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Impending Recession and How to Fight It

An Empirical Analysis of Russian Realities and Global Experience

This article considers the problem of autonomous recession as a drop in output not directly associated with the world economic situation, but mainly due to domestic supply and/or demand shocks. To determine possible factors of autonomous recession, we have studied the stylized facts and other characteristics of such periods in countries of the Organization for Economic Cooperation and Development in 2000–12, drawing analogies with the current Russian situation, from the standpoint of both causes of a potential recession and the response of the economic authorities, that is, a countercyclical economic policy. The latter considers global and Russian experience in determining the so-called output gap (the difference between potential and actual output), mainly using modeling approaches for Russia with “nonaccelerating inflation rate of production utilization factors.” Designs of an anticrisis policy are suggested with regard to autonomous recession, the utilization of productive potential, and the characteristic features of the Russian

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economy as mainly resource-based and thus unusually procyclical from the point of view of macroeconomic indicators.

Keywords: anticrisis policy, business cycle, inventory cycle, output gap, potential output, recession

Jel Classification: E31, E32, E61, E66, G18

Autonomous recession in Russia as a recession of supply or demand (not the country's usual inventory recessions)

In 2013 in Russia, despite the stabilization of the world economic situation, a discussion arose about the possibility of an early recession of the Russian economy. The reason was the steady slowdown of gross domestic product (GDP) growth to 1.2 percent in Q3 2013, compared to the corresponding period of the previous year (the peak of 5.1 percent was recorded in Q3 2011). Current data (the first, preliminary Rosstat assessment) point to the 2013 lag in production compared to demand, that is, the partial satisfaction of the latter by sale of inventories.¹ In Russia, this scenario is often a harbinger of crisis (as in Q3 2008), which, according to seasonally adjusted Rosstat data,² has already begun (Figure 1).

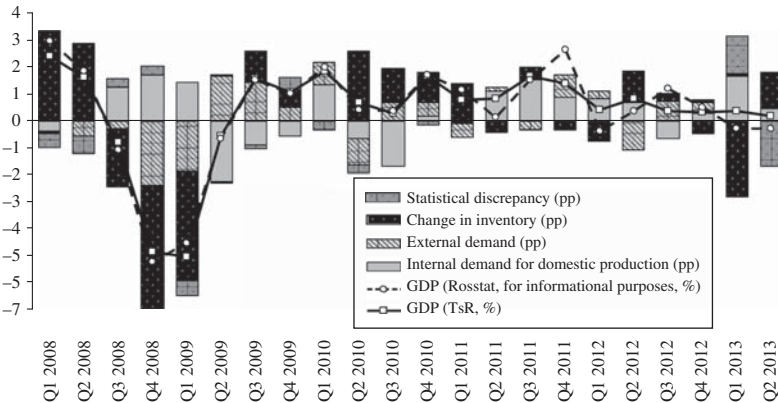


Figure 1. Dynamics of Russia's GDP (increase from previous quarter, seasonally adjusted) and its Components by Type of Demand. *Sources:* Rosstat; calculations of the Center of Development, National Research University, Higher School of Economics

Amid slowing GDP growth, industry in general and manufacturing in particular have made the most significant contribution to the steady decline in economic activity in the past two years.³ Russian industrial output in 2013 worsened in almost half of the major sectors, but the greatest decline was in manufacturing sectors that, as international experience shows, are most closely tied to a general economic recession—notably metallurgy and mechanical engineering (Figure 2).⁴

However, objective assessment of the current situation is complicated by significant statistical discrepancies in the official estimates of GDP growth in the first two quarters of 2013 with respect to final demand (see Figure 1), which leaves open the question of whether there is a recession and what its mechanism is. With respect to the latter, it should be noted that the variety of classical Keynesianism that explains cyclical fluctuations of the economy as a cycle of inventories is still well-suited to explain the two main Russian recessions (see, e.g., Mironov, 2009) (see Figure 2);⁵ other potentially fruitful methodological approaches to analysis of the cycle and dynamics of the crisis in the Russian economy are not being actively pursued.⁶ The proportion of the Russian crises of 1998 and 2008–9 attributable to the inventory factor was generally greater than during the crises of the first half of the twentieth century in the United States, where inventory decreased only with the development

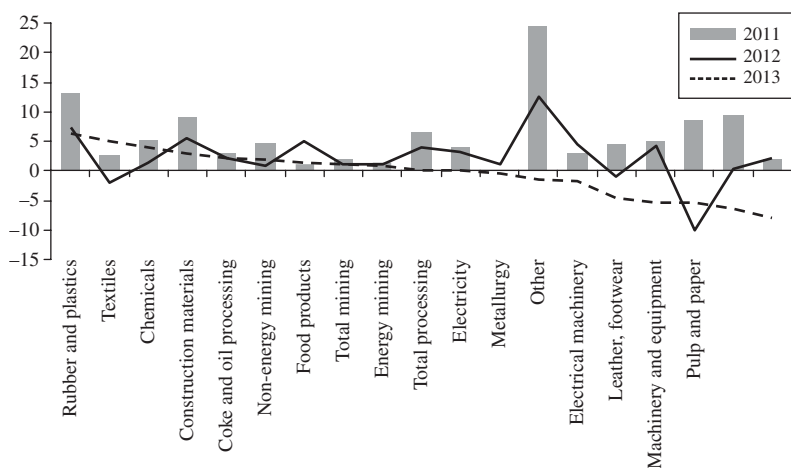


Figure 2. **Industrial Sectors in Russia, January 2011–September 2013** (increase year on year, ranked by 2013 figures, %). *Sources:* Rosstat, authors' calculations

of logistics, techniques of corporate governance, and the decline in inflation.

If analysis of a possible new recession in Russia proceeds from the theoretical model of the inventory cycle to draw analogies with previous crises, we can say that in 2008–9, events developed according to the following scenario. In the precrisis period, under conditions of high inflation, enterprises built up significant inventories of raw materials and finished goods. Then, after a sharp deterioration of expectations in late 2008, amid a kind of “perfect storm” on the financial markets,⁷ they began to drastically reduce inventories, trying to keep them, in accordance with the prevalent model, at the norm (in percent) relative to expected sales volume. Demand remained virtually unchanged in the downward phase of the market in 2009, and about three-quarters of the decline in GDP (–7.9 percent) was explained by the negative contribution of multiple reductions of inventories (Figures 3–4).⁸ Today in the Russian economy, as in 2008, some conditions still exist both for triggering a sharp decline in inventories and for potentially worsening the situation on the financial market by a crisis either of liquidity (as at the end of 2008) or of insolvency of financial institutions.

Now a liquidity crisis, unlike in 2008 (when it occurred amid a sharp contraction of monetary growth due to an inflexible model of money

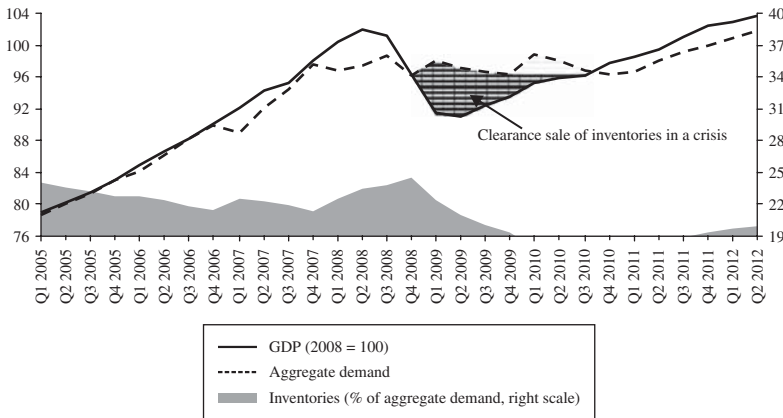


Figure 3. Interaction Between GDP and Reserves as a Mechanism of Inventory Recession in Russia. Sources: Rosstat; calculations of the Center of Development, National Research University, Higher School of Economics

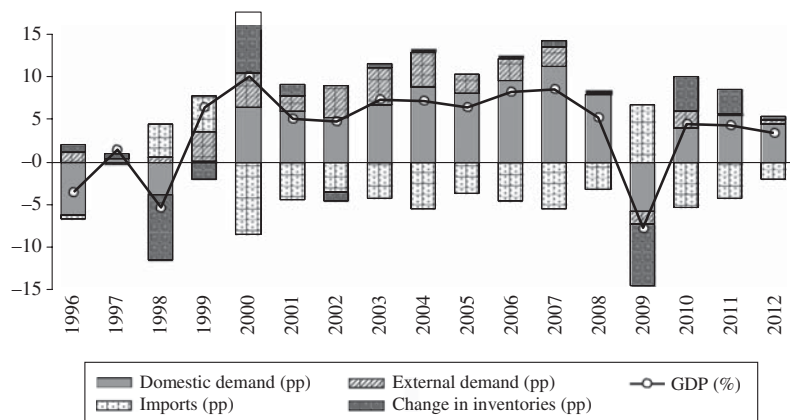


Figure 4. **Russia's GDP in 1996–2012** (increase over previous year) and Contribution of Its Components by Type of Demand. *Sources:* Rosstat, authors' calculations

supply formation),⁹ may be associated with a serious stratification of the Russian banking system. Concerning insolvency, one should bear in mind certain problems in the banking sector (as evidenced by special indicators and the recent review by the Central Bank of Russia of the licenses of several Russian banks),¹⁰ as well as the serious deterioration in 2013 of the macroeconomic situation in the BRIC countries [Brazil, Russia, India, and China]. All this suggests the likelihood of a crisis in the financial markets, which could trigger a negative multiplier of inventories and a shift from stagnation to recession. True, by Q4 2013, Russian industry, judging by Rosstat surveys, again found itself with a shortage of inventory of finished products (Figure 5). This could be a precursor not of recession but of recovery; however, finished products are only part of total inventories.

