ECONOMIC GROWTH FACTORS IN 2011 – HI 2012
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The results of decomposition of production growth rate indicate that in 2012 the increase in the gross value added (GVA) of the industry was achieved by increasing the extensive factors. According to the tentative estimates, the growth rates of total factor productivity (TFP) of industrial production were negative. In the cost structure of the main factors of the industrial sector in 2012, the cost of capital was dominating; the growth of labor cost in industrial production was implemented mainly due to increase in labor reserves (number of employees).

One approach to the study of the causes of the differentiation rate of development of various types of economic activity is the decomposition of economic growth. The basis of this approach is the evaluation of the differential form of the production function, whereby the output growth rates are presented as the sum of three components. The first two components determine the impact of the dynamics of the major cost factors: labor and capital (extensive growth components). The methodology implies that the factors costs are equal to the product of the stock of factors (the number of employees and the amount of capital assets) by the intensity of their utilization (hours worked by one employee, and production capacity utilization). The third component, defined as total factor productivity (TFP) is the major factors' balance, not explained by basic factors, which is regarded as an intensive component of growth. This assessment of total factor productivity reflects not only a change in the "technological" components, but also exogenous shocks, the impact of increasing the efficiency of production organization, management quality, as well as changes in demand and cost policy.

According to the Russian Statistical Service, in 2012 all types of industrial activities demonstrate growth of value added scope (*Table 1*). Compared with 2011, the gross value added (GVA) in the manufacturing sector increased by 3.2%, in mining – by 0.9%, in the production and distribution of electricity, gas and water – by 0.01%. Herewith, a slowdown of GVA growth rate was noted in all sectors as compared with preceding period. In manufacturing industry the growth rates of value added were by 2.1 p.p. below the level of 2011, in the mining sector – by 1.9 p.p. in the production and distribution of electricity, gas and water – by 0.5 p.p.

As before, the maximum growth rate of the value added is noted in manufacturing industry. Over the last years the companies of this type of economic activity managed in fact to restore the volume of value added reached before the recession, which began in 2008. In real terms, GVA in manufacturing sector in 2012 made 99% as compared with 2007.

According to the results of the decomposition (*Table 1*), in 2012, 91% of the growth rate of value added in manufacturing industry there were defined the costs of the basic factors. In com-parison with previous periods, this type of economic activity demonstrates a slowdown in fixed assets growth rate. However, in the cost structure of the basic factors the invested capital, as be-fore, remains the dominant component: their contribution to the GVA growth of manufacturing industry makes 77%. Labor costs define only 14% of GVA growth rates of this type of economic activity. In contrast to previous periods, the growth of labor costs in the manufacturing sector is implemented to a greater extent due to increasing the reserves of labor. Contribution to the growth of value added of this industrial sector, defined by employment growth (8%) is nearly 1.5 times exceeds the contribution made by the time worked (6%). It should be noted that the manufacturing industry is the only sector for which in 2012 hours worked by one employee has exceeded the level of 2008, but at the same time, this is the only industrial sector, where the number of employees has not reached the pre-crisis levels.

According to the tentative data, in 2012 the rate of TFP growth in manufacturing industry shifted are shifted to positive indicators, defining the 9% growth rate of GVA in this type of economic activity, although this estimate is likely to be biased, since it does not take into account changes in capacity utilization .

DECOMPOSITION OF VALUE ADDED GROWTH RATES STRUCTURE IN 2011–2012*

	Mining		Manufacturing industry		Production and distribution of electricity, gas and water		Industrial production**			
	2011	2012	2011	2012	2011	2012	2011		2012	
GVA	2.9	0.9	5.3	3.2	0.5	0.0	3.8		2.0	
I. Factors costs	7.21	3.63	11.65	2.93	2.14	2.44	8.77	(8.85)	3.83	(3.13)
I.1.Labor***	0.28	0.75	0.56	0.44	0.03	0.47	0.40	(0.39)	1.29	(0.56)
Number of employees	0.22	0.75	0.23	0.25	0.09	0.35	0.19	(0.21)	0.76	(0.45)
Hours worked (by one employee)	0.06	0.00	0.33	0.18	-0.06	0.12	0.21	(0.18)	0.53	(0.11)
I.2.Capital	6.94	2.88	11.09	2.50	2.11	1.97	8.37	(8.46)	2.54	(2.58)
Capital assets capacity****	3.47	2.88	3.35	2.50	2.11	1.97	3.08	(3.24)	2.54	(2.58)
Production capacity utilization	3.47	-	7.74	-	0.00	0.00	5.29	(5.23)	-	(-)
II. TFP*****	-4.33	-2.69	-6.35	0.30	-1.65	-2.43	-4.94	(-5.03)	-1.82	(-1.13)

* For 2012 tentative estimates are provided.

** Estimates for industrial production are based on aggregation of baseline estimated indicators by the types of economic activity (the results of decomposition, obtained by consolidation of the estimates by the types of economic activities are given in parentheses).

*** Tentative assessment of the growth rate of the number of employees in the industrial sector is based on the data on the number of substituted jobs in 2012, in the assumption of a constant ratio of the number of employees by the types of economic activities vs. the number of substituted jobs.

