |
| Price of oil URALS, \$/barr. | 34.6 | 51.0 | 40.0 | 40.0 | 60.0 | 60.0 |
| M2, % | 135.8 | 126.4 | 126.6 | 125.5 | 128.0 | 126.6 |
| Reserve money, % | 145.0 | 150.0 | 113.0 | 115.1 | 115.8 | 117.6 |
| Budget deficit (+), % of GDP | -4.3 | -7.0 | -2.6 | -1.9 | -6.3 | -5.5 |
| Reserves, bil. \$ | 124.5 | 182.0 | 89.2 | 90.5 | 211.8 | 212.3 |
| Nominal exchange rate (RUR/USD) (eoy) *** | 27.8 | 28.6 | 29.5 | 26.4 | 25.6 | 22.7 |
| Growth of real exchange rate (eoy), (RUR/USD) % ** | -15.6 | -7.8 | -17.4 | -22.3 | -27.0 | -32.1 |
| Growth of nominal exchange rate (RUR/USD), % (eoy)** | -5.8 | 2.9 | 3.4 | -7.7 | -10.4 | -20.7 |
| Inflation rate, % (eoy) *** | 111.7 | 111.6 | 105.6 | 103.6 | 104.2 | 102.1 |

Source: Development Center

(1) – balanced exchange rate (baseline scenario, 40\$/barr.)

(2) – inflation targeting (40\$/barr.)

(3) – balanced exchange rate (60\$/barr.)

(4) – inflation targeting (60\$/barr.)

All indicators are calculated as geometrical average, except:

* – absolute changes for whole period; for 2004-2005 data is given in levels.

** – relative changes for whole period

*** – end of period estimates

Increasing reserves/import ratio and a stable exchange rate support financial stability and predictability, the stable GDP growth favors growth of foreign direct investment, including in the manufacturing industry. Nevertheless, the economy still largely depends on exports and foreign demand accounts for 42% of total GDP growth. A growth of aggregate domestic demand at the rate of 107,1% (including 5.2 for the domestic goods) will be covered mostly by imports (more than 55% of total growth of aggregate demand, but it still better than it was in 2003-2004 when this figure was equal to 73%). This tendency might be judged from both lower growth rates of dollar disposable personal income, gross enterprise profit and mixed income (in USD), and saturation of consumer credit market, which is doubling for last two years and stimulates retail sales of imported electronics and cars. Another factor that can improve national economy is developing housing mortgages (hypothecary credits), which are much less import-intensive (they stimulate only import of building materials) than consumer credits. All these factors are likely to shift Russian economy to the internally-driven growth, when the most part of income (including exports) will be spent inside the country, rather than flowing back outside Russia as imports and capital outflows. Industry structure is likely to change: by 2008 we expect that shares of the fuel-exporting industry and electricity will drop by 4 and 0,6 pp, respectively, other industries will correspondingly increase their current shares.

In the **case of rising oil prices** up to 60 USD/barrel, the nominal exchange rate will likely to appreciate, the trajectory of economic growth will be much a-like as it is now: a high growth of personal income (at the rate of 7.9%) and of enterprise profits, and the appreciated RER will stimulate not only GDP growth, but mostly consumer and investment imports. Despite of high GDP growth (+6% annually), both investments (+13%) and retail sales (+9.2) as the most part of aggregate consumption and investment will be absorbed by one-and-a-half increase of import growth rates (from 11,2% per annum in scenario (1) to 16,7% in scenario (3) – see Table T2). The growth of imports in absolute terms will amount USD 78 billion against USD 50 billion dollars in the baseline scenario. It is necessary to mention that the conception of import-oriented growth is very dangerous: when much of the national income is generated and spent outside the economy as exports and imports consequently, the economic growth becomes much sensible to world market fluctuations and world business climate. In the case when more than 70% of export income is generated by oil exports, relying mostly on the high oil price, and this price suddenly halves, than the trade balance will rapidly fall by USD 100 billion, making further foreign financing very difficult, and might result in exchange rate depreciation. In a nutshell, high oil price provides more economic growth, but far more it extends risk of that growth. Comparing to the baseline scenario, switching for internal-generated growth will occur at higher levels of GDP growth (7-8% against 5-6%), but it is delayed for the years 2011-2012 (comparing to 2006-2007 in the baseline scenario).