Rosstat data on all inventories are released only after a considerable delay, so there is no basis to conclude that no recession is threatened in the near and especially the foreseeable future.

The possibility, not of an inventory recession (where a decline in inventories is the main factor leading to a fall in GDP), which is the usual pattern in the Russian economy, but of a recession in supply or demand, becomes more relevant for two reasons. The first is a steady slowdown (or even decline) of the growth rate of both domestic and external demand.¹¹ Second, are the “procrisis” dynamics of the Russian

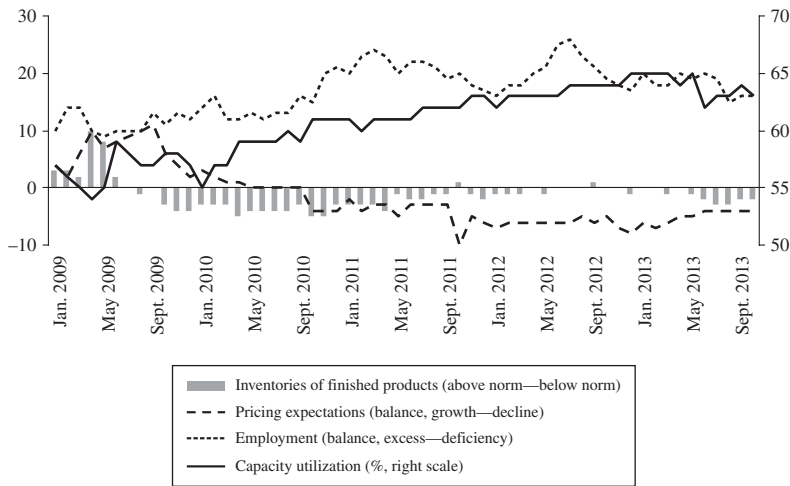


Figure 5. Changes in Russian Industrial Conditions: Entrepreneur Surveys in January 2009–October 2013 (seasonally adjusted). Sources: Rosstat, ISSEK of the National Research University, Higher School of Economics.

Notes: Figures for output and demand are in the form of balance-sheet valuation: percent of respondents reporting an increase within the most recent three to four months, minus percent of respondents reporting a deterioration. Figures for inventories are also given in the form of balance-sheet valuation: percent of respondents reporting that inventories are above the norm, minus percent of respondents reporting that they are below the norm

economy's index of competitiveness, which we calculated in terms of foreign exchange costs,¹² whose value is now considerably below the critical point of the crises in Russia of 1998 and 2008–9 (Figure 6).

A number of interrelated issues are involved here: Specifically, how real is the threat of a new recession, given that the fall in Russia's GDP during the 2009 crisis was quite recent, whereas the previous one occurred eleven years before? Might there be in Russia not a recession mainly of inventories (like the crises of both 1998 and 2009), but a full-fledged recession of supply or demand, and caused not by an external crisis (in which case it would be autonomous for Russia)? Do autonomous recessions happen often? What does international experience tell us?

Another important question, related to the first: If the threat of an autonomous recession is urgent, how reasonable are attempts to combat it by short-term stimulation of the economy—public procurement, public investment in infrastructure, and so forth? If an economy in recession

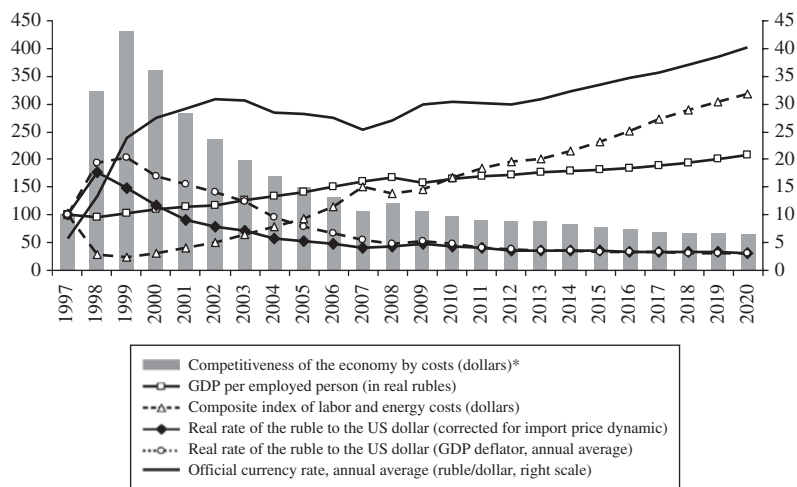


Figure 6. **Indicators of Competitiveness of the Russian Economy and an Inertial Forecast** (100 = 1997). *Sources:* Rosstat, authors' calculations. * The indicator is calculated as the inverse of a composite index of growth in labor costs and electricity in foreign currency terms, deflated by productivity growth in the economy. As a result, the competitiveness indicator is the inverse of the index of growth of unit costs in monetary terms

is operating at full capacity, attempts to “warm it up” by artificial “pumping” of demand can only accelerate inflation and do not increase real output. This is because a short-term positive response—a production increase—can lead to a subsequent decrease (given the increased cost of resources and consolidation of inflation at a new, higher rate, given the inelasticity that prevents prices from going back down). Then resumption of economic growth will primarily require solving the problem on the structural plane (lack of competitive productive capacities, poor investment climate, labor shortage, high risk and uncertainty, etc.).

We shall consider, first, the prevalence and depth of autonomous recessions in a sample of countries of the Organization for Economic Cooperation and Development (OECD) in 2000–12. We understand such recessions as a decline in seasonally adjusted GDP for two consecutive quarters or more.

Second, using econometric approaches, we shall examine phase indicators of the Russian economic cycle, identifying economic overheating as an overload of production factors (production capacities and labor). The identification of such a situation, in our view, is

extremely important for Russia as a country highly dependent on raw materials exports. Such an economy continuously experiences problems not only with respect to incentives and institutions (which are distorted by the scramble for resource rent) and production (which can be destimulated by the real appreciation of the national currency and/or high inflation, if raw materials prices depart from the long-term trend), but also from the demand side. The problem here is both the lack of demand during the crisis and its excess during the recovery, insofar as in any raw materials-based economy, the procyclical nature of credit, public expenditures, and foreign capital inflows is, as a rule, superimposed upon cycles of fluctuation in commodity prices and global business cycles.

Third, we shall offer some observations on current economic policies in Russia.

Autonomous recessions: World experience and Russian realities

With the stabilization of the global economy in the first half of 2013, it is reasonable to ask whether Russia could have an autonomous recession, not related to the situation in the world or its major regions. Also, how common are such recessions and how deep are they? And finally, what factors mainly trigger an autonomous recession: changes in inventories, in final demand, or in supply directly? In the case of demand, which elements of it? In the case of supply, is an autonomous recession linked to generally accepted measures of countries' international macro-economic competitiveness, that is, to relative prices and costs?

There is no doubt about the theoretical possibility of autonomous recessions in a given country, but how to evaluate their prevalence has been less well studied. On the one hand, the modern economic literature identifies a trend toward *convergence* of national business cycles within the two main groups of countries, developed and developing, and toward *divergence* (so-called decoupling) between the two groups.¹³ This suggests that autonomous recessions should not be widespread, at least not in developed countries. On the other hand, a significant quantity of empirical data identifies a trend toward *autonomous* recessions for countries of the Commonwealth of Independent States (CIS), Asia, Africa, and the Middle East, with manifest synchronization of growth in the developed countries.¹⁴

Our calculations show that autonomous recessions are not that uncommon in the world today. In 2000–12 (except for the period from Q2 2008 to Q1 2009, when the whole OECD was in recession), the OECD countries (and also the BRIC countries and Indonesia) had at least forty-seven autonomous recessions, that is, a recession in one country, while growth continued in the OECD countries as a whole (Table 1). Twenty-three of the recessions occurred in the precrisis period, and twenty-four in the period starting from the second half of 2009 to 2012, covering the last thirty-eight quarters.¹⁵ Two or three times during this relatively short period there were recessions in Japan (in Q1–Q3 2011 and Q1–Q3 2012) and Hungary (in Q2–Q3 2009, Q4 2010–Q2 2011, and Q2–Q3 2012).

