

ECONOMIC GROWTH FACTORS IN 2013 – H1 2014¹

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The results of decomposition of output growth rates demonstrate that in the period of 2013 – H1 2014 the rate of GDP growth was predominantly influenced by labor and capital input, which means that growth in the Russian economy has been achieved in the main due to the effect of extensive factors. The inputs provided by the main production factors mostly rely on increasing capital inputs, backed by steady growth of fixed assets alongside their declining capacity utilization.

It has become a widespread international practice, when analyzing the prospects of economic development, to apply methods based on by-factor decomposition of economic growth. Decomposition means that the rate of output growth is broken into extensive and intensive components depending on the specific values of differential production function. Labor and capital inputs are considered to be extensive factors whose value is derived by multiplying the values of both factors (the actual number of the employed and the volume of fixed assets) by the intensity of their use (the working hours of one employed person and the load on production capacities). Intensive growth components are represented by the residual that cannot be explained by the effect of the main factors and is called combined factor productivity (CFP). The results of decomposition reflect transformations in the structure of economic growth, thus making it possible to single out the most relevant factors determining changes in the dynamics of the rate of output growth.

According to data published by Rosstat, the period of 2013 through H1 2014 demonstrated a positive quarterly rate of GDP growth amounting on the average to 1.2%. In 2013, the GDP growth rate was steadily on the rise: on the average over the period under consideration, the upward movement of the quarterly growth rate of GDP amounted to 0.06 p.p. (when fitted to a linear trend – 0.05 p.p.). The rate of output growth was found to be significantly below its level recorded in 2012 (1.8% against 3.5%). In the first half year of 2014, the rate of output growth amounted on the average to 1.1%, which is somewhat above its level recorded over the corresponding period of 2013 (1.0%).

Over the entire period under consideration (with the exception of Q4 2013, when the upward move-

ment of the rate of GDP growth coincided with shrinking labor and capital inputs), the indices of GDP volume and main production factor inputs were moving in the same direction: output growth was followed by increasing inputs of the main extensive factors. At the same time, over the period of 2013 and the first half year of 2014, labor and capital inputs were growing at a rate higher than that of GDP.

As shown by factor decomposition (*Table 1, Fig. 1*) over the period under consideration, capital input acted as the most relevant economic growth factor, thus determining a major part of the rate of GDP growth.

Labor inputs demonstrated an upward growth rate, which on the average, over that period, amounted to 0.6 pp. Both their structure and their input in GDP growth varied by quarter. The fluctuations in the growth rate of labor input was determined by the multi-vectored movement of its two components. The number of employed displayed a declining growth rate, which dropped over that period on the average by 0.2 p.p. (when fitted to a linear trend – 0.01 p.p.), and in the period of Q2 2013 through Q1 2014 the growth rate of labor reserves displayed a slip into negative territory. It is noteworthy that changes in labor reserves occurred in the main due to the increasing share of employed in the total number of economically active population, while the shares of able-bodied population in total population and economically active population in able-bodied population remained practically unchanged. The index of the working hours of the employed, on the contrary, displayed an increasing growth rate, which on the average over that period amounted to 0.7 pp. (when fitted to a linear trend – 0.8 p.p.). The intensity of the use of labor reserves was on the decline in the first half year of 2013 and in Q4 2013, while in Q3 2013 and in the first half year of 2014 the first two quarters of 2013, the growth rate of this component of labor inputs was positive. The results of by-quarter decomposition of the number of working hours of the employed show that, in the majority of periods under consideration, this was

1 This section presents the results of the decomposition of output growth index (GDP) in 2013 through the first half year of 2014 obtained by applying the methodology described in the IEP's publication (Faktoy ekonomicheskogo rosta [Economic Growth Factors], series Nauchnye tridy [Scientific Works], No 70, IET, M. 2003, 390 P., www.iep.ru).

Table 1

STRUCTURE OF GDP GROWTH RATE (AGAINST SAME PERIOD OF PREVIOUS YEAR)

	2013				2014	
	Q1	Q2	Q3	Q4	Q1	Q2
Growth rate						
GDP	0.8	1.0	1.3	2.0	0.9	1.1*
I. Factor inputs	1.2	0.3	2.0	-0.2	0.6	3.1
I.1 Labor	0.2	-1.8	0.1	-0.4	0.2	1.6
Employment	0.7	-0.3	-0.3	-0.2	-0.1	0.1
Working hours	-0.5	-1.4	0.4	-0.2	0.3	1.5**
I.2 Capital	1.0	2.0	1.9	0.2	0.3	1.5
Fixed assets	1.8	1.9	2.0	2.0	1.7	1.8
Capacity load	-0.8	0.2	-0.2	-1.7	-1.4	-0.3
II. CFP	-0.4	0.7	-0.7	2.2	0.3	-2.0
As % of GDP growth rate						
GDP	100.0	100.0	100.0	100.0	100.0	100.0
I. Factor inputs	150.9	26.4	151.7	-7.7	62.4	281.6
I.1 Labor	19.8	-177.7	7.3	-20.2	27.0	146.5
Employment	82.6	-34.9	-24.4	-11.6	-5.9	6.8
Working hours	-62.8	-142.8	31.7	-8.6	32.9	139.7
I.2 Capital	131.1	204.1	144.4	12.5	35.4	135.1
Fixed assets	225.2	186.7	156.0	99.7	192.1	163.1
Capacity load	-94.1	17.4	-11.6	-87.3	-156.8	-28.0
II. CFP	-50.9	73.6	-51.7	107.7	37.6	-181.6