Financial situation of the economy will be also better - but at the same time also far more risky: exchange rate appreciation up to 26 RUB/USD will lead to rapid RER appreciation by 27,5%. Worsening of terms of trade affects industrial growth: though aggregate demand significantly rises, industry growth rises only by 0.2 pp annually. Under the real appreciation, the share of fuel-exporting industry is likely to increase, substituting all other industrial branches. As expected, the share of fuel-exporting industry will rise to 24% (comparing to 19,1% in the baseline scenario), shares of food and light industries, which have to compete with less-expensive imports, will fall to 13,1% (against 16,1% in the baseline scenario).

Bank of Russia may pursue **inflation targeting scenario** in different scale. It may strengthen the Rouble, say, up to 27 RUR/USD, or even more. Many economists polled in Russia during summer 2005 said that if the CBR withdraws from the foreign exchange market and let the market decide the “fair” value of dollar, the latter could drop up to 25 RUR/USD. According to our analysis, if average annual price of URALS will equal to 40 USD/barr., USD could drop by 26.4 RUR/USD by the year 2008. Thanks to it, Russian government could significantly lower inflation

rates down to 8,5% next year and even to 3.6% in the year 2008 (versus 5.6% in the baseline scenario).

In this case, investment growth would increase by 1,2pp (comparing to the baseline scenario) per annum and amount to 11,6% annually. But modernization of the economy will be exercised mainly at the expense of growing imports of investment goods, and will result in a weak boost of GDP growth: it would increase only by 0,2 pp. Increase in imports will amount USD 63,5 billion, or additional 3.5 percents of growth annually. The budget surplus will fall and would be equal to 0,5% of GDP and likely to force the government to decrease the government expenditures on investments by 0,2-0,5 % of GDP. So, the government expenditure will rise, albeit more slowly than in the baseline scenario, and is likely to be substituted by direct foreign investments that are expected to grow. In this case, the most part of GDP growth is generated not by import-substituting tradeables (which have to compete with less expensive imports), except food industry, but by industries exporting raw materials (export tradeables), and non-tradeables, including construction, services, transport and communication. The industry structure will slightly change: main difference is a declining share of food and light industry to 15,2%, machine-building shares will slightly grow.

Finally the **last scenario**: when the trade balance allows Central Bank to strengthen nominal exchange rate up to the 23 RUR/USD, which will lead to the RER appreciation by 32% comparable to the year 1992 level. In this case, growth in inputs of capital would beat next year a record 19%, but then sharply fall for a merely 8-10% growth a year. This effect may be explained by the lack of domestic demand for domestic goods: average growth declines to the lowest value in all scenarios – 4,5%. This value actually mean that in this case we return to the situation in 1995, when more than 80% of aggregate domestic demand increment was consumed by imports, despite large expenditures in real terms. A large amount of money that would flow back as imports reduces the investment and wages next year, because of a drop in demand for domestic goods. It results in a drop in both import-competing machine-building and consumption industries – their shares both fall by 2 and 4 pp comparing to 60 USD/barr. balanced scenario. It means that very aggressive real exchange rate strategy may cause substitution between domestic and importing goods in domestic tradeables industries, and may cause a large drop in incomes sufficient to suppress domestic funds available for further investment financing.