Thus autonomous recessions are not exceptional events internationally. So what causes this phenomenon?

Analysis of contributing factors in the GDP dynamics of countries where there was an autonomous recession in 2000–12, shows that in the OECD and BRIC countries overall, a similar situation occurred, with a simultaneous decline in gross accumulation and household final consumption expenditures (Figure 7, Table 2). These two factors explained approximately 84 percent of the drop in GDP during a typical autonomous recession, of which gross accumulation accounts for 51 percent and final consumption 33 percent. The negative contribution of inventory changes accounted for approximately 14 percent, changes in the foreign trade balance 5 percent, and the contribution of government expenditures was positive—less than the 3 percent drop in GDP—which is not surprising, given their countercyclical nature. Therefore, drawing on international experience, we can say that an autonomous recession in the Russian economy should be expected if there is a sharp slowdown in growth of household incomes, which has not yet been observed. But this cannot be ruled out because of the long period of rapid growth in wages (in currency terms) compared with labor productivity, which negatively affects the competitiveness of producers of traded goods (competing with foreigners on the criterion of unit costs) and tends to restrain wage growth.

In the economic discussions of recent years, there has been a tendency to link the factors of recessions with the international competitiveness of countries, that is, with relative prices and costs.¹⁶ It is noted in the literature that the countries of southern Europe lost their competitiveness as a result of an extravagant economic policy, which

Table 1

Autonomous Recessions in OECD and BRIC Countries in 2000–12
(excluding Q2 2008–Q2 2009)

Country	Number of recessions	Average duration, quarters	Average decline in GDP, percent	
			Per recession	Per quarter during recession
Portugal	4	3.5	1.99	0.50
Italy	3	3.3	1.28	0.34
Japan	3	3.0	1.92	0.67
Iceland	3	2.7	4.51	1.69
Hungary	3	2.3	1.22	0.50
Denmark	3	2.0	0.88	0.44
Spain	2	3.5	1.11	0.30
Ireland	2	2.0	2.62	1.32
Norway	2	2.0	1.44	0.73
Brazil	2	2.0	1.27	0.64
Switzerland	2	2.0	0.58	0.29
Mexico	1	6.0	2.74	0.46
Slovenia	1	5.0	2.91	0.59
Greece	1	4.0	7.39	1.90
Israel	1	4.0	3.92	0.99
Czech Republic	1	3.0	1.56	0.52
Germany	1	3.0	1.06	0.35
Netherlands	1	3.0	0.93	0.31
United Kingdom	1	3.0	0.57	0.19
Turkey	1	2.0	7.79	3.97
Estonia	1	2.0	1.85	0.93
New Zealand	1	2.0	0.67	0.34
Luxembourg	1	2.0	0.49	0.24
France	1	2.0	0.15	0.07
Average	1.75	2.9	2.12	0.76

Sources: Organization for Economic Cooperation and Development, authors' calculations.

Notes: Russia's important trading partners—with over 4 percent in foreign trade turnover in 2012—are shown in bold font.

sharply exacerbated the negative domestic effects of the global crisis. As Alan Greenspan wrote in an article in the *Financial Times*, “From 1990 through to the end of 1998, euro-south unit labor costs and prices rose faster than in the north. In the years following the onset of a single

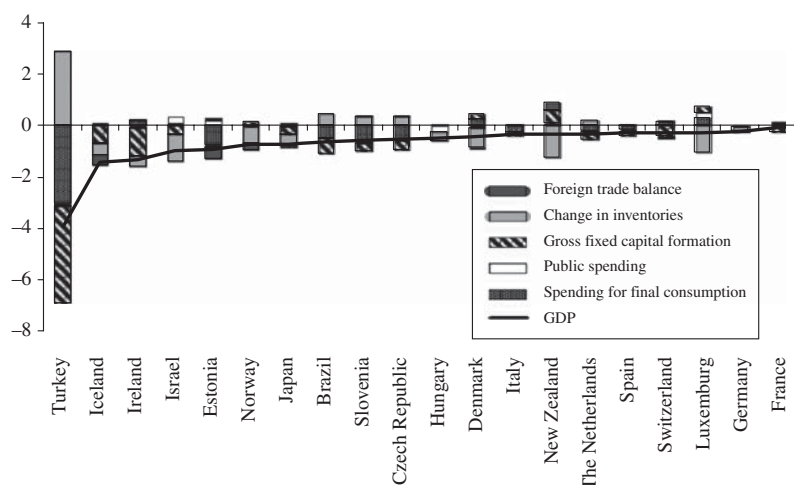


Figure 7. **Autonomous Recessions in OECD and BRIC Countries in 2000–2012 GDP and Its Breakdown into Final Demand and Inventories** (per quarter of recession, seasonally adjusted, percentage points). *Sources:* Organization for Economic Cooperation and Development, authors' calculations

Table 2

Typical (average) Autonomous Recession in OECD and BRIC Countries in 2000–2012, GDP Dynamics, Elements of Final Demand and Inventories (per quarter, growth compared to previous period, seasonally adjusted, PP)

Indicator	OECD and BRIC as a whole	Including OECD standard deviation	Eurozone (17 countries)	Eurozone (27 countries)
GDP	−0.75	0.84	−0.15	−0.16
Expenditures for final consumption	−0.25	0.72	−0.24	−0.18
Public expenditures	0.02	0.12	−0.04	0.0
Gross fixed capital formation	−0.38	0.87	−0.18	−0.15
Changes in inventories	−0.10	0.86	0.27	0.15
Foreign trade balance	−0.04	0.16	0.03	0.02

Sources: Organization for Economic Cooperation and Development, authors' calculations.

currency, that pace barely slowed. In fact, the underlying trend was stopped only by the financial crisis of 2008. Since then there have been signs of price level stabilization in the north and the south” (Greenspan, 2011). Greenspan proposes that southern Europe either “voluntarily adopt northern prudence” or politically unite within the European Union (EU) to prevent future misconduct by countries whose macroeconomic policies promote rash, procyclical behavior by enterprises and the population.

Indeed, the countries in crisis lost out to countries that escaped recession, in the major indicators of competitiveness, especially relative (compared with the portfolio of their trading partners) unit labor costs (RULC). Thus in 1999–2012, the average RULC growth in countries that experienced recession in 2010–12 was 11.3 percent (relative to the base year) and in countries that did not, only 6.8 percent.¹⁷ The second widely accepted indicator of competitiveness (the relative consumer price index, RCPI) is more equal, except for two countries, Hungary and the Czech Republic, where prices increased by 45–55 percent relative to 1996. Given the high growth in RULC, this undermined their competitive position compared with other countries that were in crisis in the previous three years.

However, in our view, the relationship between growth of unit labor costs and autonomous recession should not be considered absolute. Following another approach to factors affecting the major macroeconomic indicators, complementary to the above, we have to consider not only price competitiveness but also technological competitiveness (Fagerberg, 1988). But this, in turn, implies the need to consider a broader range of factors in recession, notably another macroeconomic indicator: unit capital costs (UCC).¹⁸

As noted in the literature, unit capital costs increased in the precrisis period in all eurozone countries due to the faster decline in the productivity of capital, compared to the rate of profit. In all countries except Greece, UCC grew faster than ULC during 1980–2007 and 1995–2007. “While the difference between the two variables varies across countries, the results indicate that the ‘loss of competitiveness’ by some countries in the eurozone is not just a question of nominal wages increasing faster than labor productivity: in all countries, nominal profit rates decreased at a slower pace than in capital productivity” (Feliipe and Kumar, 2011). Thus the real problem of the peripheral countries is that

they are stuck at the middle levels of technology, and reducing wages would not solve the problem of competitiveness (ibid.).

As experience with the crisis in OECD countries shows, in Russia, unfortunately, there are a number of internal causes (demand and supply shocks) for the potential onset of an autonomous recession. These include significantly higher growth of unit labor costs than in OECD countries that suffered a crisis,¹⁹ and the rapid rise of the real effective exchange rate of the ruble (Figure 8). Looking at all noncapital costs (including labor), the Russian economy is also in an unfavorable situation.