**** Tentative estimates of the volume of fixed assets in 2012 are based on the assumption that the stable coefficient of disposal of fixed assets and the constancy of the share of investment allocated to upgrade them.

***** TFP assessment in 2012 in the mining sector, the manufacturing sector and in the industrial production is shifted entirely due to the lack of data needed to assess changes in the degree of production capacity utilization at the enterprises of the economic activity.

Despite the fact that in recent years the companies engaged in mining are inferior to manufacturing enterprises in terms of GVA growth, in 2012 the amount of GVA in mining sector in real terms has exceeded the pre-crisis level (by more than 6%).

The structure of the growth of value added in mining sector is different from that noted in manufacturing industries. As of the 2012 results, there was a reduction of TFP mining businesses. GVA growth in this economic activity is completely dependent on the basic factors costs, while the contribution of total factor productivity in the growth rates of production was negative.

The most significant factor in the growth rate of value added of enterprises in mining is the cost of capital: the contribution of GVA to growth rate, based on the fixed assets extension, has exceeded the contribution, based on labor costs, nearly four-fold. The extension of labor costs of this type of economic activity is completely dependent on the increase of the number of employees, while the time worked by one employee remained at the level of 2011.

As noted above, the TFP assessment is the balance, not explained by the basic factors. In particular, the use of the output and capital cost indicators can results in the biased estimates of TFP due to the uneven dynamics of output and fixed assets costs. TFP dynamics of mining sector to a greater extent depends on the prices of the global commodity markets, than industrial production. An econometric evaluation of the correlation between TFP growth rates and the growth rates of the global oil prices allows to break the TFP into two parts: market component (based on changes in the price situation in the global commodity markets) and "final balance". It should be noted that the selection of mining sector component from the TFP indicator, defined by rising oil prices, does not lead to qualitative changes in the conclusions regarding the dynamics of total productivity: the "final balance" also demonstrates negative growth rates.

The lowest in the industry growth rate of value added demonstrate enterprises for the production and distribution of electricity, gas and water. According to the results of decomposition, this

type of economic activity is characterized by a similar structure to the mining sector growth rates of value added: in the situation of TFP decline, growth rate of GVA in the production and distribution of electricity, gas and water are completely dependent on the increase in the cost of basic factors. The capital costs are dominating in the structure of the basic factors: their contribution to the growth rate of GVA of companies engaged in the production and distribution of electricity, gas and water exceeds by
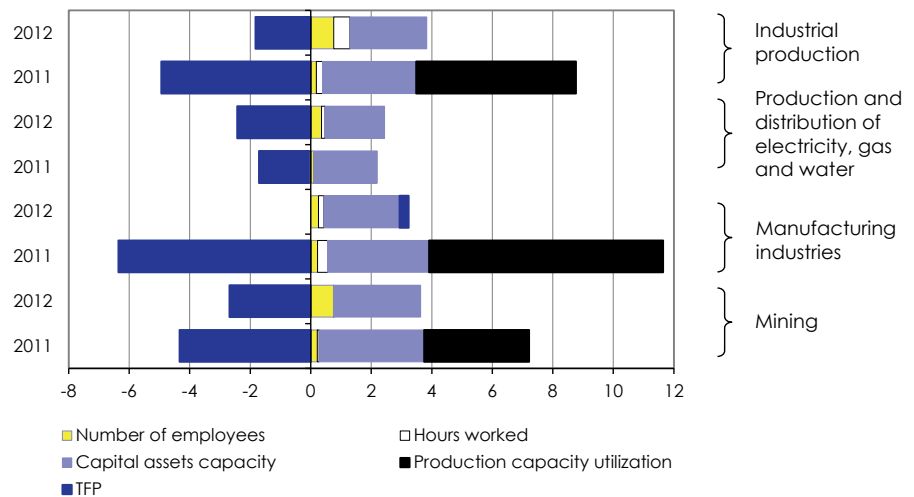

Fig. 1. Structure of gross value added growth in industrial production in 2011–2012

more than four times the contribution of labor input. The increase in labor costs in this economic activity is implemented to a greater extent at the expense of increasing their reserves: the contribution of employment in the growth rate of GVA of this type of economic activity exceeds by three times the contribution based on the working time of one employee.

The results of estimates obtained for the aggregated data as broken down by types of eco-nomic activity evidence that the overall growth rates of value added in industrial production in 2012 amounted to 2.0%, which is by 1.8 p.p. below the level of 2011.

According to the tentative results of the decomposition (in the absence of data on the degree of capacity utilization), in 2012 the growth rate of GVA in the industry is completely based on an in-crease in the costs of the basic factors. The industrial sector demonstrates growth of employment and hours worked by the employees, while fixed assets are characterized by the slowing down the growth rates, as compared with the previous periods. But in spite of this, the cost of capital re-mains the dominant factor in the growth of value added in industrial production: their contribution is exceeds the contribution of labor twice. TFP growth rates of industrial production in 2012 are negative. Allocation from TFP indicator of the component that reflects the redistribution of value added, labor and capital costs by types of economic activity results in an insignificant change in the contribution to productivity in GVA growth rate in industrial production. Herewith, the increase in the differences in the estimates of TFP, obtained from aggregated data and by sectors, proves an intensification of the process of redistribution of resources among economic activities in the indus-try in 2012 as compared with the previous period.