Table T3 . Industrial structure in the short- and medium run (% of total industry production).

| | 2004 | 2005 | 2008 | | | | 2015 | | | |
|-----------------------------------|------|-------|------|------|------|------|------|------|------|------|
| | | estim | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
| Electricity and heating | 11.7 | 11.2 | 10.6 | 11.0 | 10.5 | 10.9 | 7.6 | 7.5 | 7.5 | 8.1 |
| Fuel-exporting industry* | 20.8 | 23.3 | 19.1 | 19.3 | 24.0 | 24.8 | 12.4 | 12.0 | 14.6 | 17.9 |
| Raw-material exporting industry** | 31.0 | 30.3 | 32.8 | 32.6 | 31.4 | 31.1 | 35.7 | 33.8 | 33.2 | 35.4 |
| Machine-building | 20.7 | 19.9 | 21.4 | 21.8 | 21.1 | 20.9 | 27.7 | 29.0 | 28.3 | 26.4 |
| Food and light industry | 15.9 | 15.4 | 16.1 | 15.2 | 13.1 | 12.3 | 16.7 | 17.9 | 16.5 | 12.3 |

* – includes oil-extracting, oil-processing, coal, gas and other fuel industries

** – includes ferrous and non-ferrous metals, timber, woodworking, pulp and paper industry, chemical and petrochemical industry, building materials industry.

Medium-run development

In this period, we suppose that the price of oil will increase proportionally to the world dollar inflation rate. In 2010-2011 we are modeling a cyclical downturn in world trade and in world GDP– growth rates are falling by 0,5-1%. This period shows us a medium-run consequences of exchange rate policy and economy restructuring realized in 2006-2009.

The common feature of low oil price scenarios is a falling share of fuel-exporting industry – it amounts 12-12,5% of industrial production by 2015, versus 14,6-17,9% in high oil price scenarios (Table T3).

In the **baseline scenario**, the economy will grow under self-intensive mechanism: aggregate domestic demand for domestic goods will rise faster than aggregate domestic demand for imports, which means that economy becomes less dependent on export incomes and foreign finance. It results in reducing the difference between GDP and industry growth – they both equal to the year-average 6,1-6,3% . Also it can be traced in industrial structure – the share of machine building would rise by 6,3 pp, to 27,7%, food and light industry will rise by 0,6pp.

Possible world economic downturn in this scenario is smoothly passed to the domestic economy – because the most part of aggregate demand will be generated inside the economy, not outside. Stable economic growth, high reserves, stable exchange rate might made domestic economy attractive for both short and long-run foreign capital, boosting investments.

Scenario of **inflation targeting** could lead to better results regarding all economic fundamentals: it support rates of growth that are 0,5 pp higher than in the baseline scenario. It supports doubling of GDP by year 2014. Nevertheless, there are significant changes in sources of financing. Rising imports and private foreign debt would lead to a growth in mandatory demand for foreign currencies and worse both the trade and current account balances. We estimate that the balance of trade, which include both goods and services will have a deficit of USD 27 billion

(compared to a surplus of USD 110 billion in 2005), the total private foreign debt will amount USD 440 billion. That means that the balance of payments becomes extremely sensible to incoming FDI, which may be extremely volatile to world business climate. In our simulations for 2010-2011, GDP growth rates fall by 1-1,5 pp, but then rapidly grow. If the world downturn would last longer, the growth rates might converge to baseline figures.