Judging from a number of macroeconomic indicators, the Russian economy, in addition to its monopolistic and inefficient resource and infrastructure sectors, has serious structural problems in the labor market and in production factors, which encourage extravagant spending by economic agents. This is shown by the fact that Unit Labor Costs increased even when the dynamics of other macroeconomic indicators would have made it possible to avoid it. Such a situation was observed in the precrisis period (Figure 9), when expansionary fiscal and monetary policies, according to theoretical assumptions, should not

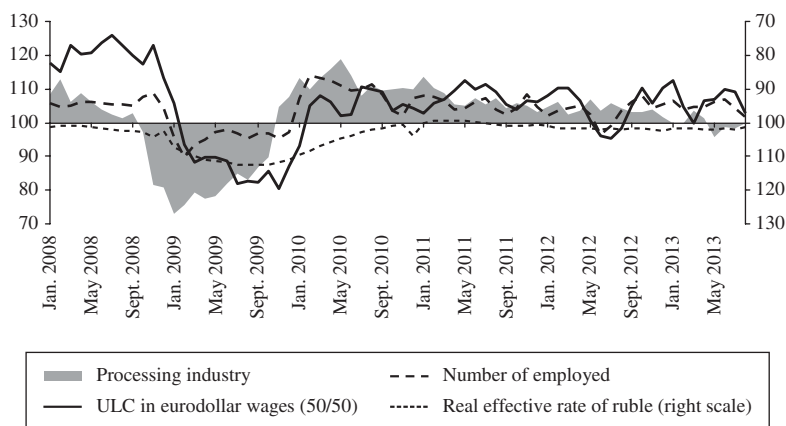


Figure 8. Dynamics of Russian Manufacturing Industry and Competitiveness Indicators (increase year on year, %). *Sources:* Rosstat, authors' calculations.

Notes: ULC in monetary terms is the quotient of wage growth in monetary terms (dollar/euro—50/50) divided by the growth of labor productivity, calculated as the ratio of the growth of the manufacturing industry and the number of filled jobs

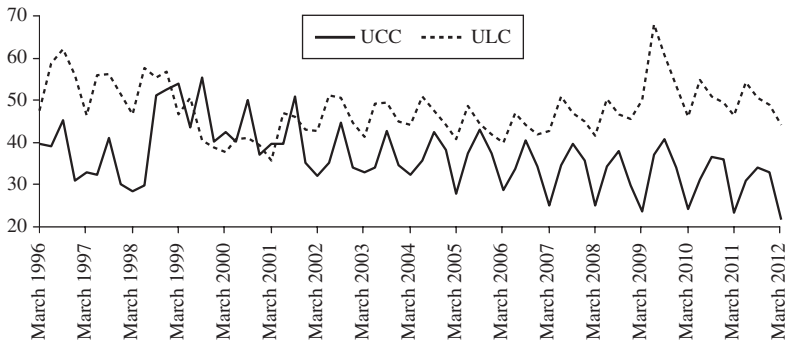


Figure 9. **ULC (in rubles) and UCC in Russian Economy in 1996–2012 (in %).**

Sources: Rosstat, authors' calculations.

Notes: The ULC in ruble equivalent is the proportion of wage earners in the GDP, multiplied by the GDP deflator; the UCC in ruble equivalent is the proportion of gross profit and gross mixed income in GDP, multiplied by the GDP deflator

have led to explosive growth of ULC, as actually occurred in the Russian economy.

The stimulatory effect of macropolicies increased noninterest budget expenditures from 15 percent to 18–19 percent of GDP in 2003–8 and increased M2 an average of 30 percent per year nominally, or around 20 percent in real terms (Figure 10). However, in a small, open economy with a fixed exchange rate, an expansionary fiscal policy contributes to the growth of output that, all things being equal, should lead to a decline in ULC. An expansionary monetary policy is theoretically neutral in this case with respect to output, which leads one to expect it to be neutral in

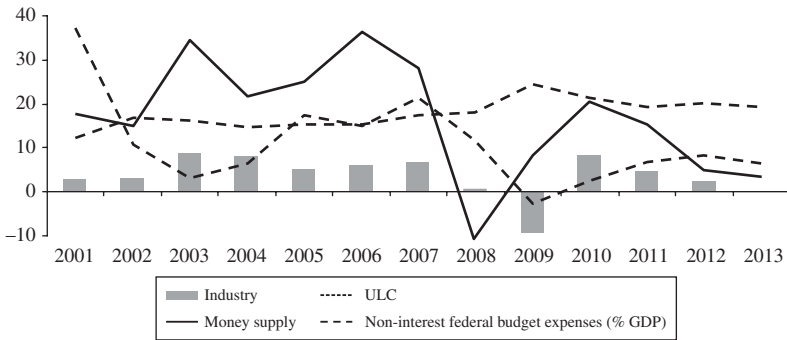


Figure 10. **Growth of Industrial Production, ULC, and Indicators of Macroeconomic Policy in Russia.** Sources: Rosstat, authors' calculations

its effect on ULC. In fact, the explosive growth of ULC in such circumstances is indicative of structural or institutional weaknesses in the economy, encouraging economic agents to engage in antimarket behavior. This topic requires further research; however, we can already assume that these weaknesses in the Russian economy include weak competition, low mobility of labor and capital, bloating of the public sector, which exacerbates the labor shortage in the private sector, and so forth.

We are inclined to agree with Gianella and Chanteloup (2006), who argue that for Russia to prevent potential recessions, crucial structural reforms are required in the labor market, demonopolizing it and creating a closer connection between wages and labor productivity. The latter will have both an anti-inflationary effect and an effect of maintaining the price competitiveness of Russian products. This is particularly important in the transition to a floating exchange rate, when a stimulating monetary policy can contribute to economic growth. This situation differs significantly from that of the *de facto* fixed exchange rate that existed before the economic crisis of 2008–9, when fiscal policy was more effective in stimulating aggregate output. But a monetary stimulus to the economy has to embed anti-inflationary “brakes” and develop a system of indicators for overheating (see below).

In Russia, the growth of unit labor costs is unlikely to be further compensated by a parallel decrease in unit capital costs. We estimate that, unlike in European countries, UCC in Russia did not grow in the 2000s, but rather declined (see Figure 9). But this process cannot continue indefinitely, and when it ends, although this will encourage investment activity, it can also create a costly new shock to the economy.²⁰

We should also mention domestic shocks to the Russian economy such as the strong capital outflow in 2011–13 and the closure of a significant number of small businesses in 2012–13. The latter may be related to an increased tax and bureaucratic burden, as well as a common problem of resource-based economies—distorted competition.

All these factors reduce competitiveness and cause domestic shocks of supply and demand, whose accumulation makes an autonomous recession very likely in Russia at its current stage of economic development. Furthermore, the country is undergoing a change in its economic growth model, which in itself can cause a slowdown.²¹

Is the Russian economy overheated? Or a new view of the “output gap”

Economic theory tells us that if an economy is operating at capacity or even beyond it, then attempts to stimulate demand, for example, by easing monetary policy, will have purely inflationary results. In the Russian economy in such a situation, cost-push inflation generated by the growth of unit labor and capital costs (the latter associated with regular centralized price indexation for products of natural monopolies), will be accompanied by demand-pull inflation, regardless of expectations about easing monetary policy.

There has been no unanimity in 2013 about the possible resurgence of inflation in the Russian economy, if the government tries to stimulate domestic demand. Advocates of stimulating demand have been saying that, according to surveys of entrepreneurs, lack of demand is one of the top factors limiting economic growth, so it is not a question of a lack of production capacity. However, to cite entrepreneurs' assessments of a lack of demand as a possible indicator of “noninflationary demand stimulation” lacks credibility, including because of the well-known stability of survey assessments amid changing economic growth rates.²²

Trend indicators for the so-called output gap, which traditionally characterize a particular phase of the economic cycle (Figures 11–13), do not permit an unambiguous judgment that the indicator is either positive or negative (the latter is usually referred to as overheating), but rather suggest an equilibrium. In addition, some authors (at least several years ago) questioned the practical significance of indicators of an output gap in the Russian economic situation because of the intense variability in economic data and the insufficient length of time during which the data have been collected.²³ When using this approach to analyze the economic situation in Russia, we think it is necessary, first, to expand the range of traditional tools, and second, to consider the conclusions of postcrisis discussions based on new conceptual approaches.