* the RF Ministry of Economic Development's estimates;

** the values of working hours for Q2 2014 are based on an autoregressive – moving-average model, calculated by applying data submitted over the period from Q1 1999 through Q1 2014.

the most significant component determining the size and direction of labor inputs in the growth rate of GDP. In Q2 2013 and Q2 2014, the input of changes in the intensity of the use of employed in the growth rate of output was four times higher than that of changes in the number of employed. In Q3 2013 and Q1 2014, growth in the intensity of the use of employed was acting as a compensatory factor with regard to their shrinking number, thus determining an overall positive labor input in the growth rate of output.

Similarly to labor inputs, capital inputs demonstrated a rising growth rate, its average quarterly growth amounting to 0.2 p.p. In accordance with the applied assessment methodology, the dynamics of capital reserves was determined by changes in the volume of investments in fixed assets, whose growth rate was losing on the average 0.3 p.p. every quarter (from 0.1% in Q1 2013 to (-1.4 % in Q2 2014). It should be noted that, in the first half-year periods of 2013 and 2014, the volume of investment in fixed assets in real terms remained below its level in 2008. As a result, in conditions of the existing degree of wear and tear of fixed assets, the growth rate of capital reserves remains practically unchanged, demonstrating only a negligible decline of 0.03 p.p. Nevertheless, capital input remains the most important factor whose predominant role in the growth rate of GDP was evident over

the entire period under consideration (except in Q4 2013). On the average in 2013 and the first half year of 2014, the growth rate of capital reserves remained steadily above that of GDP. In contrast to the volume of fixed assets, the index of their capacity utilization was negative throughout the entire period of observation, with the exception of Q2 2013. However, the index of the intensity of use of fixed assets displayed a positive trend: the mean quarterly slowdown rate of the downward movement of this component of capital inputs amounted to 0.2 pp. The shrinking load on production capacities brings down more than by half the aggregate capital input determined by growth of the volume of fixed assets.

Over the period under consideration, the impact of combined factor productivity (CFP) on output growth was distributed unevenly between different quarters: thus, in Q1 and Q3 2013 the average input of that component in GDP growth rate was negative, while in Q2 and Q4 2013 it was positive. At the same time, in Q4 2013 the growth rate of CFP increased significantly, and so in late 2013 productivity became the major factor of economic growth. In the first half year of 2014, the input of CFP in the rate of output growth was on the average negative due in the main to productivity decline in Q2. Thus, the structure of the growth rate of CFP displayed a downward trend: the average

quarterly decline in the productivity growth rate was 0.3 p.p. (when fit-ted to a linear trend – 0.2 p.p.).

The observed influence of CFP on the movement of output by no means reflects only the impact of productivity factors determined by technological changes. It also incorporates some components not included in the estimates of the main factors, as well as biases caused by the specific assessment methodology, in particular those determined by an uneven movement of the value indices applied in the decomposition (output and capital) . As shown by the estimates obtained for earlier periods, these biases are significant in conditions of Russia’s economic system, which is strongly influenced by changes in prices on international raw materials markets, especially in a short-term perspective.

In accordance with the obtained results, until Q2 2014 the input of changes in oil prices in the rate of GDP growth had been negative. On the average, during the period under consideration, changes in the price factor were conducive to a slowdown of the growth rate of GDP, while technological productivity (‘final residual’) was determining approximately 53% of the rate of output growth. Changes in the growth rate of the ‘technological’ component obtained as a result of singling out, as a separate factor, the situa-

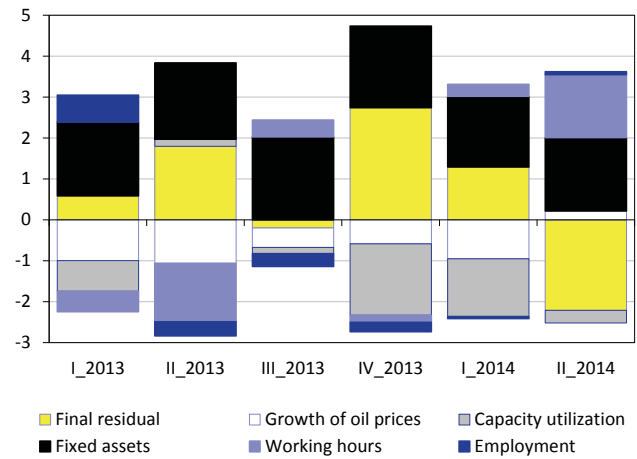


Fig. 1. By-factor Decomposition of GDP Growth (Against Same Periods of Previous Year), with Estimates of Input Provided by Oil Prices.

tion on world raw materials markets, differ little from the movement pattern displayed by CFP. The growth rate of ‘final residual’ was negative in Q3 2013 and Q2 2012. However, on the whole over the period under consideration, the movement of the ‘technological’ component demonstrated a declining growth rate – on the average by 0.6 p.p. per quarter (when fitted to a linear trend – by 0.4 p.p.). ●