Table T4. Medium-run properties of macroeconomic fundamentals: 2009-2015

| Growth of | 2004 | 2005 | Averages 2009-2015 | | | |
|--|-------|----------|--------------------|-------|--------|-------|
| | | estimate | (1) | (2) | (3) | (4) |
| GDP, % | 107.1 | 106.3 | 106.1 | 106.5 | 106.6 | 105.6 |
| Domestic demand, % | 108.9 | 110.7 | 106.1 | 107.2 | 108.1 | 106.6 |
| incl. for domestic goods, % | 104.5 | 104.2 | 106.3 | 106.8 | 107.8 | 106.4 |
| Foreign demand, % | 112.3 | 105.9 | 105.2 | 105.2 | 104.3 | 104.2 |
| Industry, % | 106.1 | 104.0 | 106.3 | 106.9 | 106.2 | 105.1 |
| Investments, % | 110.8 | 111.0 | 111.0 | 111.6 | 111.0 | 110.0 |
| Retail sales, % | 112.1 | 112.0 | 106.9 | 107.3 | 107.8 | 106.0 |
| Real personal disposable income, % | 108.3 | 109.1 | 107.4 | 107.9 | 108.0 | 106.4 |
| Exports, bil. \$* | 183.5 | 249.7 | 127.4 | 133.8 | 116.2 | 118.4 |
| Growth of exports (physical volumes), % | 109.1 | 104.2 | 104.4 | 104.7 | 103.5 | 103.6 |
| Imports, bil. \$* | 96.3 | 124.1 | 167.7 | 192.4 | 218.9 | 180.8 |
| Growth of imports (physical volumes), % | 122.7 | 125.4 | 107.5 | 108.9 | 109.8 | 107.8 |
| Trade balance (exports-imports), bil. \$ | 87.2 | 125.6 | -43.3 | -58.6 | -102.7 | -62.4 |
| Price of oil URALS, \$/barr. | 34.6 | 51.0 | 42.5 | 42.5 | 61.8 | 61.8 |
| M2, % | 135.8 | 126.4 | 119.4 | 117.9 | 118.6 | 116.9 |
| Reserve money, % | 145.0 | 150.0 | 110.7 | 108.3 | 110.4 | 108.1 |
| Budget deficit (+), % of GDP | -4.3 | -7.0 | 0.7 | 1.6 | -1.0 | -0.5 |
| Gchange in reserves, bil. \$* | 124.5 | 182.0 | 42.0 | 44.9 | 123.6 | 153.3 |
| Nominal exchange rate (RUR/USD) (eoy) *** | 27.8 | 28.6 | 31.4 | 31.0 | 27.7 | 27.5 |
| Growth of real exchange rate (RUR/USD), % (eoy)** | -15.6 | -7.8 | -20.2 | -10.8 | -15.6 | -10.5 |
| Growth of nominal exchange rate (RUR/USD), % (eoy)** | -5.8 | 2.9 | 6.4 | 17.8 | 8.2 | 20.9 |
| Inflation rate, % (eoy) *** | 111.7 | 111.6 | 103.7 | 105.0 | 104.7 | 108.0 |

Source: Development Center

(1) – balanced exchange rate (baseline scenario, 40\$/barr.)

(2) – inflation targeting (40\$/barr.)

(3) – balanced exchange rate (60\$/barr.)

(4) – inflation targeting (60\$/barr.)

All indicators are calculated as geometrical average, except:

* – absolute changes for whole period, for 2004-2005 data is given in levels.

** – relative changes for whole period

*** – end of period estimates

Industrial structure is likely to improve: shares of import-competing industries are growing 2.3 pp comparing to the baseline scenario. The inflation rate is likely to be higher, what reflects devaluating nominal exchange rate of the Rouble under growing imports and debt repayments. In both scenarios long-term exchange rate is likely to be the same and equal to some 31-32 RUR/USD.

In case of **expensive oil, the inflation targeting policy is non-appropriate**, as it was in the short-run. Most variables related to income dynamics are the lowest among all scenario. Moreover, one could spot that inflation rate is rising to 8%, though in 2008 it was only 2,6%. This means that if the economy does not generate internal income for financing investments, or, at least, disposable incomes, then under strong real exchange rate industry growth amounts to only 5,1%. Under such a regime, the monetary authorities will have to devalue the Rouble, what may result in rising inflation. The industry structure will move toward a typical Dutch-disease picture: low industry growth will emphasize the role of exporting industries – our calculations clearly show +5,5pp (almost half times larger) increase in industry share comparing to the baseline scenario, or + 3,3pp comparing to the balanced expensive-oil scenario. This can be explained by high prices on exporting goods, and weakly growing other parts of the economy.

If government will provide more **balanced policy** (i.e. not allowing for extremely appreciation of the national currency), then the situation is much better, and support the highest economic growth.