Expanding the spectrum of traditional analytical tools for Russian economic conditions could involve familiar procedures for calculating the stability of inflation, that is, the so-called nonaccelerating inflation rate of production utilization factors. For this purpose, based on the concept of the nonaccelerating inflation rate of capital utilization (NAICU),²⁴ we compare the time series, on the one hand, of capacity utilization according to the Russian Economic Barometer (REB) and

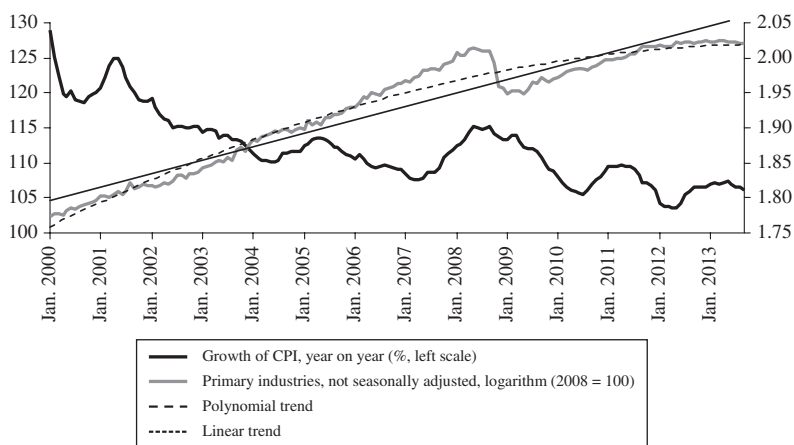


Figure 11. **Dynamics (including trend) of Basic Sectors of the Russian Economy and Inflation in January 2000–September 2013.** Sources: Rosstat, authors' calculations

Rosstat (Figure 14); and on the other hand, the rates of core inflation (more precisely, their monthly differences, to avoid nonstationarity) when introduced into the equation of lag values of inflation.²⁵

Econometric calculations lead to the conclusion that nonaccelerating inflation rate of capacity utilization can be considered as in the 75.4–81.4 percent interval (according to REB surveys) and 60.7–63.2 percent (according to Rosstat surveys),²⁶ which coincides with the empirical assessments in August 2013 of 76 percent and in October of 63 percent,

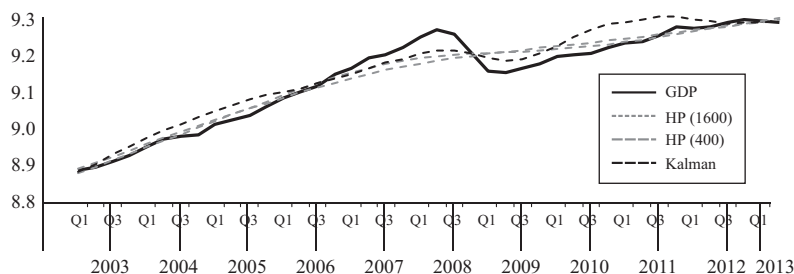


Figure 12. **Dynamics of the Logarithm of Russia's GDP, Hodrick–Prescott (HP) and Kalman Filters, Q1 2003–Q2 2013.** Sources: Rosstat, authors' calculations

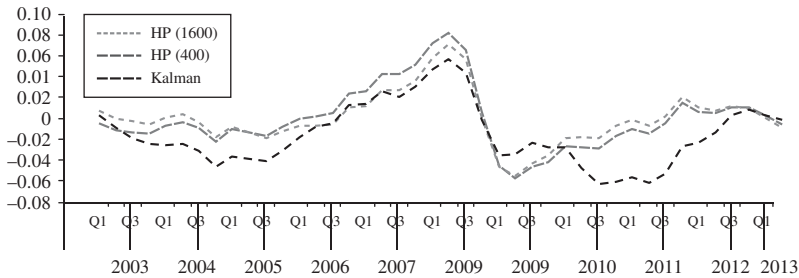


Figure 13. **Difference in Trends of Hodrick–Prescott Filter with Different Specifications (HP), and Kalman Filter and Actual GDP, Q1 2003–Q1 2013.** Sources: Rosstat, E.T. Gaidar Institute of Economic Policy, authors' calculations

according to Rosstat and Reba, respectively. These figures show the so-called potential output level. The lack of overheating is also shown by the decline in consumer inflation from 7.4 percent year on year in May 2013 to 6.1 percent in September, as well as the reduction of inflation expectations according to survey data (see Figure 5).

There is a similar situation with labor utilization: the standard econometric estimates of the relationship between the acceleration of core inflation and a specific indicator such as labor utilization (according to monthly REB surveys since the beginning of 2000),²⁷ show that the nonaccelerating inflation rate of labor utilization (NAILU)²⁸ is

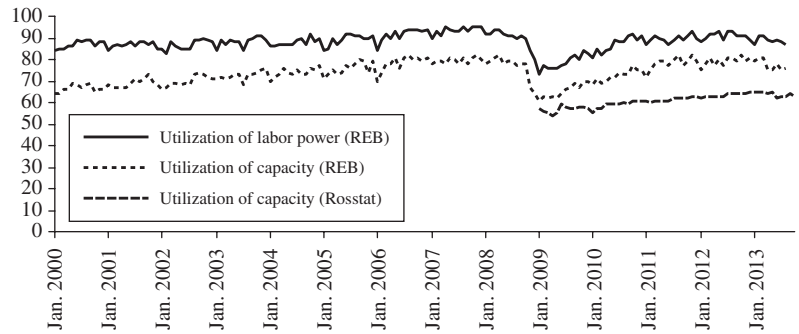


Figure 14. **Capacity Utilization of Factors of Production in Russia According to Surveys in January 2000–October 2013 (Rosstat) or August 2013 (REB) (%)**. Sources: Rosstat, National Research University, Higher School of Economics, Russian Economic Barometer (REB)

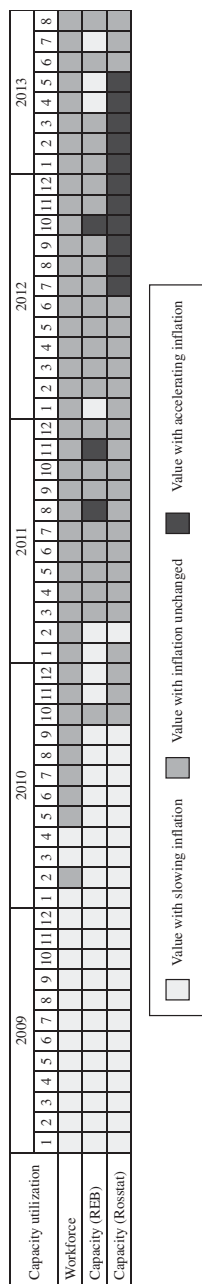
84.7–94.8 percent, and its level at the last observation point—87 percent in August 2013—fell within that interval (during the crisis of the first half of 2009, it was much lower—about 75 percent). These calculations correspond well to the historically minimal official estimate of unemployment in August 2013, at the level of 5.2 percent.

Based on the data, we have constructed indicators that characterize production utilization factors in terms of whether there is an inflationary trend. Figure 15 shows that the economy was below capacity from the beginning of the period under review until the second half of 2009–beginning of 2011. Then came a period of equilibrium, which (according to just one of the three surveys) may have shifted into a stage of overheating in mid-2012.

Because the results of the analysis of surveys from various sources differ, we decided to construct a single indicator for an overheating economy. The method of constructing it is the same as described above, with one exception: the use of 90 percent accuracy and, in case of discrepancies among the data from different surveys, we based the final value of the indicator on majority rule.²⁹ This indicator (Figure 16) shows that since mid-2012, production utilization factors were usually either greater than an equilibrium value (positive output gap), or at the equilibrium level (zero gap).

The concept of allocating long-term (stable) and structural components of GDP (and also of the budget and unemployment), on the basis of which the output gap is calculated, was criticized in the literature after the crisis of 2007–9, yet it continues to be used as attempts are made to modernize it. These attempts are focusing on broadening the spectrum of measurements of the output gap, to ensure either their fiscal neutrality (considering the characteristics of financial markets along with the traditional linking of performance indicators for output and inflation), or their neutrality respecting other features of the national economic model (e.g., sustained overheating in the labor market).

As noted in recent publications, the impact of finances on the business cycle, even in the United States, has still actually not been taken into account, either in theory or in practice. First of all, the financial sector was ignored, because the agents of the financial market made their decisions mainly not on the basis of open statistics, but confidential information (such as projected payments on assets or the expected future role of corporations in the real sector of the economy). Second, events



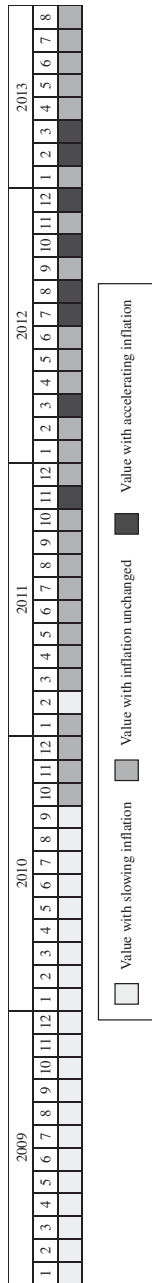


Figure 16. Composite Indicator of the State of the Russian Economy, Considering Production Utilization Factors, According to Surveys by Russian Economic Barometer and Rosstat

such as bank failures, credit squeezes, and the formation of bubbles in asset markets, events that are important for macroeconomists, play a big role as self-fulfilling prophecies, which macroeconomists still cannot fully account for (see, in particular, Kocherlakova, 2010). Third, since the mid-1980s, macroeconomists in the West have focused on new models based on structural aspects of the economy, which were not particularly closely related to actions of the fiscal and monetary authorities and to what happens on the financial markets.³⁰

But now there is discussion of both the effect of financial wealth in itself (which affects the consumption of individuals, who spend more if the value of their financial assets increases),³¹ and also the uneven distribution of this wealth over the economic cycle (losses during crises of an economy with a developed stock market are not confined to losses in current GDP, but go considerably beyond that). According to some discussants, it is also important to consider the constant massive redistribution of wealth among financial markets and also the impact of these markets on corporate financing in the real sector (by bank loans, bonds, and shares) and on their effectiveness (see Kocherlakova, 2010).

The economic literature increasingly notes that interpretation of potential output as noninflationary (output with stable inflation) ignores the historically proven fact that output may be unstable and volatile alongside low and stable inflation owing to financial imbalances, such as on the credit and/or property market (an example is the last global crisis). Trends in the financial sector also yield information about cyclical movements of output. With this in mind, some authors have attempted to develop empirically a so-called finance-neutral measure of the output gap, which leads to greater stability and makes it possible to overcome dependence on the endpoints, which is typical of the standard simple statistical filters used to calculate potential output.

Figure 17 presents estimates of the output gap in the U.S. economy compiled by experts from the International Monetary Fund (IMF), OECD, and Bank for International Settlements (BIS), using the standard Hodrick–Prescott filter (in the two upper and lower left quadrants), and the finance-neutral output gap (in the lower right quadrant), calculated by the BIS authors using a modified Hodrick–Prescott filter and taking into account changes in the credit and property markets. The figure shows a considerable difference between ex post and real-time measurements, as well as a marked difference in how the U.S. economy is treated in the precrisis period (2002–5). Whereas the standard

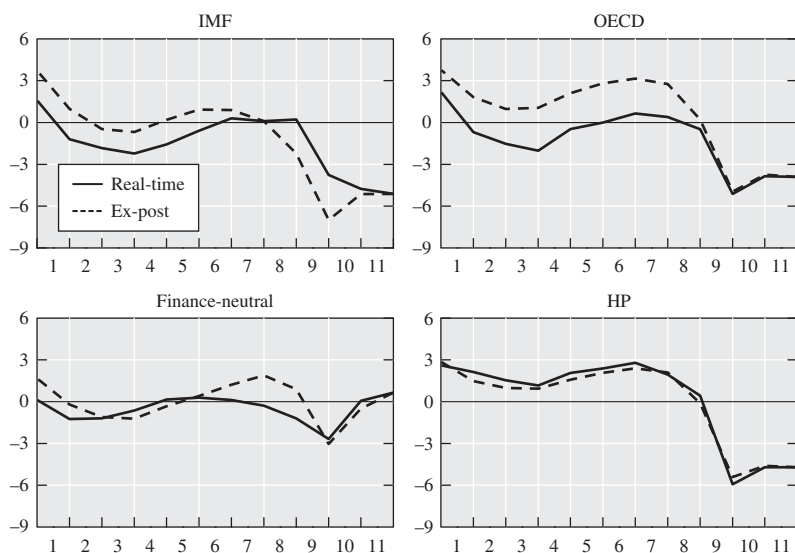


Figure 17. **U.S. Output Gaps: Ex-Post and Real-Time Estimates** (percent of potential output). *Source:* C. Borio, P. Disyatat, and M. Juselius, "Rethinking Potential Output: Embedding Information about the Financial Cycle," BIS Working Papers, 2013, no. 404, p. 2.

Notes: Real-time estimates are based on a limited time series; ex post estimates are based on the complete time series

real-time estimates showed underutilization of economic capacity, the finance-neutral estimate showed overheating since the beginning of the 2000s.

Although Russia's financial sector is not very large by world standards (total stock market capitalization and bank loans amount to less than 90 percent of GDP), its size and role may increase with a gradual transition to provision of liquidity through the Bank of Russia rather than by purchase of foreign currency earned by the export of hydrocarbons. After some time (as new models and theoretical approaches come on line) it will become increasingly urgent to develop new-generation indicators of the output gap, especially given that Russia's inflation too could be stable despite financial imbalances, and in such a situation it is difficult to use standard methods for calculating the output gap.

This is because, first, financial booms in our country may coincide with a positive supply shock, which generally exercises downward

pressure on inflation, creating the conditions for an asset market boom and subsequent crisis (Drehmann, Borio, and Tsatsaronis, 2012). Second, a financial boom and capital inflow to domestic financial asset markets are usually accompanied by appreciation of the national currency, which in itself has anti-inflationary effects.

Thus attempts to use informal procedures to assess the output gap or other financial variables (e.g., the situation on the credit market) risk excessive subjectivity, which is noticeable in the debate since 2012 about the overheating of the credit market, and in attempts by the Bank of Russia last year to cool it down. That led to slower loan growth,³² even as the total share of loans to enterprises and households relative to GDP is still small by international standards—less than 50 percent. Moreover, the economic literature emphasizes that not all credit booms are “bad,” that is, inevitably leading to a financial crisis because some of them increase the depth of the financial market and accelerate long-term economic growth; however, to distinguish “bad” credit booms (a third of which lead to a financial crisis, and a significant portion to slower long-term growth) from “good” ones is not an easy job. “Bad” booms are said to be larger in absolute size and longer: about half of booms that last more than six years lead to a financial crisis (Dell’Ariccia et al., 2012).

Different ways out of this difficulty have been suggested. When the expansive approach is used, traditional, quite formal indicators of the output gap are considered not in isolation, but systemically, that is, as part of a certain set of economic indicators covering production and financial performance, including the degree to which these exceed the levels of the previous complete cycle. This approach attempts to integrate indicators of the functioning of commodity and financial markets, for example, in the form of so-called heat charts in the IMF reports (IMF, 2012), but this treatment is also to some extent subjective. Two refinements are required.

First, a full cycle for Russia would not be, in our view, 1997–2006, as the IMF report of October 2012 has it, in its analysis of the overheating of the major world economies (IMF, 2012), but rather the more precise estimate by the Center of Development of the National Research University, Higher School of Economics (2013), whose experts dated the previous Russian business cycle from September 1997 to May 2008.³³ Second, it is also possible to use finance-neutral indicators of overheating in the Russian situation. To this end, we modified the Hodrick–Prescott filter by adding two new variables:³⁴ the real interest

rate for loans to nonfinancial organizations and the real growth of all loans (to the real sector and households) (see “Kalman filter” trend lines in Figures 12–13).³⁵ We note a curious fact: the periods of overheating and recession of the Russian economy that are shown by the finance-neutral indicator almost completely coincide with those obtained using the conventional Hodrick–Prescott filter. However, the amplitude of the fluctuations is markedly different: the finance-neutral indicator gives much deeper declines of output.

All the methods described above for determining the output gap yield generally similar results, according to which, in the middle of Q4 2013, the Russian economy for twelve months had been approximately at the level of the potential output, with an implicit tendency to decline in the last months. At the same time, when calculating the output gap for Russia it is important to find a way of accounting for possible overheating not only of the financial market but also of the labor market, keeping in mind that in 2012, Russia was already among the fifteen countries (with a high and medium level of development) that had a negative increase in the labor force (along with a number of medium-size European economies and Japan). Most developed countries do not face this problem because of large immigration, and the BRIC countries do not because of their younger populations.

In our view, it is a mistake to simplify the reasons that current inflation is exceeding its target level for 2013 by 6–6.2 percent, by reducing them to the base effect and the drought of 2012. The role of steady long-term growth in unit labor costs should not be underestimated in the inflationary trend. If these costs are measured in terms of wages in real rubles (rather than foreign currency), they act as a factor in cost-push inflation (and not so much an indicator of external competitiveness, as they are usually viewed).

Concerning cost-push inflation in Russia, reference is usually made only to the regular indexation by the government of tariffs for gas and electricity, reducing this type of inflation to the growth of unit capital costs and not always considering unit labor costs, a technique that also affects economic policy. For example, now the Russian government has decided to start spending money from the reserve funds, concurrently introducing price restrictions for products of the natural monopolies (by freezing them in 2014, and by the “inflation minus” formula in the subsequent years). However, the more rapid growth of unit labor costs in rubles, which accelerated in the first half of 2013, is almost never

discussed, nor are the structural constraints in the labor market.³⁶ Inadequate accounting for the growth of labor costs and, accordingly, overestimation of the factor of price rises by the natural monopolies and purely monetary indicators in the inflation function, make it more difficult to predict inflation.