From the macroeconomic fundamentals point of view: the growth of GDP, investments, and real personal disposable income in this scenario are at their maximum. In the short-run, the government can lower the inflation rate below 3% by 2008 and hold it relatively stable in the longer-run. But there are some important drawbacks. Strengthening of the Rouble and improving economy's attractiveness for FDI lead to the fast growing investment imports, foreign direct investments and foreign financing, which Russian economy may finance primarily by large oil exports (it accounts for 70% of exports) and by capital inflows. If the oil price would suddenly drop by half, aggregate exports may fall by 30% and a huge negative trade balance (approx. – USD 150 billion) and short-run capital outflows can lead Russian economy into the debt crisis, the same as it was in 1998. Even in the less serious situation of decreasing growth of world trade Russian economy can face problems with financing its investments. So, taking into the account all the benefits and drawbacks of this scenario, we consider scenario of high oil prices extremely unfavourable since it forces monetary authorities to strengthen the Rouble which can lead to the disastrous import growth and mean lower income or much more risk of financing these imports only because of highly speculative parameter such as the price of oil.

Conclusions

We examine different exchange rate policies and their influence on Russian economic growth and industrial structure. We consider two possible scenarios for exchange rate policy: a policy of strengthening the Rouble or inflation targeting and some balanced baseline scenario. Policy of weakening the Rouble we consider non-appropriate, because it suffers most causes for inefficient devaluation policy outlined by IMF. Moreover, it could lead to an inflation surge. We analyze the two scenarios under different oil world market situation: case of USD 40/barrel, and USD 60/barrel.

Our analysis shows that industrial structure, concerning fuel-exporting industries, mostly depends on the world oil price: in case of USD 40/barrel. this share might drop from 23.3% in 2005 to 14-14,5% in 2015; at USD 60/barrel. it will amount 15-18%. The situation of raw-materials industries remains relatively stable – they account for 33-35% of total industry independently of the scenario. The main beneficiaries of strengthening exchange rate policies will be machine-building: for low-oil-price inflation targeting scenario its share grows above 29% comparing to the 19,9% in 2005. For machine-building, in this case the negative effect of exchange rate strengthening will be outweighed by positive effects of declining unit cost of capital. Food and light industries will also demonstrate relatively stable shares, and it is more important not to tolerate its possible reduction and improve business climate for individual entrepreneurs and small businesses, which form the most part that industry. This is especially crucial for the light industry where imports occupy more than three quarters of the market.

Our analysis shows in the USD 40/barrel scenarios that inflation targeting policy is a favorable one from the macroeconomic fundamentals point of view: the growth of GDP, investments, and real personal disposable income in this scenario are at their maximum. In the short-run the government can reduce the inflation below 5% by 2008. Central Bank limits its presence on the foreign exchange market to the minimum, and this leads to the strengthening of the Rouble and improves economy's attractiveness for FDI (which, in Russia, generally is spent on import of more effective foreign equipment). In this case, the economy will experience fast growing investment imports, foreign direct investments and foreign financing, which Russian economy *may not* to transform into productivity growth due to the lack of effective management and resource allocation. In this case growing imports will turn the trade balance into a deficit, foreign private outstanding debt could result in high debt repayments. In this case the only term that could keep the balance of payments stable is net capital inflow, which we expect to be highly volatile. If oil price

drops by half and the volume of exports decreases by 30%, then negative trade balance and short-run capital outflow can lead Russian economy into the debt crisis, similar to that in 1998.

Even under USD 60/barrel scenarios it is strongly recommended not to strengthen the Rouble above some limits: in our case it's 24-25 RUR/USD: in this case the economy will experience significant decrease in national income (because of high imports) what would suppress further investment growth. In this case a more balanced exchange rate policy is appropriate, but the economy could still suffer for the same reasons as in the USD 40/barrel inflation targeting scenario – i.e. from the possible lack of an effective management and capital allocation. That means that in the case of high oil prices (USD 60/barrel) a scenario of more balanced exchange rate policy is preferable.

Literature

1. V.Mironov, V.Dorogov (2006), “:Industry Restructuring and competitiveness in Russia - from price to non-price determinants”, DC (WIIW) working paper , January 2006.
2. “Business Cycle, International Linkages, and Exchange Rates”, IMF, working paper, 1998.