Looking at the output gap by taking into account the situation on the labor market and ULCs, empirical approaches of this kind, as stated in the economic literature, can be dealt with by a multivariate Kalman filter. This presupposes the creation of a compact system of equations, in which estimates of potential output are linked to some other parameters of a dynamic model of the economy, in particular the characteristics of the labor market in the form of ULC dynamics.³⁷

Requirements for a system of anticrisis measures in Russia in conditions of a hypothetical autonomous recession

There are three principal factors to be considered for an anticrisis policy to deal with a potential recession in the current Russian economy, in our view. The first is the very nature of the recession (a recession of demand, supply, or inventory); second, the phase of the economic cycle (the sign and absolute size of the output gap relative to GDP); third, the particular features of an autonomous recession of demand or inventories in a resource-oriented economy, anomalously dependent on energy and raw materials prices.

With respect to the first of these factors, it is important to note that a hypothetical autonomous recession of demand or supply in Russia presents specific anticrisis requirements in and of itself. The main point is that a recession of demand is in some cases combated by “pumping it up,” in contrast to a recession of inventory. In an inventory recession, as in the crisis period of 2008–9, anticrisis support for demand could not be effective because industry reduced output regardless of consumption. At the same time, a pause connected with an inevitable sharp decline in manufacturing can be used to restructure production, including with state support (e.g., to resettle dismissed workers from monotowns; to create conditions for small business development or for the market in “long” bonds, with the support of development banks on the model of Brazil).

Regarding the second factor, and also monitoring the phase of the cycle as a whole, our analysis of the output gap does not allow us to

say unambiguously now (in Q4 2013) that there is overheating or, conversely, overcooling of the Russian economy. Rather, we can talk about an equilibrium point, which highlights the structural and institutional policies needed to stimulate long-term economic growth.

Monetary policy or fiscal recharging of current demand could be used, from a theoretical point of view, given that the output gap is close to zero, but this might be inflationary. That would be highly undesirable for the Russian economy (which was strongly affected by inflation in the 2000s, when it underwent a significant appreciation of the real effective ruble exchange rate due to the accumulation of relative inflation, rather than a rising nominal effective exchange rate). “Pumping up” demand when the economy is operating at full capacity will once again increase inflation. Then the much-needed confidence in the Central Bank as a reliable fighter against inflation will inevitably fall. Therefore, easing monetary policy in the near future seems risky. The prerequisite for monetary easing should be revival of investment activity, because creating new capacity in any industry (even the most capital-intensive) takes time—at least a year and a half.

The third consideration in the selection of anticrisis policy measures, the economy’s raw material dependence, is significant both as a factor in deteriorating expectations during an inventory recession, and as a factor that limits anticrisis support measures, including use of the Reserve Fund, during a recession of demand.

Modeling of the external shock from the fall of oil prices to US\$60/bbl, using a medium-term economic model, during the conditions of 2013,³⁸ showed that GDP is falling by 5 percent, federal budget revenues are falling by 3 trillion rubles (23 percent), while the deficit is increasing to 3.5 trillion rubles and amounts to 6.4 percent of GDP. Thus, with such a sharp decline in oil prices, the “safety cushion” provided by the Reserve Fund will be depleted within one year. Furthermore, it will be necessary to finance the “remaining” fiscal deficit at 1.1 percent of GDP. If the oil price falls for three years, by the end of the third year the ratio of public debt to GDP will reach 25 percent—that is, the maximum under the Ministry of Finance’s “Main Directions of the State Debt Policy of the Russian Federation for 2013–2015.” The cost of debt service will rise to 1.2 trillion rubles, or 8.3 percent of the total federal budget. However, the maximum amount of this ratio, equal to 10 percent (Ministry of Finance, 2012), will not be achieved. However, if the drop in oil prices continues for more than three years,

a choice will have to be made between continuing the rapid buildup of debt, and stabilization of the debt-to-GDP ratio. To sustain that ratio at 25 percent, the federal budget deficit would have to be reduced from 6.6 percent of GDP (in the scenario with rapid growth of public debt) to 1.3 percent of GDP.

In such circumstances, economic policies would have to be quite conservative and adaptable. It is important that the Russian economy have a flexible labor market and a minimum of other rigid structures or obligations and that it be possible to quickly correct account imbalances caused by a possible drop in income from exports of resources. It is also advisable to develop stress scenarios in case of a fall in oil prices to US \$60–70/bbl, which follows from the long-term trend of current values, and not the US\$80/bbl provided, for example, in scenario A, the stress scenario in the official forecast for socioeconomic development of the Russian Federation for 2014–16 (Ministry of Economic Development, 2013).

In addition, we think it appropriate to discuss the experience of Chile for use in forecasting the main macroeconomic indicators by independent expert groups, with the goal of developing and refining the forecast of prices for export goods (in Chile, copper; in Russia, oil and gas), which has the form of a law and is used to forecast the structural budget. This will make it possible to link the possible easing of fiscal policy with two objective conditions: Output lags behind the trend (recession) (which the same or an alternative expert group defines) or the oil price is below the trend. This would expand the involvement of independent experts in the decision-making process, increasing the transparency of official forecasting.

It seems that in a recession, with an output gap close to zero and relatively stable oil prices in the medium term, anticrisis policy should be mainly structural in nature, but with the greatest possible short-term effect. This is because the conversion of the developed countries' debt problem into a long-term problem causes developing countries (including Russia) to seek, on the one hand, ways to protect their economies from external risks that could lead to a new crisis, and on the other, new factors for long-term growth and economic restructuring. Such an anticrisis policy in Russia should be based on the analysis of both global experience and Russian specifics.

Among the important preventive anticrisis measures in OECD experts' structural plan are steps to encourage companies to use best

practices for inventory management (including development of transport infrastructure), which significantly reduce the volatility of the main macroeconomic aggregates. The negative contribution of inventory reduction during a crisis of declining GDP—which reached 70 percent in the United States in the first half of the twentieth century, according to estimates of the Center of Development, State University Higher School of Economics (GU-VShE, 2009)—declined significantly in all developed countries as inventory management techniques improved, but the potential of this reduction was exhausted in recent decades, because inventory management in enterprises in the developed countries was generally stable (OECD, 2010). Given the undeveloped techniques of corporate governance in Russia (as evidenced by its traditionally low level of 100th in the World Economic Forum competitiveness rankings), efforts in this direction and, above all, investments in transport infrastructure, can be an important part of anticrisis structural policy.

Analysis of world experience in structural policymaking during economic crises (especially the most recent crisis) shows the evolution of experts' views from general recommendations for estimating the quantitative impact of structural policy on the duration of precrisis expansion, as well as the duration and economic impact of the crisis. Structural policy measures for short-term effectiveness can be selected either by using the methodology of interindustry balance (MOB) to identify the range of industries whose output growth generates the maximum chain of interindustry linkages, or by an orientation toward fiscal multipliers. In Russia it is in principle possible to use the methodology of interindustry balance to select structural policies (meaning policies toward economic sectors), but this requires serious preparatory work. Otherwise we have to use obsolete values of the mid-2000s coefficients, because Rosstat is still working out the MOB for the 2011 All-Russia Classifier of Types of Economic Activity (OKVED). Also, the official MOB exists only in the All-Russia Classifier of Economic Branches (OKONKh), which also limits its usefulness in identifying the most effective structural policies, taking into account their multiplier effect. Therefore, for the time being, only fiscal multipliers can be used as criteria for selection of structural policy.

For more precise selection of measures to combat a potential autonomous recession, we think it important to do further research on the general nature of cyclical processes and factors of recession in the

Russian economy, based on approaches used in world economic science. Foremost among them is the classic multiplier-accelerator model, which we can try to adapt to the Russian economy by virtue of the strong empirical relationship between investment growth in the current year and the output growth of previous periods. Neo-Keynesian approaches are also relevant; their importance for the Russian economy is associated with monopolization of the commodities market and specific structural features of the labor market (including because of Russia's shift, as of 2012, into the group of countries with a sustained, absolute reduction in the labor force), which make trends in real wages during a recession more rigid than previously observed.³⁹

Acknowledgements

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Notes

1. Inventories include finished goods for resale, raw materials, work in progress, and semifinished products.

2. According to Rosstat data for the end of November 2013, seasonally adjusted GDP decreased in Q1 and Q2 2013 at 0.2 percent and 0.3 percent, respectively.

3. Russian industry in January–September 2013 grew by only 0.1 percent versus 2.9 percent in January–September 2012, while manufacturing production was down 0.3 percent against a growth of 4.5 percent in the corresponding period of the previous year.

4. Empirical findings showed earlier that in the Russian economy there is a "quite close relationship between the industrial and the general economic cycle" (see Center of Development, 2009, p. 141). This correlates with data from other countries. Our analysis of quarterly data for the U.S. economy notably showed that in the last third of the twentieth and beginning of the twenty-first centuries, the dynamic of industry as a whole was synchronous with the general economic cycle, mainly because of the manufacturing industries (*ibid.*, pp. 118–26).

5. The reference here is to the economic model of inventory recession (see Metzler, 1941).

6. Among them, given the distinctive features of the Russian market system, the most relevant from the standpoint of design are the classic model of a multiplier-accelerator and neo-Keynesian approaches (see below). For the present, in our view, neoclassical cycle theory (including the theory of the real business cycle) is less promising for Russian conditions, as was until recently the latest, mostly empirical (atheoretical) research on the relationship between cycles of real (pertaining to the real sector) and financial variables (see Bussiere, Imbs, and Kollmann, 2013; Claessens, Kose, and Terrones, 2011; Lo, 2012). The latter is only now becoming popular in Russia (as the financial market develops).

7. The rapid onset of the Russian inventory crisis in 2009, in our view, was caused by the coincidence of at least two negative factors: the need for continuous refinancing of external corporate debt (due to the particularly strong procyclical nature of credit to the commodities market) and the sharp rise in devaluation expectations, which grew stronger because of the lower oil prices and massive outflow of short-term capital. These two factors operated as a kind of trigger for the crisis: they dramatically worsened expectations of output growth and forced production to a halt, given the availability of other sources to cover demand, namely, accumulated inventories.

8. Since the decline of industry and GDP was not associated with lack of growth of domestic demand, at first—even in April 2009—it was explained (including by experts from international organizations) as due either to errors on the part of Rosstat or to reduction in net exports, both of which were equally wrong.

9. This model was based on monetization of the inflow of net foreign assets, the volume of which often does not coincide with the real need for liquidity in the banks (which showed up in the instability of interbank market rates).

10. The composite leading indicator of a systemic crisis in the Russian banking sector, calculated by the Center of Macroeconomic Analysis and Short-Term Forecasting (TsMAKP) since the end of 2012, is in the risk zone (see www.forecast.ru/SOL.aspx), and in the composite competitiveness ranking of the World Economic Forum (WEF), Russia in 2013 occupied 64th place overall out of 148 countries, and on the reliability of banks only 124th place (sources: Rosstat, authors' calculations).

11. Thus, the 1.3 percent decrease in the volume of Russian exports in the first nine months of 2013 was accompanied by import growth that was more modest than in previous years, but still significant at 3.4 percent. Investments in fixed capital decreased in January–September 2013 by 1.4 percent compared to the corresponding period of the previous year, when they rose by 9.6 percent. Economic growth is being supported mainly by the inertial increase in household final consumption.

12. The weighted growth of units of labor and energy costs in monetary terms.

13. In one study, this trend is observed in the period 1985–2008 (Kose, Otrok, and Prasad, 2012).

14. Matheson (2013) explores the synchronization of global growth in 185 countries during 1990–2011 and concludes both that there is manifest synchronization among developed countries (for which global shocks explain about 80 percent of the variation in growth rates) and that regional and domestic shocks have a significant impact on economic growth in the CIS, Asia, Africa, and the Middle East.

15. Looking at the last period, the maximum damage to the economy from the recession hit Greece and Portugal, with a cumulative 7.4 percent and 5.3 percent drop in GDP, respectively; the minimum was in France and Denmark, with a 0.15 percent and 0.6 percent drop in GDP, respectively. The duration ranged from two quarters of recession in many countries, up to five quarters in Slovenia, Spain, and Italy, and up to eight quarters in Portugal.

16. The origins of this trend in the discussion, in our view, involve the use of a certain economic model of international competitiveness suggesting a negative impact of the growth of relative unit labor costs (RULC) on the market share of the country and its economic growth. This model, proceeding from the imperfection of competition (in contrast to neoclassical equilibrium theory) and put into circulation by A. Thirlwall (1979) for purposes not directly connected with analysis of the effect of RULC on output growth and the cycle, in an alternative interpretation leads one to conclude that at higher RULC growth compared with other countries, exports decline, imports rise, and economic growth slows down (see Fagerberg, 1988). This requires strict compliance with the Marshall–Lerner condition, that the sum of the price elasticities of demand for exports and imports is greater than 1.

17. Only Japan and France managed during this period to reduce relative unit labor costs, and many countries, notably Hungary, the Czech Republic, and Denmark, not to mention Greece, Spain, and Italy, had to do this while combating the crisis in recent years, when they entered a period of austerity after one of rapid consumption.

18. Unit capital costs are calculated as the ratio of the nominal rate of return on the productivity of capital, or the product of the share of capital in value added and the price deflator, which amounts to the same thing.

19. Because of the lag in productivity growth compared to wage growth and the rapid appreciation of the ruble in the postcrisis period.

20. Investment activity in Russia is constrained by the relatively high cost of Russian goods in foreign currency terms (as shown by Russia's lead in the rise of the real effective exchange rate in the 2000s among OECD and BRIC countries), as manifested in the profitability of projects related to foreign direct investment inflows being lower than in the sixteen leading competitor countries. For example, by this measure, Russia loses by half to oil-rich Kazakhstan—13 percent compared to 26 percent—and by almost a third to Nigeria (World Investment Report 2013/UNCTAD).

21. The change in economic model is particularly linked with the rapid fall, even by Russian Ministry of Economic Development estimates, of the ratio between current transactions and GDP (from 3.5 percent in 2013 to –0.1 percent in 2016), a fall which, by increasing the volatility of the currency market, makes it impossible to count on a rapid reduction in capital outflow.

22. According to a Rosstat survey published in the bulletin of the ISIEZ of the National Research University, Higher School of Economics, the balance of estimates of surplus and lack of demand in industry is in the range of minus twenty to twenty-seven percentage points since the end of 2010, and the growth of industry started to slow down during that period. On the other hand, if we look at a longer series of estimates of domestic demand as a factor limiting the growth of manufacturing production, we can see that now these limits are substantially less

significant than in 2009–10, and are at the level of 2006–7, when industry was growing rapidly.

23. As noted by Kazakova, Sinel'nikov-Murylev, and Kadochnikov, “the foundation of traditional approaches to the assessment of a structural [trend—B.M., B.K.] and the conjunctural component of the dynamics of macroeconomic indicators, is the fact that slow variability is the only sign of the structural component of a macroeconomic indicator.” Consequently, none of the usual statistical filters “will be able to identify the structural component of a time series, if this component has changed quite a bit or if the series being studied is quite small” (Kazakova, Sinel'nikov-Murylev, and Kadochnikov, 2009, p. 47).

24. The concept of the NAICU as previously applied to Russia, based on statistical data through 2004, was first used for empirical calculations by Oomes and Dynnikova (2006), who relied on the theoretical reference by McElhattan (1978). To date, the approach to the analysis of potential GDP and the output gap on the basis of NAICU has been tested successfully with the statistics of several countries. The NAICU concept, in turn, is similar to the non-accelerating inflation rate of unemployment (NAIRU).

25. This is done mainly to account for inflationary expectations.

26. The model and calculations are described in the statistical annex to the article (see http://dcenter.ru/science/Mironov_Kanofyev_Recession_Supple_1.pdf).

27. This indicator, in our view, is very important for the Russian economy, where, as empirical data show, entrepreneurs during a recession prefer not to dismiss employees but to transfer them to part-time employment and wages.

28. To calculate the NAILU conceptually, we use the work of Oomes and Dynnikova (2006).

29. If, for example, two indicators showed overheating, and the third showed equilibrium, the final decision was made in favor of overheating.

30. These are the so-called dynamic stochastic general equilibrium (DSGE) models, which replaced models based on trends in supply and demand within a stable economic policy regime.

31. Ben Bernanke tried to use this during the second phase of quantitative easing of the U.S. economy (<http://top.rbc.ru/economics/19/11/2010/501726.shtml>).

32. Coefficients from which new variables are taken were calculated by the maximum likelihood method, using a univariate Kalman filter.

33. To highlight the turning points in the cycle, we have used the seasonal adjustment procedure (with the X-11 algorithm) in the Demetra statistical package.

34. Here we are following the work of Borio, Disyatat, and Juselius (2013).

35. The growth rate of loans to enterprises in January–June 2013 was 13 percent vs. 24 percent for the same period in 2012, while the growth rate of consumer loans was consistently higher—about 38 percent in 2013 vs. 40 percent the previous year.

36. In these circumstances, the imposition of restrictions on foreign migrant workers (introduction of a 30,000 ruble deposit upon entry to Russia, etc.) in the absence of measures to promote the mobility of families of workers within the country, may make the overheating worse (despite the importance of regulating the migration issue).

37. Such models were developed in the 2000s by IMF experts for the economies of Slovakia, the Czech Republic, and Greece (see, e.g., Komuki, 2008).

38. Estimates were made at the end of 2012, using the medium-term macroeconomic model of the Russian economy developed by the Center of Development, National Research University, Higher School of Economics.

39. Market monopolization and rigidity of prices and wages are the most important preconditions for neo-Keynesian theories of the business cycle (for a description of one neo-Keynesian model of the cycle that is relevant for Russian conditions, see, for example, Mankiw [1985]).

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